An Assessment of Perceived Emotional Intelligence and Health Behaviors among College Students

Michele L. Pettit, Sue C. Jacobs, Kyle S. Page, and Claudia V. Porras

Abstract

The purpose of this study was to assess the relationship between perceived emotional intelligence (i.e., recognizing, expressing, monitoring, managing, and reflecting on emotions) (Presbury, Echterling, & McKee, 2007) and self-reported health behaviors among college students. A convenience sample of 418 undergraduates completed online surveys consisting of items from the Brief Stress and Coping Inventory (Rahe & Tolles, 2002) which includes measures of health behaviors, conceptualized as coping responses to stress, and the 30-item Trait Meta-Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) which measures perceived emotional intelligence. Logistic regression analyses revealed relationships among perceived emotional intelligence factors (i.e., attention, clarity, and repair), gender, and a number of health behaviors: consuming more than seven alcoholic drinks per week, eating meals in pleasant surroundings, eating meals slowly and calmly, exercising at work/home, exercising moderately and regularly, exercising vigorously and regularly, controlling pace of life, and maintaining sufficient energy reserve ($p < 0.05$). Independent *t*-tests revealed that females reported higher levels of emotional attention than males ($M = 48.37$, $M = 44.12$; $p < 0.001$). Two-way contingency table analyses indicated that females were more likely to eat meals in pleasant surroundings and exercise at work/home, while males were more apt to consume more than seven alcoholic drinks per week, exercise vigorously and regularly, maintain sufficient energy reserve, and acquire sufficient sleep ($p < 0.05$). Results suggest that emotional intelligence has the potential to offset behaviors that have been associated with higher levels of morbidity and mortality. Gender differences regarding emotional intelligence and health behaviors warrant additional research.

* Michele L. Pettit, PhD, MPH, CHES; Assistant Professor; University of Wisconsin-La Crosse, Department of Health Education and Health Promotion, 1725 State Street, 207 Mitchell Hall, La Crosse, WI 54601; Telephone: 608-785-6789; Fax: 608-785-6792; E-mail: pettit.mich@uwlax.edu; Chapter: At-Large.

Sue C. Jacobs, PhD; Associate Professor Counseling Psychology; Oklahoma State University, School of Applied Health and Educational Psychology, 431 Willard, Stillwater, OK 74078

Kyle S. Page, MS; Doctoral Student; University of North Texas, Department of Psychology, TH Room 248, 1155 Union Circle #311280, Denton, TX 76203-5107

Claudia V. Porras, MS; Counseling Psychology Doctoral Candidate; Oklahoma State University, Counseling Psychology, 122 W. Husband Ct., Stillwater, OK 74075

* Corresponding author

Background

Many researchers have demonstrated the linkage between stress and illness. Stress has been associated with the development of heart disease (Jacobs, Schultz, & Welch, 2003; Jacobs & Stone, 1999; Merz et al., 2002), infectious diseases (Solomon, 2001), and other physical ailments. Similarly, stress has been linked to the emergence of depression, anxiety, eating disorders, and suicide (National Mental Health Association, n.d.). The latter issues represent salient health concerns among college student populations (American College Health Association, 2008).

The Healthy People 2010 objectives indicate the need to address mental and emotional disturbances in the United States through prevention and control of stress (U.S. Department of Health and Human Services, 2000). On a macro level, stress materializes from racism, socioeconomic status, poor living conditions, jobs characterized by high levels of demand and low levels of control, and other forms of inequity (Williams, 2008a; Williams, 2008b). From a micro perspective, a recent American Psychological Association (2007) report indicated that stress among U.S. adults manifests through unhealthy behaviors such as tobacco use, excessive alcohol use, sleeplessness, and irregular dietary patterns (e.g., overeating, missing meals, etc.). According to the report, "Young people are more affected by unhealthy stress management behaviors such as smoking, losing sleep, and skipping meals" (p. 16). In addition to age-related differences, the report points to known gender differences regarding stress-related behaviors. For example, "women are more likely to report sleep problems, overeating, skipping meals, and using prescription medications as a result of stress" (p. 12).

Colleges/universities represent one of many settings for addressing the nation's health objectives. According to the most recent findings from the American College Health Assessment, stress represents the leading obstacle to academic success among college students followed by sleep difficulty, cold/flu/sore throat, concern for a troubled friend or family member, depression/anxiety disorder/seasonal affective disorder, and relationship difficulty (American College Health Association, 2008). Students face multiple stressors throughout their college experiences. Freshmen, in particular, are vulnerable to the stress of psychologically and environmentally adjusting to the college experience. According to the National Mental Health Association (2007), "Over 30% of freshmen report feeling stressed and 'frequently overwhelmed' by everything they have to do."

Individuals' perceptions, accurate or inaccurate, about stress can have profound health implications. For example,

based upon results of their study, Hudd et al. (2000) suggested a "relationship between perceived levels of stress among college students, their health habits, health status, and self-esteem" (p. 225). Perhaps one of the most critical sources of stress among college students involves a perceived inability to cope with life events over which they have limited control (Seo, Blair, Torabi, & Kaldahl, 2004). Perceptions about an individual's ability to confront and cope with life events potentially can lead to unhealthy behaviors. As such, health behaviors are reflective of coping and effective coping skills are essential for eliciting positive and rational perceptions toward stress (DeBerard, Spielmans, & Julka, 2004).

Peter Salovey and John Mayer, psychologists with specialization in emotional intelligence, assert that the concept of emotional intelligence encompasses multiple domains. Most notably, it involves self-awareness and management of emotions, self-motivation, acknowledgement of emotions in others, and management of relationships (Salovey & Mayer, 1990). Presbury, Echterling, and McKee (2007) contend that emotional intelligence involves recognizing, expressing, monitoring, managing, and reflecting on emotions. According to Goleman (1995), emotional intelligence encompasses "abilities such as being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope" (p. 34).

