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Weight stigma questionnaire : The development and validation of a weight stigma measure for use in adults

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Weight Stigma Questionnaire: The Development and Validation of a Weight Stigma Measure for use in Adults

Submitted by

Stephanie Papadopoulos

A thesis submitted in total fulfillment of the requirements for the degree of Doctor of Philosophy / Master of Psychology (Clinical)

Discipline of Psychology

School of Behavioural and Health Sciences

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Declaration

This thesis contains no material that has been extracted in whole or in part from a thesis that I have submitted towards the award of any other degree or diploma in any other tertiary institution. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

The ethical principles and procedures specified by the Australian Catholic University's policy document on Human Research and Ethics have been adhered to in the preparation of this report.

The ethics approval letter that covers the studies requiring ethics approval from the Human Research Ethics Committee at the Australian Catholic University is included in Appendix A.

Signed

Date 20.12.2021

Acknowledgments

One of the most enjoyable aspects of preparing this acknowledgment was in reflecting on the journey of this professional and personal accomplishment up until its completion, as well as the important people who crossed this finish line with me.

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Abstract

Weight stigma is pervasive and is associated with numerous negative consequences for biopsychosocial health and well-being. To study weight stigma, researchers have utilised the available measures intended to assess this phenomenon, and the number of weight stigma measures available is growing. The main objective of this research project was to assess the psychometric evidence of existing weight stigma measures for adults and use the findings of this research, along with a social psychology understanding of stigma, to inform the development of a new measure. I sought to achieve this across four studies. The first study was a systematic literature review and evaluation of the psychometric properties of every existing measure of weight stigma in adults. This review found that structural validity, internal consistency, and hypothesis testing were the most frequently assessed and reported psychometric properties, but evidence for content validity, cross-cultural validity, reliability, measurement error, criterion validity, and responsiveness were lacking in assessment/reporting. Additionally, the commonly discussed types of weight stigma (experienced, perceived, internalised) have not been carefully considered or represented in item development. In response to the findings of the review, the remaining studies report on the development and validation of a new weight stigma measure. Study 2 reports the item development and content validity assessment across four phases: (1) item development informed by theoretical and empirical literature, (2) item review by internal researchers assessing item relevance and comprehensiveness, (3) a Delphi Study with research experts assessing item relevance and comprehensiveness, and (4) a Cognitive Interview study with individuals from the community assessing item relevance, comprehensibility, and comprehensiveness. Experts and community members reviewed the scale in two rounds. Overall, consensus was achieved by all experts and community members, favouring inclusion of most of the items, after modification of item wording across rounds. The final number of

items was 101. The next two studies involved conduct of psychometric assessment on the 101 items. Study 3 employed exploratory factor analysis (EFA) to reduce this item pool and identify the factor structure underlying the items. In addition to this, the scale's internal consistency, reliability, and concurrent and known-groups validity was assessed. Participants (n = 999) included a sample of adults (aged 18-65) across the weight spectrum. The EFA identified six subscales in the final Weight Stigma Questionnaire (WeSQ): Perceived, Internalised, Functional self-stigma, Experienced, Healthcare, and Intimate Relationships subscales. The WeSQ and its subscales demonstrated excellent internal consistency (all α's >.90) and test-retest reliability (all ICC's > .90). Furthermore, the WeSQ and its subscales were (a) positively related to existing weight stigma measures (concurrent; all r's > .56), and (b) related to weight, age, and gender in the expected direction. Finally, the goal of the fourth study was to confirm the factor structure of the scale and to gather evidence of convergent validity using a sample of adults (n = 614). The 6F structure was supported by confirmatory factor analysis (CFA), meeting criteria on all relevant fit indices (CFI = .994, RMSEA = .043; SRMR = .056). Convergent validity was demonstrated via correlations with maladaptive eating behaviour, intuitive eating responses, body appreciation, quality-of-life, and sports and physical anxiety in the expected direction (all .09 < /r/ < .80). The final WeSQ is the first weight stigma measure to demonstrate satisfactory evidence of all psychometric properties. The WeSQ is suitable for use in clinical and research studies that aim to (1) explore the broad range of stigma experiences related to weight (of any weight) both across subscales or in specific subscales (using individual subscales only), (2) evaluate the impact, and/or possible risk factors associated with weight stigma, and (3) determine how the stigma types differentially relate to and predict biopsychosocial consequences.

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CHAPTER 1: Introduction and Thesis Outline

"I think that many people have an automatic disgust reaction to people who are severely overweight, like they are diseased or disabled, and they should know that people who look different on the outside are not so different on the inside".

Quote from a victim of weight stigma, 39-year-old female (Puhl et al., 2008, p. 353)

1.1 General Overview

Weight stigma refers to the stereotypical misconceptions, prejudicial attitudes, and discriminatory behaviours encountered by individuals based on their weight. The stigmatization of people on the basis of weight has been recognised as a global health problem (Brewis et al., 2018). The incidence of perceived weight discrimination (Andreyeva et al., 2008) and negative attitudes toward weight (Charlesworth & Banaji, 2019) has shown to be worsening overtime, rather than improving. The biopsychosocial correlates of weight stigma have been documented (Emmer et al., 2020; Papadopoulos & Brennan, 2015), with the impact of weight stigma both immediate and potentially long-term (Tomiyama et al., 2018). Weight stigma has been described as "the social devaluation and denigration of people perceived to carry excess weight and leads to prejudice (i.e., attitudes), negative stereotyping (i.e., cognitive beliefs) and discrimination (i.e., mistreatment) towards those people" (Tomiyama et al., 2018, p. 8). From the perspective of the victim, weight stigma can either be experienced (i.e., actual experiences), perceived (i.e., sensing stigma from others), internalised (i.e., self-stigma), or anticipated (i.e., expectation that stigma will occur).

Whilst research into the nature, extent, and impact of weight stigma is being increasingly documented, research into the psychometric properties of measures of weight stigma is limited (Papadopoulos, de la Piedad Garcia, et al., 2021). Matching social psychology conceptualisations of 'stigma' (Corrigan & Watson, 2002; Goffman, 1963), many

authors in the weight stigma field also describe that stigma domains (i.e., stereotypes, prejudice, discrimination) and types (i.e., experienced, perceived, internalised) exist. However, current measures of weight stigma do not cover all of these domains and types (e.g., Nutter et al., 2021; Tomiyama et al., 2018). Thus, existing weight stigma measures may not be comprehensively capturing all essential aspects of weight stigma.

In addition, the items developed in current measures do not accurately reflect the types proposed by Goffman (1963) and Corrigan and Watson (2002). For example, internalized weight stigma measures sometimes include items that are more reflective of the perceived type (Lillis et al., 2010). Thus, scales are measuring other types of stigma that they do not intend to. This is problematic as it indicates that available measures are not adequately capturing the weight-stigma construct, and this is likely limiting current knowledge about weight-stigma and its impacts.

Many scholars recognise the need for improved conceptualisation and measurement of weight stigma (DePierre & Puhl, 2012; Lacroix et al., 2017; Meadows & Higgs, 2019; Papadopoulos, de la Piedad Garcia, et al., 2021; Ruggs et al., 2010; Stewart & Ogden, 2021). Specifically, it has been suggested that a clearer understanding of the conceptual nature of *experienced* and *perceived weight stigma* is needed to determine their distinction as they may be overlapping constructs (Papadopoulos & Brennan, 2015). While it has been noted that there is a need for improved measurement of *perceived weight stigma* because of the lack of measures available to accurately reflect this type (DePierre & Puhl, 2012), we view it as important to better measure both experienced and perceived weight stigma due to the conceptual overlap noted above. Furthermore, improved measurement of *internalised weight stigma* is also required given its conceptual overlap with related constructs of body image and self-esteem (Meadows & Higgs, 2020). An advance in weight stigma measurement is thus needed overall regarding the types, and improved measurement has the potential to facilitate

a better understanding of weight stigma regarding risk factors, prevalence rates, and biopsychosocial correlates. It will also help to guide anti-bullying and stigma reduction interventions that aim to improve the health and well-being among victims of weight stigma. An improved weight stigma measure is likely to be a starting point for new research in the "obesity" field.

1.2 Summary of the Studies in the Current Research Project

The overall objective of this thesis was to develop a psychometrically sound weight stigma measurement instrument that was based on a clearly outlined theoretical conceptualisation of the construct. All the studies in this thesis were conducted following the Consensus-based Standards for the Selection of health status Measurement Instrument (COSMIN) guidelines (Prinsen et al., 2018) which outline quality criteria for developing and evaluating measures.

The thesis consists of six chapters. This thesis begins with a brief introductory chapter (Chapter 1) followed by a brief overview of weight stigma summarising previous research findings relevant to this thesis (Chapter 2). This includes an overview of the current literature regarding the nature, extent, and impact of weight stigma. The conceptualisation and measurement of weight stigma is considered with reference to traditional social stigma literature that has the potential to guide the development of our new measure. Applying a stigma framework will (1) offer some conceptual organisation to the domains/types that make up the construct, (2) point to the areas where measures may be lacking in capturing all aspects of the construct, and (3) be used to create new items. The purpose of this introduction was to support the rationale for developing a new measure. Four studies are then presented (Chapter 3=systematic review, Chapter 4=content validity study, Chapter 5=factor analysis of new measure in two parts) and are each preceded by a brief preamble that reminds the reader of the relevant literature informing the study.

Chapter 3 presents the first study of the thesis, a systematic literature review and evaluation of existing weight stigma measures for adults. This review was published in *Obesity Reviews* in June 2021. The review responded to the concerns regarding the psychometric properties of weight stigma measures, as outlined by various researchers (DePierre & Puhl, 2012; Lacroix et al., 2017; Ruggs et al., 2010). In particular, DePierre and Puhl (2012) have noted that the majority of existing measures report evidence for internal consistency reliability only. Our review was thus designed to (1) conduct a comprehensive systematic search of the available literature to identify all articles presenting development and validation of weight stigma measures in adults, and (2) synthesise and evaluate the available evidence of psychometric properties in such measures following the COSMIN guidelines (Prinsen et al., 2018).

The first study identified 18 self-report measures of weight stigma designed for use in adults. There were three main findings from the review. First, the review found that structural validity, internal consistency, and construct validity were commonly reported, however reporting of other psychometric properties was lacking (e.g., cross-cultural validity, responsiveness). Second, information for content validity was not comprehensively assessed and/or reported, thus it is unknown whether current measures are accurately capturing the weight stigma construct. The finding that content validity assessment is lacking is noteworthy because this property must be established for other psychometric properties to be considered meaningful (Prinsen et al., 2018). Third, no relevant stigma model or theoretical framework was used to guide the development of any measure.

Given the findings of the review, we identified the need to develop a measure that is grounded in a theoretical model of stigma, and comprehensively represent the theorised stigma domains and types, as well as the sources and settings that weight stigma is known to occur. The process of development and validation is presented across Chapter 4 and 5. In

Chapter 4, the primary objective was to develop new weight stigma items and conduct a content validity assessment on the new items. This was carried out following four consecutive phases:

1. Development of items that would comprehensively reflect all aspects of weight stigma, as discussed in Chapter 4
2. Internal item review: item evaluation by experts in our internal research team
3. Delphi consensus study: item evaluation by experts in relevant fields, and
4. Cognitive Interview study: item evaluation by adults across the weight spectrum from the community

Given that recent literature has begun to acknowledge the different ways that weight stigma manifests itself (domains: stereotypes, prejudice, discrimination), as well as the differential impact that weight stigma types (experienced, perceived, internalised) have on health outcomes, another objective of this study was:

1. To advance knowledge of the weight stigma concept. This was achieved by asking experts to rate items according to their domain/type to identify:
    a. whether each has been captured in our items, and
    b. whether it is possible and meaningful to capture each stigma domain/type

The findings of Study 2 (Chapter 4) indicated that items were mostly considered relevant, comprehensible, and comprehensive both by experts and individuals from the community. However, the findings also showed that there was little agreement among researchers in distinguishing the domains (i.e., stereotypes, prejudice, discrimination) and types (i.e., experienced, perceived, internalised) of weight stigma. Whilst it was difficult to distinguish the domains, experts took the view that capturing them in our items was needed. This ensured that the measure was comprehensively developed and well-rounded as it considered all essential aspects of the weight stigma construct. Experts also noted that the

distinction between the stigma types, especially experienced and perceived, were challenging. However, we considered that these were important to distinguish, especially with research suggesting that the stigma types may differentially relate to health outcomes (Pearl et al., 2015). The final item pool (n = 101) was moved forward to the next phase. For this phase, across two studies (both presented in Chapter 5, in a manuscript currently under review), we sought to obtain evidence of the (a) structural, concurrent, convergent, and known-groups validity, (b) internal consistency, (c) reliability and (d) measurement error for the new measure.

In the third study of Chapter 5, the final item pool was administered to adults (aged 18-65) from the community (n = 999) with the objective to:

1. Assess the underlying factor structure of the item pool through exploratory factor analysis to select the final items.
2. Conduct additional psychometric testing on the measure including internal consistency, test-retest reliability, measurement error, concurrent and known-groups validity.

The final Weight Stigma Questionnaire (WeSQ) consisted of six subscales: Perceived, Internalised, Functional Self-Stigma, Experienced, Healthcare, Intimate Relationships. The total WeSQ and its subscales demonstrated excellent evidence for internal consistency (all α > .90), consistency overtime (intra-class correlation coefficients > .90) and construct validity (concurrent, known groups). Regarding concurrent validity, the WeSQ total and its subscales were significantly and positively related to current measures of weight stigma (all r > .56). Demonstrating known-groups validity, scores on each of the subscales were significantly related to higher weight. This was also the case for age except for Experienced and Intimate Relationships subscales. Mean scores were higher for females compared to males, but significant differences were only found for the total WeSQ, and the following subscales:

Internalised, Stigma in Healthcare, and Intimate Relationships. Mean scores were found to be higher for those who were not in a relationship across all subscales, and significant differences were found for all except the Internalised subscale. Finally, weight stigma levels progressively got worse from ‘normal weight’ to ‘obese’ after controlling for BMI. All of these differences were significant. However, the results for the ‘underweight’ group were mixed. When comparing the ‘underweight’ group to the ‘normal weight’ group, weight stigma levels were higher for the ‘underweight’ group on the PWS, IWS, EWS, SiH, and IR subscales and the total scale, but lower for the FSD subscale. Thus, for the FSD subscale only, weight stigma levels progressively got worse from ‘underweight’ to ‘obese’ after controlling for BMI. Of note, the only significant group difference that was found between the ‘underweight’ and ‘normal weight’ group was for the SiH subscale. Furthermore, no significant difference was found between the ‘underweight’ and ‘overweight’ groups on the SiH.

The fourth study of Chapter 5 aimed to confirm the factor structure obtained in the third study (i.e., structural validity), and to garner additional convergent validity evidence for the final measure. Using a community sample of adults (n = 614), all the items making up the 6F structure were an excellent fit for the data on all relevant fit indices (CFI = .994, RMSEA = .043; SRMR = .056). Convergent validity analyses revealed that the WeSQ total and its subscales were significantly and (a) positively related to weight, maladaptive eating behaviour, and sports and physical anxiety, and (b) negatively related to intuitive eating responses, body appreciation, quality-of-life (all $.09 < |r| < .80$).

The final chapter of the thesis (Chapter 6) provides a general discussion of the findings of the thesis. In this chapter I also discuss the strengths, limitations, and conclusions of the overall thesis, as well as the implications and future research directions.

1.3 A Note on Weight Terminology

Consistent with weight sensitivity movements and the language preferences regarding weight (Meadows & Daníelsdóttir, 2016), the word “obesity” was used sporadically throughout this thesis and placed it in quotation marks. This was to reflect the contentious nature of the word, as it has been considered a chronic disease within the medical setting and fuels stigma (Gailey, 2014). We use person first language, as required by the American Psychological Association’s Style Manual (American Psychological Association, 2019) in all reporting (e.g., individual with “obesity” or “higher weight”).

CHAPTER 2: Review of Weight stigma and Issues in Current Measurement

Approximately 67% of Australian adults have "overweight"/"obesity", and the prevalence of "overweight"/"obesity" in Australia has increased from 57% in 1995 to 67% in 2017-18 (Australian Institute of Health and Welfare, 2021). The worldwide prevalence of "overweight"/"obesity" is also increasing at a similar rate (World Health Organisation, 2021). Individuals with higher weight are at increased risk of negative biological (e.g., systemic inflammation) psychological (e.g., depressive symptomology) and social (e.g., social isolation) outcomes (Rosenbaum & White, 2016). The social outcomes are derived from weight stigma, which briefly refers to the differential treatment of individuals on the basis of weight.

Interestingly, the noted increased prevalence of "overweight"/"obesity" has been accompanied by a corresponding 66% increase of perceived weight discrimination (Andreyeva et al., 2008). The literature consistently reports high endorsement of internalised weight stigma, including in Australia and abroad (Pearl et al., 2021), and a significant increase in 'anti-fat' attitudes from 2001 to 2013 (Tomiyama et al., 2015) which is consistent across countries (Canada, US, Iceland, Australia; Puhl et al., 2015). Weight stigma occurs in all aspects of life (e.g., healthcare and education settings; Andreyeva et al., 2008; Carr & Friedman, 2005), and from multiple sources (e.g., family, friends, spouses; Puhl & Heuer, 2009). There is increasing evidence to suggest that encountering weight stigma contributes to poor biopsychosocial outcomes over and above the correlates of excess weight alone (Hunger & Major, 2015; Papadopoulos & Brennan, 2015). A recent meta-analysis demonstrated a moderate effect of association ($r = -0.35$) between weight stigma and various mental health outcomes (Emmer et al., 2020). This association remained significant while controlling for BMI. This suggests that weight stigma itself may have a detrimental impact on health outcomes.

2.1 Weight Stigma

Weight stigma comprises stereotypes (e.g., negative labels such as lazy), prejudice (e.g., negative attitudes: "obese people are disgusting"), and/or discrimination (e.g., being singled out; Puhl & Heuer, 2009) directed toward an individual based on weight/body size. From the perspective of the victim, weight stigma can be experienced (e.g., being told one is lacking willpower because of their weight), perceived (e.g., feeling judgment from others in a room regarding one's weight), and/or internalised (e.g., directing shame inwards because of one's weight).

Weight stigma is rarely challenged and some have argued that it is considered the last socially acceptable form of discrimination (Vartanian et al., 2014). It is likely that the widespread social acceptance of weight stigma is related to the fact that individuals with "overweight"/ "obesity" are blamed for their excess weight. Personal factors such as physical inactivity or eating unhealthily are suggested to be the cause of higher weight (Centers for Disease Control and Prevention [CDC], 2021). This is despite the fact that genetic, metabolic, and hormonal factors may be predominant determinants for weight-related issues over lifestyle and eating habits (Qualls-Creekmore et al., 2020). In addition, the acceptance of stigma is based on the idea that shaming individuals with higher weight will incentivise weight loss (Hunger, Smith, et al., 2020). This is in spite of the research showing this is not the case, as weight stigma is associated with poorer health behaviours such as lower exercise motivation and maladaptive eating (Puhl & Heuer, 2009; Puhl et al., 2020; Vartanian & Porter, 2016). Finally, the acceptance of weight stigma is highly related to the promotion of thin ideals in the media which is typically associated with attractiveness, being successful, and socially desirable (Hesse-Biber et al., 2006).

Perhaps due to the wide acceptance of weight stigma and the pervasive ideals around thinness in society, research has shown that weight stigma is experienced across the weight

spectrum as opposed to occurring solely among individuals with overweight or obesity (Puhl et al., 2013; Vartanian & Shaprow, 2008). For example, in one study, 42% of U.S. adults across a range of body sizes reported experiencing weight stigma in their day-to-day life (Lee et al., 2021), and 51% of Australian students across all body sizes reported experiencing weight stigma in another study (Puhl et al., 2015). Note that these studies did not breakdown the experience of weight stigma by weight category. This breakdown was however presented in another study by Puhl and Luedicke (2012) who found that 29% of adolescents reported weight victimization, of which a substantial proportion (65%) had a body mass index in the normal weight range.

2.2 Weight stigma and its Biopsychosocial Impacts

There is substantial evidence of the cross-sectional and longitudinal biopsychosocial correlates of weight stigma, even after statistically controlling for weight. Some of these correlates include higher weight, high blood pressure, depression, unhealthy eating, lower self-esteem, and lower physical activity (Emmer et al., 2020; Ma et al., 2021; Papadopoulos & Brennan, 2015). This suggests that observed relationships between weight and adverse health outcomes may be at least in part attributable to the experience of weight stigma itself, rather than weight alone. The evidence for this is described below.

2.2.1 Cross-Sectional Research

Biomedical correlates of weight stigma include increased perceived stress and blood pressure (Major et al., 2012), higher levels of C-Reactive Protein (Sutin et al., 2014), and augmented cortisol reactivity (Jung et al., 2019). Even after controlling for BMI, weight stigma is related to increased triglycerides (Pearl et al., 2017), higher glycaemic control levels (HbA(1c); Tsenkova et al., 2011), higher mortality risk (Sutin et al., 2015), hypercortisolism, and oxidative stress (Tomiyama et al., 2014).

Psychological correlates of weight stigma include poor quality-of-life and body dissatisfaction (Purton et al., 2019), lower exercise behaviour and motivation (Vartanian & Shaprow, 2008), poorer mental health such as psychological distress, eating disorders, and low self-esteem (Emmer et al., 2020), medication non-adherence, perceived stress, anti-social behaviour, substance abuse, low self-efficacy and limited coping strategies (Papadopoulos & Brennan, 2015). Symptoms of depression, anxiety, and low self-esteem are also related to weight stigma even after controlling for BMI (Friedman et al., 2005).

Social correlates of weight stigma include less social support, more loneliness, lower socioeconomic status, and disadvantages in employment, education, and healthcare (Papadopoulos & Brennan, 2015; Puhl & Heuer, 2009). Social isolation, lower familial support, and less engagement in romantic relationships are also associated with weight stigma (Boyes & Latner, 2009; Puhl & Heuer, 2009). Clearly, weight stigma is associated with harmful biopsychosocial outcomes. Of further concern is the research showing that these negative impacts can be long-lasting.

2.2.2 Longitudinal Research

Prospective studies have demonstrated that weight stigma is associated with poor health outcomes and higher risk of "obesity". These studies show a link between weight stigma and exercise avoidance (Han et al., 2018), lower exercise behaviour, and sedentary behaviours (Jackson & Steptoe, 2017), higher weight, and weight gain over time (Sutin & Terracciano, 2013). It has been shown that experiencing weight stigma in childhood is associated with an increased risk of transitioning to "overweight"/"obesity" in both adolescents and adults (Hunger & Tomiyama, 2014). Also, adults who experience weight discrimination and have "obesity" are likely to remain "obese" (Sutin & Terracciano, 2013). One study showed that weight-related teasing experienced by adolescent girls and boys (N = 1,830) predicted long-term declines in health outcomes 15 years later, including higher BMI,

binge eating, unhealthy weight control, eating to cope, poor body image, and recent dieting (Puhl et al., 2017). These findings highlight that early experiences of weight stigma have detrimental impacts in both the short and long term.

2.3 Weight stigma as a Central Mediating Variable between Weight and Poor Health Outcomes

In addition to research documenting the biopsychosocial correlates of weight stigma occurring independent of weight (Papadopoulos & Brennan, 2015; Sutin et al., 2015; Wott & Carels, 2010), there is evidence that weight stigma mediates the relationship between weight and health outcomes. A study by Hunger and Major (2015) showed a relationship between BMI and self-reported physical and psychological outcomes (e.g., quality-of-life, depression) that was mediated by weight stigma concerns (but not the perception of weight discrimination) in adult community members with different weight ranges. In addition, Carr and Friedman (2005) found that experiencing discrimination mediated the relationship between "obesity" and lower self-acceptance. Crucially, this research provides evidence that experiencing weight stigma poses a significant threat to health beyond the contribution of weight alone. Weight stigma thus plays a central role in the relationship between weight and adverse health outcomes and a proliferation of research has started to unpack which stigma types may impact people uniquely.

2.4 The Association between Weight Stigma Types and Health Outcomes

Recently, research has focused on understanding which health outcomes are more strongly associated with different weight stigma types, and who is at risk of experiencing weight stigma and its associated impacts (Lee et al., 2019). For example, one study of 177 women with "overweight" and "obesity" explored the differential effects of experienced and internalized weight stigma on exercise behaviour (Pearl et al., 2015). This study showed that experienced (but not internalised) weight stigma was significantly and positively related to

current exercise behaviour, however it was unrelated to exercise motivation and exercise self-efficacy. The internalization of weight stigma was significantly associated with lower exercise motivation and exercise self-efficacy, and was a partial mediator between experiences of weight stigma and current exercise behaviour while controlling for BMI (Pearl et al., 2015). Thus, it is possible that each weight stigma type differentially affects different health outcomes.

Further elucidating the findings above, research has investigated weight stigma types both as a predictor (e.g., experienced weight stigma) and a mediator (e.g., internalised weight stigma) with different outcome variables of the same analysis. For example, research has shown that internalised weight stigma (a) predicts eating disorder psychopathology and problematic cognitions, and (b) acts as a mediator in the relationship between experienced weight stigma and maladaptive eating (O'Brien et al., 2016), as well as perceived weight stigma with eating disturbance via internalised weight stigma (Durso, Latner, & Hayashi, 2012). This indicates that self-stigma may be the intervening factor in the relationship between the experienced/perceived stigma, and health outcomes. Indeed, a recent systematic literature review of this pathway found 17 studies which showed that internalised weight stigma was a consistent mediator for disordered eating outcomes (e.g., body shame, body dissatisfaction), but only partial evidence was found for depression and anxiety (Bidstrup et al., 2021). Taken together, research suggests that stigmatizing weight is related to adverse health outcomes. Findings also demonstrate that experienced, perceived, and internalized weight stigma may represent distinct phenomena, and that experiencing/perceiving weight stigma may be a risk factor for internalising stigma. However, both the lack of an adequately defined construct and psychometrically sound measures (as will be discussed later) makes it difficult to confirm these conclusions (Papadopoulos, de la Piedad Garcia, et al., 2021).

2.5 Evolution of the Weight Stigma Construct

Recognition of the importance of weight stigma first emerged in the 1960s (Cahnman, 1968). At that time there was increasing recognition that "overweight"/"obesity" was detrimental to health and well-being, and it was argued that social rejection, ridicule, and humiliation were common responses toward individuals with higher weight (Cahnman, 1968). Furthermore, whilst the causes and consequences of weight stigma were starting to receive attention in the public health context (Cahnman, 1968), measurement of weight stigma did not appear in the literature until much later (Myers & Rosen, 1999). This was due to the lack of emphasis of the importance of weight stigma and its negative effects.

In 2001, further research in the weight stigma literature was triggered by the Surgeon General David Satcher's "*Call To Action To Prevent and Decrease Overweight and Obesity".* This call to action highlighted that the stigma surrounding "obesity" is understudied and may be interfering with the ability for people affected to seek treatment (Satcher, 2001). That year, a review conducted by Puhl and Brownell (2001) gathered the first summary of evidence showing that weight stigma occurs in multiple settings (e.g., employment, education, family settings) and from multiple sources (e.g., bosses, teachers, parents, siblings). The majority of the early published literature assessed negative stereotypes (e.g., Klassen et al., 1993), attitudes (e.g., Klein et al., 1982), and behaviours (e.g., Hebl & Xu, 2001) of those stigmatizing individuals with "overweight"/"obesity" (i.e., the perpetrators perspectives). In this research weight stigma was typically measuring the perpetrators perspective through various methods including explicit beliefs about weight among nurses and the general public (i.e., self-report; Hoppé & Ogden, 1997), automatic attitudes and beliefs about weight by health professionals (e.g., Implicit Association Test; Teachman & Brownell, 2001), and experimental methods (i.e., reactions to manipulated scenarios in laboratory settings; Hebl & Xu, 2001).

Recognition that available research did not consider the perspectives of individuals with "overweight"/"obesity" as targets of stigma (Allon, 1982) generated interest in understanding the experience of stigma from the victim's perspective. Early research documented the experience of discrimination in key settings (e.g., medical settings; Rothblum et al., 1990) and from specific sources (e.g., healthcare professionals; Kristeller & Hoerr, 1997) among individuals with "overweight"/"obesity". Later, the psychological consequences of weight stigma were investigated, with research showing that weight stigma was related to greater psychological distress, greater efforts to cope, and more severe "obesity" (Myers & Rosen, 1999). Since then, research has expanded to consider the prevalence (Andreyeva et al., 2008; Latner & Stunkard, 2001; Puhl et al., 2015), nature (Brownell et al., 2005), and consequences (Emmer et al., 2020; Friedman et al., 2008; Papadopoulos & Brennan, 2015; Puhl & Heuer, 2009) of weight stigma, as well as to the development of intervention programs to combat the phenomenon (Obesity Action Coalition, 2021). The majority of this research was assessed through explicit methods (i.e., self-reported/endorsed; Harris et al., 1990), including qualitative interviews (Puhl et al., 2008) and focus groups (Cossrow et al., 2001), and aimed to capture the experience of stigma as it occurs naturally.

As a result of this new interest in understanding the victim's perspectives and their relationship to outcomes, many measures of weight stigma have been developed. The most frequently used measures have focused mainly on three aspects: *experienced weight stigma, perceived weight stigma,* and internalized weight stigma[1]. Experienced weight stigma means actual frequent stigmatizing experiences, typically assessed through the Stigmatizing

[1] In addition to the three common types of stigma noted in the weight stigma literature, the anticipated stigma dimension is also present, albeit not as commonly as the other three types noted. Anticipated weight stigma refers to the concerns held by an individual that they may be negatively stereotyped or mistreated and rejected because of their weight. This is a key aspect of stigma that has not been adequately measured to date in the weight stigma literature. In the broader stigma literature (e.g., mental health, HIV, substance abuse), anticipated stigma is considered one of the primary dimensions of stigma, and stigma scholars have suggested that it is a distinct type of stigma (Quinn & Chaudoir, 2009). However, whilst research on anticipated stigma is well documented in other domains of stigma, it is not frequent in the weight domain and thus it is not properly understood in this area of research. Thus, our present research has not focused specifically on this dimension.

