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Associations between Positive Health Behaviors and Psychological Distress

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ABSTRACT: Research examining the relationship between psychological distress and health behaviors is limited, as most such studies examine specific types of psychological distress and specific types of health behaviors. To address this limitation, the current study assessed a broad range of health behaviors (Health Behavior Checklist) and psychological symptoms (Brief Symptom Inventory) in 762 undergraduate students. Results revealed that the total BSI score showed statistically significant negative correlations with the HBC total score and three of the four HBC subscales (Wellness-Maintenance, Substance Risk, Traffic Risk). Thus, participants reporting more overall psychological distress engaged in fewer positive health behaviors across all health behavior subtypes. Stepwise regressions examining the BSI subscales and their relationship with the HBC subscales revealed that the Hostility subscale of the BSI was the strongest and most consistent predictor of positive health behaviors, as it was negatively related to the HBC total score and three of the four HBC subscales (Wellness Maintenance, Substance Risk, and Traffic Risk). In addition, the Depression subscale of the BSI was negatively related to the Accident Control subscale of the HBC (negative direction). Interestingly, the Phobia subscale of the BSI was related to the Substance Risk and Traffic Risk subscales of the HBC, but in a positive direction. Thus, participants indicating more phobic symptoms reported healthier substance and traffic behaviors. The results of this exploratory study provide an initial model that can inform future studies on this important topic area.

KEYWORDS: health behaviors, psychological distress, lifestyle choices, positive health behaviors, risky health behaviors

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INTRODUCTION

Positive health behaviors consist of those behaviors that people engage in order to maintain and improve health (Vickers, Conway, and Hervig, 1990). Further study of positive health behaviors will help researchers to communicate effective strategies for individuals seeking to maintain their health and/or to lessen the impact of disease. According to Vickers and colleagues (1990), different categories of positive health behaviors include: a) behaviors that should help prevent the onset of illness (such as avoiding substances like tobacco and alcohol); b) avoidance of risk-taking behaviors (such as exposure to automotive and pedestrian hazards); c) behaviors that reduce the risk of straining the body's adaptive capacity (such as avoiding environmental hazards as well as harmful substances); and d) behaviors that could improve health by maintaining and enhancing wellbeing (such as visiting the doctor regularly). (See Figure 1).

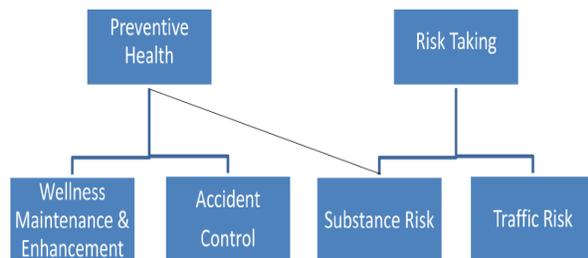


Figure 1

Despite the fact that these distinct dimensions can describe health behaviors, most existing research in this area focuses on single health behavior practices. Given that overall patterns of health behavior predict morbidity and mortality better than single behaviors, increased understanding of these dimensional behaviors will result in better interventions to minimize health problems (Breslow and Enstrom, 1980). While a large body of research addresses the relationship between health behaviors and physical health, relatively little research examines the relationship between health behaviors and psychological health. This research is further limited because the studies tend to focus on specific types of psychological distress or health behaviors. For example, yoga, a specific type of positive health behavior, has been linked to lowering an individual's perceived stress, a general construct of psychological distress (Salmon, Lush, Jablonski, and Sephton, 2009). To the author's knowledge, no published studies examine broad dimensions of health behaviors in relation to specific types of psychological distress.

Better understanding of these relationships can lead to interventions that minimize both physical and psychological health problems. To address this research question, the relationships between positive health behaviors and specific types of psychological distress were examined. We hypothesized that a statistically significant negative correlation would emerge between overall self-reported positive health behaviors and overall psychological distress. Although the current study could not address causality, the relationship could theoretically occur in either causal direction: an individual who experiences psychological distress may be more prone to engage in poor health behaviors, and pre-existing health behaviors may lead to psychological distress (see Figure 2).

