Self-compassion, mindful eating, eating attitudes and wellbeing

Abstract

Background: Mindful eating behaviour and self-compassion have been individually shown to contribute to healthy eating. Evidence suggests that they may interact and that interaction may increase our understanding of eating behaviour.

Aims: The aim of the current study was to explore the relationship between mindful eating, self-compassion, healthy / unhealthy weight, eating disorder and wellbeing in a sample of university students

Methods: An online survey using questionnaire data collection in a sample of 349 students (105 males and 244 females). Variables measured included body mass index (BMI), mindful eating, eating attitudes, self-compassion and mental wellbeing.

Results: Regression and path analysis show mindful eating and self-compassion to individually and interaction predict eating attitudes and wellbeing. BMI was shown to have a curvilinear relationship with mindful eating, self-compassion and wellbeing with both the underweight and obese reporting lower self-compassion, less mindful eating, lower wellbeing and more likely to exhibit disordered eating.

Conclusions: These results indicate that self-compassion and mindful eating behaviour might be usefully targeted in interventions to prevent both obesity and eating disorder.

Key words: Mindful eating; Self-compassion; Eating attitudes; Wellbeing; Body Mass

Introduction

Obesity is described as an epidemic in a substantial proportion of the world and probably the greatest threat to long term health that exists (Reiband, Heitmann, & Sørensen, 2020; Reilly & Kelly, 2010). Eating disorders are defined as psychiatric illness associated with a range of psychological and physical outcomes (Culbert, Racine, & Klump, 2015). Both are largely a function of problematic eating behaviour and cognitions around eating.

There is a growing literature on mindful eating (Beshara, Hutchinson & Wilson, 2013; Robinson et al, 2013). According to Mantzios and Wilson (2015), mindfulness is a state of awareness of the present moment which requires constant practice, usually through meditation. It is believed to involve maintaining a non-judgemental awareness of thoughts, feelings and perceptions in the moment (Lofgren, 2015). Mindfulness skills are essential in assisting individuals to increase their awareness of both emotional and physical states, as well as how to respond in a non-judgemental way (Kristeller, Baer & Quillian-Wolever, 2006). Additionally, mindful eating techniques are thought to increase an individual's awareness of signals relating to hunger and fullness (Hepworth, 2010). As a result, this enables them to respond appropriately to hunger cues, as opposed to engaging in restrictive or indulgent eating. For example, mindful breathing is believed to increase identification of hunger cues (Hepworth, 2010). Mindfulness interventions have been found to produce a positive impact on reducing the frequency of binge eating (Kristeller et al., 2006).

Framson et al. (2009) claims mindful eating involves food consumption which is regulated by suitable eating cues, such as hunger. Mindful eating consists of a strong awareness of personal eating behaviours as well as low emotional response to eating

(Framson et al., 2009). Mindful eating also involves adjusting attitudes towards food and aids a broader understanding of food preferences and aversions (Baer, Fischer, & Huss, 2005). Mindful eating enables appropriate decisions to be made about what food to eat, how much to eat and solely concentrating on the act of eating (Lofgren, 2015). Research evidence indicates mindfulness has the potential to reduce emotional triggers, which can often lead to emotional eating, whereas an absence of mindful eating is considered to be associated with anxiety and binge eating (Mantzios & Wilson, 2015; Pintado-Cucarella & Rodríguez-Salgado, 2016).

Results from a study carried out by Pintado-Cucarella and Rodríguez-Salgado (2016) showed that people who were less mindful, in relation to their eating behaviours, had less awareness and control of their eating habits and were overall more overweight. Similarly, Taylor, Daiss and Krietsch (2015) argue that insufficient attention to the experience of eating can result in a decrease in awareness of external eating cues or satiety signals, which in turn may lead to maladaptive eating behaviours. In contrast, participants in a study by Beshara et al. (2013), who self-reported as mindful eaters (as measured by the Mindful Eating Questionnaire) reported less emotional and stress eating. According to Corstorphine (2006), mindfulness is important for individuals with an eating disorder, as many sufferers find it difficult to regulate physical, emotional and cognitive experiences. Recent research investigating the application of mindfulness interventions with people who have eating disorders, has demonstrated promising results (Hepworth, 2010). In particular, research conducted by Jordan, Wang, Donatoni and Meier (2014) found a positive relationship between mindfulness and healthy eating behaviours, across four studies.

