



## RESEARCH ARTICLE

# Injunctive and Descriptive Norms and Theory of Planned Behavior: Influencing Intentions to Use Sunscreen

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### Abstract

The Theory of Planned Behavior (TPB) has been widely used to predict a variety of health-related behaviors. Although the TPB is generally well supported, the normative component is a consistently weak predictor of behavioral intentions. A cross-sectional survey study was conducted to test a revised TPB, with the inclusion of descriptive norms as an additional component. Different models were tested to find the optimal combination for predicting intentions. Participants (N = 320) completed measures of attitudes, injunctive and descriptive norms, perceived behavioral control, and intentions toward regular sunscreen use. Results support a model with weighted referent-specific injunctive and descriptive norms. It is concluded that young women's intentions to use sunscreen is driven mainly by descriptive norms, particularly those related to their peers and close friends. Campaigns aimed at increasing sunscreen use among college women should therefore emphasize the prevalence of use among behaviorally relevant referents (e.g., other women at their school, beach-goers).

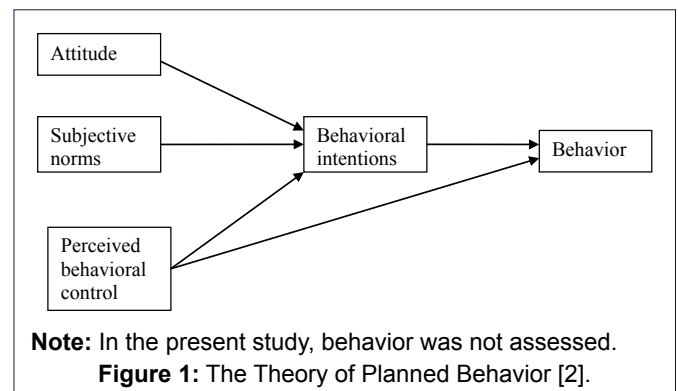
### Introduction

Several theories have been used to study health-related behavior change. The Theory of Reasoned Action (TRA); [1] and the Theory of Planned Behavior (TPB); [2,3] are among the social cognitive theories employed most frequently. The TRA and TPB have been used to predict and explain a wide range of health-related behaviors, including smoking, condom and drug use, exercise and food choice, breast and testicular self-exams, and various behaviors related to skin cancer and its prevention (e.g., Hale, Householder, & Greene, 2005).

Skin cancer is the most common form of cancer in the United States. It is estimated that one million new cases of skin cancer have been diagnosed in the United States in 2009 with about 1,000 deaths. The majority of skin cancer cases are the result of exposure to UV radiation, mostly from sun exposure. Young people, because of their active lifestyles are especially at risk of the cumulative effects of sun exposure. One key to prevent skin cancer is the daily application of a high SPF sunscreen [4]. The study reported here investigated normative influences within the framework of the TPB to influence intentions to use sunscreen daily.

### Theory of Reasoned Action and Theory of Planned Behavior

The TRA and TPB are quite similar. The TPB is an extension of the TRA and makes one modification to the original model. Both models posit that the strongest determinant of one's behavior is his/her behavioral intention. In turn, the TRA posits that intentions are influenced by one's attitude toward the behavior and subjective norms. The TPB includes attitudes and subjective norms as predictors of behavioral intentions,



but adds a third component, perceived behavioral control (PBC) over the behavior (Figure 1) [2].

### Attitudes

In the TPB, attitudes reflect personal feelings toward a behavior and are composed of affective (i.e., pleasant-unpleasant) and instrumental (beneficial-harmful) evaluations [5]. Since sunscreen use is likely to be perceived as more beneficial than harmful, the instrumental component is not likely to vary much, and so one's affective evaluation should be a better determinant of one's attitudes than will instrumental evaluations. In the present study, attitudes were defined as an affective evaluation of performing a behavior (i.e., pleasant-unpleasant feelings).