Situations Inventory (SSI; example item: "Being told, All you really need is a little willpower"; Myers & Rosen, 1999). Perceived weight stigma means the felt sense that one is being stigmatized, when it may or may not actually be the case, and this is typically assessed through the Perception of Teasing Scale (POTS; example item: “People pointed at you because you were overweight”; Thompson et al., 1995). Internalized weight stigma means the acceptance of negative beliefs to be true of oneself and this is typically assessed through the Weight Bias Internalization Scale (WBIS; example item: "It’s my fault that I am overweight"; Durso & Latner, 2008). The publication of these measures further stimulated the rapid growth of weight stigma research (Myers & Rosen, 1999; Raves et al., 2016).

Since their development, three main issues regarding weight stigma measurement have been noted (DePierre & Puhl, 2012; Papadopoulos, de la Piedad Garcia, et al., 2021). First, often times measures used in weight stigma research were not specifically designed to measure weight stigma (DePierre & Puhl, 2012). The use of such measures creates a very specific consequence as they may be measuring stigma along with other constructs, and thus the validity of measurement is likely to introduce noise into the findings. For example, the Distressing Interpersonal Interactions Scale (Carr et al., 2007) measures discriminatory treatment by others based on different characteristics (e.g., age, gender, ethnicity, weight), the Impact of Weight on Quality of Life scale (Kolotkin et al., 1995) measures “obesity “specific quality-of-life on physical function, self-esteem, sexual life, public distress, and work domains, and the Healthcare Questionnaire (Wadden et al., 2000) measures the frequency of negative interactions encountered by an individual with their physician concerning weight control. That is, these measures were not specifically designed to measure weight stigma but are being used for this purpose. Thus, this research may not be adequately measuring weight stigma. Second, of the measures which were specifically designed to assess weight stigma, measure development did not strictly adhere to best practice for developing and establishing

the psychometric properties of such measures (Papadopoulos, de la Piedad Garcia, et al., 2021). In particular, guidelines have been created to offer researchers specific design requirements when assessing and reporting on the psychometric properties of a new measure. This is to ensure that the measure is of high methodological quality and has the ability to make appropriate conclusions about the psychometric properties of the final measure (Mokkink et al., 2018). The COSMIN guidelines are one such set of guidelines (Mokkink et al., 2018) but have not yet been applied to any measure of weight stigma. Third, at the core of the issues with best practice is that available measures of weight stigma were not developed with a comprehensive construct in mind (DePierre & Puhl, 2012; Papadopoulos, de la Piedad Garcia, et al., 2021). That is, weight stigma measures are not conceptualized in a way that is consistent with stigma theories. The definition and measurement of weight stigma could be informed by the social psychological literature which conceptualizes stigma and associated concepts in ways that are not acknowledged in current weight stigma measures. Thus, we propose a consideration of the social psychological perspective of stigma in the "obesity"/weight stigma literature.

2.6 Stigma Model

Regarding conceptual issues of weight stigma, many researchers do not define the construct in their paper (e.g., Chen & Brown, 2005; Friedman et al., 2008; Puhl & Brownell, 2006). This raises an important issue regarding the operational definition of weight stigma, specifically what weight stigma is and how it should be subsequently measured. In the research that does define weight stigma, there is variability around how it is defined, for example "victimization and bullying specifically as it relates to weight and size" (Simone et al., 2019, p. 2) or "social rejection and devaluation" (Ma et al., 2021, p. 1). The most comprehensive definition of weight stigma is provided by Puhl (2010, p. 1): "negative attitudes toward a person because he or she is "overweight" or "obese", such as the stereotype

that “obese” persons are lazy or lacking in willpower [and that] these stereotypes can be manifested in different ways, leading to prejudice and discrimination”. Whilst this definition reflects all of the domains outlined by social psychologists (outlined below), it does not capture the different stigma types that weight stigma is encountered (i.e., experienced, perceived, internalised).

Numerous theories of stigma have been developed (Corrigan & Watson, 2002; Goffman, 1963; Johnstone, 2001; Jones et al., 1984; Link & Phelan, 2001; Scheff, 1999; Thornicroft et al., 2007). The main categories that emerge from most of these theories include three domains of stigma: *stereotypes*, *prejudice*, and *discrimination*, and three types of stigma: *experienced*, *perceived*, and *internalized* stigma. We review the contributions made by Goffman (1963) and Corrigan and Watson (2002) to the stigma field as the former has been consistently referred to in the “obesity” literature to define weight stigma and the latter has been used in other stigma research to aid measure development (e.g., mental illness; Griffiths et al., 2011). Combining these stigma models will enable the weight stigma construct to be more consistent with current thinking around stigma.

Erving Goffman (1963), the first author to provide a definition of stigma, defined stigma as a physical trait, mark, or attribute that is deeply discrediting (Goffman, 1963). He asserted that the relationship between an “attribute [e.g., weight] and a stereotype [e.g., “obese” people are lazy]” may produce discriminatory experiences from society and can lead to victims [of weight stigma] internalizing feelings of shame, guilt, inadequacy, and inferiority. Goffman also proposed three stigma types: *experienced*, *perceived*, and *internalized* stigma. According to Goffman (1963), *experienced* stigma refers to direct experience of the behaviours through which others discredit a person with a specific condition (e.g., teasing about weight). *Perceived* stigma refers to the sense of being stigmatized by an individual with the condition, regardless of whether this is or is not the case

(e.g., feeling that people stare because of one's weight). *Internalized* stigma relates to the acceptance of negative stereotypes, and the projection of negative feelings, by the person with the specific condition within themselves (e.g., believing one is lazy because of their weight; Goffman, 1963).

Another stigma model proposed by Corrigan and Watson (2002) views stigma as either *public-stigma* (i.e., the reaction that a perpetrator has toward people with a stigma, and the negative attitudes held by the public about a stigmatized condition) or *self-stigma* (i.e., *internalized;* the reactions of stigmatized individuals towards themselves). Within these two areas, stigma is broken down into three domains: *stereotypes*, *prejudice*, and *discrimination* (Corrigan & Watson, 2002). Although their stigma model does not make a distinction between experienced and perceived stigma types from the victim's perspective as noted by Goffman (arguably because both are forms of "public" stigma), it includes the 'prejudice' component not considered by Goffman. Here I will use both stigma models to inform the definition and measurement of weight stigma that is used in this thesis. Specifically, my stigma model includes the three stigma domains/types considered in their conceptualizations (see Table 2.1).

Table 2.1

Domains and Types of Weight Stigma Proposed by Goffman and Corrigan and Watson

		Public	**Self**
	Experienced	**Perceived**	**Internalised**
Stereotype	Being told one is incompetent, weak, unattractive.	Belief that others view oneself as incompetent, weak, unattractive.	Agreement with stereotypes such as incompetence, character weakness, unattractiveness.

Table 2.1 (continued).

Prejudice	Experience of negative emotional reaction such as 'disgust'.	Belief that others hold negative attitudes and emotional reactions such as disgust, hatred.	Agreement with belief and/or negative emotional reaction such as self-disgust and low self-esteem and self-efficacy.
Discrimination	Overt mistreatment such as being rejected or healthcare providers spending less time with patients.	Belief that others may be responding to the prejudice through failing to pursue relationship opportunities.	Acceptance of mistreatment (e.g., social rejection) or behaviour response to stigma such as failing to pursue relationship opportunities, does not seek help.

Note. The first three columns reflect all three stigma types noted by Goffman (1963) and are categorised into 'public' and 'self-stigma' as described by Corrigan and Watson (2002).

Definitions of the stigma domains (stereotypes, prejudice, discrimination) are missing from the work of Goffman (1963) and Corrigan and Watson (2002), and therefore we adopt the definitions offered by Allport (1954). According to Allport (1954), *stereotypes* are cognitive beliefs about a group of individuals that involves attributing a label (e.g., laziness) to someone with a condition (e.g., "obesity") due to negative misconceptions held by society (Allport, 1954). *Prejudice* refers to negatively valenced attitudes (and emotional reactions) toward a person who belongs to a stigmatized group (e.g., "fat people are disgusting"; Allport, 1954). *Discrimination* refers to differential treatment toward members of a stigmatized group based on the negative stereotypes attributed to the stigmatized group (Allport, 1954). This may include the act of creating a division: a superior "us" group and a devalued "them" group, resulting in status loss and the individual being devalued (Link & Phelan, 2006). Discrimination can be (1) physical which involves using one's actions to exert power over others (e.g., shoving), (2) verbal language which involves expressing negative

remarks to gain power over others (e.g., name-calling), and (3) relational which involves harm caused by damaging someone's social status (e.g., social exclusion; Janssen et al., 2004).

Notably, while the domains have been presented above as distinct constructs, many social psychology researchers have both supported and contested the distinctiveness of stereotypes and prejudice. For example, it has been found that individuals both high and low in prejudice still endorse a cultural stereotype (Devine, 1989), supporting the distinctiveness of the constructs. This is also supported by the work of neuroscientists who have identified separate networks for prejudice and stereotyping whereby the activation of a concept (stereotype) evokes a response (prejudicial attitude) in different brain regions (Amodio, 2014). However, this research is inconclusive among neuroscientists. Whilst prejudice and stereotypes are rooted in separate neural networks, the two processes are also considered to operate simultaneously whereby their effects converge in social cognition and behavioural expression of social stereotypes (Amodio, 2014). Thus, I acknowledge that the distinction between stigma domains is not clear-cut and further research is needed to determine whether there is a meaningful difference between them (which is one objective of this thesis project).

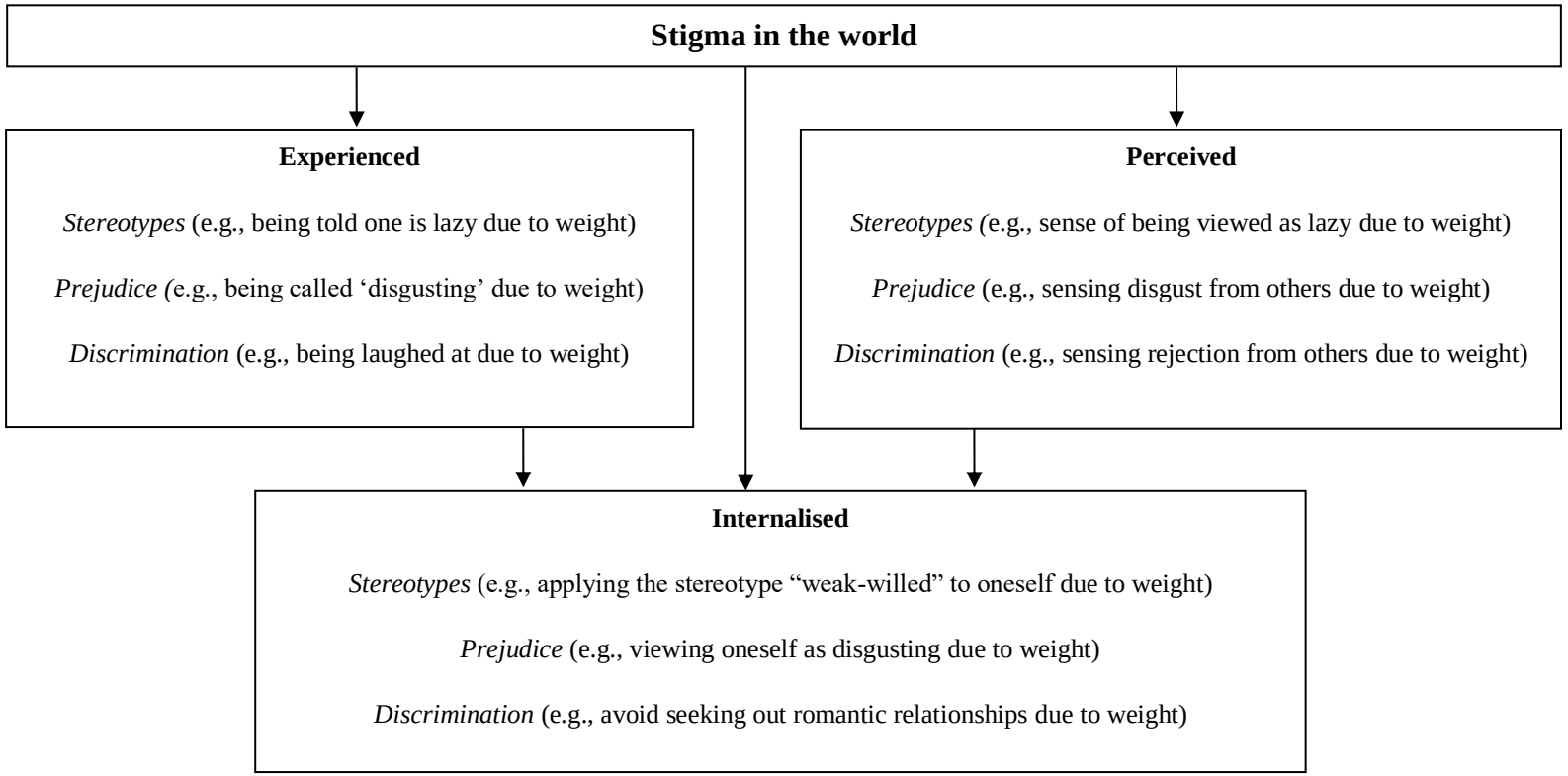
Furthermore, whilst the experienced and perceived types are typically presented as distinct constructs in the Social Psychology and weight stigma literature, their distinction is not reflected in current weight stigma measurement. This is likely because the distinction between actual encounters of weight stigma (*experienced*) and the felt sense that one is being stigmatized when it may not actually be the case (*perceived*) is a difficult distinction to make. In fact, current measures of weight stigma that intend to assess one type of weight stigma (e.g., experienced) include items tapping the other type (i.e., perceived) and vice versa (e.g., Myers & Rosen, 1999). For example, on page 30 we used the item "People pointed at you because you were overweight" from the *Perception* of Teasing Scale (POTS). This item could

very well be considered to represent an actual *experience* of stigma. Although theoretical definitions state that experienced weight stigma refers to actual encounters of stigma and perceived weight stigma refers to the belief that one is being stigmatised, this distinction may be purely academic and seems to rely on the extent to which the perceived stigmatising event would be verifiable by a third party. However, from the perspective of the target of weight stigma, the distinction between actually encountering stigmatization or feeling that they are being stigmatised might not be meaningful because both instances may have a harmful impact on the individual affected. That is, if an individual perceives stigma, they experienced it on some level. In this thesis, both the experienced and perceived types were included to be consistent with the literature (e.g., Emmer et al., 2020).

Based on the stigma models proposed above, Figure 2.1 presents our stigma model. We propose that weight stigma has three types (i.e., *experienced* for example being teased, *perceived* for example the sense that one is being judged, and *internalized* for example self-endorsing negative weight stereotypes such as ‘weak’), and three manifestations/domains (stereotypes, prejudice, discrimination). This is the first attempt in the weight stigma literature to apply a theoretical model to its conceptualisation and measurement, which will facilitate an improved understanding of the construct and measurement accuracy of relevant concepts (i.e., stigma domains/types).

Figure 2.1

Model of Weight-Related Stigma, with Examples of Each Domain and Type



Note. The marker of having higher weight leads to stigma among those affected. This stigma is expressed via stereotypes (i.e., cognitive labels), prejudice (i.e., affective/emotional attitudes), and discrimination (i.e., behaviours). From the perspective of the subject of stigma, the three domains of stigma can be encountered via experiences or perceptions, and then internalizing the stigma if one begins to accept the negative label(s), attitude(s), and treatment.

2.7 Weight Stigma Measures

Besides the theoretical issues inherent in the current weight stigma literature, there are also issues present with its measurement. That is, as discussed above, there are theoretical models which suggests that stigma is expressed in three different ways (stereotypes, prejudice, discrimination) and that three different types exist (experienced, perceived, internalized). However, these distinctions are not found in current weight stigma measures (notably, Goffman's stigma model has informed discussion in the literature, but not measure development; Brownell et al., 2005; Puhl et al., 2008). Instead, measures (1) use inconsistent terminology, (2) address only a selective number of weight stigma domains, or (3) include problematic items that do not reflect their intended weight stigma domain or type. These are described next.

First, there is considerable variation in the terminology used to describe weight stigma. The term ‘weight stigma’ is frequently used interchangeably with terms such as: weightism (Calogero et al., 2016), weight/“obesity” bias (Stewart & Ogden, 2021), fat bias (Teachman & Brownell, 2001), fat stigma (Lee & Pausé, 2016), and “obesity” stigma (Kim et al., 2019). Whilst the use of such terms may be intended to mean the same thing (‘weight stigma’), there is a need to use consistent terminology, that is not stigmatizing. This will (1) simplify the language used in the literature, (b) improve the construct clarity of weight stigma, and more crucially, (c) ensure that the terms used are not perpetuating stigma (e.g., ‘fat stigma’).

Second, most of the measures assessing weight stigma include items that tap onto stereotypes, prejudice, or discrimination alone, or a combination of two domains (e.g., stereotypes and discrimination), but never all three. Table 2.2 shows, for every weight stigma measure, my own classification of the domains and types of stigma covered by the items in that measure. As can be seen in the table, discrimination is the domain most assessed by

experienced weight stigma measures, whereas stereotypes are most assessed by internalized weight stigma measures. Attitudes are not often reflected in any of the self-report assessment tools available. The exclusion of weight stigma domains suggests that current weight stigma measures may fall short of capturing important aspects of the underlying weight stigma construct.

Third, available measures include items that do not reflect the structure of how stigma is conceptualized with regard to the stigma domains and types (Corrigan & Watson, 2002; Goffman, 1963), which is also an important finding depicted in Table 2.2. That is, measures that claim to examine experienced weight stigma contain some items that are more reflective of perceived weight stigma (Farrow & Tarrant, 2009; Wadden et al., 2000), and vice versa (Hatzenbuehler et al., 2009; Womble et al., 2001). Similarly, measures examining internalized weight stigma often include items more reflective of perceived weight stigma (Lillis et al., 2010). For example, the WBIS, which it said to assess the *internalized weight stigma type*, contains items not reflective of this type (e.g., "I feel anxious about being overweight because of what people might think of me"; Durso & Latner, 2008). This item refers to what others think about them and may be more reflective of perceived weight stigma. Further, although the SSI intends to capture the *discrimination domain*, it contains items that do not assess this domain (e.g., "Being the only heavy person, or the heaviest person, at a family gathering"; Myers & Rosen, 1999). Thus, none of the available weight stigma measures assess this construct in a way that is consistent with current thinking regarding weight stigma, in either the sociological or weight stigma literature regarding stigma domains/types.

Combined, these findings highlight that there is a mismatch between what is intended to be measured and what is being assessed in current scales. A recent study by Stewart and Ogden (2021) aimed to evaluate whether there was a match between the operationalisations

and conceptualisations of existing measures of ‘weight bias’ (e.g., Anti-Fat Attitudes Scale; Crandall, 1994) and ‘internalised weight stigma’ (e.g., Weight Bias Internalisation Scale; Durso & Latner, 2008) in the literature. It was found that existing scales included both items reflective of ‘weight bias’ (e.g., “Some people are fat because they have no willpower.”; Anti-Fat Attitudes Scale) and ‘non-weight bias’ (e.g., “I wish I could drastically change my weight.”; Weight Bias Internalisation Scale). Thus, there may be irrelevant concepts being captured in current measures, and this may be due to the lack of theory-driven measurement (DePierre & Puhl, 2012).

The lack of clear distinction between weight stigma types in the measures used in the literature limits our certainty in the precision of the conclusions drawn in research about the differential effects of types of weight stigma on biopsychosocial health outcomes. For example, studies have shown that internalising weight stigma is more harmful to health than experiencing weight stigma itself (e.g., Emmer et al., 2020; Lee et al., 2019; Magallares et al., 2017; Pearl et al., 2015). From these results, researchers tend to conclude that these constructs represent two distinct phenomena. However, it is difficult to know whether the difference in outcomes can be attributed solely to the hypothesised construct when the measure may be encompassing that construct and other unintended constructs as well.

The lack of clear distinction between the weight stigma types may also be contributing to the inconsistencies found in the studied relationships with weight stigma (Durso, Latner, White, et al., 2012; Puhl et al., 2007). For example, it has been shown that internalising weight stigma is related to poor psychological functioning and distress (Durso, Latner, White, et al., 2012), but other research has failed to demonstrate these findings (Puhl et al., 2007) when using different scales of internalised weight stigma. That is not to say that other factors are not related to the variation in results, such as the samples studied, or the lack of power, but inadequate measurement may also be a plausible contributing factor. This is

especially the case for the internalised scales available in the literature which are based on poor psychometric evidence, especially content validity (Papadopoulos, de la Piedad Garcia, et al., 2021). Therefore, it is necessary for research to assess whether scales of weight stigma truly represent their intended constructs and to consider the development of a new measure that will assist with advancing this field of study.

Table 2.2

Self-Report Weight Stigma Measures Grouped by Type and Domain Proposed by Developer

Measures of weight stigma (*N* = 18)[a]	**Stigma Type and Domain as Assessed by Author[a]**						
	Type				**Domain**		
	EWS	**PWS**	**IWS**	**AWS**	**ST**	**PR**	**DI**
Experienced							
Experience of Weight Based Discrimination (EWD; Farrow & Tarrant, 2009)	•	▪					•
Stigmatizing Situations Inventory (SSI; Myers & Rosen, 1999)	•	▪					•
Physical Appearance Related Teasing Scale (PARTS; Thompson et al., 1991)	•	▪					•
Perceived (or anticipated)							
Perceived Weight-based Stigmatization Scale (PWSS; Scott-Johnson et al., 2010)		•			*		*
Perceived Weight Discrimination (PWD; Schafer & Ferraro, 2011)		▪			▪		•
Perceived Weight Stigma Scale (PWSS-U; Rafeh & Hanif, 2019)	▪	•			*		*
Perception of Teasing Scale (POTS; Thompson et al., 1995)	•	▪					•
Weight Based Rejection Sensitivity (WBRS; Brenchley & Quinn, 2016)				•	•		•
Internalized							
Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008)			•		*		*
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale (Conradt et al., 2007)			•				*
Weight Self-Stigma Questionnaire (WSSQ; Lillis et al., 2010)		▪	•		*		*
Feelings and Thoughts about Weight (weight distress in postpartum women) Scale (FATAWS; Chang & Chen, 2009)			*				*
Weight-Focused Forms of Self-Critcising/Self-Attacking and Self-Reassuring Scale (WFSCRS; Duarte et al., 2019)			•		*	*	*
Quality of Life Instruments[b]							
Impact of Weight on Quality-of-Life *public distress scale (IWQOL original; Kolotkin et al., 1995)	*			*			*
Obesity and Weight-Loss Quality-of-Life Questionnaire *social stigma scale (OWLQOL; Niero et al., 2002)	*		*	*	*		*
Healthcare Questionnaire *negative interactions concerning weight scale (HCQ; Wadden, Anderson, et al., 2000)	*	*					*
Quality of Life for Obesity Surgery Questionnaire *social discrimination/body satisfaction subscale (QOLOS; Muller et al., 2018)		*					*

Note. EWS = Experienced Weight Stigma; PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; AWS = Anticipated Weight Stigma; ST = Stereotypes; PR = Prejudice; DI = Discrimination; The information presented in this table was gathered based on an in-depth item analysis conducted by the authors of the current study. This was to review the proposed type and domain of weight stigma that the measure aimed to capture based on the developers intentions; **Bullet points** indicate that the stigma domain or type is consistent with what the items intend to capture based on item analysis by the current researchers; **Squares** indicate that the proposed weight stigma type or domain assessed is inconsistent with what the items actually assess in the appropriate questionnaire; **Asterisks** are indicated when the study does not state clearly what the measure intends to capture, but item analysis (from the authors of the current study) classifies the weight stigma type that is being captured across the items.

[a]The measures included under each of the weight stigma types or domains are categorised based on their intended purpose as stated in their relevant article.

[b]Note that quality of life instruments are not originally developed for the purpose of measuring stigma and therefore do not explicitly state the purpose of measurement despite being a useful tool for weight-related stigma.

2.8 Conclusion

Current measures of weight stigma do not match the distinctions in the traditional social psychology literature. Although authors in the field of weight stigma argue that stigma domains (i.e., stereotypes, prejudice, discrimination) and types (i.e., experienced, perceived, internalised) exist, matching social psychology conceptualisations, each of the domains and types are not comprehensively reflected in current measurement. Measures often assess one or two domains of the weight stigma construct, but never all three, and measures do not reliably distinguish the weight stigma types which is essential to determine whether they are related to different health outcomes for intervention purposes. These issues may be due to the lack of theory-driven measurement in available measures.

First and foremost, there is a need for better grounding of operational definitions in theoretical perspectives for better conceptual understanding of weight stigma, and improved measurement of the construct. The stigma domains and types proposed by Goffman (1963) and Corrigan and Watson (2002) is a good starting point to inform our conceptualization and measurement of weight stigma. Regarding stigma domains, an assessment is needed to explore whether it is meaningful to truly distinguish them given that their distinction is unclear (Devine, 1989). Regarding stigma types, research falls short of making clear distinctions between them and there are no subscales that accurately represent each stigma type. Further, different weight stigma types may be associated with, or better predict, different biopsychosocial consequences. However, the way that current measures are designed do not allow for these hypotheses to be accurately tested.

Comprehensive and valid assessment of weight stigma is critical to obtain an accurate understanding of who is at more risk of experiencing weight stigma and why, to determine the significant challenges facing individuals with higher weight, inform and guide anti-bullying and stigma reduction interventions, and to understand the differential impact that

these stigma types may have on biopsychosocial functioning. This is likely to be a starting point for new research in the weight-related research field.

Chapter 3: Systematic Literature Review

Evaluation of the psychometric properties of self-reported weight stigma measures: A systematic literature review

3.1 Preamble: The introductory chapter identified several significant gaps in the current weight stigma literature. This included the definitional issues of weight stigma, as well as its measurement. Both the lack of a well-defined construct and adequate measurement prompts a need to examine the current state of all measures ever developed for weight stigma and assess their psychometric properties. This will help to improve the current state of existing measures and/or inform the development of a new weight stigma measure. Improving knowledge of weight stigma will only be as good as the measures available to study this phenomenon. Therefore, this chapter presents a systematic literature review which identified every measure of weight stigma ever published (created for adults) and evaluated their methodological quality and psychometric outcomes.

CHAPTER 3: Systematic Literature Review

3.2 Study 1: Evaluation of the Psychometric Properties of Self-Reported Weight Stigma Measures: A Systematic Literature Review

Current status: Published in *Obesity Reviews* (Papadopoulos, de la Piedad Garcia, et al., 2021) on 08 June 2021 doi: 10.1111/obr.13267

Addendum

Addendum: Addendum to the systematic literature review regarding commonly used measures not included for review

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3.3 Addendum

Addendum to the systematic literature review reporting on commonly used measures not included in the review

This addendum is presented in response to examiners of the current thesis who raised concerns regarding the absence of particular measures in the systematic literature review which are commonly used in the weight stigma field to assess weight stigma. This is valid because there are existing measures that are well known to researchers who read papers in the field of weight stigma which are being used to measure this construct. However, the majority of the used measures in the field were not specifically designed to assess weight stigma. Instead, researchers use subscales or items from other measures that may tap onto weight stigma. Because the inclusion criteria for the review required that journal articles reported on the development or validation of an original or modified measure of weight stigma, these measures did not get included. Table 3.1 presents a list of 14 measures that are commonly used to assess weight stigma but were not included in the current systematic review as well as reasons for their exclusion. This includes all the measures highlighted by the examiners, as well as other measures.

As Table 3.1 indicates, the most common reason for exclusion was that measures were not originally developed and/or validated for the purpose of measuring the weight stigma construct. Note that the table does not include an exhaustive list due to the difficulty of capturing every single measure used in the field of weight stigma. This is especially the case for those measures which were created for the purpose of the paper, but the title/abstract excludes mention of this and thus would not have been picked up in the search phase.

Table 3.1

List of Commonly Used Measures to Assess Weight Stigma, with Reasons for Exclusion in the Systematic Literature Review

Scale Used to Measure Weight Stigma	Intended Use	Reason for exclusion
Papers not picked up because they did not contain the search terms specified to be identified in the search phase.		
1. The Everyday Discrimination Scale (EDS; Krieger et al., 2005)	Measures unfair treatment in everyday life and the reason for discrimination can be chosen in other domains (e.g., gender, race, age, religion, height, weight, etc.).	• Measure published in the racism literature, and not designed to specifically measure weight stigma. Also, weight is one of many stigmatized conditions that the respondent can choose from.
2. Midlife in the United States (MIDUS) national survey (Brim et al., 2020)	Evaluates perceived discrimination by requesting participants to report occurrences of discrimination in interpersonal relationships. Participants are asked about the primary reason for discrimination and can report multiple reasons if applicable (e.g., age, gender, height or weight, etc.).	• Measure not designed to specifically measure weight stigma, and weight is one of many stigmatized conditions that the respondent can choose from.
3. Perceived Weight Discrimination (from national survey - NESARC – National Epidemiologic Survey on Alcohol and Related Conditions; Udo et al., 2016)	The NESARC survey is a large comorbidity survey assessing multiple mental health disorders, including alcohol and other substance use disorders, personality disorders, and anxiety and mood disorders. It offers measurement of discrimination across different domains including race, gender, and weight.	• Measure not designed to specifically measure weight stigma, and assessment is conducted across different stigmatized conditions.
4. Feedback on Physical Appearance Scale (FOPAS; Tantleff-Dunn et al., 1995)	Assesses external feedback from others that might induce a self-focus on, or a self-evaluation of, one's physical appearance. For this measure, 15 items relate to weight-related commentary (e.g., "asked you how much you weigh") and the remaining 11 items relate to more global appearance issues (e.g., "commented on your outfit").	• Measure assesses weight and physical appearance more generally (e.g., age, garment choice).
5. Obesity Perceptions Questionnaire (OPQ; Diagle et al., 2019)	Measures one's perceptions of the causes of their obesity.	• Measure was developed for the purpose of the study by the principal investigator and was based on the Explanatory Model of Depression (EMD) Questionnaire • Not originally designed to measure weight stigma as the focus is on the assessment of ones perceived causes of their own obesity.
6. Weight-Related Criticism from Romantic Partners (St. Peter, 1997)	Assesses teasing about weight and shape.	• Measure was modified from original scale (Levine et al., 1994) which was designed to assess parental and sibling teasing and other forms of criticism about weight and shape among young adolescent girls (not adults).