A separate literature has grown on self-compassion and its relationship to eating behaviour (Costa, Marôco, Pinto-Gouveia, Ferreira & Castilho, 2016). According to Neff (2003) self-compassion comprises of three connecting components, each with opposite

dimensions: self-kindness versus self-judgment, common humanity versus isolation and mindfulness versus over-identification. Firstly, self-kindness versus self-judgment refers to individuals' ability to be caring and understanding with themselves, rather than being self-critical of failure. Secondly, the common humanity versus the isolation dimension refers to an ability to remember that suffering is part of nature. Lastly, mindfulness versus over-identification involves an awareness and acceptance of painful experiences, without being judgmental (Costa et al., 2016).

A meta-analysis of eight studies by Sirois, Kitner and Hirsch (2015) showed a positive relationship between self-compassion and healthy eating habits. Neff (2003) states that self-compassion may help people to engage in healthy eating behaviours, as a result of wanting to look after their bodies. Self-compassion is also thought to increase healthy eating behaviours by decreasing body dissatisfaction (Albertson, Neff & Dill-Shackleford, 2014). For example, a self-compassionate attitude may enable individuals to view their bodies in a way which minimises body shame, consequently reducing maladaptive eating behaviours (Berry, Kowalski, Ferguson & McHugh, 2010). Additionally, self-compassion can reduce the likelihood of an individual engaging in unhealthy eating behaviours (as the result of becoming overwhelmed by negative thoughts and feeling) through encouragement of a non-judgmental and balanced view of self (Albertson et al., 2014). Research carried out by Kelly, Carter and Borairi (2014) showed that eating disorder patients who implemented self-compassion early on during treatment, had a better response. Individuals who are self-compassionate are found to be less self-critical if they fail on diets (Adams & Leary 2007). Therefore, self-compassionate eaters are considered to demonstrate less emotional eating and lower eating disorder psychopathology (Kelly, Vimalakanthan & Carter, 2014). Findings from a study carried out by Swan et al. (2016) showed that self-compassion can aid in decreasing self-judgement, meanwhile increasing self-regulation of dietary restraint. Thus,

through a more realistic self-appraisal, self-compassionate individuals have the ability to focus on healthy eating goals (Breines & Chen, 2012).

Conversely, a lack of self-compassion is found to lead to maladaptive eating behaviours, such as strict dieting and feelings of guilt associated with diet failures (Shafran, Cooper & Fairburn, 2002). This feeling of guilt can lead to further unhealthy eating behaviours, such as overeating, in an attempt to cope with negative self-thoughts (Jackson, Lynne-Cooper, Mintz & Albino, 2003). In addition, McKinley and Hyde (1996) state that maladaptive eating is partially a result of self-criticism (Raes, Pommier, Neff, & Van Gucht, 2011). Previous research has supported the psychological benefits of self-compassion, however there is limited research considering its impact on behaviours relating to health, such as eating behaviours (Swan et al., 2016). Therefore, Mantzios and Egan (2017) state that self-compassion is a trait which requires further research, as it is unclear as to whether it leads to healthy eating behaviours and decisions regarding food.

It would appear that the relationship between self-compassion and mindful eating might be a fruitful avenue to explore (Mantzios, Egan, Hussain, Keyte, & Bahia, 2018). In particular how they might influence both healthy / unhealthy eating and eating disorders.

The transition from school to university requires students to adapt to a new, unfamiliar environment (Dyson & Renk, 2006), and is a crucial period in which changes in eating behaviours commonly occur (Racette, Deusinger, Strube, Highstein & Deusinger, 2008). Research indicates that if students fail to effectively adapt to university life, it can negatively affect their health behaviours and consequently their weight (Von Ah, Ebert, Ngamvitroj, Park & Kang, 2004). According to Tanton, Dodd, Woodfield and Mabhala (2015), university students engage in risky lifestyle behaviours, including unhealthy eating, such as over-consumption of food or insufficient food intake, increasing the risk of becoming over-weight or malnourished (Tanton et al., 2015).

The aim of the current study was to explore the relationship between mindful eating, self-compassion, healthy / unhealthy weight, eating disorder and wellbeing in a sample of university students.

Method

Design

An online survey using questionnaire data collection.

