Understanding Internalised Weight Bias in Australian Males: Exploring Relationships Between Internalised Weight Bias, Self-Compassion, and Health Outcomes

The University of Adelaide

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Abstract

Internalised weight bias, the devaluation of oneself based on one's weight, is associated with poor physical and psychological health outcomes. Emerging evidence suggests that self-compassion may help explain the relationship between internalised weight bias and poor outcomes. Self-compassion is widely understood to increase individuals' psychological and physical well-being. The limited research in the field of internalised weight bias has primarily focused on females. Presently, no research has examined relationships between internalised weight bias, self-compassion, and poor outcomes in Australian males. A sample of 170 weight-diverse Australian males aged 18-83 completed an online cross-sectional survey containing demographics and validated self-report measures of internalised weight bias, self-compassion, psychological well-being, and eating behaviours. Consistent with prior research, simple linear regressions found that lower levels of internalised weight bias and greater self-compassion were associated with greater psychological well-being and healthier eating behaviours. Bootstrapping resampling procedures found that self-compassion mediated the relationship between internalised weight bias and psychological well-being. Additionally, self-compassion mediated the relationship between internalised weight bias and eating behaviours. The preliminary cross-sectional results suggest that males who internalise negative stereotypes about their weight may find it challenging to be compassionate towards themselves, which may result in poor psychological well-being and disordered eating behaviours. Results also suggest that, for Australian males with high levels of internalised weight bias, psychological interventions that seek to enhance self-compassion may offer one means to reduce the poor outcomes associated with this bias.

Declaration

This thesis contains no material which has been accepted for the award of any other degree of diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

September 2022

Contribution Statement

In writing this thesis, my supervisor and I collaborated to agree the research topic, generate hypotheses, design the appropriate methodology, and formulate the survey. I completed the literature search and drafted the ethics application which was reviewed by my supervisor. I collected the data and completed the data analysis with guidance from my research supervisor. Finally, I wrote up all aspects of the thesis.

Understanding Internalised Weight Bias in Australian Males: Exploring Relationships Between Internalised Weight Bias, Self-Compassion, and Health Outcomes

Overweight and obesity is increasingly becoming a global health crisis. Along with the physical health consequences associated with overweight and obesity (Boles et al., 2017; Luppino et al., 2010; Mitchell et al., 2015; Tappia et al., 2020), individuals face social consequences. Individuals are stereotyped as lazy and weak-willed, and are societally devalued based on their weight (Emmer et al., 2020; Phelan et al., 2015). These harmful stereotypes can be internalised, creating shame and self-hatred (Pearl & Puhl, 2018). Consequently, internalised weight bias is strongly related to poor health outcomes, including poor psychological well-being and disordered eating behaviours (Austen & Griffiths, 2022; Burmeister et al., 2013; Durso & Latner, 2008; Fekete et al., 2021; O'Hara et al., 2016). To date, the literature on internalised weight bias has largely focused on females despite mixed evidence regarding gender differences (Himmelstein et al., 2017; Vartanian, 2015). Also, at present, limited research exists regarding the efficacy of therapies targeting internalised weight bias (Lillis et al., 2009; Pearl et al., 2020). Hence, there have been calls to understand processes that may underlie the relationship between internalised weight bias and poor health outcomes in order to provide insight into possible ways to intervene. Emerging evidence suggests that self-compassion may explain the relationship between internalised weight bias and poor outcomes (Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Hardin, 2016), offering a potential option for intervention. The present study aims to explore associations between internalised weight bias, self-compassion, psychological well-being, and eating behaviours in weight-diverse Australian males. Additionally, the present study aims to investigate the hypotheses that higher levels of internalised weight bias will lead to reduced self-compassion which in turn will lead to poor psychological wellbeing and disordered eating behaviours.

Overweight and Obesity: Definition, Terminology, Prevalence, and Consequences

Overweight and obesity are defined as excessive fat accumulation that has the potential to impair health (World Health Organisation [WHO], 2021). Individuals are categorised as having overweight or obesity based on their body mass index (BMI). BMI measures a person's weight in kilograms divided by the square of their height in meters (WHO, 2021). In the past, identity-first language was used when referring to individuals living with overweight and obesity, for instance, "an obese person" (Fisch et al., 2022). This terminology emphasises health rather than the individual and contributes to stigmatising attitudes (Granello & Gibbs, 2016). There has been growing interest in reducing weight stigma through correct terminology. Therefore, person-centred language is recommended when referring to individuals with overweight and obesity, emphasising the individual and demonstrating respect (Albury et al., 2020; American Psychological Association, 2020). Person-centred language is used throughout this thesis.

Overweight and obesity is currently recognised as one of the most important public health concerns globally (WHO, 2021). Australians have the fifth highest proportion of people living with obesity among Organisation for Economic Co-Operation and Development (OECD) countries (Australian Insitute of Health and Welfare [AIHW], 2020a). Australian males are particularly vulnerable to overweight and obesity; approximately 75% of males live with overweight and obesity compared to 60% of females (AIHW, 2020b). The Australian National Preventive Health Strategy identifies overweight and obesity as the second highest risk factor in causing the national burden of disease (Australian Bureau of Statistics [ABS], 2015; Department of Health, 2021). Similarly, the National Men's Health Strategy also recognises the need to focus on males' health in this area due to males being a high-risk group (ABS, 2015; Department of Health, 2020). Overweight and obesity are associated with an increased risk of several serious health consequences. Poor physical health

outcomes include Type 2 diabetes (Boles et al., 2017), cardiovascular disease (Tappia et al., 2020), and stroke (Mitchell et al., 2015). Psychological health consequences include depression and anxiety (Luppino et al., 2010). Additionally, overweight and obesity are associated with discrimination, stigma, and the internalisation of this stigma (Austen & Griffiths, 2022; Durso et al., 2012; Pearl & Puhl, 2018).

Weight Stigma and Internalised Weight Bias

Weight Stigma

Weight stigma describes the social rejection and/or devaluation of individuals based on their weight (Emmer et al., 2020; Puhl & Heuer, 2009). Weight stigma is pervasive, with approximately 40% of all people having experienced this form of stigma (Himmelstein et al., 2017). Weight stigma is expressed through stereotypes that individuals with overweight and obesity are lazy, unmotivated, and lack self-control (Phelan et al., 2015). The extent to which individuals express these stereotypes is partly based on their perceptions of how weight gain occurs (Hilbert et al., 2008). As explained by attribution theory (Heider, 1958), if people attribute personal responsibility to weight gain, they are more likely to hold negative stereotypes (Hilbert et al., 2008). Although overweight and obesity are often caused by excess caloric intake relative to caloric expenditure, which can, in some cases, be attributed to personal responsibility, the aetiology is highly complex (Wright & Aronne, 2012). Weight gain is promoted through environmental, genetic, psychological, social, economic, and political factors beyond a persons' control (Aronne et al., 2009).

Negative stereotypes lead to stigma and discrimination in multiple life domains. Such stigma begins early in life; children as young as three hold negative attitudes toward overweight bodies (Harriger et al., 2010). Furthermore, weight stigma is prevalent in education settings among peers and teachers (Nutter et al., 2019; Pont et al., 2017). Weight stigma continues in workplaces; individuals with overweight and obesity face discrimination

during the hiring process and on the job (Grant & Mizzi, 2014; Wu et al., 2020). Also, Puhl et al. (2021) found that among participants that had previously experienced weight stigma, two-thirds had experienced stigma from their healthcare professionals, resulting in greater healthcare avoidance and lower quality of healthcare. Moreover, weight stigma occurs through media exposure and public health campaigns (Eisenberg et al., 2017; Heuer et al., 2011; Walls et al., 2011). It is commonly believed that applying social pressure and stigmatising individuals with overweight and obesity promotes weight loss (Callahan, 2013). However, evidence suggests the opposite (Jackson et al., 2014; Major et al., 2014; Puhl & Suh, 2015; Schvey et al., 2011), thus, creating a vicious cycle.

Internalised Weight Bias

Internalised weight bias refers to the awareness of negative societal stereotypes relating to overweight and obesity, application of these stereotypes to oneself, and self-devaluation (Austen et al., 2020; Pearl & Puhl, 2016; Pearl & Puhl, 2018). Approximately half of adults living with obesity and one in five adults in the general population report high levels of internalised weight bias (Puhl et al., 2018). Internalised weight bias develops through direct (i.e., verbal abuse) and indirect (i.e., media exposure) experiences of stigma (Pearl & Puhl, 2016; Pearl & Puhl, 2018). People who self-blame for experiencing weight stigma and attribute the experience to being inadequate due to their weight are more likely to internalise this stigma than people who attribute the experience as undeserved and discriminatory (Pearl & Puhl, 2016). This process can be explained through Lazarus and Folkman's (1984) key finding that a person's appraisal of life events is a larger predictor of emotional responses and poor outcomes than the experience alone.