Table 3.1 (continued).

7. Weight-related Stigma (Polk & Hullman, 2014)	Measures the frequency of and feelings regarding experiences of weight-related discrimination/rejection.	• Adaptation of original scale assessing HIV stigma (Berger et al., 2001).
8. Perceptions of discrimination (Rand & Macgregor, 1990)	Measures the frequency of experiences of discrimination at work, in the family and in public places, and includes additional questions around access to public facilities, mood and perceived attractiveness.	• Not a measure development and/or validation paper.
Papers which were picked up in the search phase but did not meet the specified inclusion criteria		
9. Obesity-related Problems Scale (Karlsson et al., 2003)	Measures the impact of obesity on psychosocial functioning.	• Measure not originally designed to assess weight stigma. The focus of this measure is on the assessment of how bothered an individual is by their obesity in specific situations.
10. FABQOL(Wang et al., 2013)*	Quality-of-life measure designed to cover areas of life that are important to individuals with obesity.	• Measure assesses quality-of-life broadly and was not specifically designed to measure weight stigma. • Only the abstract was available at the time, and it indicated that four items ("lethargic", "distressed. "anxious", and "stigmatized") were removed because they were poorly understood.
11. Body Weight, Image and Self-Esteem Evaluation Questionnaire (Al-Halabi et al., 2012)	Assesses body image concerns and the psychosocial impact of weight gain.	• The measure examines perceptions of weight in people with psychological illness (schizophrenia and bipolar disorder).
12. Ben-Tovim Walker Body Attitudes Questionnaire (BAQ)	A measure of women's attitudes towards their own bodies across six categories: (1) feelings of fatness, (2) disparagement, (3) physical strength and fitness, (4) salience of weight/shape, (5) attractiveness, (6) lower body fatness.	• Items do not specifically assess weight stigma.
13. Distressing Interpersonal Interactions (Carr et al., 2007)	Measure assesses two dimensions of distressing interpersonal interactions: (1) discriminatory treatment by strangers and acquaintances, and (2) critical treatment by family members. For each item presented, respondents are asked to indicate what the main reason for the discrimination was, with response choices occurring from any domain (e.g., age, gender, race, ethnicity or nationality, height or weight, etc.)	• Measure not designed to specifically measure weight stigma. • Weight is one of many stigmatized conditions that the respondent can choose from.
14. Body-Focused Shame and Guilt Scale (Weingarden et al., 2015)	Measure aims to present scenarios that are likely to evoke self-conscious emotions regarding one's body parts.	• Measure assesses perceived appearance flaws (e.g., body parts, social comparisons, physical attire) and the focus is not on weight-related stigma.
15. Weight Stigma Concerns (Hunger & Major, 2015)	Assesses concerns about future weight stigma	• Measure was modelled from existing scale used to assess other forms of stigma

*Only abstract available with the abbreviated (rather than full) title of instrument reported.

Chapter 4: Content Validity Study

The Development of a New Weight Stigma Measure: A Content Validity Study

4.1 Preamble: The systematic literature review that constituted the previous chapter noted that measures have limited validity and reliability evidence. Specifically, structural validity, internal consistency, and hypothesis testing were the most frequently assessed and reported psychometric properties, but evidence for cross-cultural validity, reliability, measurement error, criterion validity, and responsiveness were lacking in assessment and reporting. Most noteworthy was the fact that evidence for the most fundamental psychometric property (i.e., content validity), was lacking across all measures. Only 5 of 18 measures assessed this property, but of these 5 measures, none of them reported on all the criteria for assessing content validity (e.g., asking both professionals and community individuals about relevance, comprehensibility, comprehensiveness). Another major finding was that the commonly discussed domains and types of weight stigma have not been considered in item development (i.e., measures often have items across types of stigma). In response to the findings of the review, this chapter described the development of items and assessment of content validity of a new weight stigma measure from the "ground up". The purpose was to design a tool which is representative of all aspects of weight stigma discussed in the model presented in Chapter 2, so that it comprehensively measures the most important and relevant concepts that are essential to the construct.

CHAPTER 4: Content Validity Study

4.2 Study 2: The Development of a New Weight Stigma Measure: A Content Validity Study

Current status: This study, including supplementary materials, is available on the Open Science Framework (https://tinyurl.com/WeSQCVstudy)

Appendices

Appendix D: Content Validity Study Supplementary Tables

Appendix F - 4: Proof of data sharing of Study 2 on Open Science Framework (OSF)

Appendix F - 7: Statement of Contribution for Study 2

The development of a new weight stigma measure: Establishing content validity

Weight stigma refers to the devaluation of individuals based on their weight. This is manifested via *stereotypes, prejudice,* and *discrimination* targeting people on the grounds of their weight. From the perspective of the victim, weight stigma can be either experienced, perceived, and/or internalised. Weight stigma is associated with significant biopsychosocial consequences (Emmer et al., 2020; Papadopoulos & Brennan, 2015). Research indicates that weight stigma is related to a range of outcomes including poor metabolic health and higher weight gain (Major et al., 2018), poor mental health such as higher depression, anxiety and eating disorder psychopathology (Emmer et al., 2020), poor social support and social isolation (Carr & Friedman, 2006), and may even contribute to all-cause mortality (Sutin et al., 2015). The most recent research reporting weight stigma prevalence indicated that the prevalence of weight stigma was 57% in a sample of n = 3800 adults (Prunty et al., 2020). Weight stigma occurs in many life domains (e.g., healthcare, education), and comes from many sources (e.g., family, healthcare professionals; Puhl & Heuer, 2009). Recognition of both the high prevalence and harmful correlates of weight stigma has spurred research examining stigma initiatives to decrease the impact of weight stigma on health and wellbeing (e.g., Rubino et al., 2020). However, knowledge of weight stigma is only as good as the quality of the measures that are available to assess weight stigma (DePierre & Puhl, 2012).

Contemporary weight stigma instruments can be categorized into two groups: (1) specific tools developed to measure weight stigma, and (2) quality-of-life measures not purposefully designed to measure weight stigma (e.g., public distress subscale; Kolotkin & Crosby, 2002). While there are a variety of tools available to assess weight stigma, the evidence for their validity has been questioned (DePierre & Puhl, 2012; Meadows & Higgs, 2019; Papadopoulos, de la Piedad Garcia, et al., 2021). Study 1 (Papadopoulos, de la Piedad Garcia, et al., 2021) identified 18 published measures of weight stigma and used the

Consensus-based Standards for the selection of health status Measurement Instruments (COSMIN; Mokkink et al., 2018) guidelines to assess their psychometric properties. The review found that (1) no weight stigma measure was guided by theory, and (2) no study described a systematic process of weight stigma scale development. Importantly, content validity information was either absent or limited in reporting.

Content validity is a crucial criterion of measurement validity, and a prerequisite for all other psychometric assessment (Mokkink et al., 2018). Content validity is established by (a) specifying the theoretical definition of the construct to guide item development; (b) rating the relevance, comprehensibility, and comprehensiveness of items, (c) the clarity of instructions and response format, (d) appropriateness of the linguistic aspects of the items (e.g., content, grammar; Mokkink et al., 2018). This evidence is typically collected by consulting experts (e.g., Delphi technique) and individuals from the community (e.g., Cognitive Interview).

Study 1 found that only 5 out of 18 measures reported consensus methods in which they asked either patients or experts about the essential content validity components. However, none of the studies reporting on these measures fulfilled all essential content validity criteria which is a requirement of the COSMIN guidelines. Specifically, 2 of 5 papers asked respondents only, one asked professionals only, and two asked both patients and professionals but lacked assessment of *all* content validity aspects. The studies assessing the psychometric properties of the remaining 13 measures did not assess content validity at all. The lack of content validity evidence makes it difficult to know whether the items of existing scales measure what they intend to and whether they do so comprehensively. Thus, there is a need to conduct further research evaluating the content validity of existing measures, or develop a new measure using best practice guidelines (Mokkink et al., 2018). Establishing

content validity requires a theoretical framework and a clearly defined construct that matches its operationalisations. Both are outlined below.

The theoretical model of stigma

Numerous contributions have been made by social psychologists to inform the conceptualisation of stigma (Corrigan & Watson, 2002; Goffman, 1963; Johnstone, 2001; Jones et al., 1984; Link & Phelan, 2001; Scheff, 1999; Thornicroft et al., 2007). We highlight the work of Goffman (1963) and Corrigan and Watson (2002) because combined they provide the most comprehensive conceptualisation of stigma. Goffman considered that a stigmatized condition (e.g., weight) is linked to a stereotype (e.g., "obese people are lazy") that may produce discriminatory experiences from society (e.g., rejection), and possibly lead to the internalisation of such stereotypes. Goffman proposed three stigma types: experienced (i.e., actual stigmatizing experiences), perceived (i.e., the sense of being stigmatised), and internalized (i.e., self-stigma). Similarly, Corrigan and Watson proposed two stigma types: public stigma (i.e., experienced stigma) and self-stigma (i.e., internalised stigma), and three domains: stereotypes, prejudice, and discrimination. This Social Psychology conceptualisation of stigma is not reflected in current weight stigma measures.

The definition of weight stigma

Following from the key concepts described above, Figure 2.1 presents the stigma definition and model we propose: Weight stigma refers to negative stereotypical beliefs, prejudicial attitudes, and discriminatory behaviours directed toward individuals because of their weight. From the perspective of the subject of stigma, the three domains of stigma can be encountered via: (1) *experiences* (e.g., being called 'lazy' because of one's weight; Myers & Rosen, 1999), *(2) perceptions* (e.g., feeling that a job rejection was due to one's weight; Thompson et al., 1995), *and (3) internalization* (e.g., accepting negative weight-based stereotypes to be true of oneself; Durso & Latner, 2008). The theoretical model guiding our

measure is *reflective,* such that the construct is reflected by the items (De Vet et al., 2011). This implies that for individuals who are high in weight stigma, all the items will be manifest to a high degree.

Importantly, we note the distinctions between specific domains (stereotypes, prejudice, discrimination) and types (experienced, perceived, internalised) is not always made in the weight stigma measurement instruments. Despite having clear conceptual definitions, the domains/types are not exhaustively reflected in measurement (Papadopoulos, de la Piedad Garcia, et al., 2021). Thus, it is unclear whether the proposed weight stigma domains/types clearly fit into theorised models of stigma, and whether it is even possible (or meaningful) to capture their distinction in items that aim to measure these differences. For this study, it was important to initially include items that represented all the relevant weight stigma types and domain combinations so that (a) the resulting measure is a comprehensive representation of stigma and (b) there is an opportunity to test our proposed model.

The new measure

The new weight stigma measure was designed with the intention to reflect all theoretical domains within each type across multiple sources (e.g., friends, colleagues, medical professionals) and settings (e.g., social, workplace, healthcare) in which weight stigma commonly occurs. The target population for this measure was adults, aged 18 to 65, across the weight spectrum. This measure was designed to be a self-report measurement tool, suitable for use in clinical and research studies that aim to (1) explore the broad range of stigma experiences related to weight (of any weight), (2) evaluate the impact, and/or possible risk factors, associated with the different weight stigma types and (3) determine how the weight stigma types differentially predict biopsychosocial consequences. This measure is designed to be used across the weight spectrum, not just with those of a higher weight, because weight stigma occurs among individuals of all weight categories (Puhl et al., 2018).

The current study

This study describes in detail the content validation processes for the initial item pool of our new weight stigma measure. This study sought to:

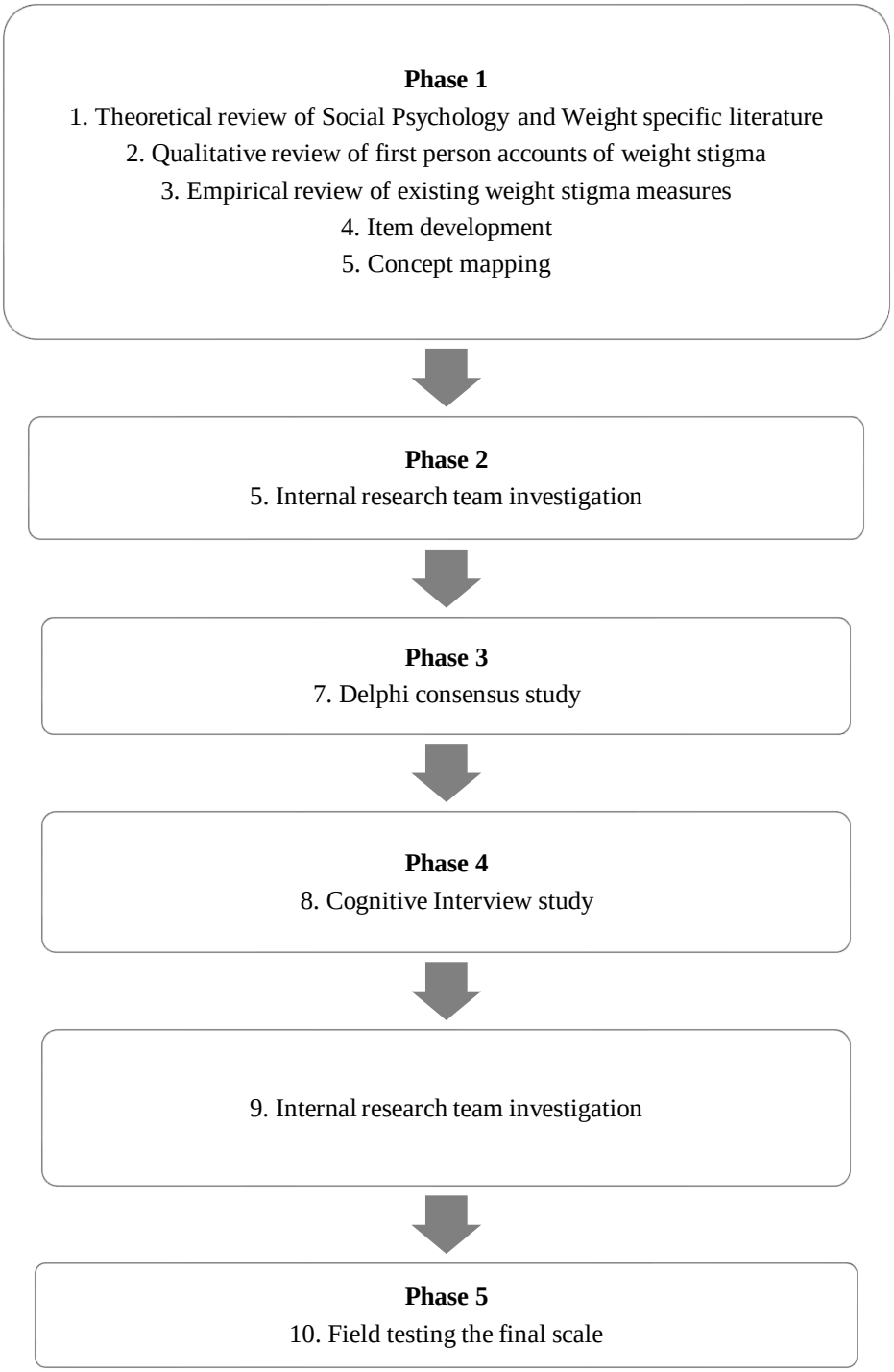
(1) develop an item pool of a new weight stigma measure that comprehensively captures all aspects of the construct, and

(2) identify the extent to which our items were relevant, comprehensible, and comprehensive in capturing the stigma domains, types, sources, and settings.

Four complementary methods were implemented to establish the content validity of the initial item pool following the COSMIN guidelines (Mokkink et al., 2018). An outline of the phases that were involved in the measure development process is presented in Figure 4.1. We will report on the first four phases (Step 1-9) in this study.

Figure 4.1

Phases involved in measure development



Phase 1: Item Generation

The current project combined quantitative and qualitative approaches to inform concept development and generate items to best represent the weight stigma construct for a new questionnaire. The existing definitions and theories of stigma (Corrigan & Watson, 2002; Goffman, 1963) which were reviewed in Chapter 2 informed the development of the items in this study. Further, items were generated based on definitions of weight stigma (e.g., Puhl et al., 2008; Tomiyama et al., 2018), experience of our clinical research team, quantitative and qualitative research including the lived experience of weight stigma among victims, and a review of existing measures (Papadopoulos, de la Piedad Garcia, et al., 2021).

Method and Results

Item Development

Step 1: Theoretical investigation

This phase involved reviewing the Social Psychology literature to identify relevant models of stigma that would be used to inform our conceptualisation of 'weight stigma'. The concepts that emerged from the theoretical literature included different domains (stereotypes, prejudice, discrimination), types (experienced, perceived, internalised), sources (e.g., family, colleagues), and settings (e.g., healthcare, education) that weight stigma commonly occurs. Table 4.1 provides a definition, and accompanying example, of the main stigma concepts that emerged from the theoretical investigation in Chapter 2.

Table 4.1

Key Concepts Common to Traditional Stigma Theory

Types	Domains
Experienced The behaviours by others to discredit a person with a specific condition (e.g., teasing about weight). **Example:** A person being told to watch what type of food is consumed because of their weight.	***Stereotypes*** Negative belief(s) or misconception(s) present in society about a group such as incompetence, character weakness, unattractiveness. **Example:** Misconception that people who are of higher weight are "weak".
Perceived The internal perception of an individual that they are subject to stigmatization (even if it is not actually the case) **Example:** A person thinking that others believe they are lazy because of their weight.	***Prejudice*** Negative attitude and/or negative emotional reaction such as irritability, disgust, discomfort. **Example:** A person feeling disgusted with oneself due to their weight, or receiving attitudes of disgust from others due to one's weight
Internalised The projection and acceptance of negative feelings by an individual within themselves, through negative self-talk or low self-esteem **Example:** A person feeling unattractive because of their weight.	***Discrimination*** Behaviour response to prejudice such as receiving negative comments from others, avoidance of relationship opportunities, withholding help. **Example:** The experience of rejection from self or others due to one's weight.

Step 2: Qualitative accounts

COSMIN guidelines indicate that the creation of a suitable client- or patient-based tool requires assessment of the perspective of the victim(s). However, as there were already numerous published qualitative studies examining the lived experiences of weight stigma, we used this literature to inform item development. Thus, for this measure, this phase involved a review of qualitative accounts of the experience of weight stigma by victims as published in the relevant literature (e.g., Forhan et al., 2013; Puhl et al., 2008; Raves et al., 2016). Twelve

qualitative studies were identified through non-systematic searching in Medline (using keywords) that were related to either the victims reported experience, perception, and/or internalisation of weight stigma (see Supplementary Table 1: https://tinyurl.com/WeSQCVstudy). Of note, two members of the measure development team have lived experience of weight stigma (XPD and SP). This is highly valuable given that prior measurement studies and reviews have highlighted the importance of engaging people with lived experience of weight stigma to generate items.

Step 3: Existing stigma measures

This phase involved the examination of existing measures assessing different stigmatized phenomena (e.g., weight, race, gambling, gender) to identify (1) the key themes in existing stigma measures, (2) item wording to examine the way that key stigma concepts are currently being captured, and (3) areas for improvement in the weight stigma items. The established measures in the stigma literature which inspired the items for our measure are presented in Supplementary Table 2. The measures used to inform our items were based on different stigmatized conditions including weight (*n*=10), race (*n*=2), gambling (*n*=2), and gender (*n*=3) related stigma. An outline of the common stigma experiences encountered by people with different stigmatized conditions is presented in Supplementary Table 3 (https://tinyurl.com/WeSQCVstudy).

Step 4: Item development

Based on the information gathered from Steps 1-3, the measure development team (*n* = 3) generated an initial set of 108 items. We developed a set of items that presented specific examples of each stigma domain within each type, across sources or settings when these combinations were possible. For example, the item “I have been called ‘lazy’ because of my weight.” represents the stereotype domain (i.e., “lazy”) for the experienced stigma type (i.e., “I have been *called*…”). Whilst this item represents *experiencing* the manifestation of a

stereotype it does not represent a specific source/setting. Thus, we also developed a list of sources (e.g., friends) and settings (e.g., healthcare) that weight stigma is known to commonly occur, and then created a set of items for each stigma type and domain within each of these sources/settings where possible. For example, the item "I have been treated unfairly by health professionals (e.g., less rapport building) because of my weight." represents *experienced discrimination* in *healthcare settings* by *healthcare professionals*. All items were written so that the weight terminology used referred to weight generally, so it was applicable across the weight spectrum. This was done by completing each item with the statement "because of my weight". This approach has been adopted in studies that have developed and/or validated other measures of weight stigma across the weight spectrum (e.g., Brenchley & Quinn, 2016; Chang & Chen, 2009; Farrow & Tarrant, 2009; Pearl & Puhl, 2014; Rafeh & Hanif, 2019; Schafer & Ferraro, 2011).

The list was refined via two rounds of discussion amongst the measure development team (see Table 4.2). In the first round, we eliminated items that were considered either confusing, not relevant, or repetitive. We also included new items that were missed in the original list (e.g., the full spectrum of weight stereotypes) and separated double barrelled items. This process resulted in a list of 117 items that was reviewed again by the measure development team.

Table 4.2

Results from each of the Initial Stages of Item Development

	Number of items	**Source of reviewers**	**Item change(s)**	**Final item set**	**Main change(s) and feedback**
Round One: Measure developers item review	First initial set of items created: 108	Measure development team	29 items added 25 items removed 91 items modified	117	Wording changes required, specifically to reduce double-barrelling and to ensure that the intention of what the item aimed to capture was clear. Further review required by expert panel.
Round Two: Measure developers implement concept map	117	Measure development team	25 items added 32 items removed 21 items modified	110	Wording changes required, specifically to increase clarity in the items.

Step 5: Concept mapping

In the second round, a concept map was introduced as a means to visually represent the conceptual model (domains, types, sources, settings) and match the 117 items in an organised fashion within this model. Table 4.3 shows an example of this conceptual map. This visual map helped us to ensure that the items matched our conceptualisation of weight stigma, and that all aspects of the conceptualisation were exhaustively covered by the items. This stage allowed for the opportunity to add, remove, or modify items that were overlapping or not commonly endorsed. As can be seen in 'Round Two' of Table 4.2, this process resulted in a final 110 items (n = 7 removed) which was then reviewed by the measure development team. This second review did not result in the removal of any items. See Supplementary Table 4 for the final concept map (https://tinyurl.com/WeSQCVstudy).

Table 4.3

Example Items that Reflect Weight-Stigma Across Sources/Settings within each Stigma Type

	Family	**Friends**	**Peers**	**Intimacy**	**Public**	**Healthcare**	**Work**	**Education**	**Housing**	**Other**
Experienced	"I have been made fun of about my weight by my family."	"I have been made fun of about my weight by my friends."	"I have been excluded by my peers because of my weight."	"I have been treated disrespectfully about my weight by my romantic partner."	"I have been called 'disgusting' because of my weight."	"I have been treated unfairly by health professionals (e.g., less rapport building) because of my weight."	"I have been treated unfairly in keeping a job because of my weight."	"I have been treated unfairly by my teachers/lecturers because of my weight."	"I have been viewed unfavorably for housing opportunities because of my weight."	"I have been called 'lazy' because of my weight."
	Discrimination	***Discrimination***	***Discrimination***	***Discrimination***	***Prejudice***	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Stereotype***
Perceived	"My family find interaction with me unpleasant because of my weight."	"My friends do not want to engage in fun activities with me because of my weight."	"My peers would prefer not to be friends with me because of my weight."	"People do not want to go on a date with me because of my weight."	"Staff at restaurants/stores offer me poorer service than to others because of my weight."	"Health staff treat me unfairly because of my weight."	"People do not consider me for employment or job advancement because of my weight."	"People patronize me (e.g., speak to me as if I am not smart) because of my weight."	"People view me unfavorably for housing opportunities because of my weight."	"People think that I am weak-willed because of my weight."
	Discrimination	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Discrimination***	***Stereotype***
Internalized	"I do not go to family occasions because of my weight."	"I do not go to events with my friends because of my weight."	"I do not socialize with my peers because of my weight."	"I do not seek romantic partners because of my weight."	"I am inferior to others because of my weight."	"I do not seek out healthcare services because of my weight."	"I do not apply for jobs because of my weight."	"I am unintelligent because of my weight."	"I am not worth being viewed favorably when looking for housing because of my weight."	"I lead an unhealthy lifestyle because of my weight."
	Discrimination	***Discrimination***	***Discrimination***	***Discrimination***	***Stereotype***	***Discrimination***	***Discrimination***	***Stereotype***	***Prejudice***	***Stereotype***

Phase 2: Internal Review

In line with COSMIN guidelines, an essential component of content validity assessment of a measure includes asking professionals about the relevance and comprehensiveness of the newly developed item pool (Mokkink et al., 2018). In this phase, the 110 items resulting from Phase 1 were subjected to evaluation by experts to assess whether the items were *relevant* to the construct of interest and whether the item pool *comprehensively* captured the weight stigma construct. We administered the items to our clinical research team which included 6 members who all had a psychology research background. Members were required to assess each item on the relevant content validity aspects. A secondary objective of this phase was to ask all members to rate the items according to their stigma domain/type. This was to help identify the extent to which our items reflected the theorised stigma model (domains, types). Of note, the ratings of *relevance* and *comprehensiveness* were used to support item modification, but the information gained from rating items according to their domain/type was used to inform our understanding of how the items are classified and whether their distinctions were possible and meaningful.

Participants

The items that were generated as a result of steps 1-5 were reviewed by six members of our clinical research team (only one member provided incomplete data). Majority of the team members were female (n=5) compared to male (n=1). All team members had a background in psychology and clinical and/or research experience in eating, weight, and body image related concerns.

Procedure

Members completed the item review using Qualtrics, an online survey platform. Members were provided with a brief explanation of the study, which included an outline of our proposed stigma definition/model to provide context for the items presented to them. As

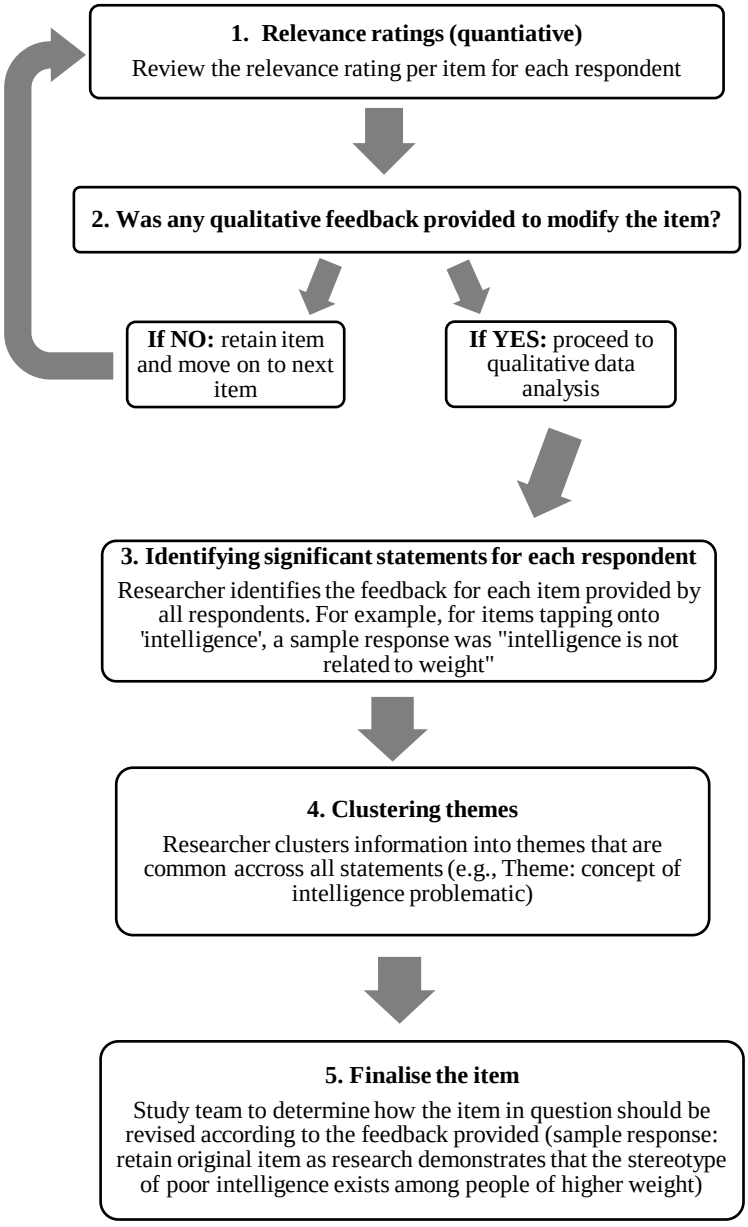
per COSMIN guidelines, members were informed that they would be presented with 110 items, and that for each item, they would be required to (1) rate items as ‘relevant’, ‘not relevant’, and ‘relevant if modified’ (a free-text option was provided to offer suggested revisions) and (2) assess the comprehensiveness of the measure, at the end of the survey, by indicating whether they believed the items collectively covered the intended construct. As an addition to the COSMIN guidelines, we asked members to identify which stigma domain/type each item tapped onto. This took approximately 90 minutes to complete.

Analysis

Relevance ratings were collated across responses. Consensus on item relevance was considered reached when at least 5 researchers rated an item as ‘relevant’ or ‘not relevant’. The written responses provided by researchers were analysed independently by two raters (one researcher in the study team, one external psychologist). First, we identified emergent themes in the data from the researcher’s feedback. For example, a common response from researchers was that the link between intelligence and weight was unclear. Second, the research team reviewed the feedback to determine how the item in question should be revised according to the feedback provided. For example, because research demonstrates that the stereotype of poor intelligence exists among people of higher weight, we decided to retain items of this nature at this stage of item review. Figure 4.2 presents the steps of our qualitative data analysis. All results (ratings and feedback) were documented in tabular format (see Supplementary Table 5 for an example of data coding by independent researchers: https://tinyurl.com/WeSQCVstudy).