Disagreement insofar as defining emotional intelligence exists among mental health experts. While some researchers (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Gohm, Corser, & Dalsky, 2005; Lopes et al., 2004) believe that emotional intelligence represents a performance-based construct that should be measured much like IQ, other researchers (Palmer, Donaldson, & Stough, 2002; Salovey, Stroud, Woolery, & Epel, 2002) contend that emotional intelligence consists of multiple domains. Researchers adhering to the latter school of thought purport that emotional intelligence should be measured via self-reported instruments designed to assess perceived traits indicative of the multidimensional construct. This construct usually is referred to as perceived emotional intelligence.

Researchers have found that higher levels of perceived emotional intelligence are associated with lower levels of depression and physical complaints (Ciarrocchi, Deane, & Anderson, 2002) and lower levels of depression and hopelessness (Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007). In a meta-analysis, Schutte et al. (2007) found that "higher emotional intelligence was associated with better health" (p. 921). Schutte and her colleagues, who analyzed measures of perceived and performance-based emotional intelligence, advised a need for studies to focus on the relationship between emotional intelligence and physical health.

Researchers have connected perceived emotional intelligence to life satisfaction (Palmer et al., 2002), coping (Saklofske, Austin, Galloway, & Davidson, 2007), and health (Schutte et al., 2007). Researchers also have documented a negative association between perceived emotional intelligence and perceived stress (Pau et al., 2007). While researchers have examined connections between perceived emotional intelligence and individuals' perceptions toward stress, few have investigated the relationship of emotional intelligence to individuals' health behaviors conceptualized as coping responses to stress.

Researchers have identified gender differences regarding perceived emotional intelligence early in the lifespan. For example, Bosacki (2007) found "positive relations between emotion understanding and self-understanding" among girls as opposed to boys between the ages of 5 and 8 (p. 155). Gender differences relative to perceived emotional intelligence also have emerged among college students. In a study of emotional intelligence and college student retention, females scored higher than males on selected measures of perceived emotional intelligence (Parker, Hogan, Eastabrook, Oke, & Wood, 2006).

Gender differences involving selected health behaviors are well-documented in the literature. For example, a myriad of researchers have reported higher prevalences of alcohol use (Harrell & Karim, 2008; Singleton, 2007) and regular/vigorous exercise (Buckworth & Nigg, 2004; George, 2000; Huddleston, Mertesdorf, & Araki, 2002) among college males as opposed to college females. On the contrary, other researchers have documented higher prevalences of cigarette smoking (Moskal, Dziuban, & West, 1999) and nicotine dependence (McChargue, Cohen, & Cook, 2004) among college females. In relation to sleep habits, college males reportedly experience better sleep quality and efficiency, and fewer sleep difficulties than college females (Tsai & Li, 2004).

Purpose

The purpose of this study was to assess the relationship between perceived emotional intelligence and health behaviors, conceptualized as coping responses to stress, among college students. A secondary purpose was to explore the relationship of gender to perceived emotional intelligence and health behaviors. Research questions for this study were as follows: (a) To what extent do perceived emotional intelligence and gender predict health behaviors of college students?, (b) do gender differences exist in relation to perceived emotional intelligence?, and (c) do gender differences exist in relation to health behaviors?

Methods

Sample

This study was approved by the Institutional Review Board at a large Southern Plains university and was part of a larger investigation of perceived emotional intelligence, stress, health behaviors, and eating attitudes among college students. The sample was representative of the target population and consisted of 418 undergraduate students

enrolled in courses at a large Southern Plains university. Sixteen participants were considered outliers and were excluded from logistic regression analyses, independent *t*-tests, and two-way contingency table analyses because their ages reflected non-traditional students. The 402 participants included in analyses ranged from 18 to 24 years of age. Over half (55%, $n = 222$) of participants were females. Ninety-eight percent ($n = 394$) of participants were less than 24 years of age and 46% ($n = 185$) were 18 or 19 years of age. Furthermore, over 40% ($n = 167$) of participants were freshmen and greater than 80% ($n = 341$) of the sample self-identified as White.

Data Collection

We employed a convenience sampling technique to solicit participants for this study. Students enrolled in courses involved with an expanded undergraduate research pool were eligible for participation. Participating students were at least 18 years of age. Eligible participants were provided an online recruitment script. If they chose to participate, they were directed to a web link that included an informed consent document indicating that their participation was voluntary and anonymous. All participants received course credit for involvement in the research as determined by their respective instructors.

Data were collected over the course of approximately three months. Analyses involved items from the 30-item Trait Meta-Mood Scale (TMMS) (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) and the Health Habits coping scale of the Brief Stress and Coping Inventory (BSCI) (Rahe & Tolles, 2002). The 30-item TMMS is a self-report instrument designed to measure characteristics of emotionally intelligent individuals. Like the 48-item TMMS, the 30-item TMMS consists of three factors including attention (i.e., "degree to which individuals notice and think about their feelings," emotions, or moods, p. 128), clarity (i.e., "ability to understand one's mood," p. 128), and repair (i.e., "attempts to repair unpleasant moods or maintain pleasant ones," p. 129). The 30-item TMMS was selected for use in this study because of its potential "to identify core individual differences that may characterize emotionally intelligent individuals capable of disclosing their feelings to themselves and other people" (Salovey et al., 1995, p. 127). Although participants were asked to answer all questions from the TMMS (48 items), the 30-item TMMS was used for analyses as recommended by Salovey and colleagues (1995).