Limited research exists regarding who is most likely to experience internalised weight bias. A cross-sectional survey of 18,769 participants found that that younger participants and those with higher BMIs were more likely to experience internalised weight bias (Pearl et al.,

2019). The finding that individuals with higher BMIs experience greater internalised weight bias is not surprising, as individuals with high BMIs are more likely to be stigmatised due to their weight (Dorsey et al., 2009; Himmelstein et al., 2018). Internalised weight bias is widespread and warrants further attention.

Males' Experiences of Weight Stigma and Bias

Currently, there is a paucity of literature regarding internalised weight bias among males despite its high rates in this demographic (Himmelstein et al., 2018). Most internalised weight bias research has focused on females (Fekete et al., 2021; Forbes & Donovan, 2019; O'Hara et all., 2016; Webb & Hardin, 2016); few studies have focused on males (Austen et al., 2020; Himmelstein et al., 2018). This imbalance is likely due to research often finding that females experience more weight stigma than males (Fikkan & Rothblum, 2012; Hatzenbuehler et al., 2009; Puhl et al., 2008). However, contrasting research has found no significant gender differences in weight stigma (Himmelstein et al., 2017; Vartanian, 2015). A meta-analysis of 36 samples, exploring the effect of weight on job-related outcomes, found that gender differences varied depending on how weight status was categorised in research (Roehling et al., 2013).

Perceptions of stigmatising experiences and weight may also be partially responsible for the sparse literature on males' experiences. Stigma is perceived to be worse for females than males (Spahlholz et al., 2016), which may be in part a result of females experiencing weight stigma at lower BMIs and increased stigma as their weight increases (Dorsey et al., 2009). In comparison, males experience weight stigma in a "U-shaped" pattern where they experience weight stigma at low and high BMIs (Himmelstein et al., 2018). In addition, females perceive themselves to be overweight at lower BMIs than males (Yancey et al., 2006). This difference in self-perception may influence how females and males self-report

weight stigma. Irrespective of potential gender differences in weight stigma, it is important to understand internalised weight bias experiences in diverse genders.

The minimal research regarding males' experiences of internalised weight bias is not unique; males are frequently overlooked in discussions of disordered eating and mental health. To date, less than 1% of research on anorexia nervosa has focused on males (Murray et al., 2016). However, disordered eating behaviours are increasing faster in males than females and are equally as severe for males and females (Mitchison et al., 2014). In recent years, males' views on appearance have changed, with a greater societal push for males to be lean and muscular (Mitchison et al., 2014). Males' well-being has also declined, with the male suicide rate in Australia increasing between 2011 and 2020 from 16.2 to 18.6 deaths per 100,000 (AIHW, 2022). Suicide is the number one killer for Australian males under 44 years (AIHW, 2022). The extent to which males' well-being is deteriorating highlights the importance of gaining a deeper understanding of the factors adversely impacting their mental health.

Consequences of Internalised Weight Bias

Internalised weight bias is associated with poor psychological outcomes. In cross-sectional studies, internalised weight bias has been associated with decreased psychological well-being (in a multi-national sample of males; Austen & Griffiths, 2022) and psychological distress, shame, and life dissatisfaction (in Australian females living with overweight and obesity; Forbes & Donovan, 2019). Moreover, internalised weight bias has been associated with depression and anxiety (in adults living with overweight and obesity; Durso & Latner, 2008), and has been found to be a risk factor for suicidality beyond BMI and self-perceived weight (in American adults; Brochu et al., 2021). Internalised weight bias has been associated with poorer psychological outcomes than externally experienced bias (in adults living with

overweight and obesity; Pearl & Puhl, 2016), emphasising that internalised weight bias is highly important to research.

Furthermore, internalised weight bias is associated with numerous disordered eating behaviours. In cross-sectional studies, internalised weight bias has been associated with eating disorder symptomology (in female Emirati university students; O'Hara et al., 2016); increased binge eating frequency (in a sample of 82% female participants; Durso et al., 2012); emotional and restrained eating (in a sample of females; Fekete et al., 2021); greater food addiction, referring to eating in greater quantities than needed and unsuccessful attempts to quit over-eating (in a sample of 68% female Americans completing a weight loss program; Burmeister et al., 2013); and coping via disordered eating (in a sample of 50% female Americans; Himmelstein et al., 2017). The percentage of female participants in these studies emphasises the limited understanding of males' experiences. As a result of the poor outcomes associated with internalised weight bias, there have been calls for interventions (Pearl & Wadden, 2018).

Interventions

Preventing and reducing weight stigma by changing societal attitudes is of high importance. However, this is challenging due to the ingrained, widespread nature of stereotypes associated with overweight and obesity. A systematic review of 17 intervention studies designed to reduce weight stigma in medical fields found little effectiveness (Alberga et al., 2016). Clearly interventions designed to help individuals cope with weight stigma and reduce its internalisation are needed but at present there is only limited research in this area. Lillis et al. (2009) found that a 6-hour acceptance and commitment therapy-based intervention for internalised weight bias resulted in greater quality of life and reductions in internalised weight bias at follow-up. However, Pearl et al. (2020), in a randomised control trial where all participants undertook a 12-week behavioural weight loss program, and the

intervention group underwent a weight bias internalisation program, found no significant differences in internalised weight bias or health outcomes between groups other than healthier eating behaviours in the intervention group at follow-up. As a result of the limited, mixed evidence regarding the efficacy of interventions designed to reduce internalised weight bias, research has turned to understanding processes that may underlie the relationship between internalised weight bias and poor health outcomes (Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Hardin, 2016) as a potential means of intervention. There are many ways in which this relationship could be explained; one potential option is self-compassion.

Self-compassion

Self-compassion has been recognised for thousands of years, originating in Buddhist traditions. In recent years, 'Western psychology' has shown increased interest in self-compassion. Self-compassion is derived from compassion, defined as empathy for those suffering, the desire to alleviate this suffering, and the understanding that suffering is universal (Strauss et al., 2016). Neff (2003a; 2003b), considered the founder of self-compassion research, defines self-compassion as extending compassion towards oneself during difficult times. Neff (2003a; 2003b) proposes that self-compassion entails three primary components; self-kindness, common humanity, and mindfulness. Self-kindness refers to understanding and supporting oneself rather than judging and criticising oneself for one's inadequacies. Common humanity involves the understanding that suffering and personal inadequacy are a part of the human experience; it involves taking a broader perspective rather than perceiving emotions and experiences as isolating. Mindfulness involves being present and aware of one's thoughts, feelings, and environment without over-identifying with them. Self-compassion is perceived to confer many health benefits.

Benefits of Self-Compassion

Self-compassion is associated with a myriad of positive outcomes. In cross-sectional studies, self-compassion has been associated with decreased psychological distress and shame, increased life satisfaction (in Australian females living with overweight and obesity; Forbes & Donovan, 2019), optimism, positive affect, wisdom (in a sample of 68% female American undergraduate students; Neff et al., 2007), and happiness (in female American undergraduate students; Hollis-Walker & Colosimo, 2011). Moreover, Zessin et al. (2015), in a meta-analysis of 79 samples comprising 16,416 participants, found that self-compassion is associated with cognitive and psychological well-being. Research has also demonstrated that greater self-compassion is associated with a decreased incidence of mental illness. Macbeth and Grumley (2012), in a meta-analysis of 20 samples, found that self-compassion was associated with decreased anxiety and depression. Furthermore, in samples of American veterans (Rabon et al., 2019) and Chinese adolescents (Sun et al., 2020), self-compassion was associated with reduced suicidal ideation.

Self-compassion is also associated with healthier eating behaviours. In cross-sectional studies, self-compassion has been associated with lower levels of emotional and restrained eating (in a sample of females; Fekete et al., 2021), decreased binge eating severity due to the inability to tolerate negative emotional states (in a sample of 86% female, American undergraduate students; Webb & Forman, 2013), and decreased eating disorder symptomology (in a sample of 97% female Canadian eating disorder inpatients; Kelly & Tasca, 2016). Though these studies may not be representative of the general population due to the under-representation of males, they show promise and suggest that exploring the relationship between self-compassion and internalised weight bias may prove fruitful.

Internalised Weight Bias and Self-Compassion

There are many ways in which self-compassion could explain the relationship between internalised weight bias and poor outcomes. A risk factor model could be used to assess self-compassion as a moderator, which may make individuals with high levels of internalised weight bias more resilient to experiencing poor outcomes. Pullmer et al. (2021) assessed a moderated mediation model, finding that psychological distress mediated the relationship between internalised weight bias and eating pathology. They also hypothesised, but disconfirmed, that self-compassion would moderate the relationship between internalised weight bias and eating pathology, suggesting that self-compassion is not a moderator of this relationship.