Participants

Participants were 349 (150 males and 244 females) university students, aged between 18-30. Of these 40 were underweight, 144 were normal weight, 122 were overweight, and 43 were obese according to the standard Body Mass Index (BMI) categorisation.

Materials

Participants were asked for their sex, age, height and weight before completing the following standard measures. Height and weight were used to calculate BMI.

The Mindful Eating Behaviour Scale (MEBS: Winkens et al., 2018).) is a scale made up of 20 items, measuring four domains of: Focused Eating; Hunger and Satiety Cues; Eating with Awareness; and Eating without Distraction. Examples of statements include 'I notice how my food looks' or 'I multi-task while I am eating'. Participants respond to the statements by indicating how often they behave in such a way. Responses are given on a 0-4 scale, with 0 being 'never' and 4 being 'always'. Cronbach's alpha values were medium to high (.70 to .89)

The Self-Compassion Scale - Short Form (SCS-SF: Raes, Pommier, Neff and Van Gucht, 2011) is an efficient alternative 12 item version of the original Self-Compassion Scale (SCS: Neff, 2003). It is reliable and has the equivalent factorial structure as the original scale. Examples include 'I'm disapproving and judgmental about my own flaws and inadequacies' and 'When something upsets me, I try to keep my emotions in balance'. Responses are rated

on a 5-point Likert scale with 1 being 'almost always' and 5 being 'almost never'. The SCS–SF has internal consistency, as the Cronbach's alpha for the scale is 0.86, in all samples.

Eating Attitudes Test (EAT-26: Garner, Olmsted, Bohr, & Garfinkel, 1982) is a 26-item shortened version of the original 40 item scale (EAT-40: Garner, & Garfinkel, 1979). It is widely used to identify potential eating disorders and has a cut off score of 20 above which participants might require treatment. Participants are asked to state how often they engage in the behaviours relating to weight and food, on a 6-point scale from 'never' to 'always'. The scale is scored 0 for the first 3 points (never, rarely and sometimes) and the 1 for often, 2 for usually, and 3 for always. Examples include 'I like my stomach to be empty' and 'I display self-control around food' (Garner, 1982). EAT-26 is found to have good internal consistency, with an alpha coefficient of 0.79 (Lane, 2003).

The Warwick Edinburgh Mental Well-being Scale (WEMWBS) was used to measure wellbeing and is made up of 18 positively worded items that relate to the different aspects of positive mental health. These include things such as positive functioning, satisfying interpersonal relationships and positive affect (Tennant et al., 2007). Each item is rated based on the experience of the respondent over the past two weeks. The items are ranked on a 5-point Likert scale ranging from 1 ("None of the Time") to 5 ("All of the Time"). The summed item scores are used to determine the level of positive mental well-being, with a higher score indicative of a higher level of positive mental well-being. The Cronbach's alpha for the scale is 0.93.

Procedure

After ethical approval from the School of Psychology Ethics Committee an e-mail containing a link to the questionnaire was sent to 532 students in the Faculty of Health Science. On clicking the link participants were taken to the online survey where they were

presented with an information sheet and asked to tick a box indicating consent. In total 349 participants completed the survey.

Ethics

In order for informed consent from participants to be received for this research study, an information sheet was provided with an attached tick box consent form.

Re

The first stage in analysis was to explore the relationships between each of the variables involved and to calculate some descriptive statistics, firstly using the variable dimensions (Table 1) and then using the composite variable scores (Tale 2).

Insert Tables 1 & 2 about here

Mindful eating and self-compassion both correlate positively with wellbeing, while eating attitudes correlates inversely with wellbeing. Mindful eating and self-compassion correlate inversely with eating attitudes. In addition, all four dimensions of mindful eating and all three dimensions of self-compassion correlate positively with wellbeing, while all three dimensions of eating attitudes correlate inversely with wellbeing. All four dimensions of mindful eating correlate inversely with the dieting and bulimia dimensions of eating attitudes but do no correlate significantly with the oral control dimension. All three dimensions of self-compassion correlate inversely with all three dimensions of eating attitudes. There was also an inverse correlation between age and wellbeing, common humanity, and oral control.