Discriminant and convergent validity previously were demonstrated for the 30-item TMMS. Reliability for the instrument was confirmed through internal consistency reliability estimates (attention: $\alpha = 0.86$, clarity: $\alpha = 0.88$, and repair: $\alpha = 0.82$; Salovey et al., 1995). Internal consistency reliability estimates for this sample were: (a) attention: 0.85 (13 items), (b) clarity: 0.78 (11 items), and (c) repair: 0.72 (6 items).

The BSCI, a succinct version of the Stress and Coping Inventory (SCI) (Rahe, Veach, Tolles, & Murakami, 2000), consists of five stress scales and five coping scales. While the inventory was designed for clinical purposes, it was used as a research instrument for this study as it has been previously in a limited way (Skrabski, Kopp, Rozsa, Rethelyi, & Rahe, 2005). The BSCI was selected for use in this study because of its succinctness and utility in collecting information pertaining to individuals' experiences with stress and coping. Internal consistency reliability estimates previously were deemed satisfactory for selected scales of the instrument. Moreover, concurrent validity was established by correlating items from the BSCI with items from the SCI. The correlation between the 13-item Health Habits coping scale from the BSCI and the 15-item Health Habits coping scale from the SCI was .05, $p < .01$ (Rahe & Tolles, 2002). We used the Health Habits coping scale to assess the relationship between perceived emotional intelligence and health behaviors. Behaviors measured via the Health Habits coping scale of the BSCI include substance use (i.e., smoking cigarettes, consuming more than seven alcoholic drinks per week, using recreational drugs, and expressing concern about use of medications; four items), diet (i.e., paying close attention to what and how much one eats, eating meals in pleasant surroundings, and eating meals slowly and calmly; three items), exercise (i.e., exercising at work/home, exercising moderately and regularly, and exercising vigorously and regularly; three items), and pace (i.e., controlling pace of life, maintaining sufficient energy reserve, and getting enough sleep; three items) (Rahe & Tolles, 2002).

Data Analysis

Data were analyzed via the Statistical Package for the Social Sciences (SPSS) version 16.0. Descriptive statistics (frequencies and percentages) were performed to describe demographics and health behaviors of the sample. Each item from the 30-item TMMS was measured via a Likert scale for which higher scores represented higher levels of perceived emotional intelligence, with reverse coding as appropriate. We generated total scores for each factor of the 30-item TMMS including attention, clarity, and repair. Higher scores corresponded to higher levels of attention, clarity, and repair.

We corrected missing data from 30-item TMMS subscales. Specifically, records missing > 20% of responses for a given 30-item TMMS subscale were discarded from analyses. For records with ≥ 80% of responses for a given 30-item TMMS subscale, the average value for responses was recorded for missing values.

We used logistic regression analyses to assess predictive relationships among perceived emotional intelligence, gender, and health behaviors. Specifically, logistic regression was performed among 30-item TMMS factors, gender, and each dichotomous (Y/N) health behavior item from the BSCI, thus resulting in 13 separate analyses. We selected logistic regression for analyses in lieu of discriminant analysis because of its relative advantage and minimal assumptions for independent variables (Howell, 2002). As recommended by Agresti (2007), we reported standardized odds ratios to

depict the relative importance of each perceived emotional intelligence factor in predicting selected health behaviors. We did not report standardized odds ratios for gender because standardized odds ratios are computed using standard deviations of associated predictors. Gender is categorical and thus, does not include a standard deviation. We used independent *t*-tests to compare 30-item TMMS factors between males and females, while two-way contingency table analyses were used to assess possible gender differences in each self-reported health behavior.

Results

Results from Logistic Regression Analyses

We conducted logistic regression analyses to determine the extent to which 30-item TMMS factors and gender predicted each health behavior of the BSCI. Each model included four independent variables (attention, clarity, repair, and gender). Significant models resulted for 8 of the 13 health behaviors. These results indicate that predictors differentiated between individuals who engaged and did not engage in the following health behaviors: (a) consuming more than seven alcoholic drinks a week, χ^2 (4, N = 396) = 36.62, p = 0.001; (b) eating meals in pleasant surroundings, χ^2 (4, N = 396) = 52.42, p = 0.001; (c) eating meals slowly and calmly, χ^2 (4, N = 396) = 15.62, p = 0.004; (d) exercising at work/home, χ^2 (4, N = 393) = 17.45, p = 0.002; (e) exercising moderately and regularly, χ^2 (4, N = 395) = 17.64, p = 0.001; (f) exercising vigorously and regularly, χ^2 (4, N = 392) = 26.62, p = 0.001; (g) controlling pace of life, χ^2 (4, N = 392) = 39.01, p = 0.001; and (h) maintaining sufficient energy reserve, χ^2 (4, N = 394) = 25.92, p = 0.001.

Beta coefficients and odds ratios are presented in Table 1 to indicate the relative importance of 30-item TMMS factors and gender in predicting each health behavior. Based on these values, gender represented the strongest predictor of consuming more than seven alcoholic drinks per week with an odds ratio of 0.299. As such, the odds of consuming more than seven alcoholic drinks per week were 3.344 times higher among males than females. Gender also was the most significant predictor of exercising at work/home, exercising vigorously and regularly, and maintaining sufficient energy reserve. While the odds of exercising at home/work were higher among females (*OR* = 1.895), the odds of exercising vigorously and regularly were 2.646 times higher among males than females and the odds of maintaining sufficient energy reserve were 1.883 times higher among males than females.

Clarity was the strongest predictor of eating meals slowly and calmly with a standardized odds ratio of 1.353. Specifically, the odds of eating meals slowly and calmly increased by 35% as the clarity score increased by a standard deviation of 6.45.

Repair represented the strongest predictor of eating meals in pleasant surroundings with a standardized odds ratio of 1.799. Consequently, the odds of eating meals in pleasant surroundings increased by 80% as the repair score increased by a standard deviation of 4.23. Repair also was the most significant predictor of exercising moderately and regularly (*SOR* = 1.526) and controlling pace of life (*SOR* = 1.573).