When considering the relationship between internalised weight bias and self-compassion, researchers have predominantly investigated a mediation pathway, yielding significant results suggesting this may explain the underlying relationship (Forbes & Donovan, 2019; Hilbert et al., 2015; O'Hara et all., 2016; Webb & Hardin, 2016). In cross-sectional studies, self-compassion mediated the relationship between internalised weight bias and health outcomes, including depression, somatic symptoms, quality of life (in a sample of 1,158 Germans with overweight and obesity; Hilbert et al., 2015), and intuitive eating (in a sample of 362 female American undergraduate students; Webb & Hardin, 2016). Similarly, in a cross-sectional study of 147 Australian females with overweight and obesity, self-compassion mediated the relationship between experienced weight stigma and several psychosocial outcomes including body shame, loneliness, and life satisfaction. Additionally, Fekete et al. (2021), in a sample of 266 females, evaluated a cross-sectional mediational model of these factors in a different light, with internalised weight bias mediating the relationships between self-compassion and poor outcomes including maladaptive eating behaviours, depression, and anxiety.

Most studies in this area have assessed females, with only one having assessed males highlighting the limited understanding of males' experiences. As a result, several researchers (i.e., Fekete et al., 2021, Forbes & Donovan, 2019; Webb & Hardin, 2016) have recommended examining the relationship between internalised weight bias and self-compassion in males. Based on previous literature (Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Hardin, 2016), the present study theorised that males who devalue themselves based on their weight may find it challenging to direct kindness toward themselves, which may result in poor physical and psychological outcomes.

The Present Study

The present study aims to understand associations between internalised weight bias, self-compassion, psychological well-being, and eating behaviours in weight-diverse Australian males. The prior literature on internalised weight bias has primarily focused on females (Fekete et al., 2021; Forbes & Donovan, 2019; O'Hara et al., 2016; Webb & Hardin, 2016), despite mixed evidence regarding gender differences (Himmelstein et al., 2017; Vartanian, 2015). This field has also focused on individuals living with overweight and obesity (Burmeister et al., 2013; Durso & Latner, 2008; Forbes & Donovan, 2019; Pearl & Puhl, 2016). Pearl and Puhl (2014), however, discuss the importance of including individuals of diverse weights in internalised weight bias research, as many individuals perceive themselves as overweight regardless of their actual body size. To the researcher's knowledge, no research at the time of writing has examined internalised weight bias in weight-diverse Australian males. Yet Australian males are potentially high-risk for experiencing internalised weight bias, with Australia having the second highest proportion of males living with obesity among OECD countries (AIHWa, 2020). Further, the present study aims to add to the limited knowledge about whether self-compassion mediates the relationships between internalised

weight bias and psychological well-being, and between internalised weight bias and eating behaviours.

The present study may generate information for researchers and health professionals, enabling them to improve the information and services available to males. The study can provide valuable information on rates of weight stigma among Australian males, which at present are unknown. Results of the present study may also have clinical implications. They may offer guidance to health professionals working with Australian males who raise weight, shape, or appearance concerns or make comments suggestive of internalised weight bias. The findings could suggest that self-compassion interventions (i.e., Gilbert, 2009) may offer a means to improve psychological well-being and eating behaviours among males with high levels of internalised weight bias. The findings from this study could also inform existing health promotion campaigns for Australian males.

Hypotheses

The present study aims to investigate the following hypotheses:

1. Higher levels of internalised weight bias will be associated with poorer psychological well-being;
2. Higher levels of internalised weight bias will be associated with disordered eating behaviours;
3. Higher levels of self-compassion will be associated with greater psychological well-being;
4. Higher levels of self-compassion will be associated with healthier eating behaviours;
5. Self-compassion will mediate the relationship between internalised weight bias and psychological well-being;
6. Self-compassion will mediate the relationship between internalised weight bias and eating behaviours.

Method

Participants

Participants were a sample of 170 Australian males aged 18 to 83 (*M* = 31.70, *SD* = 16.68) proficient in English. Most participants were born in Australia (76%) and indicated their ethnic heritage to be Australian (61%). Also, most participants had a partner (60%) and described their sexual orientation as heterosexual (89%). One hundred and sixty participants reported their BMI. Of these participants, BMIs ranged from 17 to 45, with the mean BMI just within the healthy weight range (*M* = 24.78, *SD* = 4.53). Most participants (54%) were within the healthy weight range, although 29% and 13% were within the overweight and obese ranges, respectively. Table 1 reports participants' demographic characteristics.

Table 1

Demographic Characteristics of Study Population (N = 170)

Characteristics	*n*	%
Ethnic Heritage		
African	1	<1
Asian	24	14
Australian	103	61
European	32	19
Maori or Pacific Islander	1	<1
Middle Eastern	2	<1
Other	7	4
Country of Birth		
Australia	130	76

Country other than Australia	40	23
Relationship Status (n = 169)		
Single	67	40
In a relationship	102	60
Sexual Orientation (n = 169)		
Heterosexual	151	89
Gay	7	4
Bi+ (Bisexual. Pansexual)	7	4
Other	4	2
Highest level of education		
Year 12 or below	77	45
Vocational/ Trade certificate	17	10
University	76	45
Employment Status		
Employed	97	57
Unemployed	12	7
Student	50	29
Retired	11	6
BMI (n = 160)		
Underweight (BMI $\leq$ 18.5)	6	4
Healthy weight (BMI = 18.6 - 24.9)	87	54
Overweight (BMI = 25 - 29.9)	47	29
Obese (BMI $\geq$ 30)	20	12

Materials

A study-specific survey was generated and hosted on Qualtrics. The survey comprised five sections: demographic information, weight stigma (experienced weight stigma and internalised weight bias), self-compassion, well-being, and eating behaviours (Appendix A). The measures used are described below.

Demographic Information

Ten demographic items were asked: age, country of birth, ethnic heritage, relationship status, sexual orientation, highest level of education completed, employment status, postcode, height (in centimetres), and weight (in kilograms). Height and weight data were used to calculate participants' BMI.

Internalised Weight Bias and Weight Stigma

Internalised Weight Bias. Internalised weight bias was measured using the 11-item Weight Bias Internalization Scale-Modified (WBIS-M; Pearl & Puhl, 2014). In the WBIS-M, Pearl and Puhl (2014) modified the original Weight Bias Internalization Scale (Durso & Latner, 2008) to enable measurement of internalised weight bias for individuals of diverse weights rather than only individuals with overweight or obesity. Participants indicated, on a 7-point Likert scale (1 = *Strongly disagree* to 7 = *Strongly agree*), the extent to which they agreed with the 11 statements (e.g., "My weight is a major way that I judge my value as a person"). Positive items (1, 9) were reverse-scored, then all items were averaged to produce an overall score, with higher scores reflecting higher levels of internalised weight bias. The WBIS-M has excellent internal consistency (α =.94; Pearl & Puhl, 2014); the present study also demonstrated excellent internal consistency (α =.94).

Experienced Weight Stigma. To measure whether participants perceived that others had stigmatised them due to their weight, participants responded to three questions that asked whether they had been treated unfairly, teased or bullied, or discriminated against because of

their weight, using a 'yes'/'no' response option based on Himmelstein et al.'s (2018) measure. Consistent with previous research (e.g., Himmelstein et al., 2018; Pearl et al., 2019; Pearl et al., 2020), a dichotomous variable was computed to indicate whether a participant had experienced weight stigma; if they indicated 'yes' to any of the three items, they were categorised as having experienced weight stigma.

Self-Compassion

Self-compassion was assessed using the 12-item Self-Compassion Scale Short Form (SCS-SF; Raes et al., 2011). Participants rated, on a 5-point Likert scale (1 = *Almost never* to 5 = *Almost always*), the frequency in which they behave in the stated manner for each of the 12 items (e.g., "When I fail at something important to me I become consumed by feelings of inadequacy"). Negative items on the scale (1, 4, 8, 9, 11, 12) were reverse-scored, then all items were averaged to produce an overall score, with higher scores reflecting more self-compassion. The SCS-SF is highly correlated with the long form of the Self-Compassion Scale (r = .98; Raes et al., 2011) and demonstrates good internal consistency (α = .87; Raes et al., 2011); the internal consistency in the present study was also good (α = .82).

Psychological Well-being

Well-being was measured using the five-item World Health Organization-Five Well-Being Index (WHO-5; WHO, 1998). Participants indicated how often in the past two weeks, using a 6-point Likert scale (0 = *At no time* to 5 = *All of the time*), they experienced each statement (e.g., "I have felt cheerful in good spirits"). Scores for the five items were summed, and the total raw score was multiplied by four to obtain the final score, with higher scores indicating greater well-being. The WHO-5 demonstrates good internal consistency (α = .86; Topp et al., 2015); the internal consistency in the present study was also good (α = .79).

