

# Associations Among Self-Compassion, Eating Behaviors, and Stress in College Freshmen

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**Abstract:** *Purpose:* Few studies have investigated the potential relationship between self-compassion and eating behaviors. Self-compassion has been shown to improve one's ability to respond more effectively to various situations and stressors by embracing the constructs of self-kindness, common humanity and mindfulness. This study examined correlations between self-compassion, eating behaviors and stress in first-time college freshmen.

*Methods:* First-time freshmen ( $N=1477$ ), ages 18-22 years (63% female), self-reported measures of Perceived Stress Scale (PSS), Three-Factor Eating Questionnaire (TFEQ), and Self-Compassion Scale (SCS). Associations among PSS, SCS and TFEQ scores were examined with Pearson correlations by gender. Differences by gender were explored with t-tests.

*Results:* There were significant ( $p < 0.01$ ) correlations between disinhibition and negative SCS constructs (self-judgment,  $r = 0.29$ ; isolation,  $r = 0.23$ ; over-identification,  $r = 0.28$ ) and restraint and self-judgment in females ( $r = 0.26$ ). Females scored significantly higher than males on PSS and negative SCS subscales ( $p < 0.05$ ).

*Conclusion:* Interventions increasing self-compassion and reducing stress may optimally support psychological and behavioral wellbeing as students transition into college. Future research needs to understand how self-compassion interventions may attenuate the inimical cycle of dietary restraint and disinhibition in university students.

**Keywords:** Mindfulness, self-kindness, freshmen transition, dietary restraint, dietary disinhibition, hunger, perceived stress, behavioral wellbeing.

## INTRODUCTION

For young adults, the transition into college is a sensitive and demanding period that presents new stressors, environmental changes, behavioral adaptations, unfamiliar situations, and academic pressures that challenge students' overall well-being [1-3]. Research has demonstrated that the stressful transitional period into college places students at risk for disordered eating, clinical eating disorders, and the development of weight related issues, including binge eating, purging and excessive dietary restraint [4, 5]. Eating behaviors refer to how people consume (or don't consume) foods. While eating behaviors have been widely studied using varied definitions and constructs, the operational definition of eating behaviors that was used in this study referred to *restraint, disinhibition, and hunger* from the Three Factor Eating Questionnaire [6]. The maladaptive eating behaviors of restraint, bingeing and bingeing/purging may lead to obesity, anorexia, bulimia or binge eating disorder [4, 5]. In response to

stress, these eating behaviors can potentially have enduring significance on weight-related issues and health outcomes over the lifespan [7-9].

Although relatively new in the context of health behaviors, self-compassion introduces a way of relating to and taking care of oneself with the purpose of reducing suffering by applying compassion [10]. Self-compassion has been shown to improve one's ability to respond more effectively to various situations and stressors by embracing the constructs of self-kindness, common humanity and mindfulness [10-12]. A strong body of literature supports the association between higher levels of self-compassion and positive psychological outcomes [10, 12]. Gilbert [13] proposes that self-compassion deactivates the threat system associated with stress and activates the self-soothing system. Neff [10] states that self-compassion may allow individuals to be better able to "modify unproductive behaviors" (p.213) and this may have an important impact on maladaptive stress-related eating behaviors.

Research supports the psychological benefits of self-compassion, but limited studies have assessed its

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impact on health-related behaviors. Given the magnitude of the immediate and long-term consequences associated with maladaptive eating behaviors, and the potential mediating role of self-compassion, it is important to more clearly understand these complex dynamics to better support students' psychological well-being and behavioral response to stress. The purpose of this study was to explore the relationships among self-compassion, stress, and disordered eating behaviors in college freshmen. Findings will guide future interventions on how to best attenuate disordered eating behaviors in the context of self-compassion.

## METHODS

A cross-sectional study design using previously collected survey data was used to explore the associations between self-compassion, eating behaviors and stress among male and female freshmen students. Participant inclusion criteria were limited to male or female, first-time college freshmen 18-22 years old and; to be representative of the student population, full and part-time students were included. Full time students were defined as taking 12 or more credit hours and part time students were taking less than 12 credit hours.

The survey was distributed through the campus email system to 9275 freshmen students during the fall semester of 2007 at a large, multi-campus, metropolitan university in the Southwestern United States. Responses from 2029 students were collected. Data were cleaned and incomplete surveys were omitted. A total of 1477 complete surveys were used in the analyses ( $n = 541$  male and  $n = 936$  female).

All students were entering the university in the fall of 2007 and as such were considered to be in the university transition. Dyson and Renk [1] suggested that the nature of stress experienced during the university transition period be viewed within the context of Selye's [14] general adaptation syndrome. Transitioning into university life requires freshmen to adjust to changes in their environment, social support, academic expectations, and psycho-social needs. When the demands of adaptation to university life exceed a student's ability to cope, he or she will experience stress [15].