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## Subjective Norms

Subjective norms are cognitions reflecting perceived social pressure from important others to perform a behavior. Subjective norms are determined by one's perception of the normative beliefs of important others weighted by the one's motivation to comply with those beliefs [2]. [6] described subjective norms in the TRA and the TPB as capturing only injunctive norms (i.e., the behavior preferred by important others). Neither the TRA nor the TPB considers the impact of descriptive norms on intentions. Several studies have shown descriptive norms are an important influence on intentions (e.g., Borsari & Carey, 2001; [7]). This study included descriptive norms in addition to injunctive ones. While injunctive norms were assessed by weighting normative beliefs with motivation to comply, no similar weighting exists for descriptive normative beliefs. Since descriptive norms are based on the perceived prevalence of a behavior, it may be useful to use social identification as a weighting factor. The stronger one's identification with a referent person or group, the stronger the referent's influence over one's intention should be.

Lapinski and Rimal provided two reasons why people are more likely to conform to and/or model an individual with whom they strongly identify: (a) they will experience positive affect as a result of compliance, and (b) there is an implicit understanding that others in the group will know about their response [6]. There is empirical support for using identification to weight descriptive normative beliefs. Several studies have found [8-10] stronger normative effects when identification with a referent is stronger than when it is weaker. Hence, in this study descriptive normative beliefs was weighted by identification and injunctive normative beliefs was weighted by motivation to comply.

## Perceived Behavioral Control (PBC)

PBC is a subjective evaluation of one's ability to perform a behavior. The TPB posits that, to the extent PBC reflects actual control over a behavior, PBC will directly influence behavior. The TPB also posits that PBC is a third determinant of intention such that the easier a behavior, the more likely one will intend to perform it [3].

## The Subjective Norm-Intentions Relationship

Not all of the proposed linkages in the theories have received strong empirical support. The proposed relationship between norms and intentions has consistently been weaker than other proposed relationships. In a review of TPB studies, [11] reported significantly greater correlations between attitude and intentions than between norms and intentions across 26 of 30 behaviors. In a meta-analysis of 185 studies utilizing either the TRA or TPB, [12] reported the mean correlation between norms and intention was significantly weaker than the correlations between other predictors of behavioral intentions.

Two explanations may account for relatively weak correlations between norms and intentions. First, it may be that the normative construct as defined in the TPB fails to capture

different types of normative pressures. Typically, subjective norms reflect one's perceptions of what important others want him/her to do. However, it has been argued that normative pressures are derived from two sources of normative pressure [7,13,14]. Injunctive norms specify what behaviors important others want one to perform. Descriptive norms specify what most people do in a particular situation. The norms typically measured in TPB studies are injunctive. Including descriptive norms has improved the ability to predict intentions. A meta-analysis of TPB studies that assessed both injunctive and descriptive norms found that descriptive norms accounted for an additional five percent of the variance after controlling for the other TPB variables [15].

Second, the weak correlation between norms and intentions may be attributed to measurement problems. Many studies used single item measures instead of multiple item measures of norms. Also, instead of measuring subjective norms as a generalized social pressure collapsed across all important referents (e.g., most important others would want me to use sunscreen), [8] advocated using behaviorally relevant others as a more effective way to measure normative pressure (e.g., for sunscreen use, people with whom one goes to the beach) instead of all important others (e.g., friends and parents). [8,16] found normative pressure from a behaviorally relevant group to be a better predictor of intentions than a general group.

Often only normative beliefs, as opposed to normative beliefs and motivation to comply, are assessed when measuring subjective norms. The relationship between norms and intentions might be stronger if subjective norms were measured using normative beliefs weighted by motivations to comply as proposed in the TRA and the TPB.

This study focused on intentions to use sunscreen and sought to determine (a) if descriptive norms accounted for unique variance beyond the other TPB variables, (b) whether norms of behaviorally-relevant others or referent general norms better predict intentions, and (c) whether weighted or unweighted normative beliefs better predict behavioral intentions.

## Comparison of Revised TPB vs. Classic TPB

To address whether normative influences other than those typically employed in TPB research would better predict and explain intentions, a revised TPB model is proposed. The revised TPB model includes descriptive norms weighted by social identification with referent in addition to traditional measures of injunctive norms weighted by motivation to comply. In addition, referent-specific norms were measured in addition to referent-general norms.