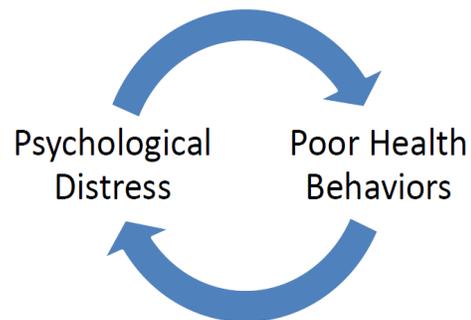


Figure 2

Because previous research has not examined the associations between broad dimensions of health behaviors and psychological distress, the current study was largely exploratory, and we did not have specific predictions at the level of particular types of health behaviors and psychological distress.

METHODS

Participants

This study was approved by the university's Institutional Review Board. To ensure an adequate statistical foundation, we collected data from 1,035 undergraduate students from a large university. All participants were recruited through Sona Systems, a web-based system for participation in research studies. Participants were given academic credit toward a Psychology Department course in return for their participation. Participants were excluded for the following reasons (sequential order): 1) if they indicated a current health condition that limited their physical activity (N = 31; 3.0%); 2) if they did not

answer every question from the primary Brief Symptom Inventory and Health Behavior Checklist measures (described below; $N = 59$; 5.7%); 3) if their score on the Infrequency Scale (described below) was greater than one ($N = 74$; 7.1%); 4) if their score from the Abbreviated Marlowe-Crowne Social Desirability Scale (described below) was more than two standard deviations above the mean for all participants ($N = 49$; 4.7%); 5) if they took less than ten minutes to complete the study ($N = 53$; 5.1%); and 6) and if they did not provide their age ($N = 7$; 0.7%). These requirements resulted in a final sample of 762 participants who were included in the data analyses.

The average age of the 762 participants was 19.27 ($SD = 3.16$; range: 18 to 50); 55% ($N = 416$) were female; 63% ($N = 482$) reported a race of Caucasian or White; 15% ($N = 110$) reported Latino or Hispanic; 9% ($N = 70$) reported Mixed/Other; 8% ($N = 60$) reported African American or Black; 4% ($N = 33$) reported Asian American; 0.3% ($N = 2$) reported Native Hawaiian; and 0.1% ($N = 1$) reported American Indian/Alaskan; 0.5% ($N = 4$) of participants declined to report their race.

Measures

Health Behavior Checklist

The Health Behavior Checklist (HBC; Vickers, Conway, & Hervig, 1990) was used to measure behaviors consistent with good health. This self-reporting scale asks about preventative behaviors that individuals who believe themselves to be in good health engage in for the purpose of maintaining or improving health. Vickers and colleagues (1990) reported the multidimensionality of health behaviors, which led to the development of the specific factors reported by this measure. The HBC consists of 40 items, of which 26 are used to assess four health dimensions. Participants were asked to indicate how well each item describes their typical behavior using a 5-point Likert scale ranging from 1, “strongly disagree,” to 5, “strongly agree.” The HBC measures four replicable factors:

1. The Wellness Maintenance and Enhancement dimension consists of statements such as “I exercise to stay healthy.”
2. The Accident Control dimension includes statements like “I fix broken things around my home straight away.”

3. The Traffic Risk Taking dimension consists of statements such as “I drive after drinking.” This statement would be reverse scored, as a higher score on the scale reflects less traffic risk taking (i.e., healthier driving behavior).

4. The Substance Risk Taking dimension includes statements like “I do not drink.” Items are scored in a manner such that a higher score on this scale indicates less substance risk taking (i.e., healthier pattern of substance use).

Brief Symptom Inventory

The 53-item Brief Symptom Inventory (BSI) is a self-report scale used to identify recent psychological symptoms. Its purpose is to identify clinically relevant psychological symptoms in adolescents and adults (Derogatis, 1993). The BSI asks participants to answer how much a specific problem has distressed them during the past week. Participants endorsed each item on a 5-point scale ranging from 0 (“not at all”) to 4 (“extremely”). The BSI is a shortened form of the longer Symptom Checklist-90-Revised. The BSI provides scores on nine dimensions: Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The measure also provides three global indices: the General Severity Index (GSI), which is a weighted frequency score based on the sum of the ratings that the participant has assigned to each symptom; the Positive Symptom Total (PST), which is a frequency count of the number of symptoms the participant reported; and the Positive Symptom Distress Index (PSDI), which is a score reflecting the intensity of distress.

