A Model of Skin Cancer: Risk Perceptions, Worry, Communication and Sunscreen Usage

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Background

•The rates of sunscreen use are falling rapidly.

•The incidence of melanoma is rising, while the incidence for many other common cancers is falling.

•Women, higher educated individuals, Caucasians and individuals with cancer histories use sunscreen more regularly. In addition, individuals who are more knowledgeable, seek health information, report higher risk perceptions and worry indicate more frequent sunscreen usage.

•First objective: to further explore individuals' information seeking, knowledge, worry and risk perceptions about skin cancer and their involvement in sunscreen usage.

•People understand reality in two ways: analytical and experiential. These two components help enact health behaviors as people respond to health threats and messages from an emotional perspective (worry) as well as a rational aspect (risk perception).

•Second objective: to examine if the dual process theory approach can inform health professionals on how to increase adherence to sunscreen use.

•Lastly a gender comparison is featured as males, compared to females, are less likely to use sunscreen and more likely to be diagnosed with skin cancer.

Hypotheses

H1: Health information seeking is positively related to knowledge.
H2: Sunscreen usage is positively related to online health information seeking and knowledge.
H3: Sunscreen usage is positively related to risk perception and worry.
H4: Risk perception and worry are positively related to online health information.
H5: Risk perception and worry are positively related to knowledge.
R1: Are there differences in path coefficients between males and females?

Method

Data
•Health Information National Trend Survey 2005.
Sample
•N = 1,736 participants, age 18+ who were selected at random to answer questions about skin cancer; 874 males and 863 females.
Measures
•Skin cancer knowledge index (KR-20=0.706).
•Online health information seeking index(KR-20=0.877).
•Risk perception (How likely do you think it is that you will develop skin cancer in the future?)1 - not likely at all to 5 - very likely.
•Worry (How often do you worry about getting skin cancer?) 1 - rarely or never to 4 - all the time.
•Sunscreen usage (How often do you apply sunscreen?) 1 - never to 5 – always.
Control variables:
44.3 mean age; 68% Caucasians; 40% some college courses or college graduates; 76% had family or personal history of cancer.
Analysis
Multiple group comparison path analysis using maximum likelihood method of estimation with robust standard errors and Satorra-Bentler chi-square difference test.
Fit indices: chi-square, CFI, TLI, RMSEA and SRMR.
All non-significant paths were removed from the final model.

Findings and Conclusions

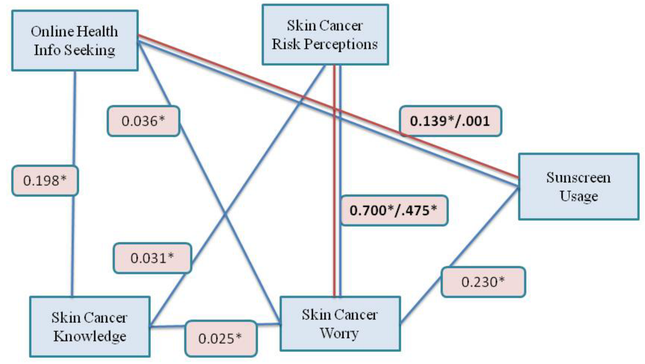
The final model fits the data well (Figure 1), and highlights three unequal paths between males and females (Table 1).

Information seeking represents an important indicator of skin cancer knowledge. Individuals in the higher social stratum engage in more information seeking which suggests the presence of the digital divide.

Caucasians, higher educated respondents and younger individuals are more knowledgeable about cancer symptoms and ways to prevent skin cancer.

Findings and Conclusions

Figure 1. The Final Skin Cancer Model, Controlling for Age, Race, Education and Personal/Family History of Cancer



*Coefficients significant at alpha < 05
Among highlighted coefficients , first value corresponds to males while the second corresponds to females.
X^2=40.353(p=.41), CFI = .998, TLI = .997, RMSEA = .006, SMRM = .028.

Table 1. Unstandardized Path Analysis Coefficients and Their Standard Errors for the Skin Cancer Model Comparing the Male vs. the Female Sub-Samples (n_{males} = 874; $n_{females}$ = 862)[1,2,3,4]

		Predicted Variables				
		Skin Cancer Knowledge	Online Health Info Seeking	Skin Cancer Risk Perception	Skin Cancer Worry	Sunscreen Usage
Control Variables	Age	-0.009* (0.004)	-0.031* (0.003)	-0.009* (0.002)		
	Race (Caucasian)	1.278* (0.151)	0.453* (0.137)	0.477* (0.078)		0.561* (0.095)
	Education	0.426* (0.058)	0.532* (0.038)			0.118*/0.335* (0.055/0.038)
	Cancer History (Pers./Fam.)		0.358* (0.129)	0.138* (0.075)		
Predictor Variables	Skin Cancer Knowledge	-		0.031* (0.017)	0.025* (0.012)	
	Online Health Info Seeking	0.198* (0.042)	-		0.036* (0.012)	0.139*/0.011(NS) (0.035/0.031)
	Skin Cancer Risk Perception			-		
	Skin Cancer Worry			0.700*/0.475* (0.087/0.055)	-	0.230* (0.063)
	R^2 (males/females)	0.161/0.200	0.239/0.232	0.234/0.196	0.026/0.020	0.149/0.172

*Coefficients are significant at alpha = 0.05.
NS indicates non-significant coefficients.
[1]Blank cell indicates that the particular path coefficient was not tested or was removed from the final model.
[2]The presence of a single coefficient in the cell indicates that the same coefficient holds for both the male and female sub-sample.
[3]The presence of two coefficients separated by forward slash indicates different coefficients for the male versus the female sub-sample. The first coefficient is representative for males and the second coefficient is representative for females.
[4]The highlighted rows represent the unstandardized model path coefficients while the ones below (the ones that are not highlighted) represent the standard errors for the respective path coefficients.

Sunscreen usage is a function of respondents' worry and information seeking behaviors.

Future communication efforts need to be geared towards individuals in low SES groups.

Addressing individuals' emotional reactions may help correct risk perceptions and facilitate involvement in sunscreen usage

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