It was expected that descriptive norms would account for a significant amount of variance in intentions to use sunscreen after controlling for the other TPB variables (H1). It was also expected that referent-specific norms would account for more variance in intentions to use sunscreen than referent-general norms (H2). Finally, given that some studies used weighted normative beliefs in testing the TPB, whereas other studies used unweighted normative beliefs, the following research

question was posed: Is a weighted normative model better at predicting intentions than an unweighted normative model when using the TPB (RQ1)?

## Method

### Participants and procedures

Participants were 327 undergraduates (127 males, 193 females) recruited from a large Southern university. Although college students represent a convenience sample, their active outdoor lifestyles, and the ability of sunscreen use to reduce their skin cancer risks, make them an appropriate population for study. The mean age of participants was 19.71 years and the sample was predominantly Caucasians (87.2%; African American 5.6%, Asian 3.8%, Hispanic 1.3%, and Other 2.2%).

Participants were told the purpose of the study was to evaluate a new message being considered for use in an upcoming skin cancer prevention campaign. Participants completed informed consent forms. Participants were presented with a survey pack containing the message, and a series of measures related to the message and the TPB. The message advocated regular use of a sunscreen with a sun protection factor (SPF) of 30 or higher as a way of reducing skin cancer risks. Participants read the message and completed the measures. After completing the survey participants were debriefed and thanked for their participation.

### Measures

**Attitudes:** Four 7-point semantic differential items assessed attitudes toward regular sunscreen use where lower scores represented more negative attitudes ( $\alpha = .88$ ).

**Perceived Behavioral Control:** A single 7-point Likert type item measured perceived behavioral control over regularly using sunscreen (If I wanted to I could use sunscreen regularly when I go outside) where higher scores represented greater PBC.

**Injunctive Normative Beliefs:** Several items assessed injunctive normative beliefs about sunscreen use for two behaviorally-relevant referents (i.e., a friend and family member) and two general referent groups (i.e., friends and family). Responses were scored on 7-point scales, where higher scores represented more positive normative beliefs. Reliabilities were high for all four sources: behaviorally-relevant friend ( $\alpha=.90$ ), behaviorally-relevant family member ( $\alpha=.80$ ); general friends ( $\alpha=.89$ ), and general family ( $\alpha=.90$ ). The two injunctive belief items for behaviorally-relevant referents were averaged to form “referent-specific injunctive beliefs.” Both injunctive belief items for general referents were averaged to form “referent-general injunctive beliefs.”

**Motivation to comply:** Two items assessed participants’ motivation to comply with the specified referents. Responses were scored on 7-point scales where higher scores represented greater motivation to comply. The two items yielded the following correlations for the four referent sources: behaviorally-relevant friend ( $r =.86$ ), behaviorally-relevant family member ( $r = .84$ ); general friends ( $r = .73$ ), and general

family ( $r = .87$ ). Items measuring motivation to comply with behaviorally-relevant referents were averaged to form “referent-specific motivation to comply.” The two motivations to comply items for general referents were averaged to form “referent-general motivation to comply.” As per the TPB motivation to comply was multiplied with injunctive normative beliefs to form referent-specific and referent-general injunctive norms.

**Descriptive normative beliefs:** Several items assessed perceptions regarding descriptive normative beliefs for behaviorally-relevant and general referents. Responses were scored on 7-point scale, higher scores reflecting more positive normative beliefs. The reliabilities produced were: behaviorally-relevant friend ( $\alpha=.98$ ), behaviorally-relevant family member ( $\alpha=.98$ ), general friends ( $\alpha=.83$ ), and general family ( $\alpha=.97$ ). The two descriptive belief items for behaviorally-relevant referents were averaged to form a referent-specific descriptive beliefs measure. The two descriptive belief items for general referents were averaged to form a referent-general descriptive beliefs measure.