Results from Independent t-tests

Independent *t*-tests revealed a significant gender difference regarding attention (t = -5.09, p = .001). Specifically, females had higher mean scores than males with respect to acknowledging and reflecting on emotions (M = 48.37, SD = 8.17; M = 44.12, SD = 8.40). No significant gender differences were found in relation to clarity or repair.

Results from Two-Way Contingency Table Analyses

We conducted two-way contingency table analyses to evaluate differences in the frequencies of health behaviors between male and female participants. Results indicated that males reported higher frequencies for consuming more than seven alcoholic drinks per week, Pearson χ^2 (1, N = 398) = 17.43, p = .001, Cramer's V = 0.21; exercising vigorously and regularly, Pearson χ^2 (1, N = 393) = 19.36, p = .001, Cramer's V = 0.22; maintaining sufficient energy reserve, Pearson χ^2 (1, N = 396) = 6.09, p = .014, Cramer's V = 0.12; and getting enough sleep, Pearson χ^2 (1, N = 398) = 5.05, p = .025, Cramer's V = 0.11; whereas females reported higher frequencies for eating meals in pleasant surroundings, Pearson χ^2 (1, N = 398) = 12.18, p = .001, Cramer's V = 0.18; and exercising at work/home, Pearson χ^2 (1, N = 395) = 10.64, p = .001, Cramer's V = 0.16. Table 2 includes frequencies and percentages for each health behavior by gender.

Discussion

Results were consistent with our hypotheses regarding predictive relationships among perceived emotional intelligence, gender, and selected health behaviors, as well as gender differences in perceived emotional intelligence and selected health behaviors. Predictive relationships between emotional repair (e.g., "No matter how badly I feel, I try to think about pleasant things," Salovey et al., 1995, p. 154) and eating meals in pleasant surroundings, exercising moderately and regularly, and controlling pace of life imply that the ability to adjust or fix emotions potentially can offset unfavorable health outcomes. Similarly, the predictive relationship between emotional clarity (e.g., "I almost always know exactly how I am feeling," Salovey et al., 1995, p. 154) and eating meals slowly and calmly suggests that comprehending emotions potentially protects individuals from behaviors that hinder health. While understanding and interpreting emotions is important, repairing unfavorable emotions and sustaining favorable ones appears to be a more powerful determinant for minimizing selected health risks.

As stated previously, researchers previously have demonstrated a connection between perceived emotional

Table 1

Logistic Regression Analyses Predicting Health Habits from 30-Item TMMS Factors

Health Habit	*B*	S.E.	Wald	*df*	*p*	Odds ratio	Stand. dev.	Stand. odds ratio	95.0% C.I. for odds ratio Lower	Upper
Smoking cigarettes										
Attention	0.019	0.021	0.810	1	0.368	1.019	8.561	1.175	0.978	1.062
Clarity	-0.043	0.029	2.258	1	0.133	0.958	6.448	0.758	0.905	1.013
Repair	-0.068	0.044	2.465	1	0.116	0.934	4.230	0.749	0.858	1.017
Gender	-0.386	0.325	1.407	1	0.236	0.680			0.360	1.286
Consuming more than seven alcoholic drinks per week										
Attention	0.036	0.018	4.049	1	0.044	1.036	8.567	1.354	1.001	1.073
Clarity	-0.072	0.024	9.191	1	0.002	0.930	6.451	0.626	0.888	0.975
Repair	-0.049	0.036	1.875	1	0.171	0.952	4.231	0.812	0.887	1.021
Gender	-1.207	0.272	19.691	1	0.001	0.299			0.175	0.510
Using recreational drugs										
Attention	-0.038	0.027	1.948	1	0.163	0.963	8.556	0.724	0.913	1.015
Clarity	-0.043	0.037	1.388	1	0.239	0.958	6.445	0.758	0.891	1.029
Repair	0.042	0.058	0.509	1	0.476	1.043	4.226	1.195	0.930	1.169
Gender	-0.383	0.411	0.869	1	0.351	0.682			0.305	1.526
Expressing concern about use of medications										
Attention	-0.019	0.035	0.294	1	0.588	0.981	8.571	0.848	0.917	1.050
Clarity	-0.068	0.046	2.177	1	0.140	0.934	6.471	0.643	0.853	1.023
Repair	0.051	0.074	0.476	1	0.490	1.052	4.231	1.239	0.910	1.217
Gender	0.126	0.534	0.056	1	0.814	1.134			0.398	3.233
Paying close attention to what and how much one eats										
Attention	0.005	0.014	0.121	1	0.728	1.005	8.567	1.044	0.978	1.033
Clarity	-0.010	0.018	0.265	1	0.606	0.991	6.453	0.943	0.955	1.027
Repair	0.023	0.030	0.579	1	0.447	1.023	4.230	1.101	0.965	1.084
Gender	0.131	0.210	0.391	1	0.532	1.140			0.756	1.720
Eating meals in pleasant surroundings										
Attention	0.002	0.017	0.011	1	0.918	1.002	8.561	1.017	0.969	1.035
Clarity	0.053	0.024	5.123	1	0.024	1.055	6.452	1.413	1.007	1.105
Repair	0.139	0.036	14.761	1	0.001	1.149	4.230	1.799	1.070	1.234
Gender	0.792	0.259	9.341	1	0.002	2.207			1.328	3.666
Eating meals slowly and calmly										
Attention	-0.005	0.014	0.121	1	0.728	0.995	8.554	0.958	0.967	1.023
Clarity	0.046	0.019	5.898	1	0.015	1.048	6.448	1.353	1.009	1.088
Repair	0.041	0.030	1.866	1	0.172	1.042	4.220	1.190	0.982	1.106
Gender	0.199	0.214	0.866	1	0.352	1.220			0.803	1.854
Exercising at work/home										
Attention	0.011	0.015	0.538	1	0.463	1.011	8.533	1.098	0.982	1.040
Clarity	0.005	0.019	0.070	1	0.791	1.005	6.469	1.033	0.968	1.044
Repair	0.044	0.031	2.068	1	0.150	1.045	4.236	1.205	0.984	1.110
Gender	0.639	0.218	8.623	1	0.003	1.895			1.237	2.904
Exercising moderately and regularly										
Attention	0.003	0.015	0.048	1	0.827	1.003	8.547	1.026	0.975	1.032
Clarity	0.002	0.019	0.007	1	0.934	1.002	6.458	1.013	0.964	1.040
Repair	0.100	0.031	10.301	1	0.001	1.105	4.231	1.526	1.040	1.175
Gender	-0.139	0.218	0.404	1	0.525	0.870			0.567	1.335
Exercising vigorously and regularly										
Attention	-0.003	0.015	0.031	1	0.860	0.997	8.570	0.974	0.968	1.028
Clarity	-0.030	0.020	2.204	1	0.138	0.971	6.450	0.827	0.933	1.010
Repair	0.085	0.033	6.747	1	0.009	1.089	4.235	1.435	1.021	1.162
Gender	-0.973	0.226	18.484	1	0.001	0.378			0.243	0.589