Figure 4.2

Method for qualitative data analysis.



Note. This method of item analysis was adapted from Colaizzi's 7-step method of phenomenological analysis (Colaizzi, 1978).

Results

As can be seen in Table 4.4, no items were removed in this item review process. Across all items, a total of 75/110 items were rated as 'relevant' by all researchers. The remaining 35 items were rated as 'not relevant' (26 items in total) and/or 'relevant if modified' (14 items in total) by a subset of researchers. Notably, feedback around how the items should be improved was not always provided by the researchers. The wording of three items was modified to improve their comprehensibility, using suggestions provided by the members of the team. Regarding item comprehensiveness, the responses indicated that in combination, the items cover all aspects of the construct and reflect typical scenarios faced by individuals affected by weight stigma. The main theme extracted from the qualitative data centred around the difficulty in distinguishing the stigma domains and types (Supplementary Table 6 displays for a full outline of the results: https://tinyurl.com/WeSQCVstudy). Below, we present the results of ratings for each stigma domain/type.

Table 4.4

Item Modification Results from the BEWT team review, and Concept Map

	Number of items	Source of reviewers	Item change(s)	Final item set	Main change(s) and feedback
Item development: BEWT item review	110	BEWT research team review	3 items modified 0 items removed or added	110	Reported difficulty distinguishing the domains/types clearly

Domains

Stereotype

Of the 26 items intended to tap 'stereotypes', only 7 items were classified as 'stereotypes' by all researchers. For the remaining 19 items that were designed as 'stereotype'

items, there was variation in their classification. Specifically, in addition to being classified as ‘stereotype’, there were 13 items that were also classified as ‘prejudice’, 4 items that were also classified as ‘discrimination’, and 2 items that were classified as both ‘prejudice’ and ‘discrimination’. Overarchingly, when classifying ‘stereotype’ items, the experts were more likely to classify them as representing prejudice than discrimination.

Prejudice

Of the 22 items intended to tap ‘prejudice’, only 3 items were classified as ‘prejudice’ by all researchers. For the remaining 19 items that were designed as ‘prejudice’ items, there was variation in their classification. Specifically, in addition to being classified as ‘prejudice’, there were 8 items that were also classified as ‘stereotype’, 2 items that were also classified as ‘discrimination’, and 9 items that were classified as both ‘stereotype’ and ‘discrimination’. Overarchingly, when classifying ‘prejudice’ items, the experts were more likely to classify them as representing stereotypes than discrimination.

Discrimination

Of the 62 items intended to tap ‘discrimination’, only 17 items were classified as ‘discrimination’ by all researchers. For the remaining 45 items that were designed as ‘discrimination’ items, there was variation in their classification. Specifically, in addition to being classified as ‘discrimination’, there were 11 items that were also classified as ‘stereotype’, 25 items that were also classified as ‘prejudice’, and 9 items that were classified as both ‘stereotype’ and ‘prejudice’. Overarchingly, when classifying the ‘discrimination’ items, the experts were more likely to classify them as representing prejudice than stereotype.

Types

Experienced

Of the 38 items intended to tap experienced weight stigma, 16 of these were classified as experienced by all researchers. Of the remaining 22 items, some researchers rated items as

also tapping onto the ‘perceived’ type (21 items) and for one item, researchers rated it as applying to all stigma types.

Perceived

Of the 39 items intended to tap perceived weight stigma, 18 of these were classified as ‘perceived’ by all researchers. Of the remaining 21 items, there was disagreement by a subset of experts, wherein experts’ opinions were split between experienced (16 items) and internalised (5 items) types. Eighteen items were classified as the ‘perceived’ stigma type by all experts.

Internalised

Of the 33 items intended to capture internalised weight stigma, 26 of these were classified as ‘internalised’ by all researchers. Of the remaining 7 items, researchers rated these as perceived and internalised.

As it was not the purpose of this phase to classify the responses from members as ‘right or wrong’, we did not remove items based on mixed classifications. It was important to identify where there was conceptual confusion in the stigma model proposed and subsequently reconsider which of the concepts needed to be distinguished (if possible). To determine whether these distinctions are meaningful and possible, we asked experts in related research fields (stigma generally, weight stigma) to classify the items in the same way in the following phase.

Brief Discussion

This phase evaluated the relevance of each item and the comprehensiveness of the items as a whole and reviewed the way in which each item was classified according to their stigma domain/type by the research team. Most items were considered relevant, with some items requiring modification, and the item pool was considered to comprehensively capture weight stigma. Furthermore, we found that the classification of items was varied for the stigma domains and types. In particular, at the level of the domain, the distinction between *stereotypes* and *prejudice* was where the most confusion. In the case of the types, *experienced* and *perceived* weight stigma were the main source of disagreement for the stigma types. Qualitative feedback by researchers also highlighted the difficulty in distinguishing the domains and types.

These findings demonstrated that the apparent distinction between stereotypes and prejudice for the domains, and between experienced and perceived for the types, may be clearer at a theoretical than a practical level. Nevertheless, because all the items were considered relevant and overall, the measure was judged to be comprehensively tapping onto weight stigma, all the items reflecting the different domains/types were retained. In the next phase, we aim to determine whether distinguishing the domains/types of stigma is meaningful and/or possible. It can therefore be concluded that our conceptual understanding of weight stigma remains preliminary until further assessment is conducted on the items.

Phase 3: Delphi Study

In line with the COSMIN guidelines that requires asking professionals about the relevance of each item and the comprehensiveness of the complete item pool (Mokkink et al., 2018), this phase conducted further item assessment in an expert panel. The 110 items that were retained after modifications in the previous round were subjected to content validation using the Delphi technique across two rounds (Dalkey & Helmer, 1963). We administered our items on the Qualtrics platform to 9 experts who had a research background in stigma generally or weight stigma specifically. Experts were required to evaluate whether each item was *relevant* to the weight stigma construct, and whether in combination, the item pool *comprehensively* captured the construct. As with the previous phase, a secondary objective of this phase (not consistent with COSMIN) was to ask the experts to rate the items according to their stigma domain/type. This was to help identify the extent to which our items reflected the theorised stigma model, and whether it was meaningful and/or possible to distinguish the domains/types.

Method

Participants

Twenty Social Psychology researchers and 20 Weight stigma researchers were invited to participate. We selected experts that published in either stigma or weight stigma research. As there is no standard with regards to the number of experts required to form a Delphi panel (Akins et al., 2005), our panel was represented by the relevance of their expertise in stigma and weight stigma research fields rather than its numbers. Email responses were received from two Social Psychology researchers (only one participated in the two rounds), two weight-related researchers (both participated in round one, only one participated in round two), and five weight stigma researchers (all participated in both rounds). Majority of the panel members were female (n=8) compared to male (n=1). The location of experts was

varied throughout Australia (n = 6) and the USA (n = 3). Two of these experts did not provide complete responses in round one, and three experts did not provide complete responses in round two. No reason was provided for the dropout among experts. The available data from their participation was analysed in each round.

Procedure

Round one

The procedure for round one of this phase was the same as for phase 1 (i.e., rating the relevance of items, and the comprehensiveness of the measure, and classifying items according to their domain/type). Approximately two weeks before the first survey was administered, potential participants were invited to participate. They were informed that their expertise was sought to develop a comprehensive measure of weight stigma in two or three rounds. To provide context for the data being collected, we provided members with our preliminary weight stigma definition (below) with examples (see Table 4.5):

"Weight-stigma refers to negative stereotypes (i.e., beliefs), prejudice (i.e., attitudes), and discrimination (i.e., mistreatment) directed toward individuals because of their weight. "Overweight" and "obese" individuals frequently experience weight-stigma, for example being called 'lazy' because of one's weight, perceive weight-stigma, for example feeling that a job rejection was due to one's weight (independent of whether this was the case or not), and internalize weight-stigma, for example believing that one is unattractive because of their weight."

Table 4.5

Example Items that Reflect Weight-Stigma Across its Domains and Types

	Experienced	**Perceived**	**Internalized**
Stereotype	I have been called 'lazy' because of my weight	People think that I am lazy because of my weight	I am lazy because of my weight
Prejudice	I have been called 'disgusting' because of my weight	People find me disgusting because of my weight	I am disgusting because of my weight
Discrimination	I have been physically attacked by others because of my weight	People laugh at me because of my weight	I am a failure because of my weight

A few days before the first survey round, the instructions and link to the survey were distributed via email to the experts who had indicated an interest in participating. As with the previous phase, experts were asked to (1) rate their relevance as 'relevant', 'not relevant', and 'relevant if modified' (a free-text option was provided to offer suggested revisions) and (2) assess the comprehensiveness of the measure by providing their opinion, at the end of the survey, on whether the items collectively covered the intended construct. As with the previous phase, we asked experts to identify which stigma domain/type each item tapped onto. This took approximately 90 minutes to complete.

Round two

In this round, only those items that required modification from the previous round were presented. All experts (including those who did not complete round one) were given the opportunity to participate in round two of the online survey. Experts were given two weeks to respond (a 2-week extension was provided to those who indicated they needed extra time). Consistent with Delphi guidelines, an individual email with instructions was sent to experts,

along with four types of feedback from round one, such as a summary of their own ratings from round one (see Table 4.6 for a summary of the feedback provided).

Table 4.6

Delphi Feedback Provided to the Expert Panel in Round Two

Consistent with Delphi guidelines, four types of feedback were sent to panel members in round two of item review, including:

(1) a word document of their own ratings and comments from the previous round for only the items requiring consensus in round two (n = 33). This was to remind experts individually of their feedback in round one.

(2) an anonymous summary of the feedback from the responses received by all panel members for only those items requiring consensus. This enabled experts to view the other expert's feedback and take their ratings into account when responding to the items requiring further consensus.

(3) a summary of the ratings presented as a percentage (e.g., if half of the panel regarded an item as 'relevant', then this was presented as "Relevant: 50%", and

(4) any changes to items that were made because of round one feedback.

In this round, experts were asked to re-rate the relevance of items as before. At the end of the survey, experts provided qualitative feedback on the overall study if desired. Consistent with Delphi recommendations, as no new information was gained from round two, a third round was not implemented (Murry & Hammons, 1995).

Analysis

The analysis of *ratings* and *feedback* for each round of this phase was the same as described for phase 1. However, for this phase there were two rounds of data collection. Only

those items requiring further consensus (based on inconsistent responses) were presented in round two for expert review. See Table 4.7 for criteria on how consensus was determined.

Table 4.7

Criteria for Determining Consensus

1	If all experts considered an item to be 'relevant', this item was not presented again in the Round 2 but was retained for the final scale.
2	If 5 or more experts judged an item as 'relevant', and others did not provide a rationale or suggested change, then the item was not presented again but the item was retained.
3	When experts who deemed an item to be 'relevant if modified', and provided feedback or suggested changes, the changes were implemented, and the new version of the item was shown to all experts in Round 2. Both the original and modified version of the item were presented in Round 2 to all experts. Experts were required to provide their feedback on the modified item. Only one of the two item variations were retained.
4	Where a panellist rated an item as 'not relevant' but did not provide any feedback, the item was reviewed by the measure development team. Knowledge of the literature was used to inform our decisions, for example, if an item that was rated as 'not relevant' (e.g., 'intelligence') represented an important aspect of the weight stigma construct (note, it is common for people with obesity to be viewed as unintelligent; Flint et al., 2016; Puhl & Brownell, 2001; Puhl & Heuer, 2009) then the item was retained. If the meaning of the item was not clear, or there was repetition with other items, then the item was considered for removal.

Results

In the first round, experts reviewed 110 items, and in the second round they reviewed 33 items. Completion of the rounds resulted in 102 items (removal of 8 items). A brief outline of the results from each round is presented in Table 4.8. Most of the qualitative feedback occurred in round one. Three main issues were identified and are presented in the bottom half of Table 4.8, along with how each was addressed. Item-specific comments from both rounds consisted mostly of proposed item revisions especially for items that were vague or contained more than one concept, explanations to substantiate chosen ratings, and requests for clarification when there was overlap between items (highlighting opportunities for merging items). Supplementary Table 7 presents a summary of such comments, as well as the ratings offered by experts for each of the survey items in the item pool (https://tinyurl.com/WeSQCVstudy). Next, we present the results from each Delphi round.

Round one

Experts rated 110 items on their relevance, stigma domain, type, and comprehensiveness. Regarding *item relevance*, consensus was achieved for 15/110 items from experts who rated the items as 'relevant'. The remaining 95 items were rated as 'not relevant' (25 items in total) and/or 'relevant if modified' (82 items in total) by a subset of researchers. Not all researchers rated the 25 items as 'not relevant' (i.e., only a portion of researchers rated items as such), and of these 25 items four were removed from the item pool. The remaining 21 items were retained as a larger portion of researchers rated them as being relevant, or relevant if modified, thus the items were adjusted according to the feedback provided. Further, not all of the items that were rated as 'relevant if modified' were presented in the next round. This was because for most of these items that were rated as such, there was repetition in the feedback provided by experts. To handle this issue, only one item that was representative of the other similar items was presented in the following round, which was a

total of 33 items. Any changes that took place with the 33 items was applied to the other items that received similar feedback to ensure consistency.

Domains

Stereotype. Of the 26 items intended to tap ‘stereotypes’, only 5 items were classified as ‘stereotypes’ by all experts. For the remaining 21 items that were designed as ‘stereotype’, there was variation in their classification. Specifically, in addition to being classified as ‘stereotype’, there were 13 items that were also classified as ‘prejudice’, 2 items that were also classified as ‘discrimination’, and 6 items that were classified as both ‘prejudice’ and ‘discrimination’. Overarchingly, when classifying ‘stereotype’ items, the experts were more likely to classify them as representing prejudice than discrimination.

Prejudice. Of the 22 items intended to tap ‘prejudice’, only 4 items were classified as ‘prejudice’ by all experts. For the remaining 18 items that were designed as ‘prejudice’, there was variation in their classification. Specifically, in addition to being classified as ‘prejudice’, there were 7 items that were also classified as ‘discrimination’, 6 items that were also classified as ‘stereotype’, and 5 items that were classified as both ‘discrimination’ and ‘stereotype’. Overarchingly, when classifying ‘prejudice’ items, the experts classified items almost equally into stereotypes and discrimination.

Discrimination. Of the 62 items intended to tap ‘discrimination’, only 24 items were classified as ‘discrimination’ by all experts. For the remaining 37 items that were designed as ‘discrimination’, there was variation in their classification. Specifically, in addition to being classified as ‘discrimination’, there were 28 items that were also classified as ‘prejudice’, 3 items that were also classified as ‘stereotype’, and 6 items that were classified as both ‘prejudice’ and ‘stereotype’. Overarchingly, when classifying ‘discrimination’ items, the experts were more likely to classify them as representing prejudice than stereotype.

Table 4.8

Overview of Activity and Item Review within each Delphi Round

Quantitative ratings						
Round	**Items assessed**	**Items reached consensus**	**Items removed**	**Items modified**	**Items requiring further review**	**Activity**
1	110	77	8[1]	33	33	• 25 items considered 'not relevant'[2] • 82 items considered 'relevant if modified'[2]
2	33	33	0	11	0	• The final number of items (N = 102) were subject to review in a subsequent Cognitive Interview

Summary text responses from Rounds 1 and 2	
Three main issues identified:	Response:
1. Some items assumed a particular status (e.g., student, partner) that not all participants may relate to (e.g., "I have been treated unfairly by my teachers/lecturers because of my weight")	N/A options provided for such items (9 items in total). These items were not presented again in Round 2.
2. All items may not be endorsed correctly by participants due to the item stem not being qualified by weight direction (e.g., "I have been stared at because of my weight" which could be endorsed by individuals with a lower weight status)	Because our items aimed to capture weight stigma experiences across the weight spectrum (given research suggests it occurs across all weight categories), we did not change the 70 items that this modification was specifically suggested for (note that this change was suggested for all the items).
3. Some items lacked clear distinction between the stigma domains/types	Items needed to better reflect the stigma types. Therefore, we presented two variations of our items to participants in the next phase, Cognitive Interview, for feedback on the most suited item stem. For example: items were adjusted from "People think/People view" to "I feel that others", and participants were asked to offer their feedback on the most suited item stem to better reflect the intended stigma type.

[1]Five out of eight items were removed but their content was captured in the modification of other items
[2]In Round 1, 25 items were rated 'not relevant', 82 items were rated 'relevant if modified', and only 33 items were presented in Round 2 for further consensus. This was because for most items, there was repetition in the feedback provided by experts. Thus, the feedback received from the 33 items were applied to other items that received similar feedback.

Types

Experienced. Of the 38 items intended to tap experienced weight stigma, 24 were classified as experienced by all experts. Of the remaining 14 items, the inconsistency between experts was due to classifications being split between experienced and perceived types.

Perceived. Of the 39 items intended to tap perceived weight stigma, 8 were classified as 'perceived' by all experts. Of the remaining 31 items, the inconsistency between experts was due to classifications being split between experienced (19 items) and internalised (12 items) types. One item was classified as the 'experienced' stigma type by all experts.

Internalised. Of the 33 items intended to capture internalised weight stigma, 28 were classified as 'internalised' by all experts. Of the remaining 5 items, a subset of experts also rated these as either experienced (1 item) or equally as perceived (5 items).

Comprehensiveness

Researcher responses indicated that in combination the items reflected things that typically occur among people faced with weight stigma. Table 4.9 presents an overview of the anonymised responses received by experts regarding the comprehensiveness of the items. The main concerns raised by experts related to whether the key stigma concepts can be accurately captured in scale items, and the lack of distinction between key concepts. Specifically, experts stated in their qualitative responses that the distinction between domains may not be clinically meaningful, however the distinction between types was an important one to make. Although the distinction between domains was not deemed to be essential, the measure was deemed to be a comprehensive representation of the weight stigma construct. For this reason, the items were retained and the issue of the distinction between domains was left as an empirical question to be answered in the exploratory factor analysis (EFA; reported in Chapter 5).

Round two

In round two, 33 of the 110 items were recirculated for a final assessment of item relevance. Consensus was achieved for all 33 items in the second round, resulting in 102 items. In this round, only 11 of the 33 items required modifications to improve comprehension, grammar, and simplicity (see Supplementary Table 7 for a complete review: https://tinyurl.com/WeSQCVstudy).

Table 4.9

Anonymised Responses from Experts regarding the Comprehensiveness of Wight-Stigma Items

- "Lots of the items were contingent on various non-relevant aspects (e.g., being in a relationship) …however I think the construct is quite broadly represented"
- "I'm not sure that some of the combinations are really possible (based on social-psychological theories – for example, can you internalise discrimination?...can you experience stereotypes given that they're cognitive by definition?"
- "Overall, it seems like things that typically occur"
- "Stereotypes and prejudice are hard to distinguish. The line between beliefs and negative attitudes is not clear"
- "Difficult to distinguish between prejudice and stereotype and I am unsure of the meaningfulness of that distinction"
- "…it is helpful to draw from these concepts to help create a more rounded measure."
- "I think it is important to distinguish between internalized and experienced stigma. However, I worry that the use of perceived stigma could be problematic. Using the term "perceived" seems to mitigate or invalidate the experience of the person holding the perceptions…"

Brief Discussion

Experts in this Delphi review evaluated the relevance of each item and comprehensiveness of the items combined, and classified items according to their stigma domain/type. Most items were considered relevant, with some items requiring modification, and the item pool was considered to comprehensively capture weight stigma. All of the responses from experts were taken into consideration when items were considered for addition, removal, or modification, and we decided that because the measure was deemed to be a comprehensive representation of the weight stigma construct, items were not removed for being "classified wrong". That is, we decided to retain all items that had been considered relevant (after the required changes and modification of items).

As was the case in phase 1, we found that the distinction between *stereotypes* and *prejudice* was where most inconsistencies were found for the stigma domains. Similarly, the distinction between *experienced* and *perceived* weight stigma was most inconsistent for the stigma types. In addition to this, experts explicitly stated in their qualitative responses that the distinction between types, but not domains, is more likely to be clinically important. This identified need is consistent with evidence from the weight stigma literature documenting the differential impact of weight stigma types on health outcomes (e.g., Pearl et al., 2015).

The finding that items received mixed classification ratings, especially for experienced and perceived items, was of particular importance. This demonstrates that these concepts are indeed difficult to separate, despite efforts to distinguish them. For example, we developed particular item stems for the intended weight stigma type (e.g., "I have…" for *experienced* and "People think/People view..." for *perceived)*. Thus, a great deal of effort was made to give the measure the best chance to pick up these distinctions among experts. It can therefore be concluded that the conceptual distinctions of stigma types may in fact be an academic argument, rather than a real-world distinction from the perspective of the victim.

The issue of the distinction between types/domains was left as an empirical question to be answered in the EFA (reported in Chapter 5). The EFA was thus conducted to indicate whether the shared variance meaningfully separated domains/types into factors.

Phase 4: Cognitive Interview Study

In line with COSMIN guidelines, an essential component of content validity assessment for a measure includes evaluating the *relevance*, *comprehensibility*, and *comprehensiveness* of the newly developed item pool from the perspective of users of the measure. This is often done via a Cognitive Interview (CI) study (Mokkink et al., 2018). Therefore, the main objective of this phase was to evaluate whether the items were (1) relevant to the construct of interest, (2) comprehensible and easily understood, and (3) comprehensively capturing the weight stigma construct. To achieve this, the 102 items that were retained after modifications in the previous round were subjected to further evaluation using CI techniques on a sample of potential users of the measure. We interviewed 13 participants individually to gather information about the content validity of each item. Another feature of content validity assessment, as outlined in the COSMIN guidelines (Mokkink et al., 2018), includes testing the items in their final form (i.e., the way in which items will be presented in the survey that will be launched into the community). Therefore, a second goal of this phase was to administer the items on Qualtrics which was the platform used to field test the final items.

Method

Participants

The CI comprised of 13 participants recruited through public advertisements in Melbourne, and word-of-mouth. The number of participants recruited was considered acceptable as no new information is typically gained from more than 5-15 participants in CIs (Blair et al., 2006). Table 4.10 displays the participant characteristics. We purposely sampled to ensure that participants from different ages, gender, educational and ethnic backgrounds, and weights across the weight spectrum were represented. All participants received a detailed description of the study and provided written consent. Reimbursement included a $30 Coles-

Myer gift voucher. The study had approval from the ACU University Human Research Ethics Committee.

Materials

Item review worksheet

We developed a hard copy worksheet (see Appendix B-5) for participants to provide their feedback on the 102 items as a supplement to the feedback reported during the verbal interview. Writing space was provided below each item to give participants the opportunity to comment on item relevance, comprehensibility, comprehensiveness, response format, recall period, item direction, and item stem (Mokkink et al., 2018). This created an opportunity for participants to provide feedback around whether important concepts were missed or not considered in their development (i.e., comprehensiveness), and to contribute to the development of item content.

Relevance was rated as "R" (relevant), "NR" (not relevant), and "R(M)" (relevant if modified). Comprehensibility was rated as "C" (comprehensible) or "NC" (not comprehensible). Comprehensiveness was assessed at the end of the study, by asking respondents to indicate if all the items combined reflected the intended construct. This was rated as "C" (comprehensive) or "NC" (not comprehensive).

Table 4.10

Participant Demographic Characteristics

	n	%	*M, SD* (when applicable)
Australian community			
Gender Identity			
Female[1]	9	69.2	
Age			*M*=32 (*SD*=12.83) Range=21-65
Ethnicity			
Australian	2	15.4	

Table 4.10 (continued).

Australian with different ethnic background		84.6	
Macedonian	1		
Italian	1		
Greek	2		
Greek/Palestinian	4		
Spanish/Lebanese	1		
Indigenous/Venezuelan	1		
Russian/Armenian	1		
Highest Education level			
TAFE (diploma course)	5	38.5	
Bachelor's degree	3	23.1	
Honours	1	7.7	
Master's degree	3	23.1	
Doctoral degree	1	7.7	
Relationship status			
Single	9	69.2	
In a relationship	2	15.4	
Married	2	15.4	
Employment			
Employed	9	69.2	
Not employed	4	30.7	
BMI			*M*=31.29 (*SD*=8.41) Range=19.22-50.68
<18.5 (underweight)	0		
18.5 – 24.9 (healthy weight)	4	30.8	
25.0 – 29.9 ("overweight")	1	7.7	
30.0 and Above ("obesity")	8	61.5	
Weight self-classification			
Underweight	0		
Normal weight	4	30.8	
Overweight	8	61.5	
Obese	1	7.7	
Weight history ("Have you ever been…")			
Underweight[2]	0		
Overweight[2]	9		

N = 13

[1]In addition to female/male, there was an option for participants to identify as 'other' however no participant endorsed any other gender labels.

[2]Perception of weight history was self-reported by participants.

Procedure

This phase comprised of two-rounds. The first round (cognitive interview) was conducted face-to-face using structured interviewing techniques, and the second round was conducted using the online Qualtrics platform to test the scale administration in its final form in line with COSMIN guidelines (Mokkink et al., 2018). Participants were aware that the face-to-face interviews were audio recorded so that responses could be transcribed by two researchers. All the feedback provided by participants in each round was reviewed jointly by the measure development team, and adjustments were agreed upon before items were changed.

Cognitive Interview

In-depth interviews were conducted that involved an item-by-item review of the questionnaire. This was a two-hour face-to-face sitting in a research clinic at the Australian Catholic University. A Clinical Psychology Registrar with experience conducting qualitative intake assessments and structured psychological testing conducted the CIs with participants. The CI was conducted using an interview guide (presented in Supplementary Table 8: https://tinyurl.com/WeSQCVstudy). To begin, the interviewer provided a description of what weight stigma is using examples (e.g., healthcare professionals offering unsolicited weight loss advice to a person because of their weight). Then, participants were informed that they were going to provide feedback on 102 items that were created for a new weight stigma questionnaire. For each item, participants were required to provide feedback on their relevance, comprehensibility, and comprehensiveness (the specific questions asked on each aspect can be seen in Table 4.11). Feedback occurred in the form of written text on the *Item Review Worksheet* (if desired) and verbal feedback.

Table 4.11

Content Validity Questions Assessing Relevance, Comprehensibility, and Comprehensiveness

Content validity aspect	Question(s) asked to participants
Relevance	Is the item relevant to the construct of weight stigma?
Comprehensibility	Is the item comprehensible? Was the item easy to understand?
Comprehensiveness	Did the combination of all the items reflect weight-stigma?
	Can you think of other items that may be reflective of weight-stigma that was not considered in the items presented to you here?

Testing final items on Qualtrics

The second round took place approximately 3 months after the initial face-to-face session. Participants were re-invited to review all of the weight stigma items on Qualtrics, as this online platform would be used to field test the final scale. In line with COSMIN guidelines (Mokkink et al., 2018), participants assessed the final version of the survey including: instructions, administration procedures, item wording, response options, recall period, and lay-out before launching the questionnaire into the community. Participants were simply required to offer feedback on any of these aspects to improve the item wording (if required) and overall survey experience but were not required to 'rate' the items as before.

Analysis

The written and/or verbal feedback that accompanied the ratings offered by participants was examined following the same method described in phase 1. Please see Supplementary Table 5 for an example of data coding by independent researchers (https://tinyurl.com/WeSQCVstudy).

Results

The results of both rounds (Cognitive Interview, Qualtrics review) are presented in Table 4.12. The first round reviewed 102 items and the second reviewed 101 items. Please see Supplementary Table 9 for a review of the adjustments made to each of the items from each participant per round (https://tinyurl.com/WeSQCVstudy). This includes the original and final wording of each item, and it also shows how the problems for each item were addressed in each round. No new information was typically gained in the final interviews as the feedback received was already captured by previous participants in earlier interviews.

Table 4.12

Item Modification Results from the BEWT team review, and Concept Map

Round	Number of items	Source of reviewers	Item change(s)	Final item set	Main change(s) and feedback
One	102	Cognitive Interview participants	8 items modified 1 item removed	101	There was difficulty understanding the links with weight on concepts related to intelligence, work, healthcare. These were retained because of their theoretical/clinical importance. Factor analysis on the items (in a subsequent study) will be used to inform the final item pool.
Two	101	Cognitive Interview participants	None	101	A total of 10 items were queried for the same reasons identified in round one (e.g., arguing the link between weight and intelligence) and were left unchanged.

Round One

A subset of participants rated 26/102 items as ‘not relevant’ and 6/102 items as ‘not comprehensible’ (see below for details). Eight items were modified, and one item was removed (“I feel that I would have difficulty in finding somewhere to live because of my

weight.") because the content of this item was deemed to be repetitive. This resulted in a final 101 weight stigma items. For the remaining items that were not modified, we found that items were being rated as 'not relevant' or 'not comprehensible' even when they were theoretically relevant to the weight stigma construct. For example, the following item "I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight." was rated as 'not relevant' because it was not considered an everyday occurrence of weight stigma. However, because this is a significant issue commonly faced by victims of weight stigma, this item was left unchanged. Remaining items were not modified and were retained in the item pool.

Relevance and Comprehensibility

As shown in Table 4.13, seven participants considered all items relevant, and ten participants considered all the items comprehensible. Issues around relevance and comprehensibility for those who did not agree related to the inability of participants to connect the main construct (weight stigma) to some of the themes (e.g., renting, job opportunities, intelligence) in the items. Notably, the issues were not always corrected (see Table 4.13 and discussion for rationale).

In line with COSMIN guidelines, comprehensibility of the measure is also assessed by asking respondents about the comprehensibility of the response format, recall period, item direction, and item stem. As outlined in Table 4.13, majority of respondents indicated that each of these content validity aspects (e.g., response format, recall period, item direction, item stem) were comprehensible and easy to understand.