Eating Behaviours

The Three-Factor Eating Questionnaire-Revised 18 Version 2 (TFEQ-R18V2; Cappelleri et al., 2009) assessed three aspects of eating behaviour: uncontrolled eating, cognitive restraint, and emotional eating. The Uncontrolled Eating subscale evaluates the likelihood that an individual will eat unusually large quantities of food and feel like they cannot stop eating. The Cognitive Restraint subscale assesses the inclination to control food intake to control body weight. The Emotional Eating subscale evaluates the likelihood of an individual overeating when experiencing negative emotions. For the first 16 items, participants indicated, on a 4-point Likert scale (1 = *Definitely true* to 4 = *Definitely false*), the extent to which each statement applied to them (e.g., "When I feel lonely, I console myself by eating"). For items 17 and 18, participants indicated how often they behaved in the stated manner on two 4-point scales (1 = *Never* to 4 = *At least once a week* and 1 = *Only at mealtimes* to 4 = *Almost always*, respectively). Positive items (1-16) were reverse-scored prior to summing with items 17 and 18 to obtain an overall score, with higher scores indicating higher levels of disordered eating behaviours. The TFEQ-R18V2 has demonstrated good internal consistency for the overall scale (α = .81-.91; Swartz et al., 2016), Uncontrolled Eating (α= .89) and Cognitive Restraint subscales (α= .78), and excellent internal consistency for the Emotional Eating subscale (α= .94; Cappelleri et al., 2009). In the present study, the internal consistency was good for the overall scale (α = .86), acceptable for the Uncontrolled Eating subscale (α = .68) and Cognitive Restraint subscale (α = .72), and excellent for the Emotional Eating subscale (α = .92).

Procedure

The University of Adelaide School of Psychology Research Ethics Sub-Committee approved the present study on March 7th, 2022 (approval number 22/11). Participation in the study was voluntary, and participants could withdraw from the study at any time until survey

submission. Before commencing the survey, all participants read participant information and provided consent as part of the survey preamble (Appendix B); people who did not consent were directed to an exit page. Data were collected between March 2022 to June 2022 via an online cross-sectional survey hosted by Qualtrics, which took approximately 30 minutes to complete. The present, cross-sectional study was conducted using an online survey as previous research into internalised weight bias and self-compassion has yielded valid and reliable results using such methods (Fekete et al., 2021; Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Forman, 2013).

Participants were recruited through The University of Adelaide School of Psychology Research Participation System; male health and well-being organisations, including The Freemasons Centre for Male Health and Well-being and Healthy Male; flyers (Appendix C) displayed at public locations such as university campuses and health services; social media (Appendix D); and passive snowballing. Participants accessed the survey via a link or QR code provided on the recruitment information. First-year psychology students at the University of Adelaide received course credit for participation; other participants did not receive credit nor reimbursement.

Power Analysis

An a priori power analysis was conducted using G*Power 3.1 (Faul et al., 2009) to determine the sample size required for simple linear regression. Based on an alpha of .05, a power of .8, and a medium effect size, a sample of 55 was required. The present study had at least 155 participants for each simple linear regression, demonstrating sufficient statistical power.

The sample required for bootstrapping mediational analyses was determined based on Fritz and MacKinnon's (2007) much-cited work (over 4,000 times). They presented sample sizes required for bootstrapping mediation with an alpha of .05 and power of .8. Based on a

medium effect size, the sample required for bootstrapping mediation analysis was 78. The present study had at least 157 participants for each mediation analysis, demonstrating sufficient statistical power.

Data Analysis

A total of 222 responses were collected. For a participant's response to be included in data analysis, they must have completed at least three of the study's four primary measures (internalised weight bias, self-compassion, psychological well-being, and eating behaviours). Fifty-two people who completed less than three of the measures were excluded from the study, resulting in a sample of 170 participants. There were no significant demographic differences between people included and excluded from data analysis.

Data were analysed using SPSS Statistics Volume 28. Descriptive statistics were calculated for each variable. Bivariate correlations between internalised weight bias, self-compassion, psychological well-being, and eating behaviours were calculated to determine whether significant correlations existed between the variables.

Simple linear regressions were conducted to understand associations between internalised weight bias, self-compassion, psychological well-being, and eating behaviours. To conduct simple linear regression, certain assumptions, including normality and linearity, must be satisfied (Marill, 2004). Normality and linearity of each variable was visually assessed using histograms and scatterplots, respectively; each variable showed no clear departure from normality nor linearity. Next mediational bootstrapping was conducted. While some may consider bootstrapping alone sufficient to answer all hypotheses, simple linear regressions were conducted prior to bootstrapping to first understand simple associations between the variables, and answer the first four hypotheses, then bootstrapping was conducted to understand the underlying complex relationships and answer the final two

hypotheses. This methodological approach has been supported by previous research (Correa-Fernández et al., 2012).

Two mediation analyses were conducted to test the mediational effect of self-compassion on the relationship between the independent variable, internalised weight bias, and the dependent variables, psychological well-being and eating behaviours. Mediation analyses were conducted using the PROCESS macro for SPSS, model 4 (Hayes, 2013), using 95% confidence intervals and 10,000 resamples. Preacher and Hayes (2008) highlight the advantages of bootstrapping over the traditional Baron and Kenny (1989) causal-steps test of mediation. Baron and Kenny's (1986) method requires parametric data and large sample sizes for adequate power, unlike bootstrapping. Bootstrapping yields confidence intervals that can be interpreted in terms of their magnitude and significance (Preacher & Hayes, 2008); the null hypothesis is rejected if the confidence intervals do not include zero. The fundamental assumption of bootstrapping is that the sample is representative of the general population (Tibshirani & Efron, 1994). The present study appears to have met this assumption. The sample is consistent with Australian census data (ABS, 2021) despite utilising a convenience sample, which is considered a weaker research methodology. Participants' average age, country of birth, and employment status was comparable with the Australian census (ABS, 2021).

Finally, post hoc analyses were conducted. An independent samples t-test was conducted to determine whether participants who had experienced weight stigma had higher levels of internalised weight bias than those who had not. Furthermore, simple linear regressions were conducted to determine relationships between internalised weight bias, BMI, and the three subscales of the TFEQ-R18V2: the Uncontrolled Eating subscale, Cognitive Restraint subscale, and Emotional Eating subscale.

Results

Descriptive Statistics

Table 2 reports descriptive data, including the number of participants who completed each measure, means, standard deviations, and the ranges for participant's scores and the possible range for each measure. Participants reported lower levels of internalised weight bias, higher levels of self-compassion, greater psychological well-being, and healthier eating behaviours than the midpoint of each relevant scale. Additionally, approximately half of the participants (45%) reported having experienced weight stigma from others.

Table 2

Descriptive Statistics for Internalised Weight Bias, Self-Compassion, Psychological Well-being, and Eating Behaviours

	n	*M*	*SD*	Range	
				Participants	Measure
Internalised Weight Bias	166	2.72	1.41	1-7	1-7
Self-Compassion	170	3.02	0.67	1-4.24	1-5
Psychological Well-being	169	56.42	16.69	12-100	0-100
Eating Behaviours	161	37.71	9.01	20-64	18-72

Bivariate Correlations

Table 3 presents the bivariate correlations between internalised weight bias, self-compassion, psychological well-being, and eating behaviours. As predicted, higher levels of internalised weight bias were associated with reduced self-compassion, poorer psychological well-being, and disordered eating behaviours. Greater self-compassion was associated with

greater psychological well-being and healthier eating behaviours. Additionally, greater psychological well-being was associated with healthier eating behaviours.

Table 3

Correlations Between Internalised Weight Bias, Self-Compassion, Psychological Well-being, and Eating Behaviours

	1	2	3	4
1. Internalised Weight Bias	-			
2. Self-Compassion	-0.47*	-		
3. Psychological Well-being	-0.39*	0.59*	-	
4. Eating Behaviours	0.45*	-0.36*	-0.31*	-

Note. * $p < .001$ (two-tailed).

Regression Analyses

Initially, simple linear regressions were conducted to assess relationships between internalised weight bias, self-compassion, psychological well-being, and eating behaviours. Internalised weight bias was a significant predictor of psychological well-being, explaining 15% of the variance in well-being, $R^2 = 0.15$, F (1,163) = 28.17, $p < .001$. Internalised weight bias was also a significant predictor of eating behaviours, explaining 21% of the variance in eating behaviours, $R^2 = 0.21$, F (1,155) = 40.21, $p < .001$. Self-compassion was a significant predictor of psychological well-being, accounting for 34% of the variance in psychological well-being, $R^2 = 0.34$, F (1,167) = 87.72, $p < .001$. Finally, self-compassion was a significant predictor of eating behaviours, accounting for 13% of the variance in eating behaviours, $R^2 = 0.13$, F (1,159) = 24.11, $p < .001$.

Testing Mediational Models

A mediational analysis was conducted to examine the relationships between the predictor variable, internalised weight bias, and the outcome variables, psychological well-being and eating behaviours, via the mediator variable, self-compassion. Mediation models consist of direct, indirect, and total effects. A direct effect is the relationship between the predictor variable and the outcome variable (in the present study, the direct effect of internalised weight bias on well-being and eating behaviours). An indirect effect is the relationship between the predictor and the outcome variable via a mediating variable (in the present study, the indirect effect of internalised weight bias on well-being and eating behaviours via self-compassion). The total effect is the sum of the direct and indirect effects.

Psychological Well-being

Table 4 displays the direct, indirect, and total effects of internalised weight bias on well-being via self-compassion. The direct effect of internalised weight bias on psychological well-being was non-significant. The indirect effect of internalised weight bias on psychological well-being via self-compassion was significant. This suggests that the relationship between internalised weight bias and psychological well-being was fully mediated by self-compassion. With an $R^2 = 0.22$, the overall model accounted for 22% of the variance in psychological well-being. Figure 1 depicts a visual representation of the mediational relationship between internalised weight bias and psychological well-being via self-compassion.