Table 1 (continued)

Logistic Regression Analyses Predicting Health Habits from 30-Item TMMS Factors

Health habit	*B*	S.E.	Wald	*df*	*p*	Odds ratio	Stand. dev.	Stand. odds ratio	95.0% C.I. for odds ratio Lower	Upper
Controlling pace of life										
Attention	0.012	0.016	0.598	1	0.439	1.012	8.589	1.108	0.982	1.043
Clarity	0.048	0.021	4.988	1	0.026	1.049	6.433	1.360	1.006	1.094
Repair	0.107	0.033	10.381	1	0.001	1.113	4.231	1.573	1.043	1.189
Gender	0.142	0.236	0.364	1	0.546	1.153			0.726	1.832
Maintaining sufficient energy reserve										
Attention	0.016	0.015	1.148	1	0.284	1.016	8.569	1.146	0.987	1.045
Clarity	0.030	0.020	2.346	1	0.126	1.030	6.419	1.209	0.992	1.071
Repair	0.064	0.031	4.280	1	0.039	1.066	4.224	1.310	1.003	1.133
Gender	-0.632	0.223	8.072	1	0.004	0.531			0.344	0.822
Getting enough sleep										
Attention	-0.009	0.014	0.419	1	0.517	0.991	8.562	0.926	0.964	1.019
Clarity	0.012	0.019	0.411	1	0.522	1.012	6.453	1.080	0.975	1.050
Repair	-0.004	0.030	0.019	1	0.889	0.996	4.230	0.983	0.939	1.056
Gender	-0.401	0.212	3.563	1	0.059	0.670			0.442	1.016

*$p < 0.05$

Table 2

Frequencies and Percentages for Each Health Behavior by Gender

Health behavior item	Male		Female	
	Yes	No	Yes	No
Smoking cigarettes	25 (14.0%)	154 (86.0%)	24 (11.0%)	195 (89.0%)
Consuming more than 7 drinks per week	57 (31.7%)	123 (68.3%)	31 (14.2%)	187 (85.8%)
Using recreational drugs	16 (8.9%)	164 (91.1%)	12 (5.5%)	207 (94.5%)
Expressing concern about use of medications	7 (3.9%)	172 (96.1%)	10 (4.6%)	206 (95.4%)
Paying close attention to what and how much one eats	86 (48.0%)	93 (52.0%)	114 (52.1%)	105 (47.9%)
Eating meals in pleasant surroundings	119 (66.5%)	60 (33.5%)	179 (81.7%)	40 (18.3%)
Eating meals slowly and calmly	90 (50.0%)	90 (50.0%)	119 (54.8%)	98 (45.2%)
Exercising at work/home	91 (51.1%)	87 (48.9%)	146 (67.3%)	71 (32.7%)
Exercising moderately and regularly	108 (60.3%)	71 (39.7%)	127 (58.3%)	91 (41.7%)
Exercising vigorously and regularly	87 (48.6%)	92 (51.4%)	58 (27.1%)	156 (72.9%)
Controlling pace of life	115 (64.6%)	63 (35.4%)	152 (70.4%)	64 (29.6%)
Maintaining sufficient energy reserve	115 (64.6%)	63 (35.4%)	114 (52.3%)	104 (47.7%)
Getting enough sleep	87 (48.3%)	93 (51.7%)	81 (37.2%)	137 (62.8%)

intelligence and coping (Saklofske et al., 2007). It should be noted that this connection simply could be a reflection of a potential overlap between emotional intelligence and coping. Essentially, health behaviors represent coping responses to stress. While some individuals engage in potentially healthy responses to stress (e.g., moderate exercise, deep breathing exercises, meditation/prayer, creative expression, etc.), others engage in potentially unhealthy responses to stress (e.g., substance use, excessive eating, excessive exercise, etc.). The challenges for health educators and other professionals, such as mental health counselors and psychologists, are to acknowledge connections between emotional intelligence and health behaviors, develop strategies for bridging gaps between the two processes, and maximize the health enhancing potential of emotional intelligence.

Chen and Park (2007) demonstrated that comprehensive stress management and prevention programs can offer benefits such as decreased perceived stress, heightened attention toward dietary behaviors, improved social support systems, and improved purposefulness. Based upon findings from this sample, we suggest that skills for acknowledging, understanding, and restoring emotional states should be taught and developed through stress interventions. Such interventions should focus on teaching individuals to verbally express and cope with their emotions in healthy ways (e.g., through creative writing, art, music, humor, etc.).