Comprehensiveness

All participants reported that, combined, the items comprehensively captured the weight stigma construct. Some item additions were suggested but were not included in the final scale (see Table 4.13 for details). For example, one participant suggested to add items

reflective of suicide intent (SI) and/or deliberate self-harm (DSH). The same experts from the Delphi study were contacted as a result of this finding and were asked to offer advice on the potential inclusion of such items. A list was provided to experts regarding the research teams reasoning *in favour* and *against* including such items. Three main issues were raised and are outlined in Table 4.13. Note that whilst the consensus was to refrain from including these items, it does not preclude the use of items from other measures that do relate to SI/DSH where this is relevant.

Round Two

In this round, participants were re-invited to review the final 101 items on Qualtrics before launching the measure into the community. Specifically, participants were asked to offer feedback on whether they have any concerns about the items or the overall survey experience, and to describe how they would revise it accordingly. Consensus was achieved on the final scale. A total of 10 items were queried for the same reasons identified in round one (e.g., arguing the link between weight and intelligence) and thus were left unchanged (see previous rationale). Briefly, items were left unchanged because the feedback was not in alignment with the commonly reported experiences among weight stigma victims.

Brief Discussion

This Cognitive Interview study included an evaluation of the relevance, comprehensibility, and comprehensiveness of each item among individuals from the community. Items were considered relevant and comprehensible after item modification, and the item pool was considered to comprehensively capture weight stigma. Of importance, many items which were being classified as ‘not relevant’ or ‘not comprehensible’ were those that, according to participants, did not promote a logical link between weight and specific concepts such as intelligence, work or housing discrimination, and healthcare. Because the literature consistently reports weight stigma occurring in each of these areas among victims

(e.g., Flint et al., 2016; Puhl & Brownell, 2001; Puhl & Heuer, 2009), we retained the items at this stage of item review. Instead, we aimed to conduct a subsequent factor analysis (Chapter 5) on the items as a way to inform the decision around which items are to be retained or removed from the final item pool.

Table 4.13

Results of the Qualitative Analysis from Round One

Rating	Content	*n*	Central issue(s) / proposed changes	Decision
Relevance	Relevant	7[1]		
	Not Relevant	6[1]	Unclear link between weight stigma and concepts relating to renting, job opportunities, and intelligence. Example item: "I have been called 'unintelligent' because of my weight"	Items left unchanged because qualitative research suggests that these occurrences are commonly endorsed by those with lived experience of weight stigma (Puhl et al., 2008).
	Relevant if Modified	0		
Comprehension	Comprehensible	10[2]		
	Not comprehensible	3[3]	Difficult to understand the link between concepts (e.g., weight and intelligence)	
Comprehensiveness	All items in combination reflect weight stigma	13		
	Additional items suggested that were not considered in the scale	1/13	Suggestion to add items reflective of suicide ideation/deliberate self-harm, such as: "I have thoughts of hurting myself because of my weight".	Experts from the Delphi Study were contacted to provide their view on including items of this nature. We decided not to include items reflective of this nature based on three main issues raised by experts[4]:

Table 4.13 (continued).

				(1) items related to SI/DSH do not, by nature, make up the conceptualisation of the weight stigma construct, but its consequences, (2) there is a possibility that individuals using the measure may not be trained to take appropriate action to handle responses that may be triggered from such items, and (3) individuals administering the questionnaire with these items included may be required to act each time, limiting the use of the measure in clinical/and or research settings
Response format	Experienced/perceived items = frequency scale Internalised items = agreement scale	13	Suitability of *Frequency scale* (0 = never to 100 = always) for all items	Upon supervisory review, a total of 27 items that intended to tap internalised weight stigma were changed so that they suited a frequency response (changes described below in 'item stem' row). This meant that all items used the same response format.
Recall period	Suitability of recall period for all items: 'day-to-day'	13		
Item direction[5]	Positively worded items	1		Respondents indicated that including positively worded items may alter its intended meaning. Also, it is suggested that item direction and wording can result in items that factorising accordingly (Qasem & Bilal, 2014) which can impact the internal consistency of the scales (Solís, 2015). Given that majority of respondents reported a preference to retain items without altering their wording, items were left unchanged.

Table 4.13 (continued).

	Negatively worded items	12		
Item Stem	Perceived and experienced items require clearer distinction	13	All participants agreed that the item stems needed to be adjusted to better reflect the distinct weight stigma types. However, qualitative feedback from some respondents suggested that they still found overlap in how the experienced and perceived items could be interpreted even with changes being made to the item stems. This was consistent with the already observed overlap between these stigma types.	**Perceived items** (*n* = 36) Items adjusted from "People think/People view" to "I feel that others". This ensured that respondents who endorsed the perceived items would feel validated in their responses. **Internalised items** (*n* = 27) For items to better capture a frequency response, item stems were changed accordingly: (1) "I think" was added at the beginning of the item stem of relevant items (e.g., "I am lazy because of my weight" to "I think that I am lazy because of my weight"), and (2) "I do not seek" was replaced with "I avoid" (e.g., I do not seek out healthcare services when I should because of my weight" to "I avoid seeking out healthcare services when I should because of my weight.")

Note. $N = 13$

[1]This includes the number of respondents who rated that *all the items* were relevant, or that *some of the items* from the entire item pool were not relevant. Please see Supplementary Table 9 for a full summary of feedback per item.

[2]This includes the number of respondents who indicated that *all the items* were comprehensible, or that *some of the items* from the entire item pool were not comprehensible. Please see Supplementary Table 9 for a full summary of feedback per item.

[3]The three respondents rated items as 'not comprehensible' for the same reason mentioned in the text of this table (see relevance row)

[4]Four experts provided feedback via email (social psychology researcher: $n = 1$, weight stigma researchers: $n = 3$)

[5]One respondent suggested including items that were positively worded whereas remaining respondents indicated their preference for the wording of items to be retained as is

Discussion

The purpose of this study was to describe the initial item pool of a new weight stigma measure, and outline the steps taken to establish its content validity (in line with COSMIN guidelines; Mokkink et al., 2018). Four methods were used to establish content validity: (1) item development informed by theory and research, (2) internal expert review (3) a Delphi consensus study, and (4) a Cognitive Interview study.

Content validation of the items was informed both by experts in the field of weight-related research, weight stigma, social psychology, and stigma more generally, as well as community members. Findings across each phase demonstrated that there was a strong consensus of item relevance from all who participated, with the majority favouring inclusion of all the items in each updated version of the final item pool (n = 101; also see Supplementary Table 6, 7, and 9 to view the specific feedback from each participant in each stage of item review: https://tinyurl.com/WeSQCVstudy). However, across each phase of item review, there were many items that were rated as ‘not relevant’ or ‘not comprehensible’ and were subsequently modified based on the feedback provided in order to improve the clarity and meaning of each item.

It is important to note that modification of all items was not always possible. Specifically, cognitive interviewing with community members showed that they could not always see the links between certain concepts in the items such as weight and intelligence, weight and employment difficulties, or weight and healthcare for weight stigma victims. There is a plethora of literature documenting these relationships (e.g., Flint et al., 2016; Puhl & Brownell, 2001; Puhl & Heuer, 2009). Research has established that individuals with higher weight face negative stereotypes about their abilities and character, and are considered lazy, lacking willpower, unsuccessful, and unintelligent (Puhl & Brownell, 2001). These stereotypes also feed into workplace discrimination (Flint et al., 2016; Puhl & Heuer, 2009)

and healthcare settings (Tomiyama et al., 2018). Because of this research, the items were not removed or modified. Instead, we aimed to identify whether the items with most disagreement are items that did not make it into the final item pool following subsequent factor analysis.

Regarding the comprehensiveness of the measure, the feedback obtained from all who were consulted (experts, individuals from the community) indicated that, together, the items developed for this new measure comprehensively represents weight stigma and demonstrated 'sufficient' evidence that was of 'high' quality for all content validity aspects. The content validity ratings of our measure are presented in Table 4.14 and 4.15 and are in line with the COSMIN scoring system.

Table 4.14

Content Validity Ratings in Line with COSMIN: Methodological Quality of the WeSQ

Measure design requirements	Methodological Quality
General design	
Clear construct	VG
Clear origin of construct (e.g., based on theory)	VG
Clear target population for which the measure was developed	VG
Clear context of use	VG
Measure developed in sample representing the target population	VG
Other (e.g., use of skilled interviewer, interviews transcribed)	VG
Asking community members (CI study)	
Relevance	VG
Comprehensibility	VG
Comprehensiveness	VG
Asking experts	
Relevance	VG
Comprehensiveness	VG
Total measure development	VG

Note. CI = Cognitive Interview; VG = Very Good'

Table 4.15

Content Validity Ratings in Line with COSMIN: Result Ratings of the WeSQ

	Overall rating	**Quality of evidence**
	+ / - / ?	**High, moderate, low, very low**
Content validity	+	High
Relevance	+	High
Comprehensiveness	+	High
Comprehensibility	+	High

Note. These ratings are based on one study; + = 'sufficient'; - = 'insufficient'; ? = 'indeterminate'

As an addition to the COSMIN guidelines for asking about relevance, comprehensibility, and comprehensiveness, we also asked gathered feedback around the distinction between stigma types and domains for our items from experts and individuals from the community. Whilst many items were consistently classified as each type, most experts classified the items into their respective type and domain inconsistently. Specifically, the domains of stereotypes and prejudice were the most difficult to distinguish, and the perceived type was confounded with the experienced and internalised types. It was also highlighted that some of the combinations may not be possible (e.g., stereotype *domain* and experienced weight stigma *type*). Similarly, individuals from the community were not able to easily distinguish the types from the wording of the items, especially the experienced and perceived types, suggesting that there may be overlap in their features. We elaborate on these next.

Regarding the domains, although discrimination appeared to be an independent domain by raters, they found it difficult to distinguish between stereotypes and prejudice. The finding that stereotypes and prejudice was a difficult distinction to make conceptually was supported by the broader Social Psychology literature (Devine, 1989; Harding et al., 1969; Madva & Brownstein, 2016). Specifically, whilst their conceptual (or "academic) distinction is widely accepted, the nature of their overlap remains contested (Madva & Brownstein,

2016). The basic argument is that if stereotypes exist or become activated, prejudice will inevitably follow (Devine, 1989). Given that the differentiation of the stigma domains may be mostly an academic one, we argue that it may not be important to make this distinction at the level of measurement. Rather, the importance lies in ensuring that the measure includes items reflective of stereotypes, prejudice, and discrimination, and our results show that some items were consistently classified as each domain. The assessment that the measure is comprehensive further supported our decision to keep the items.

Regarding the stigma types, internalised weight stigma items were consistently rated as such. The ‘perceived’ items were mostly misclassified as reflecting the ‘experienced’ type (although some items were also misclassified as ‘internalised’). As discussed in Chapter 2, the difference between "experienced" and "perceived" lies on whether the event can be "confirmed to be true" or not. However, it could be argued that perceptions by a person, are in fact their experience. This may be where the difficulty in classification lies. For example, the following statements "I have been stared at because of my weight" and "I feel I have been stared at because of my weight" could both be classified as experienced and/or perceived weight stigma, making it difficult to tease the two classifications apart. Whether weight stigma is objective (experienced) or subjective (perceived) is largely irrelevant to the impact this has on the individual, and our results demonstrate that it may not be possible to distinguish these theoretically distinct concepts in measurement and clinical practice. The mixed classification raises questions as to whether the items may be distinguishable into two different subscales or not. Nevertheless, there was agreement on the fact that the list of items developed included items that reflected both experienced and perceived weight stigma. For some of these items, there was consensus.

Despite the variable classification of stigma types, the importance of distinguishing them was a view supported by the researchers of this study, and the broader weight stigma

literature. It has been shown that all weight stigma types are harmful to health (Papadopoulos & Brennan, 2015), but the research focusing on internalised weight stigma has demonstrated that it may have a stronger association with poor health outcomes in comparison to experienced weight stigma (Pearl et al., 2015), and that internalised weight stigma may be an important mediator in the relationship between experienced weight stigma and poor health outcomes (Bidstrup et al., 2021; Magallares et al., 2017; O'Brien et al., 2016). This research highlights the importance of distinguishing internalised weight stigma from other types. Thus, the issue of the distinction between the stigma types was left as an empirical question to be answered in the subsequent exploratory factor analysis.

Future Considerations

The results of this study have implications for the developing measure of this thesis, as well as the stigma theory we applied to our measure. Regarding the measure, our results provide good evidence for content validity. The feedback from researchers and individuals from the community demonstrated that the new measure comprehensively captured weight stigma, almost all items were deemed relevant, and they were all comprehensible after the requested modification. Further, instructions, administration procedures, response options, recall period, and lay-out were clear and unambiguous. Meeting relevant criteria of content validity ensured that our items reflect the intended weight stigma construct which is important to consider before making sense of data and demonstrating other forms of validity which is the next step of validating our measure (Mokkink et al., 2018).

The theoretical implications of our measure are also noteworthy. While potentially of interest from a theoretical and academic perspective, the model of stigma we originally proposed, consisting of three domains (stereotypes, prejudice, discrimination) and three types (experienced, perceived, internalised), may not be meaningful to weight stigma victims and it may not be possible to distinguish these concepts empirically. Thus, it is important to include

items that comprehensively capture all domains and types so that the scale represents the breadth of manifestations of weight stigma, even if they are not viewed as distinct, or do not separate into distinct factors in subsequent factor analyses. Thus, the separation of items into factors that reflect domains or types (or a combination of both) remains an empirical question. We aimed to factor analyse responses on this measure to identify patterns of covariance and determine whether these reflect the theoretical distinction of domains and types (Chapter 5). This would offer further insight into whether the theoretical concepts can be distinguished in practice and inform the literature around whether it is possible to test the differential impact of weight stigma types on health outcomes (Magallares et al., 2017; Pearl et al., 2015).

Overall Strengths and Limitations

There are several important areas where this study makes an original contribution to the weight stigma literature. First, this is the only weight stigma measurement study to comprehensively report on content validity, and to be guided by a theoretical stigma framework (Corrigan & Watson, 2002; Goffman, 1963). Second, as available research has not used existing consensus methods (i.e., a Delphi study, Cognitive Interviewing) to assess important content validity aspects, this study fills an important gap in the literature by gathering and reporting opinions from researchers and individuals from the community. This enabled us to ensure that the item pool comprehensively represented the multi-faceted conceptualisation of weight stigma (sources, settings, domains, types). In addition, the revised item pool formed the basis for the remainder of our measure validation. It provided initial evidence for comprehensiveness in the weight stigma construct ahead of looking at the factor structure of the items. Another notable strength was that two members of the measure development team have lived experience of weight stigma (XPD and SP). This was highly valuable for the development of the WeSQ given that prior measurement studies and reviews

have highlighted the importance of engaging people with lived experience of weight stigma to contribute to the generation of items (as well as their relevance and comprehensiveness).

In line with recent movements to use correct weight terminology (Meadows & Daníelsdóttir, 2016; Puhl, 2020), our items were specifically worded to consider the sensitive nature of weight stigma. We reflected people-first language in items to remove weight labelling (e.g., avoiding phrases such as "*obese people* are labelled as 'lazy" and instead using phrases such as "people think that I am lazy *because of my weight*"). Lastly, our items were assessed in individuals across the weight-spectrum as weight stigma is known to affect people across all levels of weight.

One limitation of the current study was that the background of expertise from the panel members was not as diverse as intended. Whilst we invited an equal number of experts from the social psychology and weight-related field, the weight-related researchers outnumbered the Social Psychology experts (7:2). Dropout in the Delphi study was also an issue, as their expertise on the topic may have been missed. Further, it could be argued that presenting the theoretical model to the expert panels primed their thinking and classification of items. However, our findings demonstrated that experts rated all items variably in the study (i.e., items that intended to tap a specific domain/type were not always classified accordingly), suggesting that presenting the theoretical model did not impact the results. Information about the racial/ethnic diversity in the research team (Phase 2) and group of experts (Phase 3) who reviewed the items was not obtained and can also be considered a limitation of the study. This information would have strengthened the generalizability of our items for populations who will be filling out the measure. Given some of the observed differences in relevance ratings across participants in the community sample and among experts, testing the relevance ratings with larger and diverse samples of community individuals and experts may be useful for future item refinement. This will ensure that items

are more representative of the diverse perspectives and experiences of future study participants who complete the measure. Lastly, we did not specifically ask those who did participate whether they had ever experienced weight stigma. Given that there were a number of established papers in the field that recruited victims to report on their experiences of weight stigma, we used this data to inform our items instead. In an effort to be comprehensive, we offered community members (across the weight spectrum) the opportunity to make suggestions and offer feedback to each of our items including whether there were important concepts missed or not considered in their development. In total, there were 9 participants living in overweight bodies from the Cognitive Interview study. The rich dialogue of all our participants, especially those of higher weight, provided helpful information about the impact of stigma on those who are stigmatised.

Conclusion

Considerable progress has been made in understanding weight stigma to inform weight specific research and treatment. However, the value of these clinical advances is not completely understood because available measures have been limited largely to inadequate testing and reporting of content validity. This content validity study provides the final item pool to be tested in a companion study that aims to develop the final scale. It is intended to continue developing this measure into a useful clinical and scientific questionnaire for assessment and treatment of those affected. This would help to better measure the negative health outcomes that are related to, and predictive of, the different weight stigma types.

Chapter 5: Weight Stigma Measurement Study

Weight Stigma Questionnaire (WeSQ): Development and validation of a weight stigma scale for adults across the weight spectrum

5.1 Preamble: Both the systematic review presented in Chapter 3 and the content validity study described in Chapter 4 informed the study described here. One of the significant findings from the review was the absence of high-quality evidence for content validity in current measures of weight stigma (Chapter 3). This highlighted the importance of developing a measure from the 'ground up' to ensure that the content of the items is representative of all aspects of the weight stigma construct (Chapter 4). Therefore, Study 2 developed the initial item pool and reported on the content validity assessment of the new measure and resulted in 101 items. As an extension of the content validity study, the next two studies developed the final item pool. Study 3 conducted an exploratory factor analysis to identify the underlying factor structure and select the final item pool, and to assess the measures internal consistency, reliability, measurement error, concurrent and known-groups validity. Study 4 aimed to confirm the factor structure identified in Study 3 via confirmatory factor analysis and assess the construct validity of the final measure.

CHAPTER 5: Weight Stigma Measurement Study

5.2 Study 3 and 4: Weight Stigma Questionnaire (WeSQ): Development and validation of a weight stigma scale for adults across the weight spectrum

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Appendices

Appendix E: Weight Stigma Questionnaire Study Supplementary Tables

Appendix F - 5: Proof of Study 3 and 4 Submission to Body Image

Appendix F – 8: Statement of Contribution for Study 3 and 4

Abstract

In response to the psychometric limitations of weight stigma measures identified in the literature, two studies were conducted to report on the development and validation of the Weight Stigma Questionnaire (WeSQ) in adults, the first comprehensive measure of weight stigma. In Study 3, $N = 999$ adults (18-65) completed the initial item pool of the WeSQ, and three existing weight stigma scales. In Study 4, $N = 614$ adults (18-65) completed the WeSQ, and measures of maladaptive eating, intuitive eating, body appreciation, quality-of-life, and social physique anxiety to assess structural and convergent validity. Exploratory factor analysis identified six factors: Perceived, Internalised, Functional self-stigma, Experienced, Healthcare, and Intimate Relationships. We found evidence of excellent internal consistency (all $\alpha > .90$), test-retest reliability (all ICC > .90), concurrent validity (all $r > .56$), and known-groups validity. In Study 4, confirmatory factor analysis supported the six-factor structure (CFI = .994, RMSEA = .043; SRMR = .056). Convergent validity was demonstrated via correlations in the expected direction (all $.09 < |r| < .80$). The WeSQ demonstrated good initial evidence for almost every psychometric property. It may be used to study weight stigma in adults across the weight spectrum. Although further psychometric assessment is required (e.g., cross-cultural validity, responsiveness), the WeSQ is the first comprehensive and psychometrically strong measure of weight stigma.

Weight Stigma Questionnaire (WeSQ): Development and validation of a weight stigma scale for adults across the weight spectrum

Weight stigma has attracted increased attention in the research and public health literature due to the role it plays in the development and/or maintenance of negative biopsychosocial health outcomes (Emmer et al., 2020). Weight stigma refers to negative stereotypes (i.e., beliefs) about, prejudice (i.e., negative attitudes) towards, and discrimination (i.e., mistreatment) of individuals because of their weight. We refer to these as *stigma domains*. From the perspective of the target, weight stigma is often classified into experienced, perceived, and/or internalised weight stigma (Papadopoulos & Brennan, 2015; Papadopoulos, de la Piedad Garcia, et al., 2021). More recently, the concept of anticipated weight stigma (i.e., expectation that stigma will occur) has been introduced (Hunger, Dodd, et al., 2020). We refer to these as *stigma types*. Weight stigma is related to poor biopsychosocial health outcomes (Emmer et al., 2020) and is a mediator of the relationship between weight and psychological health problems (Forbes & Donovan, 2019; Hunger & Major, 2015). Despite the large volume of research examining weight stigma, the psychometric evidence for its measurement is lacking and many researchers have reported the need for an improved measure (DePierre & Puhl, 2012; Lacroix et al., 2017; Meadows & Higgs, 2019; Papadopoulos, de la Piedad Garcia, et al., 2021; Stewart & Ogden, 2021). In this study, we present the development and validation of a new measure of stigma, borne out of the needs identified in our recent systematic review (Papadopoulos, de la Piedad Garcia, et al., 2021).

Current Weight Stigma Measurement

We recently published a systematic review and evaluation of the existing weight stigma measures (Papadopoulos, de la Piedad Garcia, et al., 2021). One of the main findings of our review was that there was little published evidence of the evaluation of content validity across published weight stigma measures (Papadopoulos, de la Piedad Garcia, et al., 2021).

Further, inspection of the measures' items confirms that existing measures of weight stigma do not comprehensively (or specifically) include items tapping onto the domains (stereotypes, prejudice, discrimination), or types (experienced, perceived, internalised) that are frequently referred to in the literature (Emmer et al., 2020; Puhl et al., 2008). Supplementary Table S1 shows a mapping of the classification of items found in measures included in the review. The table shows that measures which purport to tap onto one type (e.g., experienced weight-based stigma) often also include items that seem to correspond to a different type (e.g., perceived weight-based stigma items). This overlap of stigma types within measures introduces a level of uncertainty in the evidence base supporting models about the differential effects of each type of stigma. In addition to these content validity limitations, our review also found that there was limited assessment and/or reporting of evidence for cross-cultural validity, reliability, measurement error, criterion validity, and responsiveness in current measures. On the other hand, there was consistent reporting of evidence for structural validity, internal consistency, and hypothesis testing for construct validity. The evidence was often deemed to be of higher quality (particularly for internal consistency).

Given that our knowledge of weight stigma is only as good as the measures available to assess it (Durso & Latner, 2008), improved assessment of weight stigma would contribute to a more accurate understanding of this phenomenon. In this study we present a new weight stigma measure. The development and content validation of the initial item pool is reported in our content validity study (Papadopoulos, de la Piedad Garcia, et al., 2021). Across two studies, the current paper presents evidence for structural, concurrent, known-groups, and convergent validity, as well as estimates of internal consistency and test-retest reliability of the measure.

The Weight Stigma Questionnaire

The new self-report Weight Stigma Questionnaire (WeSQ) was designed to be used in adults, aged 18 to 65, across the weight spectrum. It aimed to represent all theoretical domains (stereotypes, prejudice, discrimination) and types (experienced, perceived, internalised) proposed by Goffman (1963) and Corrigan and Watson (2002), across an exhaustive list of stigma-sources (e.g., family, friends, partners, etc), and settings (e.g., healthcare, workplace, etc). The measure is intended for use both in clinical and research studies.

Content validity of the measure was assessed across four phases (reported in Papadopoulos, Brennan, et al., 2021): (1) item development informed by theoretical/empirical literature, (2) an internal research team review assessing item relevance and comprehensiveness, (3) a Delphi Study with experts assessing item relevance and comprehensiveness, and (4) a Cognitive Interview Study with community individuals assessing item relevance, comprehensibility, and comprehensiveness. A total of 101 items resulted from this process of validation and were used in the two studies included in this paper, where we present preliminary psychometric evidence for the following properties: structural validity, internal consistency, test-retest reliability, measurement error, and concurrent, known-groups, and convergent validity.

Study 3

The aims of this study were to (1) establish the final item pool of the WeSQ via exploratory factor analysis, and (2) estimate the internal consistency, test-retest reliability, measurement error, and construct validity (concurrent, known-groups) of the resulting factors. Data was collected from participants at two time points. At Time 1, participants completed all measures described below and were asked whether they would be willing to complete a shortened version of the measure 4-weeks later to assess test-retest reliability. Those who agreed, were contacted via email 4 weeks later (Time 2), at which point they only responded to the WeSQ items. As this is the first study to apply a theoretical model to a weight stigma measure, our expectations for the initial factor analysis remain exploratory. However, we had specific hypotheses pertaining other psychometric properties. Specifically, we hypothesised the following:

H1: Given that weight stigma is stable over time and across all areas of daily life (Haines et al., 2013), we expect 4-week test-retest intraclass correlation coefficients (ICC) between WeSQ scores at Time 1 and at Time 2 to be ≥ 0.8 which is considered "good" consistency overtime (Nunnally & Bernstein, 1994).

H2: To provide evidence of *concurrent validity*, we expected positive and large ($r >$ .50) correlations, in line with Cohen (Cohen, 1988), between each factor in the WeSQ and the three existing weight stigma measures as they are each assessing similar constructs.

The literature suggests there are demographic factors that are related to weight stigma including weight, age, gender, and relationship status (Boyes & Latner, 2009; Emmer et al., 2020; Major et al., 2014; Tomiyama et al., 2018). Therefore, we also hypothesised the following:

H3a: Weight. It has been shown that weight stigma can trigger changes in the body, such as increased cortisol levels that lead to poor metabolic health and increased weight gain

(Tomiyama et al., 2018). Therefore, we expected scores on the WeSQ to shows positive and large correlations with weight.

H3b: Age. Research has found that frequent experiences with weight stigma is associated with increasing age (Friedman et al., 2005). Thus, we expected scores on the WeSQ to shows positive and large correlations with age.

H3c: Gender. Weight stigma has been considered a risk factor for a range of emotional consequences for both females and males. Some studies suggest that males are just as vulnerable to weight stigma as females (Himmelstein et al., 2018a), but others report more weight stigma experiences in females than in males (Sattler et al., 2018). This may be due to the pervasive ideal of physical attractiveness which emphasises being thin as central to feminine beauty. Therefore, we expected scores on the WeSQ to be significantly higher for women than men.

H3d: Relationship status. Research indicates that people who are not in a relationship are more likely to view themselves as unlovable and less attractive because of their weight, which may be exacerbated by weight stigma (Boyes & Latner, 2009). Therefore, we expected scores on the WeSQ to be significantly higher for participants not in a relationship (compared to those in a relationship).

H3e: Perceived weight. As perceived weight affects individuals' vulnerability to experiencing weight stigma more than actual weight (Major et al., 2014), we expected that individuals who reported their perceived weight to be high (overweight, obese) would obtain significantly higher scores on our measure than those whose perceived weight was in the lower weight categories (underweight, normal weight), when controlling for BMI.

Method

Participants

A total of 1479 adult participants (aged 18-65) across the weight spectrum were recruited via public and online advertisements, word of mouth, and university courses

(Australian Catholic University, Melbourne). However, only n = 999 provided complete data on the WeSQ, and therefore all analyses were conducted using this data. Most missing responses occurred for participants who were residing in Australia. They corresponded to individuals who dropped out towards the end of the survey. Missing responses were not imputed to preserve the true correlation estimates among our items that will form the basis of our measure (Akhtar-Danesh & Dehghan-Kooshkghazi, 2003).

A larger portion of the sample self-identified as women (n = 861) compared to men (n = 129), or non-binary (n = 7). Two participants preferred not to disclose their gender. The mean age was 28.59 (SD = 10.37) and the mean BMI was 27.17 (SD = 9.72). Complete data on demographic characteristics for this sample is presented in Table S2. The location of participants was varied throughout Australia (n = 884) and various countries around the world (n = 112). Students at the host university were granted course credit for their time. Participants who were not university students went into a draw to win an iPad mini. Data collection commenced in January, 2020 and ended August, 2021.

Measures

Demographics

Demographics information was obtained such as self-reported age, gender, occupation, relationship status, residential location, ethnicity, and national and educational background. Perceived weight information was obtained by asking participants to indicating whether they considered themselves to be underweight, normal weight, overweight, or obese.

Current Measure

Weight Stigma Questionnaire (WeSQ). The WeSQ was created by the authors to include items that tapped onto the different domains (stereotypes, prejudice, discrimination), types (experienced, perceived, internalised), and their combination. For each combination we developed items that made reference to stigma as "perpetrated" by a number of sources (e.g.,

family, peers), and occurring in various settings (e.g., healthcare, public). Item development was informed by existing definitions and theories of stigma (Corrigan & Watson, 2002; Goffman, 1963), definitions of weight stigma (e.g., Puhl et al., 2008; Tomiyama et al., 2018), quantitative and qualitative research including the lived experience of weight stigma among victims (Blackstone, 2016), and a review of existing measures (Papadopoulos, de la Piedad Garcia, et al., 2021). The items were then reviewed by our clinical research team, experts in the field of stigma (broadly) and weight stigma specific researchers (Delphi Study). They were then reviewed by individuals from the community (Cognitive Interview Study). The final version administered to participants here consisted of 101 items (see Table S3). Respondents are asked to indicate the extent to which they have experienced stigma-based events across a number of statements such as “I have been called 'disgusting' because of my weight” on a visual analogue scale ranging from 0 (never) to 100 (always).

Concurrent Validity Measures

Stigmatizing Situations Inventory (SSI). The brief SSI (Vartanian, 2015) is commonly used to assesses *experienced* weight stigma (e.g., Mensinger et al., 2018; O'Brien et al., 2016). It includes 10 items covering various stigmatizing experiences. An example item is: “Being stared at in public.” Participants indicate how often each situation has happened to them on a 10-point scale ranging from 0 (*never*) to 9 (*daily*). A total score is obtained by calculating the mean of the scale. Higher scores indicate increased frequency of stigma experiences. The brief SSI has demonstrated convergent validity with various outcomes such as self-esteem, body dissatisfaction, and eating disorder psychopathology in adults (Vartanian, 2015) and good estimates of internal consistency in this sample $\alpha = .86$.