Table 4

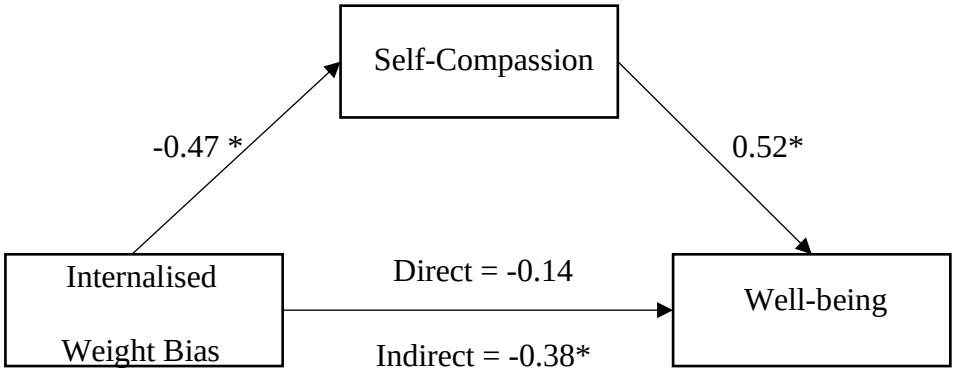
Mediational Effect of Internalised Weight Bias on Well-being via Self-Compassion (n=165)

Type of Effect	*B*	*SE*	95% CI		*p*
			LL	UL	
Direct Effect	-1.66	0.85	-3.34	0.02	0.053
Indirect Effect	-2.90	0.54	-4.03	-1.92	<0.001
Total Effect	-4.56	0.86	-6.26	-2.86	<0.001

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Figure 1

The Relationship Between Internalised Weight Bias and Well-being Mediated by Self-Compassion



Note. Values in Figure 1 are standardised coefficients, * p < .05.

Eating Behaviours

Table 5 displays the direct, indirect, and total effects of internalised weight bias on eating behaviours via self-compassion. The direct effect of internalised weight bias on eating behaviours was significant. The indirect effect of internalised weight bias on eating behaviours via self-compassion was significant. This suggests that the relationship between

internalised weight bias and eating behaviours was partially mediated by self-compassion. With an $R^2 = 0.24$, the overall model accounted for 24% of the variance in eating behaviours. Figure 2 depicts a visual representation of the mediational relationship between internalised weight bias and eating behaviours via self-compassion.

Table 5

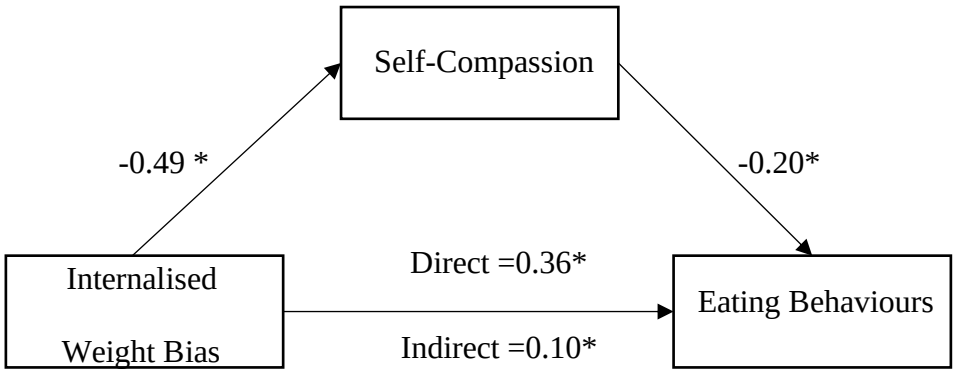
Mediational Effect of Internalised Weight Bias on Eating Behaviours via Self-Compassion (n=157)

Type of Effect	*B*	*SE*	95% CI		*p*
			LL	UL	
Direct Effect	2.27	0.51	1.26	3.29	< .001
Indirect Effect	0.62	0.29	0.10	1.24	< .001
Total Effect	2.90	0.46	2.00	3.80	< .001

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

Figure 2

The Relationship Between Internalised Weight Bias and Eating Behaviours Mediated by Self-Compassion



Note. Values in Figure 2 are standardised coefficients, * p < .05.

Post Hoc Analyses

Post hoc analyses were conducted to assess patterns of interest in the data that were not the primary hypotheses. An independent samples t-test was conducted to determine whether the participants who had experienced weight stigma had higher levels of internalised weight bias than those who had not. Participants who had experienced weight stigma had higher levels of internalised weight bias (M = 3.35, SD = 1.47) than participants who had not experienced weight stigma, M = 2.21, SD = 1.12; t (164) = -5.68, $p < .001$. A simple linear regression found that BMI predicted internalised weight bias, explaining 19% of the variance in internalised weight bias, $R^2 = 0.19$, F (1,158) = 37.6, $p < .001$.

Simple linear regressions were conducted to assess the influence of internalised weight bias on the three subscales of the TFEQ-R18V2: the Uncontrolled Eating subscale, Cognitive Restraint subscale, and Emotional Eating subscale. Internalised weight bias was a significant predictor of uncontrolled eating, $R^2 = 0.07$, F (1,156) = 11.57, p = .001, cognitive restraint, $R^2 = 0.04$, F (1,159) = 6.54, $p = .011$, and emotional eating, $R^2 = 0.19$, F (1,159) = 36.81, $p < .001$, explaining 7%, 4%, and 19% of the variance, respectively.

Discussion

Overview

The present study explored relationships between internalised weight bias, self-compassion, psychological well-being, and eating behaviours in a sample of weight-diverse adult Australian males. Previous research has consistently linked internalised weight bias with poor health outcomes (Austen & Griffiths, 2022; Burmeister et al., 2013; Fekete et al., 2021; O'Hara et al., 2016). Though some promising research regarding the efficacy of therapies targeting internalised weight bias exists (Lillis et al., 2009), the current understanding is mixed and in its infancy (Pearl et al., 2020). Hence, there has been interest in assessing factors that may underlie this relationship as a means of informing interventions

with limited research suggesting self-compassion may be one possible resource (Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Hardin, 2016). However, at the time of writing, no research had assessed these relationships in Australian males, who are a potentially high-risk, under-researched group (AIHW, 2020a; Himmelstein et al., 2018).

It was hypothesised that internalised weight bias would be associated with poor psychological well-being and disordered eating behaviours, and self-compassion would be associated with greater psychological well-being and healthier eating behaviours. Furthermore, it was hypothesised that self-compassion would mediate the relationships between internalised weight bias and psychological well-being, and between internalised weight bias and eating behaviours. The hypotheses were tested individually in a total of six separate analyses; all hypotheses were supported. The present study's findings, implications, methodological considerations, and potential areas for future research are discussed below.

Present Study's Findings

The Effect of Internalised Weight Bias on Psychological Well-being and Eating Behaviours

The hypothesis that internalised weight bias would be associated with poorer psychological well-being was supported. This relationship has been well-documented in the literature (Austen & Griffith, 2022; Fekete et al., 2021; Forbes & Donovan, 2019). Further research has shown how significantly detrimental internalised weight bias is to well-being, with internalised weight bias being associated with depression, anxiety, and suicidality (Brochu et al., 2021; Durso & Latner, 2012). It stands to reason that males judging and devaluing themselves based on an often uncontrollable physical attribute may result in reduced well-being.

As predicted, higher levels of internalised weight bias were associated with disordered eating behaviours. This result is in line with prior research that has found that

internalised weight bias is associated with a range of disordered eating behaviours (Burmeister et al., 2013; Durso et al., 2012; Fekete et al., 2021, Himmelstein et al., 2017; O'Hara et al., 2016). As one potential means of explaining this relationship, Marshall et al. (2019) found that drive for thinness partially explains the relationship between internalised weight bias and disordered eating behaviours. Males who attribute negative weight related stereotypes to themselves may try to pursue a thinner body. In order to achieve their thin ideal, they may avoid eating specific foods, which may result in binge eating episodes.

Post hoc analyses were conducted to understand the impact of internalised weight bias on specific eating behaviours. These analyses assessed the relationships between internalised weight bias and uncontrolled eating, cognitive restraint, and emotional eating. Internalised weight bias was a significant predictor of each subscale. Internalised weight bias explained a higher percentage of the variance in emotional eating than in uncontrolled eating and cognitive restraint. Previous research has supported the relationship between internalised weight bias and emotional eating (Fekete et al., 2021; Himmelstein et al., 2017). Emotional eating is hypothesised to be a learned response occurring in individuals with poor coping skills (van Strien et al., 2012). People who emotionally eat have been shown to lose the ability to recognise the difference between hunger cues and emotional agitation. Therefore, it is logical that males who attribute negative stereotypes to themselves based on their weight, often resulting in poor emotional states (as supported by the present study), may eat to cope with these poor emotional states.