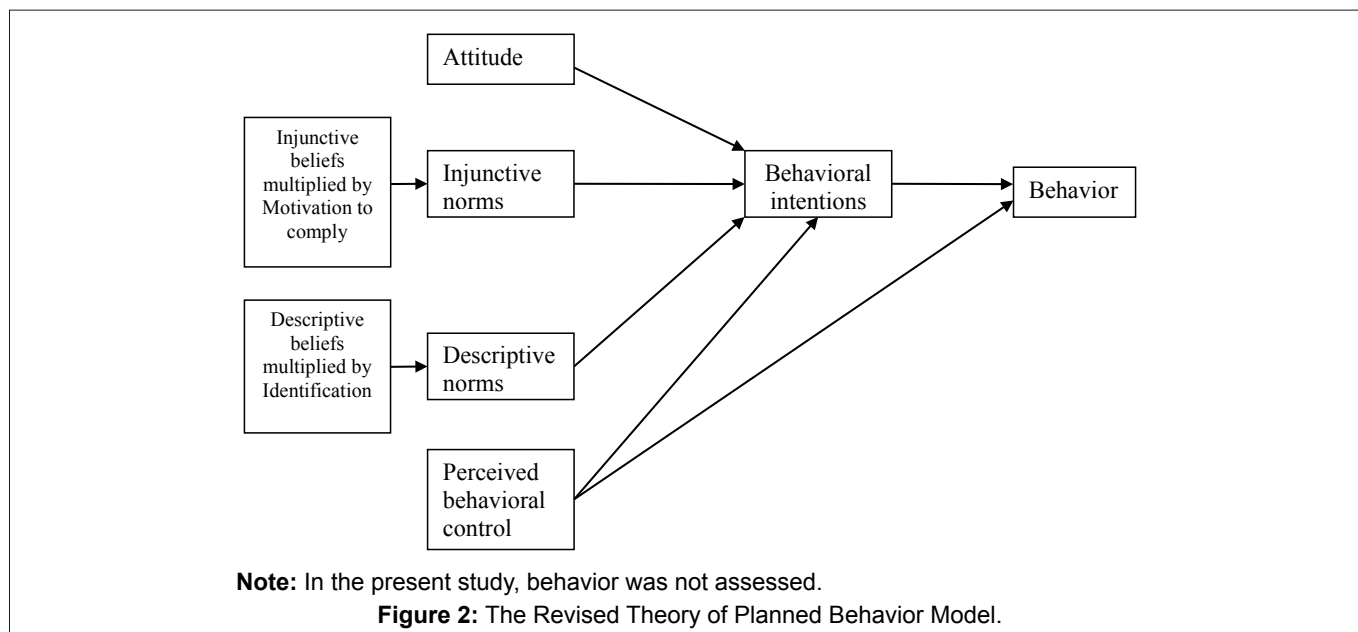
**Social identification:** Several items assessed participants’ levels of identification with their behaviorally-relevant and general referents. Responses were scored on a 7-point scale where higher score reflected greater identification. The reliabilities were: behaviorally-relevant friend ( $\alpha=.95$ ), behaviorally-relevant family member ( $\alpha=.93$ ), general friends ( $\alpha=.88$ ), and general family ( $\alpha=.93$ ). The two identification items for behaviorally-relevant referents were averaged to form a referent-specific identification measure. The two identification items for general referents were averaged to form a referent-general identification measure. Identification was multiplied with descriptive beliefs to form referent-specific and referent-general descriptive measures of subjective norms.

**Behavioral intentions:** Four items assessed participants’ sunscreen use intentions Responses were scored on a 7-point scale where higher scores represented greater intentions to use sunscreen. The items formed a reliable measure ( $\alpha = .90$ ) (Figure 2).

## Results

Four hierarchical regression analyses were used to test the two hypotheses and answer the research question posed for this study. In all analyses, intention to use sunscreen regularly was the dependent measure. The independent variables were entered into two blocks: (a) attitudes, perceived behavioral control, and the injunctive norm component, and (b) descriptive norm component. For each individual analysis, the injunctive and descriptive norm components varied accordingly: (a) referent-general injunctive and descriptive normative beliefs (i.e., unweighted norms) in the first analysis, (b) referent-specific injunctive and descriptive normative beliefs in the second analysis, (c) referent-general injunctive and descriptive norms in the third analysis, and (d) referent-specific injunctive and descriptive norms in the last analysis.

The TPB model, using referent-general injunctive beliefs



**Table 1:** Sunscreen Use Intention Regressed onto Attitudes, PBC, and Referent-General Injunctive and Descriptive Normative Beliefs.