Perception of Teasing Scale (POTS). The POTS (Thompson et al., 1995) is commonly used to measure *perceived* weight stigma. Participants are presented with six examples of stigmatisation (e.g., “People pointed at you because you were overweight”) and

are asked to indicate: (1) *frequency:* how often they faced this on a 5-point scale ranging from 1 (*never*) to 5 (*always*), and (2) *effect:* how it affected them. The POTS includes frequency and effect items for two subscales: general weight-teasing and competency. Only the *frequency* of the 6-item weight teasing subscale was used in this study to obtain a measure of how often participants thought they were the target of stigmatizing behaviour. To obtain a frequency score, the sum of all scores is calculated. Higher scores indicate higher perceived weight stigma. The POTS has demonstrated convergent validity with measures of body image, eating disturbances, and self-esteem in adults (Thompson et al., 1995), and good estimates of internal consistency in this sample ($\alpha = .91$).

Weight Bias Internalisation Scale (WBIS-M). The modified WBIS (Pearl & Puhl, 2014) is used to measure *internalised* weight stigma (e.g., Pearl & Puhl, 2014). An example item is: "I am less attractive than most other people because of my weight." Participants are asked to indicate their agreement with each statement on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A total score is obtained by calculating the mean across items. Higher scores indicate strong agreement with weight-based stereotypes and the application of negative statements about the self. The modified WBIS has showed convergent validity with various outcome measures (e.g., self-esteem, depression) in adults (Pearl & Puhl, 2014), and good estimates of internal consistency in this sample ($\alpha = .93$).

Procedure

The study advertisement included the link available to complete the online questionnaire on Qualtrics (Qualtrics, 2021). Interested participants who clicked the link were directed to an information letter. Participants who agreed to participate after reading the letter were presented with the measures listed above. Demographic questions were asked first, followed by the new items of the WeSQ (items randomised), and each of the existing weight stigma measures. Individuals of any weight were welcome to participate even if they had not

experienced weight stigma. Upon survey completion, participants were asked whether they would be willing to participate again, completing a shorter version of the survey, four weeks later. Those who agreed, provided their emails. Average completion time for Time 1 measures was 20-25 minutes.

For the test-retest reliability study, willing participants received a link to the re-test part of our study four weeks later. This survey only included the new measure items, which were presented under the same test conditions as the first study. The 4-week timeframe was selected because there was no reason to expect a change in weight stigma experiences, perceptions or internalisations over a 4-week period, as weight stigma is considered to be stable over time and across important areas of life (Haines et al., 2013). Average completion time was 10-15 minutes.

Results

The statistical analyses included assessment of descriptive information, identification of the factor structure, and assessment of other psychometric properties. The EFA was conducted in SPSS version 27.

Data Preparation

We encountered a few problems in the self-reports of weight and height, and we report on the way in which we dealt with this data in supplementary material (S4). As a result of this, we computed BMI in three different ways (see S4 for an explanation). We conducted all analyses with all three BMI estimates and the results were the same regardless of the method estimating BMI. For that reason, in this study we only report the data for the original BMI, but supplementary Table S4 reports data for the relationship between BMI and our scale, for each method of BMI estimation.

As per the COSMIN taxonomy, the item statistics including skewness/kurtosis, percentage missing on each item, and floor/ceiling effects, are reported for all items in Table

S5. Significant floor/ceiling effects have been set at 15% as an acceptable benchmark (Terwee et al., 2007) and is indicated by the percentage of participants who achieved the lowest or highest possible score on the WeSQ. Following this criterion, significant floor effects were observed for many of our items, with a high percentage of participants endorsing items on the lower end of the scale (closer to 0). Whilst transformations are the conventional method to improve skewness, it can distort the original data. Therefore, performance of transformations was not suitable for our data.

Analyses of Psychometric Properties

Structural validity

Nine of 101 items were removed because they contained a not applicable (n/a) response option that was highly endorsed between 47% to 87% of our sample (example item: "I have lost a job because of my weight."). Given such high rates of non-applicable responses, keeping these items in the analysis would lead to substantial loss of cases. Thus, they were removed[2]. We conducted a brief systematic search of the literature to identify the methods for dealing with n/a response options (e.g., Michalski & Wojtusiak, 2012; Osborne, 2013) and consulted with experts in the substantive area of missing data to inform item removal (R. F. Devellis, personal communication, June 12, 2021). The literature reporting on this issue advises to combine 'n/a' with the 'never' response (i.e., score each as '0'). However, placing a '0' to a non-applicable item gives '0' to a participant who said the item did not apply to them, and that participant will contribute to the data as if they had a partner who did not discriminate against them. Each response option has different connotations and for this reason we decided not to combine 'n/a' with the 'never' response option as it would

[2] N/A response options were applied to a total of 9 items as they assumed a particular status that may not have applied to all respondents, for example, having a job or receiving welfare benefits. It is considered "incorrect" to simply impute or treat this data as missing because they are valid responses. Further, among respondents, there was a high endorsement rate of selecting "n/a" or the lowest score '0', suggesting that these items may not be relevant to the target construct. Thus, the items were removed.

complicate the meaning of the results. We identified 33 items that had correlations with other items above .8. Whilst it is common practice to remove variables with low (< .30) and high (> .80) correlations, there are problems with this heuristic (Rockwell, 1975). Following Rockwell's recommendations (Rockwell, 1975), these items were not removed because the variables were regarded as important indicators of weight stigma. In order to be regarded as such (i.e., an important indicator of weight stigma), this was mostly informed by the ratings and feedback received from experts and individuals from the community in a companion paper outlining the content validity of our item pool (https://tinyurl.com/WeSQCVstudy). Relevant research was also reviewed to make a determination about these items. Items were retained and included in the analysis based on their theoretical/clinical importance. Specifically, some of the highly correlated items tapped onto the (related but distinct) concepts of shame and embarrassment which are important characteristics of internalisation of stigma (Wilfley et al., 2016).

An Exploratory Factor Analysis (EFA) was performed to reduce the item pool and identify the underlying structure of the weight stigma items. In line with COSMIN guidelines, an EFA was appropriate as our items were based on a reflective model (i.e., the construct is reflected by the items indicating that for individuals who are high in weight stigma, all the items will be manifest to a high degree; Mokkink et al., 2018). COSMIN guidelines suggest that sample size should be at least 7 times the number of items in the analysis (Mokkink et al., 2018). With 92 items, this rule requires a minimum of 644 participants, which our sample (n = 999) exceeded. The Kaiser-Meyer-Olkin (KMO) test indicated 'superb' sampling adequacy, KMO = .984 (Field, 2009), and the Bartlett's test of sphericity was significant χ^2 (2485) = 78,938.41, p < .001. Principal axis factoring (PAF) was specified using an oblique rotation (direct oblimin) because factors were expected to correlate.

We used parallel analysis (PA) to select the number of factors to extract. The 95th percentile eigenvalues (EV) were determined from 100 randomly correlated matrices for 92 items and a sample size of 999 using a web-based PA engine (Vivek et al., 2017). Figure S6 presents the parallel analysis scree plot indicating six factors should be retained. In each factor, items were retained when (a) their loading on the main factor was equal to or larger than .4 and (b) any of their cross-loadings were lower than .4.

Table 5.1 displays the factor loadings and communalities of each item, the descriptive statistics for each item and each factor, and the variance accounted for by each factor. It also includes other psychometric information for each factor, which will be discussed below. Based on the items in each factor, we identified each factor as referring to:

1. *Perceived Weight Stigma.* Fourteen items related to perceived stigmatizing interactions with others (e.g., “I feel that people ignore me because of my weight.”).
2. *Internalised Weight Stigma*. Fourteen items related to the personal application of negative stereotypes to the self (e.g., “I think being the weight that I am is my fault.”).
3. *Functional self-devaluation.* Ten items related to the belief that one cannot contribute in a valuable way to society and relationships, and are deserving of societal stigma (e.g., “I think that I cannot contribute anything useful to society because of my weight.”).
4. *Experienced Weight Stigma*. Twelve items related to actual stigmatizing experiences encountered (e.g., “My family has made fun of my weight.”).
5. *Stigma in Healthcare*. Five items related to weight stigma encountered in the context of healthcare settings (e.g., “I feel that health staff offer me poorer service because of my weight.”).

6. *Intimate Relationships*. Five items related to weight stigma encountered in the context of intimate relationships (e.g., “I avoid seeking romantic partners because of my weight.”).

Table 5.1

Factor Loadings, Item Means and Standard Deviations, and Communalities (N = 999)

Factor and item	Factors						Item-level data		
	PWS	**IWS**	**FSD**	**EWS**	**SiH**	**IR**	***M***	***SD*[1]**	***h*[2]**
Q63 I feel that people sometimes exclude me from social gatherings because of my weight.	0.821						14.41	25.65	.79
Q47 I feel that my friends exclude me from fun activities because of my weight.	0.814						10.62	22.17	.71
Q49 I feel that people prefer not to be close friends with me because of my weight.	0.780						12.74	24.23	.74
Q13 I have been excluded by my friends from social gatherings because of my weight.	0.756						9.67	21.34	.63
Q48 I feel that people do not want me to be their friend because of my weight.	0.753						14.34	25.46	.74
Q29 I have been deliberately left out by people because of my weight.	0.640						15.66	26.56	.68
Q66 I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.	0.618						13.75	24.39	.71
Q61 I feel that people do not treat me nicely because of my weight.	0.598						17.77	27.04	.72
Q65 Because of my weight, people do not show me sympathy.	0.594						15.33	24.98	.65
Q62 I feel that people ignore me because of my weight.	0.557						20.63	30.29	.73
Q41 People who are thinner than me dislike me because of my weight.	0.532						18.39	27.73	.65
Q67 I feel that people find interacting with me unpleasant because of my weight.	0.525						15.77	26.20	.71
Q31 I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.	0.482						16.35	27.19	.62
Q28 I have been ignored by people because of my weight.	0.464						19.43	29.70	.68
Q76 I think being the weight that I am is my fault.		0.752					58.03	36.70	.50
Q71 I think that I am lacking in willpower because of my weight.		0.743					38.27	36.72	.71
Q100 I am embarrassed because of my weight.		0.625					45.74	37.96	.84
Q73 I think that I am unattractive because of my weight.		0.620					47.77	37.15	.81
Q101 I am ashamed of myself because of my weight.		0.619					41.80	37.84	.81
Q70 I think that I am lazy because of my weight.		0.612					34.78	35.74	.61
Q98 I find it difficult to love myself because of my weight.		0.607					46.33	37.73	.77
Q81 I hate myself because of my weight.		0.559					36.49	36.71	.79
Q74 I think that my weight is the result of the lifestyle I lead.		0.557					61.27	33.50	.23

Table 5.1 (continued).

Q99 I find it difficult to show myself compassion because of my weight.	0.553			38.42	37.38	.70
Q75 I think that I am not confident in my abilities because of my weight.	0.547			35.19	35.75	.71
Q80 I think that I am disgusting because of my weight.	0.536			32.15	36.34	.77
Q82 I think that I am a failure because of my weight.	0.509			29.41	34.62	.76
Q38 I feel that others think that I am to blame for my weight.	0.485			45.18	40.08	.69
Q72 I think that I am unintelligent because of my weight.		0.673		8.69	19.91	.59
Q79 I think that I cannot contribute anything useful to society because of my weight.		0.668		11.19	22.77	.73
Q95 I think that I am not worth being selected when looking for housing because of my weight.		0.590		6.08	16.80	.52
Q78 I think that I am undeserving of living a good, rewarding life because of my weight.		0.574		17.54	28.69	.72
Q77 I think that I am undeserving of the same opportunities that other people have because of my weight.		0.572		15.94	27.87	.64
Q85 I think that I am not worthy of having good quality relationships with family because of my weight.		0.566		12.20	23.99	.65
Q83 I think that I am not deserving of proper treatment by health staff because of my weight.		0.554		8.16	19.43	.58
Q87 I think that I am not worthy of having good quality friendships because of my weight.		0.552		12.74	24.19	.71
Q93 I think that I am not worth being hired for a good paying job because of my weight.		0.541		10.24	22.27	.65
Q89 I think that I am not worthy of having good quality relationships with my peers because of my weight.		0.453		15.20	26.78	.73
Q7 I have been called 'disgusting' because of my weight.			0.741	15.44	27.56	.71
Q8 I have been told by people that they dislike me because of my weight.			0.694	11.58	23.68	.66
Q3 I have been called 'ugly' (or similar) because of my weight.			0.642	25.34	33.01	.72
Q19 I have been shouted at with insults in public because of my weight.			0.581	11.40	24.18	.62
Q26 I have found myself in situations where I have overheard others say offensive things about me because of my weight.			0.548	25.21	31.79	.59
Q2 I have been called 'unintelligent' because of my weight.			0.545	7.21	18.47	.57
Q5 I have been told that I have poor personal hygiene because of my weight.			0.532	7.53	18.72	.50
Q18 I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.			0.531	14.06	25.57	.60
Q20 I have been laughed at in public because of my weight.			0.520	13.83	25.42	.63
Q27 I have been physically attacked by others because of my weight.			0.518	6.64	18.00	.32
Q1 I have been called 'lazy' because of my weight.			0.487	27.96	34.68	.66
Q12 My family has made fun of my weight.			0.486	33.15	34.73	.44

Table 5.1 (continued).

Q42 I feel that health staff treat me unfairly because of my weight.	0.815		13.89	26.59	.84		
Q43 I feel that health staff offer me poorer service because of my weight.	0.793		13.21	25.89	.82		
Q9 I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.	0.733		17.06	29.96	.72		
Q44 I feel humiliated during contact with health professionals because of my weight.	0.608		23.52	32.65	.74		
Q84 I avoid seeking out healthcare services when I should because of my weight.	0.515		15.78	28.37	.64		
Q52 I feel that people do not want to enter a committed relationship with me because of my weight.		0.786	26.26	34.86	.81		
Q50 I feel that people do not want to go on a date with me because of my weight.		0.703	30.20	36.98	.81		
Q51 I feel that people do not want to have a sexual relationship with me because of my weight.		0.699	31.99	36.83	.82		
Q91 I think that I am not worthy of having a romantic relationship with anyone because of my weight.		0.695	27.09	35.88	.77		
Q92 I avoid seeking romantic partners because of my weight.		0.683	28.81	36.19	.76		

Scale statistics	**PWS**	**IWS**	**FSD**	**EWS**	**SiH**	**IR**	**WeSQ total**
M	15.35	42.20	11.80	16.61	16.70	28.87	22.51
SD	21.63	30.22	19.11	20.16	25.57	33.10	20.93
% of Accounted Variance	52.87	7.35	4.06	2.45	2.15	1.96	
Internal Consistency (Cronbach's α)	.97	.96	.94	.93	.93	.95	.98
Test-retest reliability (ICC; *N* = 227)	.93	.95	.90	.94	.93	.94	.96
SEM	11.53	12.52	10.30	9.59	14.43	15.09	8.29
SDC	31.96	34.70	28.55	26.58	39.99	41.83	22.98

Note. PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships; h^2 = item communalities; ICC = Intraclass Correlation Coefficient; SEM = Standard Error of Measurement; SDC = Smallest Detectable Change

[1]Item standard deviations are large due to presence of skewed data

The factors were correlated with each other (all above .3) suggesting moderate to high correlations between factors (see Table 5.2). The complete text of the final questionnaire, together with the scoring system, is reported in Table S7. Of note, two items loaded on the first factor (perceived weight stigma) but were removed because they did not conceptually represent the factor (Q90 “I avoid socializing with my peers because of my weight.”, and Q88 “I avoid attending events with my friends because of my weight.”).

Table 5.2

Factor Correlation Matrix between Factors (N = 999)

	1.	2.	3.	4.	5.
1. PWS					
2. IWS	.40				
3. FSD	57	.32			
4. EWS	.65	.27	.35		
5. SiH	.63	.30	.39	.53	
6. IR	.53	.57	.36	.38	.42

Note. Factor correlations represent the correlations between the *factors,* based upon oblique rotation method. PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships

The 41 (of 92) items that were not retained in the final measure covered topic areas around obtaining welfare benefits, housing/renting opportunities, stigma in professional settings (e.g., employment), and items related to eating. Items related to avoidance behaviours that may be adopted by someone who internalises weight stigma were also not retained (example item: “I avoid attending events with friends because of my weight.”).

However, these concepts were retained in the perceived domain of stigma (example item: “I feel that people sometimes exclude me from social gatherings because of my weight.”).

Internal consistency

The internal consistency of the full scale and subscales were estimated by Cronbach's alpha coefficient (α; shown at the bottom of Table 5.1). Both the individual subscales and the full scale had α’s > .9, which is considered “good” (Nunnally & Bernstein, 1994).

Test-retest Reliability and Measurement Error

Test-retest reliability is a property that refers to the stability of responses between measurements at different time points. In this case, we are interested in demonstrating stability between participants’ responses across two time points because weight stigma is considered to be largely consistent overtime (unless some intervention takes place; Haines et al., 2013). Intraclass correlation coefficients (ICC) for estimating consistency were assessed using a two-way random effects model. The *consistency* type of ICC was selected as we were interested in assessing the systematic differences between participants’ responses between time points (De Vet et al., 2011), as recommended in COSMIN guidelines (Mokkink et al., 2018). The consistency of the instrument was assessed on the participants who provided complete data at Times 1 and 2 (n = 228). The total instrument and each of the subscales demonstrated excellent test-retest reliability with all ICCs > .90 which is considered “excellent” (Koo & Li, 2016; see bottom of Table 5.1).

Measurement error refers to “how close the scores on repeated measures are” (Terwee et al., 2007, p. 36), and is expressed in the same units as the original measurement. It can be represented by the standard error of measurement (*SEM*), where $SEM = SD \times \sqrt{}$ (1-ICC consistency). The *SEM* can be converted into the smallest detectable change (SDC), also known as the minimal detectable change (MDC), which reflects the smallest change in score between two time points that can be interpreted as a significant change above the estimated

measurement error (with $\alpha = .05$). It was calculated using the SDC: $1.96 \times \sqrt{(2 \times SEM)}$ (De Vet et al., 2011). Estimated *SEM* and SDC values are reported in Table 5.1 (bottom).

Hypotheses testing for construct validity

Concurrent validity. A Pearson correlation analysis was used to estimate the bivariate relationships between the WeSQ and its subscales, and existing weight stigma measures. Correlation coefficients are presented in Table 5.3. The WeSQ total score and all subscales were significantly and positively correlated with existing weight stigma measures (SSI-brief, POTS, & WBIS-M). All effect sizes were large.

Table 5.3

Concurrent and Convergent Validity (N = 960)

	WeSQ Scale						
Validity Measure	PWS	IWS	FSD	EWS	SiH	IR	WeSQ total
Subscale Correlations[1]							
PWS	-						
IWS	.66**						
FSD	.78**	.69**					
EWS	.80**	.61**	.64**				
SiH	.77**	.56**	.66**	.69**			
IR	.73**	.75**	.68**	.67**	.62**	-	
Concurrent Validity							
SSI-brief	.75**	.56**	.58**	.78**	.72**	.61**	.76**
POTS	.67**	.52**	.51**	.72**	.61**	.56**	.69**
WBIS-M	.59**	.89**	.63**	.52**	.50**	.72**	.79**
Known Groups Validity							
$BMI_{original}$[2]	.51**	.43**	.39**	.45**	.61**	.45**	.54**
Age	.15**	.08*	.08*	.05	.23**	.05	.11**

Note. PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships; WeSQ total = Weight Stigma Questionnaire total; SSI-brief = Stigmatizing Situations Inventory-brief; POTS = Perception of Teasing Scale; WBIS-brief = Weight Bias Internalisation Scale-modified; BMI = Body Mass Index

*$p < .05$ (2-tailed), **$p < .01$ (2-tailed).

[1]Pearson correlations are based on the variations of the variables tested (distinct from the factor correlation matrix presented in Table 5.2)
[2]Correlation values were identical for all BMI variations (i.e., BMI original, BMI with extreme cases removed; $n = 10$, and BMI pounds)

Known-groups validity. This was assessed by analysing the relationship between the WeSQ and its subscales, and participant variables (i.e., weight, age, gender, relationship status and perceived weight). Correlations for weight and age are presented in Table 5.3. The WeSQ total and subscales were positively and significantly related to BMI, regardless of the method of dealing with the extreme cases of reported weight (see Table S4). Similarly, age was significantly and positively related to the WeSQ total and all subscales except for Experienced and Intimate Relationships subscales.

Table 5.4 displays M and SD for each subscale and the global scale as a function of Gender and Relationship status. The table shows that, for *gender*, women scored higher than men in all subscales. However, these differences were significant only for IWS, SiH, IR and Total. Similarly, scores for people who were *not in a relationship* were higher across all the subscales. The differences were significant for all but the internalised subscale.

A MANCOVA was conducted to compare levels of weight stigma across all subscales (and the total scale) of the WesQ between the four perceived weight groups (underweight, normal weight, overweight, obese) controlling for BMI. The estimated marginal means resulting from the analysis are presented in Table 5.4. The MANCOVA revealed a significant multivariate effect of perceived weight, Pillai's Trace = .36. F (18, 2961) = 22.25, $p < .001$, $\eta_p^2 = .12$. Given the significance of the overall test, the univariate main effects were examined. Univariate analyses of variance (ANOVAs) for each dependent variable were conducted as

follow up tests to the MANCOVA. Using the Bonferroni method for controlling Type I error rates for multiple comparisons, each ANOVA was tested at the .007 level. Significant univariate main effects were obtained for all the subscales and the total scale (all *p*s < .001). Post hoc analyses following MANCOVA were carried out to detect group differences ($p < .05$).

As can be seen in Table 5.4, the estimated marginal means showed that weight stigma levels progressively got worse from 'normal weight' to 'obese' after controlling for BMI on all subscales and the total scale. Post hoc analyses revealed that all of these differences were significant (all $p < .05$). The estimated marginal means also showed that the results for the 'underweight' group were mixed. Specifically, when compared to the 'normal weight' group, weight stigma levels were higher in the 'underweight' group on the PWS, IWS, EWS, SiH, and IR subscales, and the total scale, but lower on the FSD subscale. Thus, weight stigma levels progressively got worse from 'underweight' to 'obese' after controlling for BMI for the FSD subscale only. Post hoc analyses revealed that the only significant group difference between the 'underweight' and 'normal weight' group was for the SiH subscale. The 'underweight' group endorsed higher stigma in healthcare than the 'normal group' (though this could be considered marginal with $p = .04$). Furthermore, no significant difference was found between 'underweight' and 'overweight' groups on the SiH (unlike all other subscales and the total scale).

Table 5.4

Descriptive Statistics for Gender and Relationship Status, and Estimated Marginal Means for Perceived Weight Groups

	Gender		**Relationship status**		**Perceived weight**			
	Women (*n* = 861)	**Men (*n* = 129)**	**In a relationship (*n* = 550)**	**Not in a relationship (*n* = 445)**	**Underweight (*n* = 32)**	**Normal weight (*n* = 484)**	**Overweight (*n* = 343)**	**Obese (*n* = 136)**
Scale	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*EM* (*SE*)	*EM* (*SE*)	*EM* (*SE*)	*EM (SE)*
PWS	15.67 (21.80)	13.03 (20.37)	**12.79 (19.22)**	**18.64 (23.97)**	8.95 (3.22)	7.28 (0.89)	18.53 (0.98)	37.37 (1.89)
IWS	**43.60 (30.70)**	**32.72 (25.09)**	41.08 (30.10)	43.80 (30.37)	29.50 (30.44)	25.90 (28.07)	56.38 (1.33)	68.17 (2.58)
FSD	12.16 (19.42)	9.74 (17.38)	**10.28 (18.19)**	**13.78 (20.08)**	4.14 (19.59)	5.12 (17.21)	14.92 (19.46)	29.75 (1.79)
EWS	16.85 (20.18)	14.69 (19.86)	**14.18 (18.62)**	**19.74 (21.58)**	12.74 (20.02)	10.36 (20.89)	19.69 (19.63)	31.91 (1.86)
SiH	**17.20 (26.02)**	**12.38 (20.91)**	**15.20 (24.87)**	**18.68 (26.37)**	15.86 (25.78)	8.38 (27.11)	18.87 (20.95)	41.33 (2.05)
IR	**29.77 (33.80)**	**23.11 (28.05)**	**19.89 (26.56)**	**40.18 (36.83)**	17.63 (33.00)	13.94 (31.99)	38.71 (34.83)	59.94 (2.90)
WeSQ total	**23.14 (21.20)**	**18.19 (18.87)**	**20.04 (19.32)**	**25.72 (22.42)**	15.00 (21.26)	12.53 (20.02)	28.70 (20.27)	44.40 (1.72)

Note. PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships; WeSQ total = Weight Stigma Questionnaire total; *M* = Mean; *SD* = Standard Deviation; *EM* = Estimated Marginal Means Controlling for BMI; *SE* = Standard Error; '$BMI_{original}$' was the default variable used for this analysis; **Bold** indicates significant mean differences ($p < .05$)

Study 3 Discussion

Following exploratory factor analysis, the initial 101 item pool was reduced to 60 items that loaded onto six subscales. The subscales reflected core content areas of weight stigma including: Perceived, Internalised, Functional Self-Devaluation, Experienced, Stigma in Healthcare, and Intimate Relationships. The WeSQ total and subscales yielded good estimates of internal consistency and test-retest reliability (H1), and we reported on estimates of measurement error and SDC. Furthermore, concurrent validity evidence was demonstrated via correlations with established measures of weight stigma, and were of the predicted magnitude and direction (H2). Our subscales were mostly related to gender, relationship status, age, and weight in the expected direction (including BMI and perceived weight), supporting the known-groups validity of the WeSQ (H3). Collectively, these findings provide initial psychometric support for the WeSQ. In the next study, with data from a new sample, we aimed to determine the overall fit of the data to the scale model and whether the items load onto the six factors that emerged in Study 3. We also tested the convergent validity of the WeSQ.

Study 4

The aim of Study 4 was to confirm the factor structure of the WeSQ found in Study 3 using confirmatory factor analysis (CFA; *structural validity*), and to report on construct (convergent) validity with related concepts to further validate our measure. To this end, the following hypotheses were tested.

H4: The final 60-items were expected to load onto the six factors which emerged from Study 3, and the specified model was expected to demonstrate good CFA fit indices: CFI and TLI > .90, RMSEA < .06, and SRMR < .08 (Hair et al., 2010).

Weight stigma has been consistently associated with markers of negative psychological well-being, such as eating disorder psychopathology (Wagner et al., 2020), anxiety around interpersonal judgment about one's physique (Omolayo, 2015), less intuitive eating (Braun et al., 2021), poor body appreciation (Soulliard et al., 2021), and low overall quality-of-life (Liu et al., 2022). Thus, we also hypothesised the following:

H5a: Disordered eating. Because weight stigma is known to increase unhealthy eating behaviours such as emotional eating, uncontrolled eating, and loss-of-control eating (Wagner et al., 2020), WeSQ scores were hypothesised to show large positive correlations with disordered eating.

H5b: Physique anxiety. It is well known that people who are stigmatized for their weight feel anxious that others could be negatively evaluating their physique in some sort of social situation (Omolayo, 2015). Therefore, WeSQ scores were hypothesised to show large positive correlations with physique anxiety.

H5c: Body appreciation. Those who experience weight stigma are considered less likely to respect and appreciate their bodies (Soulliard et al., 2021), WeSQ scores were hypothesised to show large negative correlations with body appreciation.

H5d: Intuitive eating. Those who experience weight stigma are considered less aware of their body needs, including their hunger and satiety signals, and eat according to those signals (Braun et al., 2021), WeSQ scores were hypothesised to show large negative correlations with intuitive eating.

H5e: Quality-of-life. Peoples experience of weight stigma has been shown to reduce quality of life and pose major obstacles to domains of everyday living including physical health, psychological health, social relationships, and immediate environment (Liu et al., 2022). Therefore, WeSQ scores were hypothesised to show large negative correlations with all domains of quality of life.

Method

Participants

Participants were 622 adults (aged 18+) from a new data collection sample. They were recruited through paid Facebook advertisements and social media posts, as part of a larger study. Eight of these participants withdrew from the study, and so analyses were conducted on the remaining 614 participants who provided complete data on the questionnaires. A large portion of the sample were women (n = 508), the remainder were men (n = 78), non-binary (n = 22), or did not to disclose their gender (n = 4). The mean age was 39.86 (SD = 12.71) and the mean BMI was 39.40 (SD = 27.17). BMI data for four participants fell outside the normal distribution following the criterion $M \pm 3SD$ due to implausible height entries (e.g., 63cm, 67cm) and therefore BMI for these participants was treated as missing. These cases were removed from analyses that used BMI but not from other analyses. Following the removal of this data, average BMI was 37.37 (SD = 12.27). Detailed demographic data is presented in Table S8. Participants volunteered their time freely to take part in the study. Eligibility criteria included age restrictions of 18+ years, and the

absence of an eating disorder diagnosis. Data collection commenced in August, 2021 and ended September, 2021.

Measures

In addition to the WeSQ, participants also completed a number of measures assessing a range of outcomes including disordered eating, intuitive eating, body appreciation, quality of life, and physique anxiety.

Demographics

Participants provided demographic information including age, gender, ethnicity, highest education level, relationship status, and language spoken.

Three Factor Eating Questionnaire Revised (TFEQ-R18)

This 18-item measure assesses three dimensions of dietary restraint (Stunkard & Messick, 1985): (1) cognitive restraint, (2) uncontrolled eating, and (3) emotional eating. An example item is "When I feel blue, I often overeat". Responses are scored on a 4-point scale, ranging from 1 (*never*) to 4 (*at least once a week*). TFEQ-R18 subscale scores were converted as recommended by the scoring instructions to a 0 to 100 scale by use of the following equation: [(raw score - lowest possible raw score)/possible raw score range) × 100]. Higher scores indicate more of the behaviour on the relevant scales. The TFEQ-R has shown to have good estimates of internal consistency (all factor α's >.82; Stunkard & Messick, 1985) and has evidence of convergent validity with outcomes such as anorexia and weight fluctuations in adults (Shearin et al., 1994).