Stress was assessed using the Perceived Stress Scale 10 (PSS 10). The Perceived Stress Scale [16] was developed as a global measure of the degree to

which respondents appraised their life as unpredictable, uncontrollable, and overloading. Cohen *et al.* [16] demonstrated that the PSS was correlated with life-event scores, physical symptomatology, and social anxiety. Van Eck and Nicolson [17] further found that higher PSS scores are correlated with higher measures of cortisol. While the PSS has several versions (i.e., 14, 10, and 5 items), the PSS 10 is the most frequently used scale to measure individual psychological perception of stress and has been supported for use in college-student populations. Higher scores indicate higher stress levels [18]. The PSS 10 has been found to have acceptable internal reliability (alpha coefficient  $\alpha = .89$ ) [18].

Maladaptive eating behaviors were measured using The Three-Factor Eating Questionnaire (TFEQ) [6]. The TFEQ is comprised of three constructs examining restriction (21 items), disinhibition (16 items) and hunger (14 items). Restraint is defined as the conscious restriction of food intake usually to control body weight. The restraint construct has three subscales: strategic dieting behavior, attitude to self-regulation, and avoidance of fattening foods. Disinhibition is considered the tendency to not control eating or to overeat in response to palatable foods or when under stress. The disinhibition construct has three subscales: habitual susceptibility, emotional susceptibility and situational susceptibility. Hunger is the tendency to eat in response to physiological symptoms indicating a need for food. The hunger construct has two subscales: internal locus for hunger and external locus for hunger. Higher scores indicate higher levels of the defined constructs; all constructs are measured as subscale scores only [6].

The Self-Compassion Scale (SCS) was used to measure self-compassion [19]. The SCS is comprised of 6 subscales with a total of 26-items. The scale yields both a total score and 6 subscale scores. The scale uses a 5-point Likert scale, 1-5 (0=almost never to 5=almost always). A higher total self-compassion score indicates higher self-compassion. In previous research, the test-retest reliabilities for the 6 individual scales ranged from 0.80 to 0.93, suggesting strong test-retest reliability.

Data were analyzed using SAS version 9.2 [20]. Data were checked for normality prior to analyses. Differences between sexes were explored for all variables using t-tests. Chi-square tests were used to look at frequency distributions among gender and categorical variables. Pearson product-moment

correlation coefficients were used to indicate size and direction of the relationship between stress, eating behaviors and self-compassion [21]. Correlations of  $\pm 0.1 - 0.3$  or less were considered weak, of  $\pm 0.3 - 0.50$  were considered moderate, and of  $\pm 0.5-1.0$  were considered strong. A p-value of less than .05 was considered significant for all analyses.

## RESULTS

Participants ( $N=1477$ ) included 936 females and 541 males. The majority of participants (81%) were 18 years of age (779 females, 420 males). Participants

identified primarily as European (44.9%), other/multi-ethnic (27.1%), and Latino/Hispanic (15.7%). As compared to males, females demonstrated significantly higher levels of perceived stress ( $p < 0.001$ ) (Table 1). Females reported lower total SCS ( $p = 0.005$ ) with higher scores on the self-judgment ( $p = 0.002$ ), isolation ( $p = 0.015$ ), and over-identification ( $p < 0.001$ ) compared with males. Additionally, females scored significantly higher than males on dietary restraint and disinhibition ( $p < 0.001$ ) (Table 1).

A weak, but significant positive association was found between self-judgment and dietary restraint in