Infrequency Scale

The measures used above assume that respondents understand the procedures and are both willing and able to provide accurate responses. However, because of the potential for inattention and/or carelessness in questionnaire responding, an 8-item scale modeled after the Infrequency Scale from the Personality Research Form was used (Jackson, 1984). This scale helps to identify/exclude participants who may be answering items randomly or without sufficient effort. An example of one of the questions is: “There have been a number of occasions when people I know have said to hello to me.” Any participant who answered “false” to this item would receive one point toward the scale score.

Abbreviated Marlowe-Crowne Social Desirability Scale

To deal with social desirability in test behavior and the possibility that individuals might respond to self-report instruments in a way that misrepresents their behavior, items/instruments that can measure such responses to discount or statistically adjust scores have been developed. The Abbreviated Marlowe-Crowne Social Desirability scale (Reynolds, 1982), widely used to assess and control for response bias in self-report research, was used in this study. The MC scale is a short form of a 33-item version. The 13-item version of the Marlowe-Crowne Social Desirability Scale was also found to have strong reliability with the Marlowe-Crowne Standard form ($r = .93$).

Procedure

The entire study was completed online. Participants first completed an online informed consent form and were directed to the first question of the study if they indicated consent. They were then asked questions on basic demographic information and then completed the MC scale, HBC, and BSI. Pairs of the 8 Infrequency Scale items were interspersed between the scales of interest to assess continued attention to item content.

Statistical Analyses

Pearson correlations were used to examine the relationship of the total Health Behavior Checklist score with each of the three BSI global indices. Five exploratory stepwise regressions were then used to analyze the relationships between the nine BSI scales (as predictors) and the HBC total score and each of the four HBC subscales (in separate regressions). An entry criteria of .05 and exit criteria of .10 was used. In cases in which there was more than one model, the model was chosen that explained at least 2% additional variance (at least .02 increase in R^2) than the previous model with fewer variables.

RESULTS

Pearson correlations revealed that the HBC total score showed statistically significant negative correlations (all p 's < .001) with each of the three BSI global indices. All three of the BSI global indices showed similar small effect sizes in their relationship with the HBC total score (all r values around $-.18$). The correlations between all BSI and HBC scales can be found in Table 1.

DISCUSSION

Consistent with our hypothesis, a statistically significant negative relationship was found between overall positive health behaviors and overall psychological distress. Although this correlational study cannot address causality, it is possible that proactively engaging in more positive health behaviors may decrease psychological distress. Due to the potential clinical significance of this possibility, future research should more directly examine the causal direction of this association. The current study also provides evidence of the important role hostility plays in health behaviors. Results of the stepwise regression revealed that the BSI subscale of Hostility stood out as the strongest predictor of overall positive behaviors, as well as the strongest predictor of three of the four HBC subscales (Wellness Maintenance, Traffic Risk and Substance Risk) (see Figure 3 for depiction of regression relationships). Studies on the association between hostility and specific types of poor health behaviors indicate that hostility is to be strongly associated with tobacco and marijuana smoking, increased alcohol consumption, and greater caloric intake (Scherwitz, Perkins, Chesney, Hughes, Sidney, and Manolio, 1992). Hence, hostility can increase the risk of life-threatening illnesses (Smith, 1992). Overall, results of the current study, as well as previous research, suggests that chronic hostility may be detrimental to one's health and safety.

Only the Depression scale entered the model as a predictor for the HBC Accident Control Behavior subscale, also in a negative direction. Accident control behaviors include behaviors such as being careful, fixing broken things, knowing first aid, and checking the condition of vehicles and electronics. It is proposed that depression may have a causal effect on accident control behaviors. Poor concentration, difficulty with decision-making, loss of energy, and fatigue are symptoms of depression that may decrease accident control behavior. Hence, individuals who experience depression may not make good safety decisions and could therefore jeopardize their well-being. As it does not appear that any existing research has assessed this particular relationship, further exploratory research is needed.