Intuitive Eating Scale (IES)

This 23-item scale assesses four dimensions of intuitive eating: Eating for Physical rather than Emotional reasons, Unconditional Permission to Eat, Reliance on Hunger and Satiety Cues, and Body-Food Choice Congruence (Tylka, 2006). Participants indicate the extent to which they agree with items such as "I trust my body to tell me what to eat" on a 5-

point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A factor score is obtained by calculating the mean of each subscales. Higher scores represent higher levels of intuitive eating on the respective dimension. The scale has good estimates of internal consistency (all factor α's > .72) and evidence of convergent validity with various outcomes such as body dissatisfaction and pressure for thinness in female adults (Tylka, 2006).

Body Appreciation Scale (BAS)

The 13-item Body Appreciation Scale (Avalos et al., 2005) was used to measure positive aspects of body image. An example item is "I feel good about my body". Responses are scored on a 5-point scale, ranging from 1 (*never*) to 5 (*always*). A total score is obtained by calculating the mean of the scale. Higher scores represent higher levels of body appreciation. The scale has good estimates of internal consistency (α = .94) and evidence of convergent validity with various outcomes including body dissatisfaction and appearance evaluation in female adults (Avalos et al., 2005).

The World Health Organisation Quality of Life Measure WHOQOL-BREF

The WHOQOL-BREF is a 26-item quality of life assessment that assesses four domains of quality-of-life: (1) physical, (2) psychological, (3) social relationships, and (4) environment (The WHOQOL Group, 1998). An example item is "How healthy is your physical environment?". Responses are scored on a 5-point scale, ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*). Scores were transformed to a 0-100 scale, with higher scores representing better quality-of-life in the respective domain. The scale has good estimates of internal consistency in a sample of adults (all factor α's > .6; The WHOQOL Group, 1998), and has evidence of convergent validity with psychopathological symptoms and perceived social support in an adult sample of psychiatric patients (Trompenaars et al., 2005).

Social Physique Anxiety Scale (SPAS)

The Social Physique Anxiety Scale (SPAS; Hart et al., 1989) is a 12-item measure assessing the degree to which people become anxious when it is believed that others are observing or evaluating their physique. An example item is: “I wish I wasn't so uptight about my physique/figure.” Each question is answered on a 5-point scale ranging from 1 (*not at all characteristic of me*) to 5 (extremely characteristic of me). Following the suggestion of Eklund and Crawford (1994), we used the updated version of item 2. Previously, item 2 on the SPAS read “I would never worry about wearing clothes that might make me look too thin or overweight” and has been found to be problematic (Crawford & Eklund, 1994; Lantz et al., 1997; McAuley & Gretchen, 1993). As it was suggested by Crawford and Eklund (1994), this is because the negative wording of this item created some confusion in responding and may have resulted in the low item-total correlations observed. Re-phrasing the item to a positive statement (“I would worry about wearing clothes that might make me look too thin or overweight”) was shown to alleviate this problem with a resulting item-total correlation of .72. A factor score is obtained by calculating the mean of the scale. Higher scores indicate increased anxiety about one’s physical body being judged by others. The scale has good estimates of internal consistency ($\alpha = .90$) and evidence of convergent validity with other’s evaluations about one’s body and self-consciousness in university students (Hart et al., 1989).

Procedure

Clicking on the advertised link directed participants to the online Qualtrics study. An information letter was presented prior to the survey measures. Consent was obtained from participants by proceeding to complete the study after reading the letter. Dropping out from the survey was considered *withdrawal* of consent. A second opportunity was given to participants to withdraw their responses at the end of the study. Finally, links to support

services were offered at the end of the study. Average completion time for all study measures was 30-40 minutes.

Results

Statistical analyses included assessment of descriptive information, followed by CFA and construct validity (convergent) analyses. The CFA was conducted in JASP (JASP Team, 2021). All remaining analyses were conducted in SPSS following Field's recommendations (Field, 2009). Analyses were preceded by data cleaning, missing data assessment and assumption testing following the procedures outlined in Hair et al., (2010). For normality assessment we visually examined the shape of the distributions and found that our items and WeSQ subscales were positively skewed (except for IWS subscale), with many participants endorsing items on the lower end of the questionnaire (closer to 0). However, the method of fit chosen for the present CFA was appropriate for violations of normality (Mindrila, 2010).

Psychometric properties

Structural validity.

A CFA was conducted to test the goodness of fit of the model with the factor structure that emerged from the EFA. Sample 2 (N = 614) exceeded the COSMIN guidelines criterion of a minimum sample size of 7 x 60 items = 420 (Mokkink et al., 2018). CFA was applied using Diagonally Weighted Least Squares (DWLS) estimation as our items and subscales were positively skewed (Mindrila, 2010). Six goodness-of-fit statistics were examined to determine the acceptability of the final model. The *Chi-Square* with corresponding *p*-value was evaluated. It suggested poor model fit (χ^2 [1695] = 3618.72; $p < .001$). Because the Chi-Square statistic almost always rejects the model if large sample sizes are used or there are deviations from normality (Hooper et al., 2008), we also reported the normed Chi-Square which takes the degrees of freedom (χ^2 / df) into account. The normed Chi-Square value was

less than the recommended value of 3 (Schumacker & Lomax, 2004), indicating a good fit (χ^2 / df) = 2.13.

There is agreement that a RMSEA of < 0.06, SRMR of < 0.08, and both CFI and TLI of > 0.90 indicates a good model fit (Hair et al., 2010). In our model, all these indices showed excellent fit: RMSEA = .043, 90% CI [.041, .045], SRMR = .056, CFI =.994, and TLI = .994. Overall, these values indicate that the six-factor model identified in Study 4 was an excellent fit for the data from the present sample.

Additionally, the coefficient for each item was examined for its degree of fit using z-tests. This tests the null hypothesis that the specified value of factor loadings is zero. Items were considered for deletion if they had non-significant factor loadings ($p > .05$). The test indicated that all loadings were significantly different from zero (all $p < .001$; see Table 5.5). Thus, no items had to be excluded. As can be seen in Table 5.5, all loadings were higher than .4 except for items Q81, Q79. However, given the excellent model fit with the items included we did not remove these items (see Discussion for rationale).

Table 5.5

Parameter Estimates of the Confirmatory Factor Analysis for the WeSQ

Factor	Item	Factor Loading Estimate	Std. Error	*z*-value[1]	95 % Confidence Interval Lower	Upper	Std. Est. (loadings)
Factor 1: PWS							
	Q49 I feel that my friends exclude me from fun activities because of my weight.	24.01	0.26	91.90	23.50	24.52	.76
	Q70 I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.	30.23	0.27	112.68	29.71	30.76	.86
	Q43 People who are thinner than me dislike me because of my weight.	28.00	0.25	111.65	27.51	28.49	.83
	Q51 I feel that people prefer not to be close friends with me because of my weight.	28.06	0.28	102.16	27.52	28.60	.80
	Q69 Because of my weight, people do not show me sympathy.	29.82	0.26	113.99	29.31	30.33	.86
	Q29 I have been ignored by people because of my weight.	33.66	0.27	124.26	33.13	34.19	.87
	Q13 I have been excluded by my friends from social gatherings because of my weight.	23.95	0.26	90.99	23.43	24.46	.74
	Q65 I feel that people do not treat me nicely because of my weight.	32.54	0.26	125.75	32.04	33.05	.91
	Q32 I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.	29.08	0.27	107.46	28.55	29.61	.81
	Q50 I feel that people do not want me to be their friend because of my weight.	28.42	0.28	103.47	27.88	28.95	.81
	Q66 I feel that people ignore me because of my weight.	34.81	0.27	131.26	34.29	35.33	.92
	Q67 I feel that people sometimes exclude me from social gatherings because of my weight.	30.34	0.27	111.22	29.80	30.87	.85
	Q30 I have been deliberately left out by people because of my weight.	32.71	0.28	117.03	32.16	33.26	.85
	Q71 I feel that people find interacting with me unpleasant because of my weight.	29.75	0.26	112.89	29.23	30.26	.87
Factor 2: IWS							

Table 5.5 (continued).

Q81 I think being the weight that I am is my fault.	13.19	0.28	47.08	12.64	13.74	.39
Q76 I think that I am lacking in willpower because of my weight.	25.99	0.299	87.27	25.40	26.57	.68
Q106 I am embarrassed because of my weight.	34.73	0.29	121.67	34.17	35.29	.89
Q107 I am ashamed of myself because of my weight.	36.72	0.30	123.68	36.14	37.30	.89
Q74 I think that I am lazy because of my weight.	28.70	0.31	94.07	28.10	29.30	.73
Q78 I think that I am unattractive because of my weight.	31.32	0.28	110.37	30.76	31.87	.83
Q104 I find it difficult to love myself because of my weight.	36.22	0.29	124.82	35.66	36.79	.90
Q79 I think that my weight is the result of the lifestyle I lead.	6.90	0.28	24.44	6.35	7.46	.21
Q86 I hate myself because of my weight.	35.56	0.29	123.60	34.98	36.11	.91
Q105 I find it difficult to show myself compassion because of my weight.	36.08	0.29	123.53	35.51	36.65	.90
Q80 I think that I am not confident in my abilities because of my weight.	33.32	0.30	111.79	32.74	33.91	.84
Q85 I think that I am disgusting because of my weight.	35.37	0.30	117.52	34.78	35.96	.87
Q87 I think that I am a failure because of my weight.	35.11	0.29	119.75	34.54	35.68	.89
Q39 I feel that others think that I am to blame for my weight.	31.57	0.28	111.02	31.01	32.13	.83
Factor 3: FSD						
Q84 I think that I cannot contribute anything useful to society because of my weight.	27.12	0.35	76.52	26.43	27.81	.87
Q77 I think that I am unintelligent because of my weight.	14.92	0.26	57.05	14.41	15.43	.63
Q101 I think that I am not worth being selected when looking for housing because of my weight.	10.56	0.22	47.94	10.13	10.99	.55
Q90 I think that I am not worthy of having good quality relationships with family because of my weight.	21.66	0.32	67.50	21.03	22.29	.78

Table 5.5 (continued).

Q99 I think that I am not worth being hired for a good paying job because of my weight.	22.31	0.32	69.57	21.68	22.94	.80
Q88 I think that I am not deserving of proper treatment by health staff because of my weight.	20.26	0.31	65.64	19.65	20.86	.75
Q83 I think that I am undeserving of living a good, rewarding life because of my weight.	30.32	0.38	79.70	29.57	31.06	.87
Q82 I think that I am undeserving of the same opportunities that other people have because of my weight.	29.42	0.38	78.08	28.68	30.16	.85
Q92 I think that I am not worthy of having good quality friendships because of my weight.	23.15	0.32	71.59	22.52	23.79	.82
Q94 I think that I am not worthy of having good quality relationships with my peers because of my weight.	24.89	0.33	74.83	24.23	25.54	.86
Factor 4: EWS						
Q7 I have been called 'disgusting' because of my weight.	32.54	0.31	106.02	31.94	33.15	.83
Q8 I have been told by people that they dislike me because of my weight.	28.09	0.30	93.88	27.50	28.67	.77
Q3 I have been called 'ugly' (or similar) because of my weight.	33.23	0.28	116.42	32.67	33.79	.86
Q12 My family has made fun of my weight.	24.91	0.30	82.89	24.32	25.49	.66
Q20 I have been shouted at with insults in public because of my weight.	32.05	0.30	107.23	31.47	32.64	.84
Q5 I have been told that I have poor personal hygiene because of my weight.	23.86	0.28	84.49	23.31	24.41	.70
Q27 I have found myself in situations where I have overheard others say offensive things about me because of my weight.	33.13	0.30	111.70	32.55	33.71	.85
Q1 I have been called 'lazy' because of my weight.	31.32	0.28	113.48	30.78	31.86	.86
Q2 I have been called 'unintelligent' because of my weight.	24.74	0.28	89.46	24.19	25.28	.74
Q19 I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	33.05	0.30	110.61	32.46	33.63	.86
Q21 I have been laughed at in public because of my weight.	33.18	0.30	110.66	32.60	33.77	.870
Q28 I have been physically attacked by others because of my weight.	8.56	0.20	42.78	8.17	8.95	.39
Factor 5: SiH						

Table 5.5 (continued).

Q44 I feel that health staff treat me unfairly because of my weight.	37.08	0.33	111.56	36.43	37.73	.93
Q45 I feel that health staff offer me poorer service because of my weight.	36.01	0.34	107.01	35.35	36.67	.90
Q9 I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.	37.66	0.35	109.04	36.99	38.34	.91
Q46 I feel humiliated during contact with health professionals because of my weight.	38.13	0.34	111.50	37.46	38.80	.94
Q89 I avoid seeking out healthcare services when I should because of my weight.	31.48	0.34	92.19	30.81	32.15	.81
Factor 6: IR						
Q55 I feel that people do not want to enter a committed relationship with me because of my weight.	36.52	0.38	97.09	35.79	37.26	.88
Q54 I feel that people do not want to have a sexual relationship with me because of my weight.	37.30	0.37	100.87	36.57	38.02	.92
Q52 I feel that people do not want to go on a date with me because of my weight.	37.70	0.38	100.61	36.97	38.43	.91
Q98 I avoid seeking romantic partners because of my weight.	35.18	0.37	94.33	34.45	35.91	.87
Q97 I think that I am not worthy of having a romantic relationship with anyone because of my weight.	30.44	0.36	84.41	29.73	31.14	.80

Note. WeSQ = Weight Stigma Questionnaire; PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships

[1]All *p*s < .001

Hypothesis Testing for Construct Validity (convergent validity).

A Pearson correlation analysis was used to estimate the bivariate relationships between the WeSQ and the TFEQ, IES, BAS, WHOQOL-BREF, and SPAS. Interpretation of the effect sizes for these was in line with Cohen's guidelines (Cohen, 1988). The correlations are shown in Table 5.6. All variables were significantly related, with a range of effect sizes. On average, effect sizes were lower for eating-related variables (TFEQ and IES) but higher for Body Appreciation, Quality of Life and Physique Anxiety. Correlations were positive for weight, cognitive restraint, uncontrolled eating, emotional eating, and social and physical anxiety. Conversely, correlations were negative for intuitive eating, body appreciation, and quality-of-life.

Table 5.6

Pearson Correlations between WeSQ Total and Subscales, and Validity Measure

	Pearson's *r* coefficient						
	Full Scale	**Subscale**					
Validity measure	**WeSQ**	**PWS**	**IWS**	**FSD**	**EWS**	**SiH**	**IR**
BMI	.61**	.55**	.48**	.41**	.58**	.63**	.46**
TFEQ							
Cognitive restraint	.20**	.17**	.23**	.15**	.18**	.13**	.09*
Uncontrolled eating	.34**	.25**	.44**	.31**	.22**	.20**	.27**
Emotional eating	.46**	.34**	.56**	.33**	.33**	.36**	.37**
Intuitive eating scale (total)	-.53**	-.38**	-.67**	-.42**	-.38**	-.35**	-.45**
Unconditional permission to eat	-.24**	-.19**	-.29**	-.20**	-.19**	-.12**	-.18**
Physical hunger	-.49**	-.35**	-.59**	-.36**	-.35**	-.39**	-.41**
Reliance on hunger	-.39**	-.27**	-.51**	-.34**	-.24**	-.23**	-.33**
Body food choice congruence	-.31**	-.20**	-.42**	-.23**	-.22**	-.16**	-.31**
Body appreciation scale	-.68**	-.52**	-.80**	-.55**	-.49**	-.47**	-.60**
WHOQOL							
Physical Health	-.51**	-.46**	-.43**	-.40**	-.45**	-.44**	-.42**
Psychological Health	-.65**	-.52**	-.68**	-.56**	-.47**	-.43**	-.60**

Table 5.6 (continued).

Social Health	-.48**	-.44**	-.45**	-.40**	-.34**	-.29**	-.52*
Environmental Health	-.50**	-.47**	-.40**	-.42**	-.46**	-.42**	-.40**
Social and physical anxiety	.70**	.56**	.78**	.49**	.52**	.54**	.63**

Note. N = 614; TFEQ = Three Factor Eating Questionnaire; WHOQOL = The World Health Organisation Quality-of-Life Measure; WeSQ = Weight Stigma Questionnaire; PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; IR = Intimate Relationships. *p < .05 (2-tailed), **p < .001 (2-tailed).

Study 4 Discussion

The goal of Study 4 was test whether the six-factor model identified in Study 3 was a good fit to a new sample of data and to assess the convergent validity of the WeSQ. The six-factor model provided an excellent fit to the data (all fit statistics were acceptable; H4). Supporting the convergent validity of the measure, the WeSQ total and subscales were related to higher weight, maladaptive eating, and social and physical anxiety, and lower intuitive eating processes, body appreciation, and quality-of-life (H5). Collectively, these findings provide good initial psychometric support for the WeSQ's structural and convergent validity.

General Discussion

Across two studies, we report on the psychometric properties of a new measure of weight stigma (WeSQ), including structural validity, internal consistency, test-retest reliability, as well as concurrent, known-groups and convergent validity. The WeSQ was designed to comprehensively measure weight stigma in adults across the weight spectrum. Results provided evidence of excellent psychometric properties for this new measure.

Study 3 revealed that the final WeSQ included 60 items loading onto six conceptually meaningful factors, and accounting for about 70% of the observed variance. These factors were Perceived (PWS), Internalised (IWS), Functional Self-Devaluation (FSD), Experienced (EWS), Stigma in Healthcare (SiH), and Intimate Relationships (IR). The CFA conducted in Study 2 confirmed the six-factor structure in a new sample. This six-factor model and was a good fit for the data, showing excellent model fit across indices. The six subscales found include the well documented perceived, experienced, and internalised stigma types. In addition, our scale yielded two factors related to stigma in the specific domains of healthcare and intimate-partner relationships, and one factor that relates to individual's self-perceived value in the world. The correlations among the subscales indicated that the six factors are positively correlated. Overall, the evidence for structural validity of the WeSQ via factor analyses demonstrates that each of the manifest subscales are an adequate reflection of the weight stigma construct.

The analyses of reliability suggest that the WeSQ is internally consistent and reliable across time points (test-retest reliability) with all Cronbach α's and ICC's above .9 as expected. Measurement error (*ME*) was estimated by *SEM* and SDC. COSMIN guidelines note that, *ME* can only be meaningfully interpreted in light of the Minimal Important Change (MIC; the smallest change in WeSQ score that would be perceived as important by patients/clinicians). We could not estimate this in these studies because this can only be

obtained from distribution- and anchor-based methods that involve assessing change scores between two time points. Future studies are encouraged to investigate and establish the MIC for the WeSQ.

We also found evidence of construct validity (concurrent, known-groups, convergent) for the measure. Significant positive and large correlations with existing weight stigma measures constitute evidence of concurrent validity. As expected, the scores on the WeSQ were related to demographic variables, providing evidence for known-groups validity. In particular, we found that, as expected, weight stigma was positively related to weight (Tomiyama et al., 2018), age, being a woman (Emmer et al., 2020), and not being in a relationship (Boyes & Latner, 2009). Age was unrelated only to Experienced and Intimate Relationships subscales, suggesting that the reported levels of these types of stigma are the same across age. The lack of a relationship with age is consistent with previous research (Spooner et al., 2018). Finally, as expected, the current study found that weight stigma levels progressively got worse from 'normal weight' to 'obese' after controlling for BMI on all subscales and the total scale. Of note, for the FSD subscale only, weight stigma levels got progressively worse with perceived weight across all categories (i.e., from 'underweight' to 'obese'). Combined, these findings suggest that perceiving weight is a risk factor for experiencing and perceiving weight stigma, turning weight stigma inwards, challenging one's perceived value in the world, and the discomfort experienced within intimate-partner relationships as well as healthcare settings. This is consistent with prior research demonstrating that perceiving oneself as having overweight is related to a fear of being stigmatized on the basis of weight, and greater concern about being negatively evaluated or excluded by others because of one's weight (Lee et al., 2021; Romano et al., 2018).Notably, we also observed mixed results for the 'underweight' group. We found that weight stigma levels were higher in the 'underweight' groups relative to the 'normal weight' groups for all

scales (except the FSD subscale), but significant differences were only found for the SiH. The finding that stigma levels were higher in the ‘underweight’ group match those observed in other studies which have shown that people who are ‘underweight’ endorse higher stigma than people who are ‘normal weight’ (Davies et al., 2020; Himmelstein et al., 2018b; Sikorski et al., 2016). To the best of our knowledge, there is no research that has examined the experience of stigma in healthcare among people who fall into the ‘underweight’ BMI category. Our results are therefore the first to show that people who are ‘underweight’ may be more susceptible to experiencing stigma than people with ‘normal weight’ in the context of health. Possible explanations for these findings is that the presence of strong cultural ideals of thinness in society (Allison & Lee, 2014) and the reported experience of health needs being undermined among people who are ‘underweight’ (Eiring et al., 2021), may place this group at high risk of experiencing stigma in healthcare settings. Future research is encouraged to explore the experience of stigma in healthcare among individuals with underweight relative to their higher weight counterparts.

The findings of (a) positive relationships between WeSQ and its subscales and weight, disordered eating behaviour, social and physical anxiety, and (b) negative relationships between WeSQ and its subscales, and intuitive eating, body appreciation, and quality-of-life, provided evidence of convergent validity. The relationships found here are consistent with those found in the existing literature (Emmer et al., 2020; Papadopoulos, de la Piedad Garcia, et al., 2021; Puhl & Heuer, 2009; Tylka, 2006). Further, the strongest relationships were between all subscales and weight, body appreciation, psychological health, and social and physical anxiety across the subscales. Strong relationships were found between all variables and the Internalised subscale. Whilst we broadly measured psychological health including symptoms of depression, anxiety, and self-esteem using the WHOQOL-Bref (The WHOQOL Group, 1998), future research may select measures

specifically designed to assess these constructs to strengthen the convergent validity evidence presented here. Overall, the WeSQ demonstrated "very good" evidence for *methodological quality*, and "sufficient" evidence for the *psychometric results* when rated against the COSMIN criteria (ratings can be found in Table 5.7). Please note that the table also includes content validity ratings (for the sake of completeness) but evidence for these was reported in a separate study (https://tinyurl.com/WeSQcontentvalidity). In addition, Table S9 reports the necessary information regarding feasibility and interpretability of the WeSQ, as required by COSMIN guidelines.

Table 5.7

COMSIN Ratings of Psychometric Properties, and Future Research Directions for Psychometric Properties

Psychometric property	Methodological rating	Result rating	Psychometric assessment omitted (with rationale)	Future research
Content validity[1]	Very good	+		
Asking patients				
Relevance	Very good	+		
Comprehensiveness	Very good	+		
Comprehensibility	Very good	+		
Asking experts				
Relevance	Very good	+		
Comprehensiveness	Very good	+		
Structural validity	Very good	+		
Internal consistency	Very good	+		
Cross-cultural validity	n/a	n/a	The WeSQ is an originally developed measure that was not culturally translated or adapted. Thus, assessment of this property was not applicable for the current study	• Translation or cultural adaptation of the measure in other population groups as required
Reliability	Very good	+		
Measurement error	Very good	?		
Criterion validity		n/a	No agreed upon gold standard weight stigma measure exists	• Establish whether the WeSQ (or existing measures) can be considered a 'gold standard' for measure selection purposes and to facilitate comparison between measures

Table 5.7 (continued).

Construct validity	Very good	+		• Convergent validity with additional biopsychosocial variables (e.g., eating disorder psychopathology, self-esteem, physiological stress) known to be related to weight stigma • Predictive ability of the WeSQ with relevant health outcomes • Establish the incremental predictive value of the WeSQ subscales beyond existing weight stigma measures in health outcomes to determine its unique predictive ability • Assess similarities and differences with anticipated weight stigma
Responsiveness		n/a	This was outside the scope of this study to assess the ability of the WeSQ to detect true underlying change in a patients/client's health status overtime in response to an intervention.	• Future research is encouraged to establish the responsiveness of the WeSQ via distribution- and anchor-based methods • Minimal Important Change (MIC) statistics required to measure the ability of the WeSQ to detect true change overtime in response to treatment
Item topic areas				• Items not retained in the factor analysis covered topic areas that may be missed from the final scale. Future research may wish to assess topics such as welfare benefits, housing/renting and professional settings, eating habits, and internalised avoidance behaviours

Note. Psychometric properties were rated following the COSMIN taxonomy; + = 'sufficient'; ? = 'indeterminate'; n/a = not assessed

[1]Information taken from Content Validity Study (companion study: https://tinyurl.com/WeSQcontentvalidity).

Theoretical and Clinical Implications

The factors that emerged were consistent with theory and clinically useful. We found that the items factor analysed according to the stigma types noted in the social psychology literature (Cahnman, 1968; Goffman, 1963) following the emergence of Perceived, Internalised, Functional self-devaluation (a form of internalisation), and Experienced subscales. As explained above, two other factors emerged that refer to specific settings/contexts of stigma: Healthcare and Intimate Relationships. This finding is consistent with a body of results which showed that participants report the experience of stigma in healthcare and intimate relationships (Brown et al., 2022; Phelan et al., 2015; Schmidt et al., 2022). Counterintuitively, while healthcare settings are designed to promote health, and it is presumed that intimate relationships are emotionally supportive, empirical studies show that weight stigma is often encountered in these areas of life (Brown et al., 2022; Phelan et al., 2015; Schmidt et al., 2022). These findings suggest that each factor in our measure captures different but related aspects of weight stigma. However, assessment of the differential effects of the stigma types on outcome variables is needed to support this claim. For example, it has been found that stigma in healthcare leads to healthcare avoidance (Puhl et al., 2021). Interventions encouraging healthcare professionals to adopt a weight inclusive approach in healthcare settings, may lead to the specific decrease of Stigma in Healthcare, which in turn would be related to decreased avoidance.

The Internalisation scale was the mostly highly endorsed scale among our sample. This finding was consistent across weight categories, self-classified weight, gender, and relationship status. Unlike the WBIS, for which a recent analysis found two factors relating to weight-related distress and weight-related self-worth, respectively (Meadows & Higgs, 2019), our IWS subscale reflects the extent to which individuals endorse existing weight stigmatising views and apply them to the self. On the other hand, the second internalised

measure which emerged, functional self-devaluation, represents one's beliefs about their sense of self-worth and value in how they contribute to the world. We argue that these are a "purer" measure of internalisation of stigma, which is likely the result both of direct experiences of stigma, and of exposure to the pervasive stigmatising views of society. That scores on the Internalised scale were the highest likely reflects the fact that stigmatizing weight remains socially acceptable and is rarely challenged (Puhl & Heuer, 2009).

Strengths and Limitations

The WeSQ is the first of weight stigma measure to be developed based on an articulated theoretical model of the construct. Second, it is the first to provide comprehensive evidence of psychometric properties including content validity which is reported separately (https://tinyurl.com/WeSQcontentvalidity), driven by guidelines set out by the COSMIN standards (Mokkink et al., 2018). The COSMIN ratings of the WeSQ in Table 5.7 provide initial evidence of the strength of this measure. Further research should continue to assess the validity of this measure (e.g., cross-cultural, predictive validity), and to establish its empirical value in contributing to the body of research in weight stigma. Of note, different samples were recruited for the two empirical studies and the age range of participants differed for Sample 1 (i.e., adults aged 18-65) and Sample 2 (adults aged 18+). However, there were only 16 participants above the age of 65 in Sample 2 and they were not likely to have made a difference to the results.

A notable limitation was the fact that we failed to consider anticipated weight stigma, at the time that we developed our items. This was partly because research in this area is relatively recent (Sinnott et al., 2021). Another limitation of the study is the generalizability of the measure. Optimally, it would have been beneficial to include a more representative sample of racial/ethnic diversity, and males, as the data obtained was mostly from Caucasian females in both the EFA and CFA. This should be taken into consideration for possible future

item refinement of the measure. It is also important to consider the impact of the response options chosen for the current measure, which ranged from 0 (‘never’) to 100 (‘always’) on a visual analogue scale (VAS). The use of the VAS offered participants the freedom to respond to each item along the sliding scale, rather than using a forced choice method. This was to reflect the fact that in reality, people’s experiences exist on a continuum. However, the response options ‘never’ to ‘always’ assigned to the items could potentially complicate the interpretation of the data. For instance, if a respondent selects ‘always’ to the item ‘I have been called disgusting because of my weight’, this may imply that this experience occurs in every interaction with people. Consideration should also be given to the possibility that selecting ‘100’ on the scale may indicate that the item endorsed is felt with personal significance rather than meaning it ‘always’ occurs. These should be taken into consideration when interpreting the study results. Also, we found that two items demonstrated loadings < .4 in the CFA. This is possibly because these items refer to the extent to which participants believe their weight is their fault, and most of the participants in Study 4 were recruited from body positive groups, where there is a clear understanding about weight being multidetermined. As the overall model demonstrated excellent fit with these items included and the items were conceptually meaningful to measure internalised weight stigma, we decided to keep them. Even with these items, internal consistency of the subscale was high. Removal of these items in future studies is open to the discretion of the researchers.

Future Research Directions

Complete measure validation is an ongoing process that requires the gradual accumulation of psychometric data to build confidence in a new questionnaire. Therefore, it should be clear that, along with the content validity study (Papadopoulos, Brennan, et al., 2021), the current study provides initial evidence of validation of the WeSQ. The next steps involve gathering (1) further evidence of *construct validity* with additional outcome measures

known to be related to weight stigma such as eating disorder psychopathology and physiological stress, (2) evidence of *cross-cultural validity,* which would require validating if desired a translated or culturally adapted version of the WeSQ, (3) evidence of *criterion validity* to ascertain whether this measure (or existing measures) can be considered a 'gold standard' weight stigma measure for comparative purposes, and (4) evidence of *responsiveness,* to identify the ability of the WeSQ to detect changes overtime in weight stigma scores. The latter requires a clinical team to define MIC as noted above, which would also inform the *interpretability* of the measure. Further, future research should assess whether relevant subscales of our measure contribute incremental value to existing weight stigma measures in health outcomes to determine its unique predictive ability. Finally, as outlined in the results, there were some items that were removed and therefore concepts which were originally captured in our item pool were dropped through item reduction processes. The main concepts that were omitted as a result of item reduction related to welfare benefits, housing/renting opportunities, stigma in professional settings, items related to eating, and avoidance behaviours. If future research deems these topic areas important, additional measures could be developed to assess these topics. Table 5.7 summarises our future research directions.