**Table 1: Participant Self-Reported Demographics and Key Variables by Gender**

Characteristic	Total Sample ( $N= 1478$ )	Males ( $n= 541$ )	Females ( $n= 936$ )	p-value
<b>Age <math>n</math> (%)</b>				
18 years	1200	420	779	.0127
19 years	252	107	145	
20-22 years	26	14	12	
Age mean (SD)		18.3 (0.6)	18.2 (0.5)	.0031
<b>BMI Status <math>n</math> (%)</b>				
Underweight	56 (3.9)	14 (2.6)	42 (4.6)	< .0001
Overweight	287 (19.4)	129 (24.2)	158 (17.2)	
Obese	93 (.1)	50 (9.4)	43 (4.7)	
BMI mean (SD)		24.1(4.4)	22.6 (3.9)	< .0001
<b>Ethnicity <math>n</math> (%)</b>				
European	664 (44.9)	280 (51.8)	383 (40.9)	
African/North African	40 (2.7)	16 (3.0)	24 (2.6)	
Asian/South Asian/Pacific Islander	97 (6.6)	48 (8.9)	49 (5.2)	< .0001
Latino/Hispanic	232 (15.7)	65 (12.0)	167 (17.8)	
Middle Eastern	20 (1.4)	10 (1.9)	10 (1.1)	
Native American	25 (1.7)	11 (2.0)	14 (1.5)	
Other/Multi ethnic	400 (27.1)	111 (20.5)	289 (30.9)	
<b>Mean Scores Key Variables</b>				
PSS mean (SD)		20.8 (4.0)	22.2 (4.1)	< .0001
SCS Total Score mean (SD)		3.0 (0.6)	2.9 (0.6)	.0050
SCS Self-Kindness mean (SD)		2.8 (0.8)	2.8 (0.8)	.3740
SCS Mindfulness mean (SD)		3.2 (0.7)	3.1 (.1)	.0972
SCS Common Humanity mean (SD)		2.9 (.1)	3.1 (0.8)	.1158
SCS Self-Judgment mean (SD)		3.0 (0.9)	3.2 (0.9)	.0018
SCS Over-Identification mean (SD)		2.8 (0.9)	3.1 (0.9)	< .0001
SCS Isolation mean (SD)		3.0 (0.9)	3.1 (0.9)	.0153
TEFQ: Restraint mean (SD)		7.5 (4.7)	9.9 (5.4)	< .0001
TEFQ: Disinhibition mean (SD)		4.0 (2.8)	5.5 (3.5)	< .0001
TEFQ: Hunger mean (SD)		5.7 (3.4)	5.8 (3.5)	.6781

SD: Standard Deviation; BMI: Body Mass Index [self-reported height & weight]; PSS: Perceived Stress Scale; SCS: Self-Compassion Scale; TEFQ: Three Factor Food Questionnaire.

**Table 2: Correlations for Females by Constructs of the Self-Compassion Scale and the Three Factor Eating Questionnaire (Restraint, Disinhibition, and Hunger)**

SCS: Positive Psychological Constructs	Self-Kindness	Common Humanity	Mindfulness	TFEQ Restraint	TFEQ Disinhibition	TFEQ Hunger
Self-Kindness	1.0	0.54***	0.66***	-0.06	-0.15***	-0.06
Common Humanity		1.0	0.63***	0.06	-0.05	0.001
Mindfulness			1.0	0.04	-0.13***	-0.05
TFEQ Restraint			1.0	0.12***	-0.04**	
TFEQ Disinhibition			1.0		0.55***	
TFEQ Hunger			1.0			
SCS: Negative Psychological Constructs	Self-Judgment	Isolation	Over-Identification	TFEQ Restraint	TFEQ Disinhibition	TFEQ Hunger
Self-Judgment	1.0	0.72***	0.71***	0.26***	0.29***	0.15***
Isolation		1.0	0.63***	0.06***	-0.05***	0.001***
Over-Identification			1.0	0.04**	-0.13***	-0.05***
TFEQ Restraint				1.0	0.14***	-0.09**
TFEQ Disinhibition					1.0	0.58***
TFEQ Hunger						1.0

Note: SCS= Self-Compassion Scale. TFEQ= Three-Factor Eating Questionnaire. \*p<.05. \*\*p<.01. \*\*\*p<.001.

females ( $r = 0.26$ ;  $p < 0.001$ ) (Table 2). Significant and weak positive associations were found between all negative self-compassion constructs and dietary disinhibition in females: self-judgment ( $r = 0.29$ ;  $p < 0.001$ ), isolation ( $r = 0.23$ ;  $p < 0.001$ ), and over-identification ( $r = 0.28$ ;  $p < 0.001$ ).

In females, increased levels of negative self-compassion constructs were consistently associated with increased disinhibited eating; these correlations were the strongest among all explored matrices with respect to self-compassion and eating behaviors. Weak but significant negative associations were found in males between two of the negative self-compassion constructs and disinhibition in males: self-judgment ( $r = -0.15$ ;  $p < 0.001$ ) and over-identification ( $r = -0.13$ ;  $p < 0.001$ ).

Weak and significant associations were found between perceived stress and self-compassion (total) in both females ( $r = -0.28$ ;  $p < 0.001$ ) and males ( $r = -0.25$ ;  $p < 0.001$ ). In females, weak but significant associations were found between stress and eating behaviors: restraint, ( $r = 0.12$ ;  $p = .0002$ ), disinhibition, ( $r = 0.17$ ;  $p < 0.0001$ ), and hunger, ( $r = 0.18$ ;  $p < 0.0001$ ). However, no significant associations were found between stress and eating behaviors in males.