The Effect of Self-Compassion on Psychological Well-being and Eating Behaviours

The hypothesis that self-compassion would be associated with greater psychological well-being was supported. This finding builds upon prior research that has found that self-compassion is associated with well-being and factors closely linked to well-being, such as life satisfaction (Forbes & Donovan, 2019; Hollis-Walker & Colosimo, 2011; Neff et al.,

2007; Zessin et al., 2015). It has been theorised that the relationship between self-compassion and well-being can be somewhat explained by rumination (Krieger et al., 2013). Theoretically, self-compassion may change how males react to negative events, allowing them to view the emotions associated with the event without overthinking. Lower levels of self-compassion have been associated with more ruminative thoughts, which in turn have been associated with higher levels of depression (Krieger et al., 2013). Findings from the present study suggest that extending kindness towards oneself increases males' psychological well-being.

As hypothesised, self-compassion was associated with healthier eating behaviours. This finding is consistent with prior research (Fekete et al., 2021; Kelley & Tasca, 2016; Webb & Forman, 2013). It is well understood that eating disorders are often triggered by repeated exposure to cultural norms about body ideals (Blodgett Salafia et al., 2015). Self-compassion may allow males to accept their imperfections rather than judging themselves for failing to obtain impossible beauty standards, which may reduce the extent to which they engage in disordered eating behaviours (Breines et al., 2014).

Self-Compassion Explaining the Relationship Between Internalised Weight Bias and Poor Outcomes

Psychological Wellbeing. As predicted, self-compassion mediated the relationship between internalised weight bias and psychological well-being. Self-compassion fully mediated the relationship between internalised weight bias and psychological well-being, indicating that the extent to which males are self-compassionate entirely explains the relationship between their level of internalised weight bias and their psychological well-being. This finding is consistent with prior research which has found that self-compassion mediates the relationships between internalised weight bias and depression and quality of life (Hilbert et al., 2015), and between experienced weight stigma and loneliness and life

satisfaction (Forbes & Donovan, 2019). Individuals with internalised weight bias have been found to have higher levels of loneliness and social withdrawal (Rotenberg et al., 2017). This seclusion may lead to them perceiving negative weight-related emotions as more isolating. Furthermore, individuals with high levels of internalised weight bias often over-identify with experienced weight stigma and attach value to judgements about their body and size (Wong et al., 2018). Such an approach may make it harder for them to be aware of their negative thoughts without over-identifying with them, reducing the extent to which they are self-compassionate. The present study suggests that males who apply negative weight-based stereotypes to themselves may direct less kindness towards themselves, resulting in poor mental well-being.

Eating Behaviours. The hypothesis that self-compassion would mediate the relationship between internalised weight bias and eating behaviours was supported. Self-compassion partially mediated the relationship between internalised weight bias and eating behaviours, indicating that there is a stand-alone relationship between males' levels of internalised weight bias and their eating behaviours. However, the extent to which males are self-compassionate partially explains this relationship. This outcome supports Webb and Hardin's (2016) finding that self-compassion mediates the relationship between internalised weight bias and intuitive eating. Intuitive eating refers to listening to one's own hunger and satiety cues, giving one permission to eat when hungry, and avoiding using food to cope with negative emotions (Tylka & Kroon Van Diest, 2013). The present study's findings suggest that males who devalue themselves based on their weight may extend less compassion towards themselves, resulting in disordered eating.

Implications

Theoretically, the present study adds to growing evidence showing that lower levels of internalised weight bias and higher levels of self-compassion are associated with better

health outcomes, assessing these relationships in a previously unstudied group, weight-diverse adult Australian males. A large percentage of research in the field of internalised weight bias only recruits people living with overweight and obesity; findings from the present study are consistent with findings in these samples (Burmeister et al., 2013; Durso & Latner, 2008; Forbes & Donovan, 2019; Pearl & Puhl, 2016). This finding reinforces the idea that while individuals with high BMIs are more likely to experience weight stigma (Dorsey et al., 2009; Himmelstein et al., 2018) and internalised weight bias (as found in the present study), physical weight is not the primary determining factor in internalised weight bias. In the present study, BMI only explained 19% of the variance in internalised weight bias; evidently factors outside weight influence internalised weight bias. The present study has implications for how the field of internalised weight bias is conceptualised and researched, suggesting that research in this area should include weight-diverse individuals.

Additionally, the present study highlights self-compassion as a potential explanation for the relationship between internalised weight bias and poor outcomes. This finding could have implications for clinical practice. For example, when working with an adult Australian male who raises weight, shape, or appearance concerns or makes comments suggestive of internalised weight bias, health professionals may wish to assess for internalised weight bias. For males with high levels of internalised weight bias, therapies that target self-compassion could offer one way of reducing potential poor health outcomes. One option could be Compassion Focused Therapy (CFT) which aims to heal highly self-critical individuals (Gilbert, 2009). For instance, Forbes and Donovan (2020) reported two case studies where a two-day CFT intervention, designed for individuals with high levels of internalised weight bias, improved self-compassion and several psychosocial outcomes for both participants. However, internalised weight bias did not significantly decrease post-intervention. This

outcome indicates how challenging it can be to modify internalised weight bias and that it may be necessary to target mediating factors in interventions.

Future research needs to continue investigating potential interventions to change societal attitudes concerning weight stigma. Given how challenging it is to reduce internalised weight bias and the present study's finding, consistent with previous research, that experiencing weight stigma is associated with higher levels of internalised weight bias (Pearl & Puhl, 2016; Pearl & Puhl, 2018), campaigns targeting Australians that seek to educate and reduce weight stigma could be implemented. Existing public health campaigns regarding weight can contribute to weight stigma due to their focus on body shape and size (Rukavina & Li, 2008; Walls et al., 2011) highlighting how important it is for these campaigns to be restructured.

Methodological Considerations

Strengths

To the researcher's knowledge, this is the first study to assess relationships between internalised weight bias, self-compassion, psychological well-being, and eating behaviours in weight-diverse adult Australian males. This study provides novel insight into these relationships. The present study also provides insight into the number of Australian males that have experienced weight stigma; 45% of participants had experienced weight stigma, a finding consistent with that found in a sample of adult Americans (40%; Himmelstein et al., 2017). This high percentage highlights how prevalent this social concern is.

A strength of the present study is the sample population. Psychological research frequently utilises purely undergraduate university students, often psychology students, as a result of convenience. This sampling approach is undeniably seen in internalised weight bias and self-compassion research, as noted in the thesis introduction previously (Neff et al., 2007; O'Hara et al., 2016; Walker & Colosimo, 2011; Webb & Forman, 2013). The sampling

methods in the present study sought males with a wider range of ages and education levels. As previously mentioned, the present study's sample is consistent with Australian census data regarding age, country of birth, and employment status (ABS, 2021). The greater variability in the sample increases the generalisability of the findings.

An additional strength of the study was the sample size generated. Males are well known to be challenging to recruit for health research (Ryan et al., 2019). A systematic review of 10 studies, containing 113, 988 participants, examining health research targeting males and females found that males only make up 20% of participants (Maher et al., 2014). Moreover, recruiting males for weight-related research is particularly challenging (Rounds & Harvey, 2019). Therefore, though the present study's sample size of 170 participants may not appear exceptionally large, it is within the context of a challenging recruitment field. The way in which participants responded to the present study's survey highlights the challenge in engaging males in weight-related research. Fifty-two males (23% of males who began the survey) completed fewer than three of the four primary measures and were excluded from data analysis. Compared to the 10% expected dropout rate for a voluntary psychological survey of the present study's length (Hoerger, 2010). Of the 170 participants who completed at least three primary measures, only 160 reported their BMI, 166 reported their internalised weight bias, and 161 reported their eating behaviours. This response pattern is in comparison to all 170 participants reporting their self-compassion and 169 reporting their psychological well-being. Seemingly the participants were more reluctant to report on areas related to weight than unrelated yet personal topics.

Limitations

The present study was cross-sectional; therefore, causal relationships cannot be determined. It is possible that the associations between the variables may work in the opposite order to that postulated. For example, individuals with poor psychological and

physical health may be vulnerable to internalised weight bias also having poor psychological and physical health may result in being less self-compassionate. The present study's cross-sectional nature poses a concern for mediation analysis as mediation requires a causal relationship between the predictor and the outcome variable (Tibshirani & Efron, 1994). It was theorised that males devaluing themselves based on their weight would result in reduced self-compassion, which would result in poor outcomes; however, this relationship could operate in any number of ways. For instance, directing less self-compassion towards oneself may result in internalised weight bias which may result in poor outcomes, or the strength of the relationship between internalised weight bias and poor outcomes may be moderated by self-compassion. Though the present study was based on previous literature that assumed the same direction of the relationship (Forbes & Donovan, 2019; Hilbert et al., 2015; Webb & Hardin, 2016), it is theoretically plausible for the relationships to operate differently. However, preliminary research, such as the present study, is required before investing the time and resources into longitudinal and/or experimental causal research.