	Variable	Step 1 (β)	Step 2 (β)
Step 1	Attitude	.31***	.31***
	PBC	.13*	.12*
	Referent-general injunctive normative beliefs	0.04	0.04
Step 2	Referent-general descriptive normative beliefs		.17**
	R <sup>2</sup>	.15***	.18***

•  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

was able to explain 15% of the variance in intention scores ( $R^2 = .15$ , adj.  $R^2 = .14$ ),  $F(3, 316) = 17.83$ ,  $p < .001$ , with attitude and PBC as significant predictors. The addition of referent-general descriptive beliefs produced a small, but significant change in the amount of variance explained ( $R^2$  change = .03),  $F_{\text{change}} = 11.52$ ,  $p < .01$ . Overall, the model accounted for 18% of the variance explained in intention ( $R^2 = .18$ , adj.  $R^2 = .16$ ),  $F(4, 315) = 16.69$ ,  $p < .001$ , with attitude, PBC, and referent-general descriptive beliefs as significant predictors (Table 1).

A TPB model using referent-specific injunctive beliefs helped explain 19% of the variance in intention scores ( $R^2 = .19$ , adj.  $R^2 = .19$ ),  $F(3, 316) = 25.34$ ,  $p < .001$ , with attitude, PBC, and referent-specific injunctive beliefs all found to be significant predictors. The addition of referent-specific descriptive beliefs produced a significant change in the amount of variance explained ( $R^2$  change = .11),  $F_{\text{change}} = 47.24$ ,  $p < .001$ . Overall, the model accounted for 30% of the variance explained in intention ( $R^2 = .30$ , adj.  $R^2 = .29$ ),  $F(4, 315) = 33.59$ ,  $p < .001$ , with attitude, PBC, referent-general injunctive and descriptive beliefs all emerging as significant predictors (Table 2).

A TPB model using referent-general injunctive norms explained 16% of the variance in intention scores ( $R^2 = .16$ , adj.  $R^2 = .15$ ),  $F(3, 316) = 19.60$ ,  $p < .001$ , with attitude, PBC, and

**Table 2:** Sunscreen Use Intention Regressed onto Attitudes, PBC, and Referent-Specific Injunctive and Descriptive Normative Beliefs.

	Variable	Step 1 (β)	Step 2 (β)
Step 1	Attitude	.30***	.26***
	PBC	.14**	.09
	Referent-specific injunctive normative beliefs	.23***	.14**
Step 2	Referent-specific descriptive normative beliefs		.34***
	R <sup>2</sup>	.19***	.30***

•  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

**Table 3:** Sunscreen Use Intention Regressed onto Attitudes, PBC, and Referent-General Injunctive and Descriptive Norms.

	Variable	Step 1 (β)	Step 2 (β)
Step 1	Attitude	.30***	.29***
	PBC	.13*	.12*
	Referent-general injunctive norms	.12*	.08
Step 2	Referent-general descriptive norms		.22**
	R <sup>2</sup>	.16***	.20***

•  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

referent-general injunctive norms all emerging as significant predictors. Adding referent-general descriptive norms yielded a significant increment in the variance explained in intention ( $R^2$  change = .05),  $F_{\text{change}} = 18.16$ ,  $p < .001$ . The final regression model accounted for 20% of the variance in sunscreen use intention ( $R^2 = .20$ , adj.  $R^2 = .19$ ),  $F(4, 315) = 20.03$ ,  $p < .001$ , with attitudes, PBC, and referent-general descriptive norms as significant predictors (Table 3).

Lastly, a TPB model using referent-specific injunctive norms explained 23% of the variance in sunscreen use intentions ( $R^2 = .23$ , adj.  $R^2 = .22$ ),  $F(3, 316) = 31.14$ ,  $p < .001$ , with attitude, PBC, and referent-specific injunctive norms all found to be



**Table 4:** Sunscreen Use Intention Regressed onto Attitudes, PBC, and Referent-Specific Injunctive and Descriptive Norms.