**DISCUSSION**

Correlations among self-compassion, eating behaviors, and stress in 1477 first time college

freshmen were explored using a cross-sectional “snapshot” design. The main findings demonstrate an association between the negative self-compassion constructs of self-judgment, isolation and over identification, and the eating behaviors of restraint and disinhibition in females. These results are important as they illuminate possible underlying psychological factors that may contribute to the maladaptive eating behaviors of restraint and disinhibition in response to stress in young women.

Greeno and Wing [9] concluded that women, who are more stressed, are more likely to have disordered eating. Previous research has reported that disinhibition is associated with obesity [22]. In addition, the disordered eating behaviors of restraint and disinhibition are frequently linked together such that the psychology underlying the behavioral characteristics of dietary restraint, often prompts disinhibition thereby creating a harmful cycle [5]. This cycle is further expressed by applying self-criticism as a maladaptive means to self-regulate and return to dietary restraint (after disinhibition) [20]. The associations between these variables that emerged from the current study corroborate this interpretation. While the correlations were somewhat weak, these maladaptive eating behaviors are generally underreported [23] so these observations are likely conservative. In the women, significant positive associations were identified between self-judgment (a negative construct of self-compassion), dietary restraint and disinhibition. In fact,

the strongest positive correlation was found between disinhibited eating and self-judgment. Although these are simple correlations, and do not represent the complex origin of these behaviors, the prevailing concern is that these behaviors may become habitual and potentially manifest into a counterproductive cycle leading to obesity, bulimia, anorexia, binge eating, or other eating disorders.

The findings from this study suggest that the adaptive skills of self-compassion may help decrease self-judgment and increase self-regulation with regards to dietary restraint and disinhibition. Associations were most significant among the negative self-compassion psychological constructs of self-judgment, isolation and over identification and the eating behaviors of restraint and disinhibition. Thus, perhaps by developing or focusing on the positive psychological constructs of self-compassion one may both decrease self-judgment and improve self-regulation thereby attenuating this inimical dietary cycle. In a population of college students, Adams & Leary [24] explored the effects of a one-time self-compassion intervention on the eating behavior of restraint. Among restrictive eaters, self-compassion orientation reduced self-criticism and attenuated eating after an unhealthy food preload. While self-compassion is a relatively new concept, Adams and Leary [24] suggest that self-compassion may help restrictive eaters learn how to eat in a more balanced and healthy way. This current work is redolent of the idea that restrictive eaters with greater self-compassion may learn to respond to stress and negative thoughts with greater kindness, forgiveness, and mindfulness toward oneself without the need to escape negative self-awareness.

A primary limitation of this study was that measures were self-reported via online surveys. However, the measured outcomes were subjective to subject's experience and were therefore not otherwise observable. Additionally, data were only collected once from a single university and participant population was primarily female; this may reduce external validity therefore limiting generalizability of findings. Further, this study was correlational which limits the ability to establish temporality or causality among the variables.

Strengths of this study include the population size, the use of three valid measures and anonymous collection of all data. Additionally, independent correlations between self-compassion and stress, stress and eating behaviors, and self-compassion and eating behaviors are concordant with current literature.

To our knowledge, this is the first time that associations between self-compassion, stress and eating behaviors have been assessed.

There were few significant correlations observed between stress, self-compassion and disordered eating behaviors among males in this study. These results are consistent with previous research that indicate that men are less likely than women to report that stress has an impact on their health and men tend to de-emphasize any need to manage their stress [25].

College students, particularly females, are at an increased risk of developing disordered eating behaviors and clinical eating disorders [5]. In this study, significant positive associations were identified between self-judgment (a negative construct of self-compassion), dietary restraint and disinhibition. In fact, the strongest positive correlation was found between disinhibited eating and self-judgment. Although the correlations were weak, maladaptive eating behaviors are known to be generally underreported [23], suggesting that these weak observations are likely to be underestimated. Thus, this study adds insight into the complexity underlying disordered eating behaviors. Understanding the predictive factors of disordered eating behaviors is critical to the development of efficacious prevention and intervention programs.

Findings of the current study justify the need for further exploration of the effects of self-compassion on the eating behavioral constructs of restraint (dieting behavior, attitude to self-regulation, and avoidance of fattening foods) and disinhibition (emotional, situational, habitual). Although a relatively unexplored concept with regards to health behavior outcomes, self-compassion may help reduce disordered eating behaviors by teaching individuals to be kind to themselves, relate to others and be mindful of their feelings and choices. More research is needed to better understand how self-compassion may ameliorate the relationship between stress, disordered eating behaviors and specific negative psychological constructs. The findings of this study may help guide future interventions on how to utilize self-compassion to attenuate disordered eating behaviors in at risk college women.

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