To explicate these relationships more robustly hierarchical multiple regression analysis (HMRA) was used with wellbeing as the dependent variable on the first analysis and eating attitudes as dependent variable on the second analysis (see Table 3). Age, sex and BMI raw score were entered on the first step and accounted for 9% of the variance. The only individual significant predictor was age (β=-.274). The four dimensions of mindful eating

were entered on the second step and accounted for 43.2% of the variance in wellbeing. The significant predictors were hunger and satiety cues (β=.533) and eating without distraction (β=.216). On the third step the three dimensions of self-compassion were entered and accounted for 14.9% of the variance. All three were significant predictors of well-being, self-kindness (β=.417), common humanity (β=.145), and mindfulness (β=.130). On the final step the three dimensions of eating attitudes were entered and accounted for 1.3% of the variance, dieting was the only significant predictor (β=.134). The pattern that emerges associated with positive wellbeing is a younger person who responds to hunger and satiety cues and eats without distraction, who is kinder to the self, sees failures as part of common humanity and is more mindful, and who is less concerned with dieting.

Insert Table 3 abut here.

A second HMRA was carried out with eating attitudes as the dependent variable (Table 3). Again sex, age and BMI raw score were entered on step one but did not account for any variance in eating attitudes. The four dimensions of mindful eating were entered on the second step and accounted for 32.9% of the variance in wellbeing. The significant predictors were hunger and satiety cues (β=-.361) and focussed eating (β=-.338). On the third step the three dimensions of self-compassion were entered and accounted for 15.1% of the variance. The significant predictor of eating attitude was self-kindness (β=-.388).

Based on the analysis so far and the background literature a path model (Figure 1) was proposed and tested using Structural Equation Modelling with AMOS 25. The model that best fits the data is shown in Figure 2. Fit statistics for the model were chi-square (3) = 4.19, p=.241, CMIN/DF = 1.4, GFI = .99, NFI = .99, IFI = .99, CFI = .99, RMSEA = .03, PCLOSE = .557.

Using the EAT cut off score of 20, 92 participants were indicated as potential eating disorder. The distribution of above the cut off by BMI was 34 underweight, 14 normal

weight, 19 overweight, and 25 obese. The association between these distributions was significant (Pearson Chi-square = 121.074, DF=3, p<.001).

The final analysis used one-way Analysis of Variance (Anova) to test for mean differences on wellbeing, eating attitudes, mindful eating and self-compassion in an attempt to explore the lack of relationship between BMI raw scores and these variables. The descriptive statistics for this are shown in Table 4.

There were main effects for wellbeing (f (3,345) = 45.71, p<.001), eating attitudes (f (3,345) = 4.27, p<.01), mindful eating (f (3,345) = 19.02, p<.001), and self-compassion (f (3,345) = 22.58, p<.001), Bonferroni correction shows that the differences were between underweight and both normal weight and overweight, and between obese and normal weight and overweight. The means for normal and overweight did not differ significantly. This demonstrates that the relationship between BMI scores and other variables is curvilinear in that both at the upper end and lower end of the BMI distribution participants exhibit lower wellbeing, mindful eating, and self-compassion, and higher eating attitudes scores.

Insert Table 4 about here

Discussion

The aim of the current study was to explore the relationship between mindful eating, self-compassion, healthy / unhealthy weight, eating disorder and wellbeing in a sample of university students. Previous research shows that both mindful eating and self-compassion are implicated separately in healthy eating and hence both a healthier body mass and lower likelihood of disordered eating. The current study explored their joint relationship and ultimately to see if the outcome might be better mental wellbeing. To that end the data supports both of the above propositions. Through the correlations, HMRA and path analysis there appears to be a joint impact of mindful eating and self-compassion on eating attitudes which are an indication of disordered eating. It would appear that participants who are self-compassionate and also engage in mindful eating are less likely to have a potential eating disorder.

In terms of body mass, the relationship is more complex because it is curvilinear and therefore there appears to be no significant relationship in the correlation and regression analysis. However, when we looked at the distribution of mean scores across BMI categories we can see that both underweight and obese individuals have lower wellbeing, lower levels of mindful eating and self-compassion and higher scores on eating attitudes demonstrating more propensity for eating disorder. The chi-square analysis supports this showing that there are significantly more participants scoring above the cut off on the EAT in the underweight and obese categories. The path analysis picks up on a strong relationship between self-compassion and BMI, and a relationship between BMI and eating attitudes. It also demonstrates an interaction between mindful eating and self-compassion in a complex relationship with eating attitudes and indirectly with wellbeing. This suggests that both are useful target in understanding both eating disorders and obesity and potentially useful target for intervention. Of course, there may be some shared variance between mindful eating and

self-compassion as one of the dimensions of self-compassion is mindfulness. On the other hand, factor analysis of the items from both scales together produced separate factors in our data suggesting that they are, at least statistically, measuring different constructs.