	Variable	Step 1 ( $\beta$ )	Step 2 ( $\beta$ )
Step 1	Attitude	.28***	.25***
	PBC	.11*	.06
	Referent-specific injunctive norms	.30***	.14*
Step 2	Referent-specific descriptive norms		.35***
	R <sup>2</sup>	.23***	.32***

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

significant predictors. The inclusion of referent-specific descriptive norms in the model produced an additional 9% of variance explained,  $F_{\text{change}} = 40.35$ ,  $p < .001$ . Overall, the final model accounted for 32% of the variance in intention scores ( $R^2 = .32$ , adj.  $R^2 = .31$ ),  $F(3, 316) = 36.35$ ,  $p < .001$ , with attitude, referent-specific injunctive and descriptive norms emerging as significant predictors (Table 4).

Hypothesis 1 predicted that descriptive norms would account for significant variance in sunscreen use intentions after controlling for the other TPB variables. Regardless of whether or not descriptive norms were based on behaviorally-relevant or general referents, the results show that they accounted for a significant amount of unique variance after controlling for the other TPB-related variables. The descriptive component emerged as either the strongest predictor of intentions, or second strongest behind attitudes. Hence, it is clear that the addition of descriptive norms to TPB significantly improves the predictability of the model.

The second hypothesis predicted that referent-specific norms would work better than referent-general norms in predicting sunscreen use intentions. The results show referent-specific norms (i.e., both unweighted and weighted) to be more predictive of intentions than referent-general norms. Based on the results found, a TPB model based on referent-specific norms accounts for about 4% to 6% more variance in predicting intentions than a TPB model based on referent-general norms. When the descriptive component is added to the TPB model, the one based on referent-specific norms accounts for about 12% more variance than one based on referent-general norms.

Finally, a research question was posed asking whether a TPB model using unweighted or weighted norms would work best to predict intentions. The results show that the TPB using weighted norms accounts for between 1% to 4% more variance in intentions than when using unweighted norms. While the change in variance explained is small, in all cases using the weights increased the predictive power of the normative components.

## Discussion

This study attempted to clarify the relationship between normative influences and behavioral intentions within the TPB. Previous research showed the subjective norm intentions relationship was inconsequential in affecting health related intentions and behaviors. Explanations for the weak association

between norms and intention include poor conceptualization and measurement of the construct. This study addressed those issues by including measures of injunctive and descriptive norms as separate sources of normative pressure.

Two additional issues were addressed. Normative measures were both referent specific and referent general. Those measures were also tested weighted by group identification or motivation to comply, respectively. It was expected that using weights would improve the predictive power of norms. I was also expected that behaviorally relevant referents would enhance the predictive power of norms on intentions.

Results showed that the conceptual and measurement changes made did improve the association between norms and intentions. Descriptive norms were found to have an independent effect on intentions beyond the influence of the other TPB variables accounting for an additional 5% to 9% of variance in intentions. That is consistent with the impact of descriptive norms in other TPB studies [15,16]. [3] Asserted that the TPB is, “open to the inclusion of additional predictors” (p. 199) if they account for significant and unique variance. The results provide support for including both injunctive and descriptive norms. These findings also suggest one should use behaviorally-relevant referents instead of general referents.

The results of this study have implications for health campaign designs, particularly those aimed at increasing sunscreen use among young adults. For health communicators interested in increasing sunscreen use, this study suggests greater focus should be on developing positive descriptive norms related to sunscreen use (i.e., all of your close friends and family members are doing it) rather than simply trying to alter injunctive norms (i.e., important others think you should do it).

Hence, those designing campaigns advocating regular sunscreen use should do strive to accomplish two goals: (a) persuade their target audience to adopt a positive attitude toward using sunscreen (e.g., that it is not unpleasant), and (b) persuade their target audience that sunscreen use is a common behavior to protect oneself UV rays, even if the target does not see others applying the sunscreen (e.g., most people put on sunscreen at home before going outdoors). Additionally, if an injunctive norms approach is used, the results suggest that health campaign designers need to use message sources with which the target audience has a high motivation to comply, or the message is likely to have little effect on changing intentions.

It may not be enough to simply educate the public about their skin cancer risks to motivate them to enact sun protection behaviors. An alternative approach to using educational messages may be to use empowerment messages. Specifically with regards to young children and sunscreen use, parents may be more effective at promoting use by children by modeling the behavior (e.g., putting on sunscreen together with them) instead of simply lecturing them or issuing a directive.