The present study relies on a fallible data collection method, self-report data. As a result of the data being self-reported, it is subject to social desirability bias, participants may have answered questions in a socially favourable manor (Althubaiti, 2016). However, the anonymous survey may have allowed participants to provide more accurate responses. Participants may also have been susceptible to recall bias (Althubaiti, 2016). For example, they may have under or over-reported the extent to which they engage in disordered eating behaviours due to problems associated with retrospective reporting.

The average BMI reported in the present study was significantly lower than the average Australian males BMI. Forty-one percent of participants in the present study reported BMIs within the overweight and obese ranges, whereas 75% of Australian males have BMIs within these ranges (AIHW, 2020b). Research has consistently shown that people often under

report their weight (Burke & Carman, 2017; Christian et al., 2013). Further, King et al. (2018) found that individuals high in social desirability (overestimate desirable qualities and underestimate undesirable qualities) are more likely to under report their weight. Despite the likelihood that participants underreported their weight, the present study appears to be under-representative of people living with overweight and obesity. Futhermore, using BMI to categorise individual's weight status is problematic as BMI is impacted by age, gender, and ethnicity and cannot distinguish between body fat, muscle mass, and bone structure (Müller et al., 2016). However, BMI is widely used in research and clinical practice because of its convenience and relative accuracy (Gutin, 2017).

There was a discrepancy of note found within the data. Despite having sufficient statistical power, through bootstrapping analysis, the direct effect of internalised weight bias on psychological well-being was insignificant; however, through simple linear regression, internalised weight bias was a significant predictor of psychological well-being. A relationship is deemed significant if the p-value is less than .05 or if the confidence interval does not contain zero. However, many critique the definitive nature of p values (Pitak-Arnnop et al., 2010). This is a consequence of there being very little difference between a p-value of .05 and a p-value of .049. This miniscule difference in values drastically changes how a relationship is perceived. Small changes in sample size can tilt the p-value from significant to insignificant (Akobeng, 2008). In the present study, bootstrapping analysis found a p-value of .053, which is .004 larger than what would be deemed statistically significant. Current research calls into question whether this minor difference should lead to disregarding the potentially significant nature of this relationship. Moreover, recently there has been a push to consider confidence intervals rather than p-values (du Prel et al., 2009), as the width of the confidence interval indicates the size and direction of the effect. In the present study, bootstrapping analysis found a confidence interval from -3.34 to 0.02, which

only just contains zero. Though the confidence interval contains zero, indicating statistical insignificance, the confidence interval indicates that the relationship is most likely negative. Furthermore, though the study had sufficient power, 170 males is not a large sample size which may have contributed to the discrepancy in statistical significance.

Future Directions

Longitudinal and experimental research should be conducted to corroborate the strength and directions of the relationships explored in the present study. Experimental research on internalised weight bias poses ethical challenges; however, some research has manipulated weight stigma experimentally (Rodriguez et al., 2016). Longitudinal research may be more practical because of the ethical constraints and artificial nature of experimental research on internalised weight bias. Furthermore, qualitative research, giving voices to males who experience internalised weight bias, should be conducted to further understand the complexities of internalised weight bias and its physical and psychological health consequences.

Future research could consider moderation as an alternate approach to explaining the underlying mechanism between internalised weight bias and poor outcomes. Though Pullmer et al. (2021) found that self-compassion was not a moderator of the relationship between internalised weight bias and poor outcomes, this relationship has only been assessed once. Hence, it cannot be definitively assumed that self-compassion is not a moderator. These relationships are highly complex and it is not neccesarily given that there is one simple answer for why internalised weight bias is associated with poor health outcomes.

Literature documenting gender differences highlights the importance of conducting between-gender and within-gender analyses. In internalised weight bias research, gender is often included as a control rather than a variable to compare (Puhl et al., 2008; Puhl & Brownell, 2006). Reference is often made to gender in study methodology but excluded from

the reported results, thus, preventing increased knowledge regarding the effect of gender on internalised weight bias (Rosenthal et al., 2015; Tsenkova et al., 2010). Though the present study provides much-needed information on males' experiences, future research should include individuals of diverse genders, and between-gender analyses should be conducted.

Future research should also explore the impact of sexuality and culture on internalised weight bias and self-compassion. Limited previous research has found that gay and bisexual males experience higher levels of internalised weight bias than heterosexual males (Austen et al., 2020). This finding shows that sexual minority males are a highly relevant group to study in this field. The present study comprised a higher percentage of sexual minority males than reported levels in the general Australian male population (Wilson et al., 2020); however, it was not possible to assess the impact of sexuality on internalised weight bias as the number of sexual minority males would not allow sufficient statistical power for analysis. Research has shown that levels of internalised weight bias vary by ethnicity, with 'Caucasian' participants reporting higher levels of internalised weight bias than 'African American' participants (Himmelstein et al., 2017). Despite ethnicity and culture intersecting, they are different concepts. Research assessing cultural differences in internalised weight bias is absent. Future research should explore the possible influence of cultural differences. Culture is a highly complex concept, and as such, could not be explored in depth within the current thesis.

Conclusion

The present study was the first to provide insight into relationships between internalised weight bias, self-compassion, psychological well-being, and eating behaviours in weight-diverse adult Australian males. Results from the present study suggest that lower levels of internalised weight bias and greater self-compassion positively influence Australian males' well-being and eating behaviours. Results also suggest that males devaluing

themselves based on their weight leads to them directing less compassion towards themselves and, in turn, leads to poor psychological well-being and disordered eating behaviours. The relationships explored are highly complex, and it is recommended that future longitudinal research be conducted to confirm the strengths and directions of relationships. Nevertheless, the present study's findings suggest that for Australian males with high levels of internalised weight bias, psychological interventions that seek to enhance self-compassion may be one way of reducing the poor outcomes associated with this bias.

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Appendix A

Survey Questions

Part 1: Demographics

1. Are you a first year University of Adelaide School of Psychology student?
    - Yes
    - No

Skip To: Q4 If "Are you a first year University of Adelaide School of Psychology student?" = "No"

2. Please enter your 5-digit Research Participation System ID (open text box)
3. Please enter your student ID number (open text box)
4. What is your age in years? (open text box)
5. What is your postcode? (open text box)
6. What is your current relationship status?
    - Single
    - In a relationship
    - Married
    - Separated/Divorced
    - Widowed
7. How do you describe your sexual orientation?
    - Heterosexual
    - Gay
    - Bi+ (bisexual, pansexual)
    - I use a different term (please specify; open text box)
    - Don't know
    - Prefer not to answer

8. What is your highest completed level of education?
    - Year 9 or below
    - Year 10 or 11
    - Year 12
    - Vocational/Trade Certificate
    - Undergraduate Bachelor's Degree
    - Post-graduate Degree
9. Which of the following best describes your main current employment status?
    - Full-time (35 hours or more a week)
    - Part-time (less than 35 hours a week)
    - Unemployed
    - Student
    - Retired
    - Other (please specify; open text box)
10. In what country were you born? (open text box)
11. Which of the following best represents your ethnic heritage?
    - African
    - American
    - Asian
    - Australian
    - European
    - Indigenous Australian
    - Maori or Pacific Islander
    - Middle Eastern
    - Other (please specify; open text box)

12. How tall are you (in centimetres)? (open text box)

13. How much do you weigh (in kilograms)? (open text box)

Part 2: Self-Compassion

Please read each statement carefully and indicate how often you behave in the stated manner, using the following scale (1. Almost never – 5. Almost always).

14. When I fail at something important to me I become consumed by feelings of inadequacy.
15. I try to be understanding and patient towards those aspects of my personality I don't like.
16. When something painful happens, I try to take a balanced view of the situation.
17. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
18. I try to see my failings as part of the human condition.
19. When I'm going through a very hard time, I give myself the caring and tenderness I need.
20. When something upsets me I try to keep my emotions in balance.
21. When I fail at something that's important to me, I tend to feel alone in my failure
22. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
23. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
24. I'm disapproving and judgmental about my own flaws and inadequacies.
25. I'm intolerant and impatient towards those aspects of my personality I don't like.

Part 3: Weight Stigma and Internalised Weight Bias

Read each statement carefully and indicate the degree to which you agree or disagree with the statements using the following scale (1. Strongly disagree – 7. Strongly agree)

26. Because of my weight, I feel that I am just as competent as anyone.
27. I am less attractive than most other people because of my weight.

28. I feel anxious about my weight because of what people might think of me.

29. I wish I could drastically change my weight.

30. Whenever I think a lot about my weight, I feel depressed.

31. I hate myself for my weight.

32. My weight is a major way that I judge my value as a person.

33. I don't feel that I deserve to have a really fulfilling social life, because of my weight.

34. I am OK being the weight that I am.

35. Because of my weight, I don't feel like my true self.

36. Because of my weight, I don't understand how anyone attractive would want to date me.

Read each statement carefully and indicate the degree to which you agree or disagree with the statements

37. I have been treated unfairly because of my weight.

- Yes
- No

38. I have been teased or bullied because of my weight.

- Yes
- No

39. I have been discriminated against because of my weight.

- Yes
- No

Part 4: Well-Being

This section contains statements about psychological well-being. Please respond, regarding how you felt in the last two weeks.