In assisting college students, we recommend that emotional intelligence be inserted into a comprehensive wellness program addressing health, behavior, and emotional intelligence. It is plausible that an emotional intelligence program alone can be of benefit, but given the evidence of relationships between emotional intelligence and health behaviors, a well-rounded program is recommended. Newly refined or learned skills can be placed within contexts relevant to college students. For example, freshmen orientation seminars, campus wellness center programs, personal health courses, campus outreach initiatives, and workshops sponsored by student organizations (e.g., Eta Sigma Gamma) represent potential venues for introducing college students to emotional intelligence training.

Emotional intelligence training already has been employed in various educational and occupational settings (Freudenthaler, Neubauer, & Haller, 2008; Kelly, Longbottom, Potts, & Williamson, 2004). Vandervoort (2006) states, "an explicit valuing of emotional intelligence in academia could have a significant impact on the nature of the university milieu" (p. 5). Vandervoort identified several areas in which emotional intelligence can be influential in higher educational settings such as professor-student relationships, teaching styles, career decisions, and personal and social improvements.

Students can be taught to effectively communicate their emotional states to others which, in turn, will enable them to identify emotions of their peers. Once communication skills are mastered, activities to promote expression and self-awareness can be facilitated. Self-awareness activities may involve increasing students' emotional vocabulary and building their comfort levels with emotional expression. Students in small groups not only can learn from each other, but they also can build relationships, collectively participate in healthy activities, and form support networks to maintain healthy behaviors.

It should be highlighted that gender represented a substantial predictor of selected health behaviors. Additional findings suggest that males and females respond differently to emotions and stress. While males reportedly are more likely to exercise vigorously and regularly, maintain sufficient energy reserve, and sleep sufficiently, they also are more likely to consume alcohol on a weekly basis. On the contrary, females are more mindful of their emotions, more apt to eat meals in pleasant surroundings, and more likely to exercise at work/home.

Gender differences regarding attention to emotions and alcohol use were not surprising. Researchers have documented emotional suppression and its accompanying consequences (e.g., violence, aggression, substance use, etc.) among males (Ludeman, 2004). Additionally, several researchers have reported disproportionately high levels of alcohol use among college males. For example, Harrell and Karim (2008) found that "Males reported more frequent alcohol use, alcohol-related problems, binge drinking, substance-use coping, and drinking to 'feel high' " (p. 359). Similarly, in a study linking alcohol consumption to academic performance, Singleton (2007) found that gender was predictive of alcohol consumption and that males were more prone to the behavior. In accordance with previous research, males in this sample were more susceptible to alcohol use, an adverse coping response to emotional suppression, than females. Our findings suggest that females reportedly are cognizant of their emotions and thus, harbor protection from potentially destructive coping methods like alcohol use.

Gender differences regarding alcohol use potentially could be explained by the influence of emotional intelligence. With the exception of a study conducted by Trinidad and Johnson (2002), few researchers have examined relationships among gender, perceived emotional intelligence, and alcohol use. Brackett, Mayer, and Warner (2004) discovered a relationship between a performance-based measure of emotional intelligence and alcohol/drug use among male college students as opposed to female college students. Our findings suggest that gender and emotional intelligence are closely intertwined and that emotional intelligence represents a protective factor for females.

Interestingly, females reported a greater likelihood of eating meals in pleasant surroundings. Considerable research has been conducted to elucidate health implications of *what* people eat. *How* people eat arguably is as important as *what* they eat. The contextual stimuli surrounding meals potentially give rise to food choices (Blake, 2008), quantity of food consumed (Patel & Schlundt, 2001), and other variables.

The fact that females reported a greater frequency for exercising at home/work than their male counterparts was intriguing. This finding could be a reflection of participants' perceptions regarding exercise behavior. This finding also

could be emblematic of exercise preferences (e.g., using exercise videos at home versus working out at a gym) and/or student employment opportunities among females.

While reasons for gender differences based on exercise at home/work warrant further exploration, gender differences regarding vigorous/regular exercise were not surprising. In fact, several researchers (Buckworth & Nigg, 2004; George, 2000; Huddleston et al., 2002) have indicated that male college students reportedly exhibit higher levels of exercise intensity and frequency than female college students.

In accordance with previous research (Tsai & Li, 2004), females in this sample reportedly experienced less sleep than males. Females also reportedly experienced less energy reserve than males. Our findings suggest that despite reportedly exhibiting characteristics of emotional intelligence, females potentially are at risk for adverse health effects resulting from insufficient sleep and related conditions. Potential reasons for reduced energy and sleep patterns among college females should be explored through future research. For example, residential arrangements (residence halls, sorority houses, off-campus apartments, etc.), school and work endeavors, service endeavors, family commitments, and social events should be explored for their potential contribution to sleep deprivation and lethargy among female college students. Energy and sleep deprivation also could be attributable to the prevalence of anxiety and depression among college females. According to the American College Health Association (2008), 46% of college females "felt so depressed that it was difficult to function" at least one time within the last 12 months (p. 13).

Despite the aforementioned findings, this study had several limitations. Essentially, limitations fell within the realm of the sample and instrumentation. As mentioned previously, we employed a sample of convenience, thus limiting generalizability of the results. Moreover, an unequal distribution of males and females completed the survey, and approximately two-fifths of the sample classified themselves as freshmen. While the sample was representative of the affiliated university, cultural diversity was limited in the pool of participants. It should be noted that participants were susceptible to self-report bias and limitations inherent in self-report instruments.