In terms of young adults, a similar type of message can be communicated via health campaigns advocating personal

responsibility in protecting one's close friends and loved ones from skin cancer. The message can be similar to those already used in other health campaigns to stop unhealthy behaviors such as drinking and driving (e.g., Friends don't let friends drive drunk), but changed to target sunscreen use behaviors instead.

Similarly, given that the mass media may also be a likely source of influence for many young people, especially when it comes to deciding what is and isn't normative behavior, it may be useful to have influential figures (e.g., celebrities, musicians, athletes) use sunscreen regularly themselves (either in public or as characters on a show) as a way of increasing descriptive norms for using sunscreen. And so, entertainment education may be an effective channel to communicate descriptive norms as well when it comes to sunscreen use.

Although this study does have both implications for the TPB as well as for health campaign design, it should be noted that there are some limitations worth discussing. First, the present investigation focused on a single health behavior (i.e., regular sunscreen use), and sample population (i.e., college undergraduates) as a means of testing the revised TPB. The results are therefore limited in its generalizability to this particular behavior and sample, and as [3] noted, the salience of the different TPB constructs differ depending on the specific behavior, situation, and population under study. Therefore, this study needs to be replicated with other health behaviors and more diverse populations. One potential avenue for future study may be to test the revised TPB in predicting people's intentions to get screened for various cancers.

Second, the current study used a cross-sectional survey design to test the revised TPB in predicting sunscreen use intentions. The problem of using a cross-sectional survey design is that it is difficult to pinpoint the causal force behind people's intentions to use sunscreen. From an applied perspective, it may be more useful to manipulate the different TPB constructs to see whether or not that has an impact on behavioral intentions. Specifically, persuasive messages can be created to induce a positive/negative attitude in participants concerning sunscreen use, as well as induce positive/negative injunctive and descriptive norms regarding sunscreen use. Using an experimental design may provide us with a clearer picture as to what can and cannot be done to help increase people's intentions to use sunscreen regularly.

On a related issue, the design of this study did not allow for a complete test of the TPB. Presently, only participants' intentions to use sunscreen were measured, but not actual sunscreen use behaviors. Therefore, it is difficult to say with certainty that participants will actually act on their reported intentions to use sunscreen. This is an important limitation because recently, some scholars have suggested that not all individuals are likely to act on their intentions due to a variety of reasons such as lack of skill, and/or the presence of environmental constraints [17]. Thus, future research may benefit from a longitudinal design to better test the link between intentions and subsequent behaviors to ensure that participants have actually carried out

their reported intentions. For the present investigation, this is not a serious limitation given that the primary interest of the study was on clarifying the relationship between norms and intentions, not intentions and behaviors.

A final limitation is one that occurs frequently in social scientific research within the communication discipline – the use of a fairly homogeneous college undergraduate sample. As mentioned earlier, due to the sample used, the results for this study are limited in terms of its external validity, generalizable only to those who share similar demographic characteristics as the sample. Although this may be a limitation, the decision to study college undergraduates was made for two specific reasons. First, given that the target behavior chosen was sunscreen use, it is likely a more salient behavior for college undergraduates than for an older population. Second, given that the primary interest of this study is in looking at the power of normative influences, it is likely that normative pressure (i.e., peer pressure) is more impactful on college undergraduates as it relates to decision-making compared to an older population where peer influence may be less impactful. Thus, a college sample for the present study is appropriate.

Another avenue of research may be to test the revised TPB across a variety of different cultures to examine more clearly the impact of cultural forces on the relationships between the different TPB constructs. This line of research extends previous work done to test the TRA across different cultures [18]. Specifically, it may be interesting to examine whether or not cultural forces moderates the relationship between norms and intentions. For example, it may be that for individuals from predominantly collectivistic cultures, normative pressure affects them to a much greater extent in influencing their intentions and behaviors compared to those from predominantly individualistic cultures.

In closing, the TPB should include both a weighted injunctive and descriptive normative components; and the norms assessed should be based on behaviorally-relevant referents. The TPB continues to be a model of interest for many research scholars and recent developments have been made to improve the predictive power of the model with the inclusion of additional predictors [19-23]. The more work that is done on improving the TPB, the better the chances that health message designers craft the most effective messages.

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