The findings above support previous literature on the separate effects of mindful eating (Framson et al., 2009; Mantzios & Wilson, 2015; Pintado-Cucarella & Rodríguez-Salgado, 2016) and self-compassion (Albertson, Neff & Dill-Shackleford, 2014; Costa, Marôco, Pinto-Gouveia, Ferreira & Castilho, 2016; Sirois, Kitner and Hirsch, 2015), on eating behaviour. The current study adds evidence that mindful eating and self-compassion my be usefully combined to add more explanatory power. Reciprocal relations of causality may exist where self-compassionate individuals may be more likely to eat mindfully and vice versa. In addition the current study proposes that mindful eating and self-compassion may underpin both more healthy eating and therefore less obesity, as well as a more healthy attitude towards food and less likelihood of developing an eating disorder.

The study is limited in the strength of conclusions that can be drawn because it is cross-sectional and it is restricted to a student sample. Taking into consideration the limitations the study provides some pointers in terms of interventions based on enhancing self-compassion and mindful eating perhaps starting early with children. Future research could explore these variables and their developmental origins in children. Furthermore understanding the role of family in engendering mindful eating and self-compassion might advance the prevention agenda in health promotion.

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Table 1: Means, standard deviations, and correlations for study variables using factor scores for the EAT, the Self-Compassion Scale and the Mindful Eating Scale.

			1	2	3	4	5	6	7	8	9	10	11	12
1.	Age:	24.93 (8.00)												
2.	BMI Raw Score	25.50 (4.69)	-.08											
3.	Focussed Eating	19.85 (2.79)	-.09	.05										
4.	Hunger/Satiety Cues	15.66 (4.61)	-.07	.02	.35**									
5.	Eating with Awareness	12.04 (0.64)	-.06	-.02	.10	.19**								
6.	Eating no Distraction	12.42 (2.98)	-.04	.11*	.26**	.35**	.18**							
7.	Self-kindness	11.73 (3.71)	-.13*	.13*	.23**	.43**	.10	.21**						
8.	Common humanity	12.38 (3.99)	-.09	.13*	.16**	.28**	-.02	.07	.66**					
9.	Mindfulness	13.32 (4.11)	-.12*	.13*	.25**	.37**	.03	.32**	.73**	.58**				
10.	Dieting	9.13 (7.36)	-.02	.02	-.41**	-.34**	-.06	-.26**	-.46**	-.32**	-.40**			
11.	Bullimia	2.47 (2.88)	.00	.15**	-.24**	-.41**	.05	.11	-.34**	-.24**	-.19**	.20**		
12.	Oral control	3.17 (3.39)	-.16**	-.13*	-.32**	-.32**	-.08	-.26**	-.42**	-.24**	-.38**	.37**	.17**	
13.	Wellbeing	50.18 (10.44)	-.29**	.11*	.33**	.67**	.16**	.43**	.64**	.37**	.57**	-.29**	-.29**	-.36**

* p < .05. ** p < .01

Table 2: Correlations between variables using composite scores

Variable	Mean (SD)	1	2	3	4	5
1. Age:	24.93 (8.00)					
2. BMI Raw Score	25.50 (4.69)	-.08				
3. Mindful Eating	59.98 (7.24)	-.03	.09			
4. Self-Compassion	37.43 (10.35)	-.09	.15**	.33**		
5. Eating Attitudes	14.77 (10.23)	.02	.02	-.54**	-.53**	
6. Wellbeing	50.18 (10.44)	-.23**	.11*	.48**	.59**	-.40**

$* p < .05.$ $** p < .01$

Table 3: HMRA to identify the predictors of wellbeing and Eating Attitudes.