An additional limitation of the study involved potential instrumentation glitches and confounding variables (e.g., social desirability) that may have influenced validity of the results. Future studies on perceived emotional intelligence and health behaviors should examine the potential influence of social desirability on self-report instruments. Future studies also should explore social determinants of stress and alternative measurements of health behaviors.

Our findings lend support for acknowledging and addressing the potential role of perceived emotional intelligence in facilitating healthy behaviors and behavior change. Our results suggest potential for incorporating perceived emotional intelligence into health education strategies, interventions, and programs. Health education and promotion professionals traditionally have borrowed theoretical constructs from a variety of disciplines including education, public health, and the behavioral sciences (Simons-Morton, Greene, & Gottlieb, 1995). For example, the construct of self-efficacy consistently has demonstrated effectiveness in health programming (Gieck & Olsen, 2007; Marks, Allegrante, & Lorig, 2005; Richards, Kattelmann, & Ren, 2006). That said, it seems appropriate and worthwhile to explore the effectiveness of perceived emotional intelligence in contributing to development and delivery of health education strategies, interventions, and programs. To facilitate evaluation of emotional intelligence in health programming, health educators should collaborate with professionals from disciplines grounded in emotional intelligence namely, counselors, psychologists, and other mental health professionals.

The exploratory nature of this study yielded modest, but suggestive results. That said, researchers need to further investigate predictive relationships between perceived emotional intelligence and health behaviors, particularly among other age groups and culturally diverse samples. An investigation of predictive relationships between perceived emotional intelligence and health behaviors not examined in this study (e.g., risky sexual behaviors, intentional and unintentional injuries, etc.) would be advantageous to health researchers and practitioners.

References

Agresti, A. (2007). *An introduction to categorical data analysis* (2nd ed.). Hoboken, NJ: Wiley and Sons.

American College Health Association. (2008). *American College Health Association-National College Health Assessment: Reference group executive summary fall 2007*. Baltimore, MD: Author.

American Psychological Association. (2007). *Stress in America, 2007*. Retrieved May 7, 2008, from http://apahelpcenter.mediaroom.com/file.php/138/Stress+in+America+REPORT+ FINAL.doc

Blake, C. E. (2008). Individual differences in the conceptualization of food across eating contexts. *Food Quality and Preference, 19*(1), 62-70.

Bosacki, S. L. (2007). Children's understandings of emotions and self: Are there gender differences. *Journal of Research in Childhood Education, 22*(2), 155-172.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. *Journal of Personality and Social Psychology, 91*(4), 780-795.

Brackett, M. A., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behavior. *Personality and Individual Differences, 36*(6), 1387-1402.

Buckworth, J., & Nigg, C. (2004). Physical activity, exercise, and sedentary behavior in college students. *Journal of American College Health, 53*(1), 28-34.

Chen, D., & Park A. (2007). Components of mental resilience: Effects of comprehensive stress management and prevention. *Journal of Sport and Exercise Psychology, 29*(Suppl.), S17-S23.

Ciarrocchi, J., Deane, F. P., & Anderson, S. (2002). Emotional intelligence moderates the relationship between stress and mental health. *Personality and Individual Differences, 32*(2), 197-209.

DeBerard, M. S., Spielmans, G. L., & Julka, D. C. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal, 38*(1), 66-81.

Freudenthaler, H. H., Neubauer, A. C., & Haller, U. (2008). Emotional intelligence: Instruction effects and sex differences in emotional management abilities. *Journal of Individual Differences, 29*(2), 105-115.

George, V. (2000). Assessing physical activity in college students in reference to the new recommendations for physical activity. *Measurement in Physical Education and Exercise Science, 4*(2), 128.

Gieck, D. J., & Olsen S. (2007). Holistic wellness as a means to developing a lifestyle approach to health behavior among college students. *Journal of American College Health, 56*(1), 29-36.

Gohm, C. L., Corser, G. C., & Dalsky, D. J. (2005). Emotional intelligence under stress: Useful, unnecessary, or irrelevant? *Personality and Individual Differences, 39*(6), 1017-1028.

Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Dell.

Harrell, Z. A. T., & Karim, N. M. (2008). Is gender relevant only for problem alcohol behaviors? An examination of correlates of alcohol use among college students. *Addictive Behaviors, 33*(2), 359-365.

Howell, D. C. (2002). *Statistical methods for psychology* (5th ed.). Pacific Grove, CA: Duxbury/Thomson Learning.

Hudd, S., Dumlao, J., Erdmann-Sager, D., Murray, D., Phan, E., & Soukas, N. (2000). Stress at college: Effects on health habits, health status and self-esteem. *College Student Journal, 34*(2), 217-228.

Huddleston, S., Mertesdorf, J., & Kaori, A. (2002). Physical activity behavior and attitudes toward involvement among physical education, health, and leisure services pre-professionals. *College Student Journal, 36*(4), 555-573.

Jacobs, S. C., Schultz, L., & Welch, G. (2003). Women and heart disease: Information for counselors. In M. Kopala & M. A. Keitel (Eds.), *Handbook of counseling women* (pp. 377-391). Thousand Oaks, CA: Sage.

Jacobs, S. C., & Stone, P. H. (1999). Psychosocial issues. In P. Charney (Ed.), *Coronary artery disease in women: What all physicians need to know* (pp. 496-534). Philadelphia, PA: American College of Physicians-American Society of Internal Medicine.

Kelly, B., Longbottom, J., Potts, F., & Williamson, J. (2004). Applying emotional intelligence: Exploring the promoting alternative thinking strategies curriculum. *Educational Psychology in Practice, 20*(3), 221-240.

Lopes, P. N., Brackett, M. A., Nezlek, J. B., Schutz, A., Sellin, I., & Salovey, P. (2004). Emotional intelligence and social interaction. *Personality and Social Psychology Bulletin, 30*(8), 1018-1034.