The Traffic Risk and Substance Risk HBC subscales were more complex, with more than one BSI subscale entering the model. As mentioned above, the Hostility subscale was the strongest predictor (in a negative direction) of both the HBC Substance Risk and Traffic Risk

subscales. However, after accounting for Hostility, the BSI subscale Phobia also stood out as a strong predictor of the HBC Substance Risk and Traffic Risk subscales. Yet, unlike Hostility, Phobia was related to both of these scales in a positive direction. Hence, people who engage in healthier substance and traffic behavior are less hostile but more phobic.

Previous studies on phobia and substance risk contradict the findings of this study, as previous studies found that people who engage in healthier substance behavior show less phobic behavior than substance abusers (Stockwell Smail, Hodgson and Canter, 1984; Page and Andrews, 1996; Darke, Torok, McKetin, Kaye and Ross, 2011). It does not appear that any existing research has assessed the relationship between phobia and traffic risk behaviors. The zero-order correlations of Phobia with these two HBC scales did not approach statistical significance (both p 's > .27), and so it appears that the BSI Phobia subscale is only significantly (and positively) related to these positive health behaviors in the presence of corresponding low Hostility.

This study confronted several limitations. One limitation is that the participants completed the study online in an unsupervised setting, which may have decreased their

level of attentiveness to the questions. We partially controlled for this by excluding individuals who responded incorrectly to more than one Infrequency Scale item, which is usually a result of inadequately attending to item content. In addition, the study is limited to relatively young and healthy university students and may not generalize to the larger population. This type of sample may have restricted the range of psychological distress and health behaviors, which may be one reason why our effect sizes were relatively small.

Despite these limitations, the preliminary findings of this study provide further support for an important association between psychological distress and health behaviors, and extend earlier findings by providing particular types of health behaviors that relate to particular types of psychological distress. These associations could bear implications on the treatment of both physical and psychological disorders. The association is complex when looking at the different subscales, and further research is needed to replicate and better understand the causal direction of these findings. Given such complexity, our findings highlight the need to study health behaviors in distinct dimensions rather than in isolation. Overall, these preliminary findings provide an initial model for much needed further research on this topic, which would benefit both the medical and mental health fields.

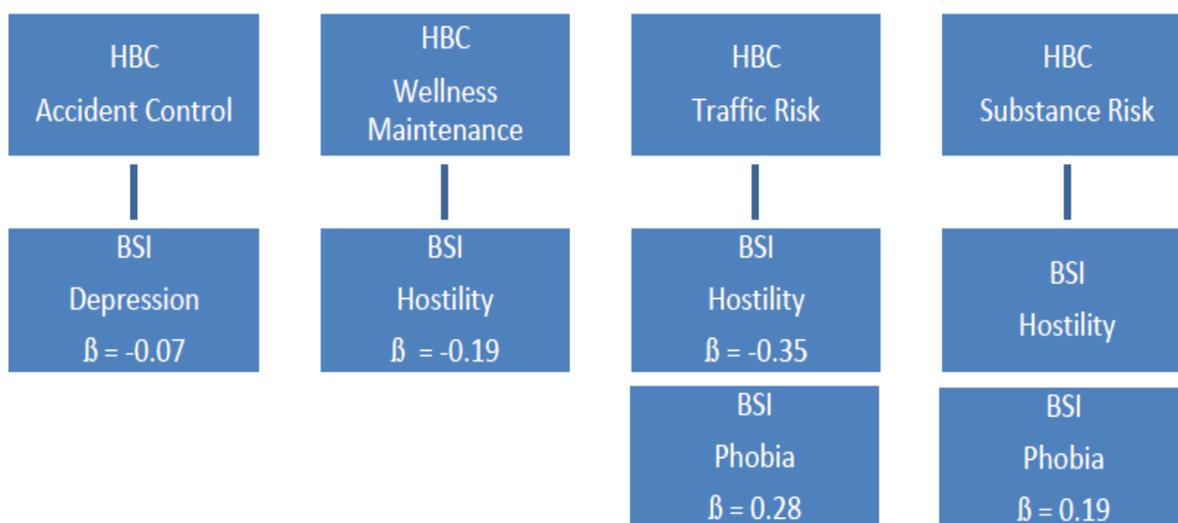


Figure 3

Table 1
Zero-order Pearson correlations between the Brief Symptom Inventory and Health Behavior Checklist