HMRA to identify the predictors of wellbeing

	B	SE B	β
Step 1: R^2= .09, F(3,345) = 11.53, p <.001			
Age:	-.024	.005	-.274***
Sex	.073	.078	.048
BMI Raw Score	.011	.008	.076
Step 2: R^2 Δ= .432, F(4,341) = 77.36, p <.001			
Age:	-.013	.003	-.147***
Sex	.054	.060	.036
BMI Raw Score	.008	.006	.053
Focussed Eating	.018	.010	.071
Hunger and Satiety Cues	.081	.007	.533***
Eating with Awareness	.000	.043	.000
Eating without Distraction	.050	.010	.216***
Step 3: R^2 Δ= .149, F(3,338) = 51.40, p <.001			
Age:	-.013	.003	-.153***
Sex	.090	.050	.059
BMI Raw Score	.002	.005	.013
Focussed Eating	.009	.009	.037
Hunger and Satiety Cues	.057	.006	.376***
Eating with Awareness	-.014	.036	-.013
Eating without Distraction	.039	.008	.167***
Self-kindness	.313	.039	.417***
Common humanity	-.101	.031	.145***
Mindfulness	.088	.033	.130**
Step 4: R^2 Δ= .013, F(3,335) = 4.49, p <.01			
Age:	-.012	.003	-.137***
Sex	.108	.050	.071*
BMI Raw Score	.001	.005	.007
Focussed Eating	.018	.009	.073*
Hunger and Satiety Cues	.056	.006	.373***
Eating with Awareness	-.017	.036	-.015
Eating without Distraction	.044	.009	.190***
Self-kindness	.337	.041	.449***
Common humanity	-.093	.031	-.134**
Mindfulness	.094	.033	.139**
Dieting	.013	.004	.134***
Bullimia	-.007	.009	-.031
Oral control	.001	.007	.005

Total R^2 = .67

* $p < .05$. ** $p < .01$

Table 2: HMRA to identify the predictors of Eating Attitudes.

	B	SE B	β
Step 1: R²= .007, F(3,345) = 0.84, *p* =.471			
Age:	.036	.070	.028
Sex	1.820	1.201	.082
BMI Raw Score	.048	.118	.022
Step 2: R² Δ= .329, F(4,341) = 42.26, *p* <.001			
Age:	-.104	.059	-.082
Sex	1.132	1.033	.051
BMI Raw Score	.081	.098	.037
Focussed Eating	-1.234	.177	-.338***
Hunger and Satiety Cues	-.802	.113	-.361***
Eating with Awareness	.642	.748	.040
Eating without Distraction	-.136	.166	-.040
Step 3: *R²* Δ= .151, F(3,338) = 32.25, *p* <.001			
Age:	-.153	.054	-.120
Sex	.262	.920	.012
BMI Raw Score	.179	.087	.082*
Focussed Eating	-1.122	.157	-.307***
Hunger and Satiety Cues	-.439	.106	-.198***
Eating with Awareness	.780	.666	.049
Eating without Distraction	-.072	.152	-.021
Self-kindness	-4.276	.720	-.388***
Common humanity	-.497	.573	-.048
Mindfulness	-.255	.605	-.026