Read each statement carefully and answer by ticking the alternative that best applies to you using the following scale (0. At no time – 5. All of the time)

40. I have felt cheerful in good spirits
41. I have felt calm and relaxed.
42. I have felt active and vigorous.
43. I woke up feeling fresh and rested
44. My daily life has been filled with things that interest me.

Part 5: Eating Behaviours

This section contains statements and questions about eating habits and feelings of hunger. Read each statement carefully and answer by ticking the alternative that best applies to you. Using the following scale (1. Definitely true – 4. Definitely false) for questions 45 to 60 and using the scales provided for questions 61 and 62.

45. I deliberately take small helpings to control my weight
46. I begin eating when I feel anxious
47. Sometimes when I start eating, I just can't seem to stop
48. When I feel sad, I often eat too much
49. There are some foods I don't eat, because they make me fat
50. Being with someone who is eating, often makes me also want to eat
51. When I feel tense or stressed, I often feel I need to eat
52. I often feel so hungry that my stomach feels like a bottomless pit
53. I'm always so hungry that it's hard for me to stop eating before finishing all of the food on my plate
54. When I feel lonely, I console myself by eating

55. I consciously restrict how much I eat during meals to avoid gaining weight
56. When I smell appetizing food or see a delicious dish, I find it very difficult not to eat – even if I've just finished a meal
57. I am always sufficiently hungry to eat at any time
58. If I feel nervous, I try to calm myself down by eating
59. When I see something that looks delicious, it often makes me feel so hungry that I have to eat right away
60. When I feel depressed, I want to eat
61. Do you go on eating binges even though you're not hungry?
    - 1. Never
    - 2. Rarely
    - 3. Sometimes
    - 4. At least once a week
62. How often do you feel hungry?
    - 1. Only at mealtimes
    - 2. Sometimes between meals
    - 3. Often between meals
    - 4. Almost always
63. If you would like to receive a summary of the research findings, please provide an email address here (open text box)

Appendix B

Participant Information Sheet and Consent

Self-Compassion, Weight Stigma, Psychological Wellbeing and Eating Behaviours in Australian Males

SCHOOL OF PSYCHOLOGY RESEARCH ETHICS SUB-COMMITTEE

APPROVAL NUMBER: 22/11

PRINCIPAL INVESTIGATOR: XXXX

STUDENT RESEARCHER: XXXX

STUDENT'S DEGREE: Honours Degree of Bachelor of Psychology (Advanced)

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

The aim of this project is to explore the relationships between self-compassion, weight stigma, psychological wellbeing, and eating behaviours in males.

Who is undertaking the project?

This project is being conducted by XXXX. This research will form the basis for the degree of Honours Degree of Bachelor of Psychology (Advanced) at the University of Adelaide under the supervision of XXXX.

Why am I being invited to participate?

You are being invited as you are an Australian male over the age of 18 years who is fluent in English.

What am I being invited to do?

You are being invited to complete an online survey about your demographic (background) information self-compassion, weight stigma, psychological wellbeing, and eating behaviours. As this is an online survey, you are able to complete it on any device from any location with

internet access.

How much time will my involvement in the project take?

The survey is anticipated to take approximately 30 minutes of your time.

Are there any risks associated with participating in this project?

It is possible that you may experience emotional distress answering questions on self-compassion, weight stigma, psychological wellbeing and eating behaviours. However, you have the option to not answer specific questions. Should you require support you can contact Lifeline on 13 11 14, Beyond Blue on 1300 224 636, or MensLine Australia on 1300 78 99 78.

What are the potential benefits of the research project?

Although answering questions about self-compassion, weight stigma, psychological wellbeing, and eating behaviours may cause distress to participants who may have experienced difficulties in these areas, understanding the relationship between these factors is important. The findings of this study may provide information for health educators and professionals to better understand the relationship between these factors, which may be used to improve information and services available to males.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time before submitting your survey responses.

What will happen to my information?

Confidentiality and Privacy

Participant names will not be used in this research. Participants will not be identified in any publication or presentation resulting from the research.

Storage

All information and data for this project will be stored securely. All electronic data collected

will be stored according to the University of Adelaide's policy, on a secure server with password protection. This data will be stored for a period of five years post-publication and will only be accessible by the researchers.

Publishing

You will not be identified in any publications; only summary data will be published. Findings from the research may be published as a book, thesis, journal article, news article, report, on a website and in conference presentations.

Sharing

Data will be made available for use in future studies as indicated on your consent form. Only your de-identified information will be used in the future. Your email address will be stored separately from your responses to the questionnaire. This de-identified data may be shared with other researchers according to your consent.

Should you wish to receive a copy of the research findings you may provide an email address at the end of the survey. Your email address will be stored separately from your responses to the questionnaire. Your information will only be used as described in this Participant Information Sheet and it will only be disclosed according to the consent provided, except as required by law.

Who do I contact if I have questions about the project?

Should you have any further questions about the project, please contact XXXX (email: XXXX) or XXXX (phone: XXXX or email: XXXX)

What if I have a complaint or any concerns?

The study has been approved by the School of Psychology Research Ethics Sub-Committee at the University of Adelaide (22/11). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (updated 2018). If you have questions or problems associated with the practical aspects of your

participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Convenor, Human Research Ethics Sub-Committee (School of Psychology) on: Phone: +61 8 8313 4936 Email: paul.delfabbro@adelaide.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If you experience distress and require assistance, you are encouraged to contact XXXX using the email listed above, or to contact: • Lifeline Australia on: 13 11 14 • Beyond Blue on: 1300 22 4636 • MensLine Australia on: 1300 78 99 78

If I want to participate, what do I do?

If you want to participate, please complete the consent questions and then continue to the online questionnaire.

Yours sincerely, XXXX and XXXX

Support Resources

To talk to someone right away:

• Lifeline Available 24/7: 13 11 14

• Beyond Blue Available 24/7: 1300 224 636

• MensLine Australia Available 24/7: 1300 78 99 78

PLEASE CLICK TO CONFIRM: I have read the above information

Eligibility to participate

I confirm that I am a male/man:

- Yes, I am a male/man
- No, I am not a male/man

Skip To: Q64 If " I confirm that I am a male/man" = "No, I am not a male/man"

Consent

I have read and understood the above information and provide consent for my survey responses to be included in this research:

- Yes - I provide my consent
- No - I do not wish to continue

Skip To: Q64 If "I have read and understood the above information and provide consent for my survey responses to be included in this research" = "No - I do not wish to continue"

2. I hereby provide 'extended' consent for the use of my data in future research conducted by the same or other researchers, for projects that are an extension of, or closely related to, the original project:

- Yes
- No

Please note that you can withdraw from this research at any time until you submit your survey.

Q64 Thank you for your time and interest in this research. Unfortunately, you answered no to the previous question and therefore are not eligible to participate in this study.

If you have any questions, please contact the researchers:

Principal researcher:

• XXXX – XXXX

Student researcher:

• XXXX - XXXX

Appendix C

Flyer

THE UNIVERSITY of ADELAIDE

School of Psychology

PARTICIPANTS INVITED

We are seeking participants to take part in a study of

Self-Compassion, Weight Stigma, Psychological Well-being, and Eating Behaviours in Australian Males

Your participation would involve completing an online survey (approximately 30 minutes) about your background, self-compassion, weight stigma, psychological well-being, and eating behaviours.

To be eligible you must be a male aged 18 and above, fluent in English

To participate in the survey please access via the QR code or the following link:

https://adelaideunisop.syd1.qualtrics.com/jfe/form/SV_0fHFuY69H1ScXWe

For more information about this research study, or to volunteer, please contact:

XXXX or XXXX (School of Psychology) at:

XXXX

This study has been reviewed and approved by the School of Psychology Research Ethics Sub-Committee at the University of Adelaide (22/11).

Appendix D

Social Media Posts

We are seeking males aged 18 and above to take part in a study of

Self-Compassion, Weight Stigma, Psychological Well-being, and Eating Behaviours in Australian Males

The limited research examining self-compassion and weight stigma has mainly been conducted with females, meaning little is known about these things in males. The research aims to examine relationships between self-compassion, weight stigma, psychological well-being, and eating behaviours in males.

https://adelaideunisop.syd1.qualtrics.com/jfe/form/SV_0fHFuY69H1ScXWe

For more information about this research study please contact:

XXXX or XXXX (School of Psychology) at:

XXXX

XXXX

This study has been approved by the School of Psychology Research Ethics Sub-Committee, The University of Adelaide, 22/11.


AUSTRALIAN MALES WEIGHT STIGMA SURVEY
We are seeking males aged 18 and above
to participate in a study of
'weight-based discrimination and self-kindness'
Click the link in the caption or scan
the QR code to learn more.
Freemasons
Centre for Male
Health & Wellbeing
THE UNIVERSITY
of ADELAIDE