	HBC TOTAL	HBC WME	HBC AC	HBC TR	HBC SR
BSI GSI (Total)	-.18**	-.10*	-.10*	-.10*	-.14**
BSI ANX	-.10*	-.05	-0.28	-.10*	-.10*
BSI SOM	-.13*	-.08*	-0.01	-.10*	-.10*
BSI PSY	-.11*	-.10*	-.10*	-.10*	-.10*
BSI PAR	-.11*	-0.03	-.05	-.13**	-.14**
BSI O-C	-.17**	-.10	-.11*	-.12*	-.15**
BSI HOS	-.24**	-.10*	-.12*	-.18**	-.17**
BSI PHOB	-.02	-.05	-.05	-0.04	-0.03
BSI DEP	-.17**	-.10*	-.14**	-0.04	-.13**
BSI I-S	-.12*	-.10*	-.11*	-0.03	-.10*

* $p < .01$ ** $p < .00$

*Correlation is significant at the 0.01 level (2-tailed)

**Correlation is significant at the 0.05 level (2-tailed)

A stepwise linear regression of the nine BSI predictors on the HBC total score revealed that only the BSI Hostility subscale entered the model with a negative relationship with the HBC total score, standardized $\beta = -0.22$; $F(1,760) = 39.79$, $p < .001$; adjusted $R^2 = .05$. When the same regression was examined for the HBC Wellness Maintenance and Enhancement subscale, again only the BSI Hostility subscale entered the model in a negative direction, standardized $\beta = -0.10$; $F(1,760) = 8.11$, $p = .005$; adjusted $R^2 = .01$. In contrast, when the regression was examined for the HBC Accident Control subscale, only the BSI Depression subscale entered the model, also in a negative direction, standardized $\beta = -0.13$; $F(1,760) = 13.55$, $p < .001$; adjusted $R^2 = .02$. When the regression was examined for the HBC Traffic Risk subscale, both the BSI Hostility (negative direction; standardized $\beta = -0.23$, $t = 6.49$, $p < .001$) and BSI Phobia (positive direction; standardized $\beta = 0.17$, $t = 4.22$, $p < .001$) subscales entered the model, $F(1,759) = 21.71$, $p < .001$; adjusted $R^2 = .05$. Finally, when the regression was examined for the HBC Substance Risk subscale, both the BSI Hostility (negative direction; standardized $\beta = -0.25$, $t = 6.07$, $p < .001$) and BSI Phobia (positive direction; standardized $\beta = 0.15$, $t = 3.67$, $p < .001$) subscales entered the model, $F(1,759) = 18.68$, $p < .001$; adjusted $R^2 = .04$. Regression information can be found in Table 2.



Table 2
Step-wise regression information for Brief Symptom and Health Behavior Checklist subscales

	Beta	<i>t</i>	<i>P</i>	Adj. <i>R</i> ²	<i>F</i>	<i>P</i>
<u>HBC-TOTAL SCORE</u>						
Predictors in Model						
BSI - Hostility	-1.02	6.31	<.001			
Overall Model				0.05	39.79	<.001
<u>HBC-WME</u>						
Predictors in Model						
Hostility	-0.19	2.85	0.005			
Overall Model				0.009	8.11	0.005
<u>HBC-AC</u>						
Predictors in Model						
BDI - Depression	-0.07	3.68	<.001			
Overall Model				0.02	13.55	<.001
<u>HBC-TR</u>						
Predictors in Model						
BDI-Hostility	-0.35	6.49	<.001			
BDI-Phobia	0.28	4.22	<.001			
Overall Model				0.05	21.71	<.001
<u>HBC-SR</u>						
Predictors in Model						
BDI - Hostility	-0.25	6.07	<.001			
BDI - Phobia	0.19	3.67	<.001			
Overall Model				0.04	18.68	<.001

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