Total R² = .47

* $p < .05.$ ** $p < .01$

BMI

Self compassion

Eating
Attitude
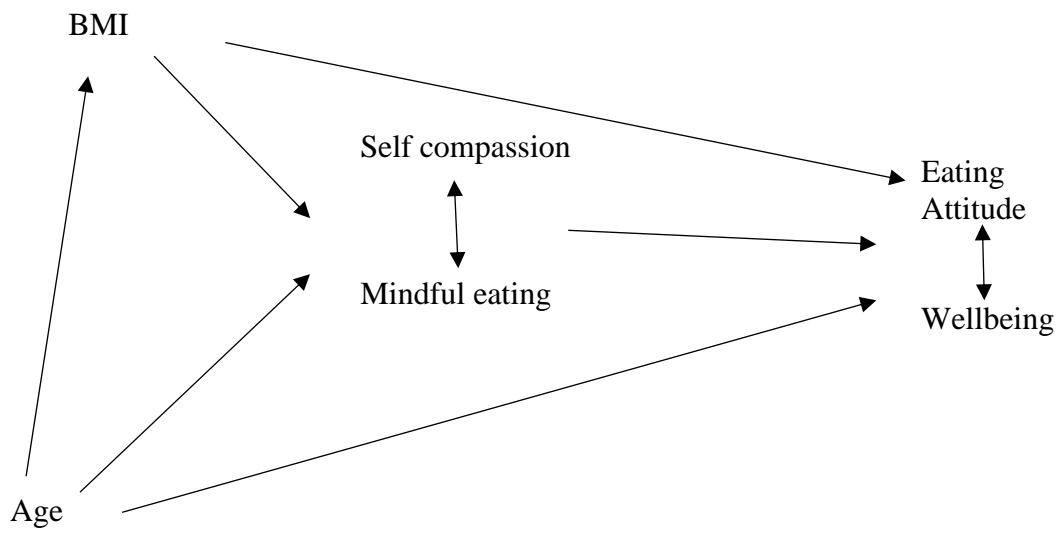
Mindful eating

Wellbeing

Age

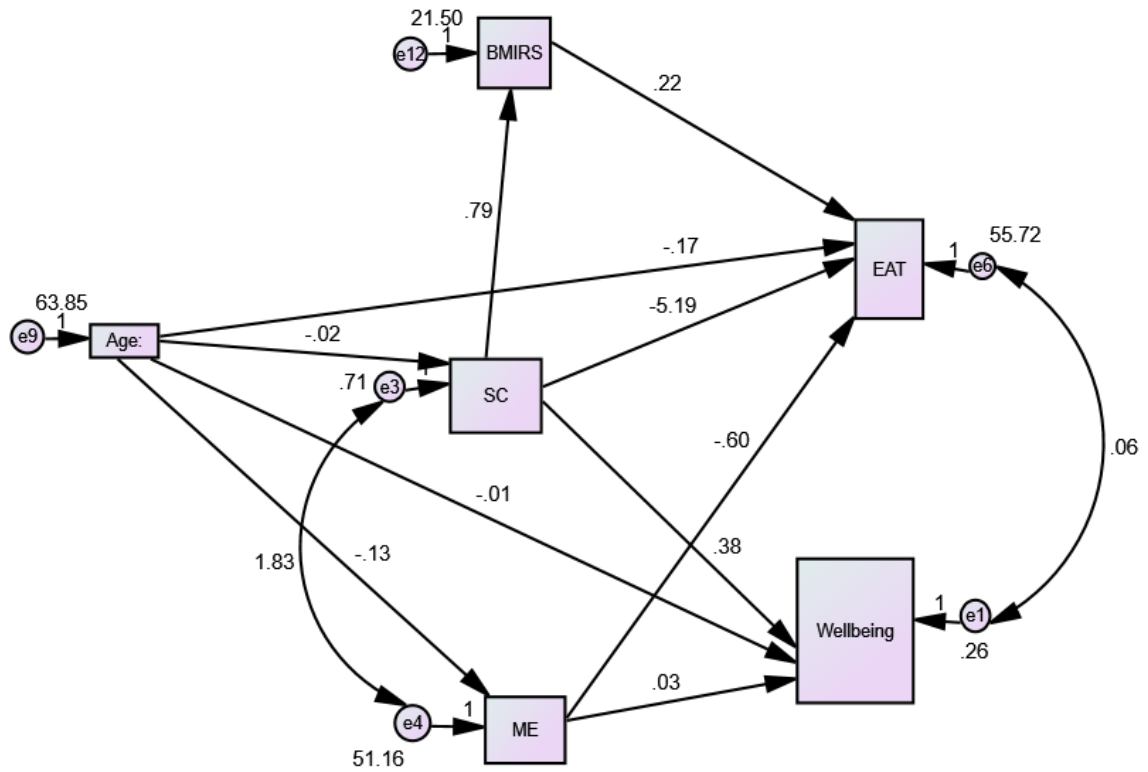*Figure 1: Proposed Model of predictors of eating attitudes and wellbeing in students.*

Figure 2: Path model of Eating Attitudes and Wellbeing; BMIRS = Body Mass Raw Score
;EAT=Eating Attitude total sco; SC= Self-compassion; ME=Mindful Eating.

Table 4: Means and standard deviations across BMI categories

	Underweight N=40	Normal weight N=144	Overweight N=122	Obese N=43
Wellbeing	36.69 (8.39)	53.47 (8.77)	52.59 (9.29)	44.83 (8.36)
Eating attitudes	18.75 (13.94)	12.91 (9.37)	14.98 (9.92	16.69 (8.51)
Mindful eating	53.48 (9.08)	61.99 (6.91)	60.61 (6.08)	57.49 (5.25)
Self-compassion	26.60 (9.97)	39.74 (9.62)	39.19 (8.90)	34.84 (10.36)