Ludeman, R. B. (2004). Arrested emotional development: Connecting college men, emotions, and misconduct. *New Directions for Student Services, 107*, 75-86.

Marks, R., Allegrante, J. P., & Lorig K. (2005). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implications for health education practice (part II). *Health Promotion Practice, 6*(2), 148-156.

McChargue, D. E., Cohen, L. M., & Cook, J. W. (2004). Attachment and depression differentially influence nicotine dependence among male and female undergraduates: A preliminary study. *Journal of American College Health, 53*(1), 5-10.

Merz, C. N. B., Dwyer, J., Nordstrom, C. K., Walton, K. G., Salerno, J. W., & Schneider, R. H. (2002). Psychosocial stress and cardiovascular disease: Pathophysiological links. *Behavioral Medicine, 27*(4), 141-148.

Moskal, P. D., Dziuban, C. D., & West, G. B. (1999). Examining the use of tobacco on college campuses. *Journal of American College Health, 47*(6), 280-286.

National Mental Health Association. (n.d.). *Fast facts*. Retrieved May 7, 2008, from http://www1.nmha.org/may/fast_facts.pdf

National Mental Health Association. (2007). *Back to campus: Mental health America develops resources for college students*. Retrieved May 7, 2008, from http://www.nmha.org/index.cfm?objectid=937F9D37-1372-4D20-C832919126319F1F

Palmer, B., Donaldson, C., & Stough, C. (2002). Emotional intelligence and life satisfaction. *Personality and Individual Differences, 33*(7), 1091-1100.

Parker, J. D. A., Hogan, M. J., Eastabrook, J. M., Oke, A., & Wood, L. M. (2006). Emotional intelligence and student retention: Predicting the successful transition from high school to university. *Personality and Individual Differences, 41*(7)329-1336.

Patel, K. A., & Schlundt, D. G. (2001). Impact of moods and social context on eating behavior. *Appetite, 36*(2), 111-118.

Pau, A., Rowland, M. L., Sudeshni, N., AbdulKadir, R., Makrynika, E., Moraru, R., et al. (2007). Emotional intelligence and perceived stress in dental undergraduates: A multinational survey. *Journal of Dental Education, 71*(2), 197-2004.

Presbury, J. H., Echterling, L. G., & McKee, J. E. (2007). *Beyond brief counseling and therapy: An integrative approach* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Rahe, R. H., & Tolles, R. L. (2002). The Brief Stress and Coping Inventory: A useful stress management instrument. *International Journal of Stress Management, 9*(2), 61-70.

Rahe, R. H., Veach, T. L., Tolles, R. L., & Murakami, K. (2000). The stress and coping inventory: An educational and research instrument. *Stress Medicine, 16*, 199-208.

Richards, A., Kattelmann, K. K., & Ren, C. (2006). Motivating 18- to 24-year-olds to increase their fruit and vegetable consumption. *Journal of American Dietetic Association, 106*(9), 1405-1411.

Saklofske, D. H., Austin, E. J., Galloway, J., & Davidson, K. (2007). Individual difference correlates of health-related behaviors: Preliminary evidence for links between emotional intelligence and coping. *Personality and Individual Differences, 42*(3), 491-502.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality, 9*, 185-211.

Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp. 125-154). Washington, DC: American Psychological Association.

Salovey, P., Stroud, L. R., Woolery, A., & Epel, E. S. (2002). Perceived emotional intelligence, stress reactivity, and symptom reports: Further explorations using the Trait Meta-Mood Scale. *Psychology and Health, 17*(5), 611-627.

Schutte, N. S., Malouff, J. M., Thorsteinsson, E. B., Bhullar, N., & Rooke, S. E. (2007). A meta-analytic investigation of the relationship between emotional intelligence and health. *Personality and Individual Differences, 42*(6), 921-933.

Seo, D. C., Blair, E. H., Torabi, M. R., & Kaldahl, M. A. (2004). Lifestyle and perceptional changes among college students since September 11. *American Journal of Health Studies, 19*(1), 20-28.

Simons-Morton, B. G., Greene, W. H., & Gottlieb, N. H. (1995). *Introduction to health education and health promotion* (2nd ed.). Prospect Heights, IL: Waveland Press.

Singleton, R. A. (2007). Collegiate alcohol consumption and academic performance. *Journal of Studies on Alcohol and Drugs, 68*(4), 548-555.

Skrabski, A., Kopp, M., Rozsa, S., Rethelyi, J., & Rahe, R. H. (2005). Life meaning: An important correlate of health in the Hungarian population. *International Journal of Behavioral Medicine, 12*(2), 78-85.

Solomon, G. F. (2001). Psychological stress and the common cold: Cohen et al. (1991). *Advances in Mind-Body Medicine, 17*(1), 34-39.

Trinidad, D. R., & Johnson, C. A. (2002). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences, 32*(1), 95-105.

Tsai, L. L., & Li, S. P. (2004). Sleep patterns in college students gender and grade differences. *Journal of Psychosomatic Research, 56*(2), 231-237.

U.S. Department of Health and Human Services. (2000). *Healthy people 2010*. Retrieved May 7, 2008, from http://www.healthypeople.gov/Document/ html/uih/uih_bw/uih_2.htm

Vandervoort, D. J. (2006). The importance of emotional intelligence in higher education. *Current Psychology, 25*(1), 3-7.

Williams, D. R. (2008a). Racial/ethnic variations in women's health: The social embeddedness of health. *American Journal of Public Health, 98*(Suppl.), S38-S47.

Williams, D. R. (2008b). The health of men: Structured inequalities and opportunities. *American Journal of Public Health, 98*(Suppl.), S150-S157.