Conclusion

Our findings provide first evidence for a comprehensive measure of weight stigma that is built on a strong foundation of evidence for content validity. In addition, the WeSQ demonstrated "sufficient" results ratings and "very good" evidence for methodological quality for the psychometric properties assessed for the WeSQ in this study. Overall, the WeSQ structure and the internal consistency, reliability, and construct validity of its scores were demonstrated in our sample of adults. Its development is timely as it can advance the field of weight stigma research. Specifically, the WeSQ can be used in clinical/research

studies that aim to explore weight stigma both across domains or in specific domains (using individual subscales only), evaluate the impact, and/or possible risk factors linked to weight stigma, and (3) examine the differential impact of weight stigma types on biopsychosocial health outcomes.

Chapter 6: General Discussion

6.1 Introduction and Chapter Overview

The four main studies presented in this project were designed to (a) evaluate the psychometric quality of existing measures, (b) develop a new measure of weight stigma that comprehensively represents the weight stigma construct as defined in the literature, and (c) evaluate and report on the psychometric properties of this measure. The overall objectives of the three studies were:

- Study 1: To systematically explore the psychometric properties of existing weight stigma measures
- Study 2: To develop a new pool of items that comprehensively reflects the construct of weight stigma as represented in the literature, and to assess the content validity of the new item pool. This was done across four phases:
    - Phase 1: Item development (informed by qualitative and quantitative research)
    - Phase 2: Consensus study using internal researchers to inform item development
    - Phase 3: Delphi Consensus Study (among experts in relevant fields)
    - Phase 4: Cognitive Interview Study (among community members)
- Study 3 and 4: To attain the simplest meaningful factor structure and subsequently evaluate structural validity (via confirmatory factor analysis), internal consistency, test-retest reliability, and construct validity (including concurrent, known-groups, and convergent validity).

Together, the findings from the four studies represent the development of a weight stigma measure, the Weight Stigma Questionnaire (WeSQ) that is both theoretically and empirically informed. This chapter begins with a brief summary and conclusion of each study. This is followed by a discussion of the findings that emerged in the context of the theoretical model we applied to our measure, as well as the broader contributions and

future research directions of the new measure. The limitations and strengths of the overall project are then presented prior to providing a concluding paragraph that summarises the thesis.

6.2 Summary of Each Study

Numerous measurement scales have been developed to assess weight-related stigma. Although the literature on theoretical and methodological quality in scale development is extensive (e.g., De Vellis, 2003; Mokkink et al., 2018; Nunnally, 1967), many definitional and measurement issues have been identified in the process of scale development for existing weight stigma measures in the literature (as outlined in our brief overview of the literature in Chapter 2). Thus, I identified a need to *systematically* review the psychometric quality of weight stigma measures in the current literature. This was the main objective of Study 1.

Study 1 consisted of a systematic literature review to identify every measure of weight stigma ever published for the adult population and comprehensively explore the psychometric properties of such measures. This systematic review identified 18 existing weight stigma measures for which psychometric evidence was reported in 36 articles. When applying the COSMIN methodology for assessing the psychometric properties of measures (Mokkink et al., 2018), the review found that in no case was there evidence that a psychometrically sound weight stigma measure has been developed in the literature. The most noteworthy finding of the review was that no study reported the evaluation of the full scope of the most important psychometric property, *content validity*. Specifically, our findings highlighted the weight stigma construct itself is one that is not clearly conceptualised or measured. According to the COSMIN guidelines, content validity is considered a pre-requisite for subsequent psychometric evidence (Prinsen et al., 2018). This is because it should first be clear that the measure items are relevant, comprehensible, and comprehensive in relation to the construct of interest and target population (Prinsen et al., 2018). Therefore,

COSMIN guidelines dictate that those measures which provide high quality evidence of inadequate content validity can be excluded from further psychometric assessment because if it is unknown whether the items of a scale measure what they intend to, this may subsequently decrease internal consistency, structural validity, and interpretability of the measure (Prinsen et al., 2018). However, in our systematic review, we continued the assessment of all psychometric properties for all measures, because our goal was to provide a comprehensive review of the state of measurement of weight stigma.

In our evaluation of remaining psychometric properties, we found that cross-cultural validity, reliability, criterion validity, and responsiveness were given low quality ratings as results were based on the absence of, or limited, evidence available. No study reported on measurement error. The most frequently reported properties were structural validity, internal consistency, and hypothesis testing for construct validity. For these properties, measures received high quality ratings. Whilst the evidence for these properties can be considered a strength of the measures assessing them, the lack of evidence for content validity does not make it possible to ensure confidence in any inferences made using the final measure in question. As such, none of the measures demonstrated unequivocal support for their use. The implication of this finding was that it is not possible to provide clear suggestions around the selection of the best measure(s) in the field. These findings led us to conclude that a new measure of weight stigma needed to be developed. All the steps that followed adhered to the COSMIN guidelines for comprehensive development and reporting of psychometric evidence (Mokkink et al., 2018).

Study 2 was dedicated to developing the initial item pool based on theoretical and empirical literature. The goal was to ensure that the domains, types, sources, and settings of weight stigma were comprehensively covered to ensure content validity. This enabled our new weight stigma measure to fulfil, as best as possible, the criticisms that were outlined in

the systematic review regarding the lack of content validity assessment (Papadopoulos, de la Piedad Garcia, et al., 2021). The methods followed for Study 2 were in line with the COSMIN guidelines on what constitutes good scale development and validation and resulted in four phases to guide the testing and calibration of the WeSQ. This included (1) item development informed by theoretical and empirical literature, (2) a review of the relevance and comprehensibility of the items by our internal research team, (3) a review of the relevance and comprehensibility with research experts via a Delphi Study, and (4) a review of the relevance, comprehensibility, and comprehensiveness of all the items among individuals from the community via a Cognitive Interview Study. Items were also classified into their respective domain and type among experts. Modifications and deletions took place between each phase and the initial 108 items were reduced to 101. We made an exhaustive effort to create items that tapped onto all aspects of weight stigma that have been identified in the literature (types, domains, sources, settings) as there has been no attempt to operationalise these concepts thoroughly, until now.

Across the phases requiring feedback on the items (internal research team review, Delphi Study, Cognitive Interview Study), the general findings suggested that our new weight stigma items were relevant and comprehensible. Also, it was a common finding across phases that, in combination, the items were deemed to be a comprehensive representation of the weight stigma construct. However, it was clear from the phases that evaluators did not agree on the classification of items into domains and types. In particular, for the domains, the most common cross-over was between stereotypes and prejudice. For the types, the most common cross-over was between experienced and perceived items (with some overlap between perceived and internalised). The disagreement observed does not detract from the fact that the measure included items that widely represented all stigma domains (stereotypes, prejudice, discrimination) and types (experiences, perceived, internalised). All experts agreed that all

three domains and types were represented but did not agree on whether specific items represented stereotypes or prejudice (for the domains), or experienced and perceived (for the types). Despite experts classifying items inconsistently, we retained all items on the grounds that all raters agreed that, together, the items comprehensively represented the construct of interest. In and of itself, the overlap and confusion in responses among experts was an important finding to highlight. Specifically, researchers in the traditional stigma and weight stigma literature often describe the three domains and three types as separate constructs, however our findings suggest that stereotypes and prejudice for the domains are difficult to separate, as well as experienced and perceived for the types. The distinction between weight stigma domains and types was left to be determined empirically via factor analysis in the next study.

Having established the content validity of the measure, I collected data to evaluate other psychometric properties of the new measure. The final project (Chapter 5) reports two studies (Study 3 and 4) that involved an empirical evaluation of the items that were carried forward from the content validity study. Across the two studies, the final item pool was reduced, and the underlying factor structure was identified. In addition, the initial psychometric evaluation of the WeSQ was established. In Study 3, the 101 items were reduced to 60 items via exploratory factor analysis (EFA). The items formed a conceptually meaningful scale and revealed six factors: Perceived, Internalised, Functional self-devaluation (our second internalised scale), Experienced, Healthcare, and Intimate Relationships. This six-factor structure was supported by an excellent fit in subsequent confirmatory factor analysis (CFA) in Study 4. The structural validity findings of the WeSQ offers initial empirical support for the assertion that the weight stigma types may be distinct constructs. In accordance with the COSMIN guidelines (Mokkink et al., 2018), the WeSQ

demonstrated the highest evidence for structural validity, that is 'sufficient' *result* ratings based on the CFA findings and 'very good' *methodological quality*.

In addition, the total WeSQ and its subscales demonstrated excellent internal consistency and test-retest reliability overtime. Measurement error estimates accompanied reporting of test-retest reliability; this provides a basis for future studies that aim to define minimal important change (MIC) and evaluate sensitivity to change and responsiveness on the WeSQ. Support for construct validity was demonstrated via (1) concurrent validity with existing weight stigma measures (SSI, POTS, WBIS), (2) known-groups validity with variables known to be related to weight stigma including higher weight (and perceiving weight), age, being female, and not being in a relationship (Boyes & Latner, 2009; Emmer et al., 2020; Tomiyama, 2014), and (3) convergent validity with a range of outcomes that weight stigma should be related to including negative eating behaviour, higher social and physical anxiety, and lower intuitive eating practices, decreased body appreciation, and poorer quality-of-life (Emmer et al., 2020; Papadopoulos & Brennan, 2015; Puhl & Heuer, 2009; Tylka, 2006). Combined, the results of both studies indicated that the final 60-item WeSQ is a psychometrically sound instrument that measures weight stigma in adults across the weight spectrum. All the remaining psychometric properties that were assessed met the COSMIN criteria necessary to be graded 'sufficient' for the *results* (except for measurement error because MIC could not be determined), and 'very good' for *methodological quality* (Mokkink et al., 2018). The six subscales that emerged offer an opportunity to assess different aspects of weight stigma across subscales, or in any specific subscale, when the individual subscales are the construct of interest.

6.3 Contributions and Implications of this Research Project

Within the last decade, scholars in the weight stigma field have outlined the need to clearly articulate the conceptualisation of weight stigma, and for improved measurement of

the construct (DePierre & Puhl, 2012; Lacroix et al., 2017; Ruggs et al., 2010; Stewart & Ogden, 2021). This research thesis is the first attempt to develop a measure that comprehensively represents all aspects of the weight stigma construct, and report on all possible aspects of validation with high quality evidence, adhering to the COSMIN guidelines (Mokkink et al., 2018). The first step in validating our measure involved reporting of the most important psychometric property, *content validity.* In doing so, we applied a stigma model to the conceptualisation and measurement of the weight stigma construct by purposefully creating items that are reflective of traditional stigma models (Corrigan & Watson, 2002; Goffman, 1963), and weight stigma research (e.g., Mold & Forbes, 2011; Puhl et al., 2008), which is the first of its kind in the literature. The result was a comprehensive weight stigma measure that included all three stigma domains (stereotypes, prejudice, discrimination), and types (experienced, perceived, internalised), as well as the different sources (e.g., family, intimate partners) and settings (e.g., public, healthcare) that weight stigma is known to occur. This was beneficial to inform a more complete understanding of weight stigma.

The fact that high quality evidence was established for the content validity of the WeSQ (in line with the COSMIN guidelines) suggests that the measure has established strong grounds to evaluate other psychometric properties. In the general literature, studies often document a differential impact of weight stigma types on relevant health outcomes (e.g., Pearl et al., 2015; Puhl et al., 2021) and conclude that the types are therefore distinct. However, existing measures lack support for content validity thus it is unclear whether they are precisely measuring the intended constructs. Thus, our measure can be used to assess this type of research with more confidence, specifically whether weight stigma types do in fact differentially relate to different health outcomes.

In applying a theoretical stigma model to our measure, this project expands our theoretical understanding of the weight stigma construct. The broader social psychology literature describes the domains (stereotypes, prejudice, discrimination) as separate stigma components (Corrigan & Watson, 2002; Goffman, 1963). Whilst our measure reflected the stigma model by including items that tapped onto all its elements, ensuring its comprehensiveness, we found that the distinction between stigma domains did not emerge first in the content validity assessment, and second in the empirical assessment of the factor structure. That is, the domains did not factorise separately or account for separate variance. In fact, the broader social psychology literature recognises that whilst the domains are theoretically distinct, the domains are closely related and tightly interwoven social constructs (Amodio, 2014; Devine, 1989). These findings suggest that from the perspective of the victim of weight stigma, the domains are not distinguishable and that the domains may not be easily represented in practice. We elaborate on these arguments next.

Some scholars have argued that stigma domains are separate (Devine, 1989), whereby individuals cognitively associate particular characteristics with a group (i.e., stereotypes) and develop affective responses (i.e., prejudice) which influences behaviour (i.e., discrimination). However, the fact that in our content validity study, results showed high variability in item classification regarding the *domains* among experts, and that the domains did not factorise separately in the empirical study, suggests that although the domains may be theoretically distinct, and important to include in a measure to cover all manifestations of stigma, this distinction may not be relevant to participants experience. That is not to say that the domains do not represent theoretically distinct constructs. However, it is possible that these distinctions may be more relevant from an academic than a practical perspective. The question therefore arises, “Does it matter?". Each of the domains are fundamental to understanding the way(s) in which stigma is expressed, thus including them offers the

opportunity to contribute to a well-rounded and comprehensive assessment of weight stigma. However, for a target of weight stigma it may not matter whether the stigma was manifested by being told that they are lazy (stereotype), viewed as "disgusting" (prejudice), or ignored at a social gathering (discrimination), because any of these have a significant impact on the quality of their lives and they very likely co-occur.

In contrast to the contention that the stigma domains are distinct, it has also been argued that the manifestation of stigma domains cannot be teased apart because it is likely that they are all operating simultaneously (Amodio, 2014). Applying this to weight stigma, individuals who turn prejudice against themselves (e.g., self-hatred, dislike, and disgust) may simultaneously agree with the stereotype: "That's right; I am lazy and weak-willed because of my weight!". This might lead to behavioural responses, for example people with higher weight may fail to pursue work or romantic relationships. However, these processes are likely to coexist. Therefore, whilst teasing apart the various domains can be useful to identify precisely what processes may be involved in the stigma process, it may not be possible to separate them by virtue of the stigma process itself. Combined, our results show that the distinction between domains may be an academic distinction that is not clinically meaningful from the perspective of the victim of weight stigma.

Whilst the project did not demonstrate support for the distinction between stigma domains, it did partially substantiate the stigma model we applied to weight stigma measurement. Claims made by scholars in the field of Social Psychology that stigma can be experienced, perceived, and/or internalised (Corrigan & Watson, 2002; Goffman, 1963) were theoretically supported because as shown in Chapter 5, four of the emerging factors reflected these types (Experienced, Perceived, Internalised, Functional Self-Stigma). That is, the types factorised separately and accounted for separate variance. The emergence of the stigma types in the subscales suggests that our items matched traditional conceptualisations of stigma

regarding the types, and this suggests that the roles of experienced, perceived, and internalised weight stigma among individuals may differ. As mentioned previously, this offers an opportunity for future research to build upon the existing literature that documents a differential impact of weight stigma types on biopsychosocial health outcomes with more accuracy (e.g., Emmer et al., 2020; Lee et al., 2019; Magallares et al., 2017; Pearl et al., 2015), and identify the difference in trajectory on relevant biopsychosocial health outcomes. For example, research has shown that internalising weight stigma may produce worse outcomes than experiencing weight stigma alone (e.g., Puhl et al., 2021). Our scale offers an opportunity to test this with more precision. Future research should aim to explore whether the existing findings that differentiate between experienced, perceived, and internalised weight stigma replicate with our measure.

Uniquely, two additional scales emerged beyond our stigma model, namely the Stigma in Healthcare (SiH) and Intimate Relationships (IR) subscale. Whilst the literature often focuses on experienced weight stigma that occurs generally, across different settings, the emergence of healthcare and romantic settings as independent subscales suggest that they are uniquely important in the field of weight stigma research. Indeed, the items on our Experienced subscale reflects stigma that occurs generally from different sources (e.g., family, the public), yet the items that represent other known sources/settings of stigma, which formed the SiH and IR subscales, loaded onto separate factors. Thus, the responses on the items that formed the respective subscales (SiH, IR) covaried with one another and appeared to define meaningful separate factors. This suggests that there might be something unique about these stigma types, such that stigma in healthcare and intimate relationships are a specific type or class of stigma. Based on the emergence of these subscales, this offers research the opportunity to explore (1) the factors that affect stigma in healthcare and intimate relationships, and the consequences of this stigma on health and wellbeing, and (2)

explore the precursors and consequences of these types of stigma. This is particularly important because when weight stigma is experienced in healthcare settings, this can act as a risk factor for increased avoidance of treatment seeking behaviours, less trust and lower levels of open communication with healthcare providers, all of which may exacerbate health issues (Tylka et al., 2014). Although a less studied topic than healthcare, several studies have shown that when weight stigma is experienced in the romantic context, this can have significant consequences for one's physical and mental health (Carels et al., 2020), negatively shape intimate experiences and prospects as stigmatized individuals are less likely to be in a relationship, and lead to lower quality relationships, relationship satisfaction, and sexual intimacy (Boyes & Latner, 2009; Carels et al., 2020).

The six subscales which emerged also enhanced our understanding of the ways in which weight stigma is encountered. Our findings demonstrated that the way people encounter weight stigma is either self-directed or encountered from the external environment. Specifically, our items were categorised uniquely into sources of stigma via internalized (Internalised, Functional Self-Stigma) and externalized (Perceived, Experienced, Intimate Relationships, Healthcare) processes rather than by individual sources (e.g., family, friends, partners). Because stigma from internal/external sources might act differently, differentiating their effects upon an individual may help to facilitate understanding around the mechanisms linking weight stigma to poor health outcomes. Interventions can be targeted to the different internal and external sources of stigma for the purposes of stigma reduction and prevention. For example, it has been found that self-directed stigma is associated with poorer mental and physical health (Pearl et al., 2014), and as stated above, stigma in healthcare leads to healthcare avoidance and mistrust of healthcare professionals (Tylka et al., 2014). Clinicians might address each differently; for example, by adopting a weight inclusive approach in healthcare settings. The WeSQ could be used for such purposes, as each subscale can be used

as possible target variables for identifying those who would benefit from specialised interventions in the associated area (e.g., Stigma in Healthcare or Intimate Relationships).

Building upon the existing literature, our measure has the capacity to assess the weight stigma types with more confidence. An important finding of the study presented in Chapter 5 was that the new subscales representing the different weight stigma types were mutually related to existing weight stigma measures. Specifically, we found that the new and existing experienced (Experienced, SSI), perceived (Perceived, POTS), and internalised (Internalised, WBIS) scales were all strongly related to each other. However, only our scales demonstrated content validity evidence and can thus be considered a better representation of the stigma types. In fact, a study by Meadows and Higgs (2020) found that the commonly used WBIS may not be unidimensional as originally indicated (Durso & Latner, 2008) as it includes overlapping constructs of self-esteem, body image, and positive body-related self-judgment. Unlike the WBIS, our internalised subscales (Internalised, Functional Self-Devaluation) reflect the extent to which individuals endorse existing weight stigmatising views and apply them to the self (Internalised) and one's beliefs about their sense of self-worth and value in how they contribute to the world (Functional Self-Devaluation).
Thus, the internalised subscales could be considered a better representation of the internalised weight stigma construct. Future work is encouraged to compare the different subscales assessing the different stigma types and determine whether the new WeSQ subscales contribute variance over and above existing scales (e.g., our 'Experienced' subscale and the existing Stigmatizing Situations Inventory that is used to assess experienced weight stigma) in relevant biopsychosocial outcome variables. Research of this nature would offer evidence for incremental validity of the WeSQ, specifically to determine whether it will increase the predictive ability beyond that provided by existing measures of weight stigma. Accordingly, this would facilitate measure selection among researchers and clinicians. This is important

because as our systematic review highlighted (Papadopoulos, de la Piedad Garcia, et al., 2021), it was difficult to make recommendations on the selection of the best weight stigma measure in research due to the lack of evidence across many psychometric properties.

6.4 Limitations of the Overall Research Project

Whilst our structural validity results demonstrated that the types factorised separately in the WeSQ, we acknowledge an important statistical limitation of attempting to word items in such a way that they capture the distinct stigma types. That is, items may have factor analysed according to the item wording, rather than the theoretical distinction built into the items (such that items beginning with "I feel..." were used to represent the perceived subscale, items starting with "I have…" were used to represent the experienced subscale, and items beginning with "I think/am…" were used to represent the internalised subscale). This is a common challenge noted in measure development research as it has been shown that the effect of item wording and item direction (i.e., positive, or negative) can impact the factorial construction of the data as items tend to factorise accordingly (Netemeyer et al., 2003). It could be argued that the distinction between weight stigma types may not be relevant, especially the distinction between experienced and perceived weight stigma which were confused among experts in our content validity study. This is because what distinguishes them is whether one's personal experience can be verified, and this has the potential to invalidate and dismiss the victim's conception of their own perception/experience. Therefore, future work should aim to determine whether there is in fact a meaningful empirical distinction between the types which emerged from our subscales or whether the apparent factors that emerged in the WeSQ may be an artifact of item wording. One way this could be assessed is by determining whether the perceived and experienced subscales differentially account for variance in relevant outcomes.

Another limitation was that we did not include items reflective of a more recently documented weight stigma type: *anticipated weight stigma*. The concept of anticipated weight-stigma has been adopted from the sociological literature on social identity threat, and recently cited in the weight stigma literature (Hunger, Dodd, et al., 2020). Stigma scholars have suggested that anticipated stigma is a distinct domain of stigma (Quinn & Chaudoir, 2009), with most of the evidence for anticipation of stigma from other domains (i.e., other minorities). Anticipated stigma in the weight domain refers to the expectation that one will experience weight-related stigma in any given context (Hunger et al., 2015), such as when one first meets a potential dating partner and is concerned that they will be discriminated against (e.g., rejected and devalued) or negatively stereotyped, on the basis of their weight. In the first systematic review study in this thesis, the majority of measures identified assessed the commonly known types of weight stigma (experienced, perceived, internalised), but the search did not identify measures that were directly designed to assess anticipated weight stigma. The only standardised measure that was found which tapped onto the concept of anticipated weight stigma was the Weight Based Rejection Sensitivity (WBRS) scale (Brenchley & Quinn, 2016). In this study, 'anticipated weight stigma' was not the term used but we note that the concept "weight-based rejection sensitivity" is highly similar to that of 'anticipated'. Of note, this scale was published at the time of the review, and the measure has not been used once since its publication in 2016. Further, at the time of developing the WeSQ, this stigma type was documented, albeit not as commonly as the other three types noted (experienced, perceived, internalised), and has only recently started to receive increased attention in the literature (e.g., Brenchley & Quinn, 2016; Hunger, Dodd, et al., 2020; Sinnott et al., 2021). In a more recent study of anticipated weight stigma (Hunger, Dodd, & Smith, 2020), the authors assessed this construct using the 'weight concerns' scale (Hunger & Major, 2015). This scale was modelled from existing scales used to assess other

forms of stigma concerns. However, although this measure has been used by Hunger and colleagues in a small number of published studies, there is no study reporting its psychometric development. This was an inclusion criterion for the systematic review and thus this measure was not picked up by our systematic review. Since then, research has used the weight concerns scale to show preliminary evidence for the role of anticipated weight stigma in poor health outcomes. For instance, it has been found that weight discrimination is associated with higher eating disorder symptomology via its association with anticipated weight stigma (Hunger, Dodd, & Smith, 2020). In another study, it was found that avoidance of healthcare is higher among those who anticipate weight stigma compared to those who do not endorse anticipation of future weight stigma experiences (Nichelsen, 2020). Thus, it could be argued that whilst our measure is a comprehensive measure of the other stigma types (experienced, perceived, internalised), it is not representative of anticipated weight stigma. Future research could explore the relationship between the WeSQ and valid measures of anticipated weight stigma to explore the similarities/differences between the constructs and related outcomes.

Another notable limitation relates to the participant experiences of Study 3 described in Chapter 5. There were a number of participants who contacted the measure development team to indicate that they found answering the questions in the measure was distressing. It is well recognised that questioning individuals about their negative experience may precipitate some emotional reaction during the research process (Gibbs et al., 2018). Our research protocol maintained the ethical standard for research as we informed participants upfront about the nature of questions asked and also offered participants mental health support options upon study completion. However, our questioning resulted in high drop-out and some participants reported reluctancy to complete the study. This may have introduced sampling bias in our results because those who reacted to our questioning may not have completed the

questionnaire. Therefore, it is possible that our sample is biased toward individuals who did not react when being asked questions relating to their weight and highly sensitive weight stigmatizing experiences. This should be considered when interpreting the results of our findings.

The WeSQ has not yet been evaluated in terms of sensitivity to change overtime or defined clinically meaningful changes in the measure. However, it is important to note that this was not possible because this information can only be obtained via anchor- and/or longitudinal based methodology. Notably, the results of test-retest reliability provided initial evidence that the scales are stable overtime, and the provision of measurement error estimates may be used to build a confidence interval around a score on the WeSQ (Terwee et al., 2010). Taken together, this enables researchers and/or clinicians to use the measure in longitudinal research and interpret whether any observed changes reflect a true effect above measurement error, even though the meaning of the magnitude of change has not yet been determined (i.e., MIC). The test-retest data and measurement error estimates presented here provides a basis for evaluation of sensitivity to change and responsiveness in future studies.

Finally, individuals from the community were welcome to participate whether they experienced weight stigma or not. This enabled us to assess known-groups validity data in Chapter 5. However, this does not allow us to generalise our findings to clinical population groups such individuals seeking treatment for weight- or eating-related issues. Future studies are encouraged administer the WeSQ in relevant target populations to further strengthen the construct validity of the measure. Further, future work could test whether concepts or measures that are not supposed to be related are actually unrelated, for example, whether WeSQ scores discriminate between participants who experience eating disorder psychopathology and those without eating pathology, which is commonly experienced among

stigmatized individuals (Vartanian & Porter, 2016). This would strengthen the discriminant (construct) validity evidence of the WeSQ.

6.5 Strengths of the Overall Research Project

Across the four studies, the present work fulfilled a major gap in the existing weight stigma literature, specifically the development of a weight stigma measure that demonstrated evidence for the most essential psychometric property, content validity. All studies were guided by the most up-to-date and rigorous COSMIN guidelines to inform our item development (Prinsen et al., 2018). The ratings of results and methodological quality are presented in Table 6.1 and are in line with the COSMIN taxonomy (Mokkink et al., 2018). All result ratings were 'sufficient' except for measurement error because as mentioned previously, MIC could not be defined. The methodological quality ratings for each measurement property assessed was considered 'very good'. Overall, the present data suggests that the WeSQ represents a structurally robust measure. It possesses good content, structural, concurrent, known-groups and convergent validity, and is internally reliable, and reliable over time.

Table 6.1

Ratings of the Measurement Properties of the WeSQ

	Result rating (+ / - / ?)	**Methodological quality**	**Quality of evidence (High, moderate, low, very low)**
Content validity	+	VG	High
Relevance	+	VG	High
Comprehensiveness	+	VG	High
Comprehensibility	+	VG	High
Structural validity	+	VG	High
Internal consistency	+	VG	High

Test-retest reliability	+	VG	High
Measurement error	?	VG	High
Hypothesis testing for construct validity	+	VG	High

Note. These ratings are based on one study; + = 'sufficient'; ? = 'indeterminate'; VG=Very Good

Another key strength of this research project was that the WeSQ was built on a solid foundation of items that were relevant, comprehensible, and comprehensive overall. Because of this, we can have greater confidence in the conclusions drawn on the basis of its use in future work. Thus, the WeSQ is likely to facilitate the improved measurement of weight stigma in research and ensure that appropriate research inferences are being made in the literature with regards to prevalence, risk factors, biopsychosocial correlates, and intervention outcomes. Given that our knowledge of weight stigma and its impacts is only as good as the measures available to assess this phenomenon (DePierre & Puhl, 2012), the WeSQ has the potential to offer opportunities in the field to build upon the available knowledge.

6.6 Conclusion

This thesis makes a novel and significant contribution to our understanding and measurement of the weight stigma construct. Prior to this research project, the growing research on weight stigma has been based upon measures that have been lacking evidence for the first most important psychometric property: content validity. The WeSQ is the only measure developed that offers comprehensive evidence of content validity in the weight stigma field. Therefore, researchers who wish to utilise this measure should be more confident that the scores represent what they intend to, and that the items are relevant and comprehensible, and the combined item pool is comprehensive overall. Our empirical assessment of the WeSQ showed good initial evidence of other psychometric properties including structural validity, internal consistency, reliability, concurrent validity, known-groups validity, and convergent validity. We also provided estimates on measurement error and information on the feasibility and interpretability of the measure. Whilst the initial

findings are promising, future studies should continue garnering the psychometric evidence base of the measure as the strength of the measure is developed based on accumulating evidence. Nonetheless, its development is timely as it offers a unique opportunity in the weight-related literature to study weight stigma in clinical and research settings where this measure is intended to be used. Researchers are encouraged to use the WeSQ when their goal is to explore the broad range of stigma experiences related to weight (of any weight) both across subscales or in specific subscales (using individual subscales only). Thus, the subscales are suitable for standalone use when they are separate variables of interest. Further, the WeSQ can be used to evaluate the impact, and/or possible risk factors associated with weight stigma, and/or clarify the ways in which weight stigma may differ from other types of stigma. Improving the understanding around how the stigma types differentially relate to and/or predict negative biopsychosocial outcomes may identify areas requiring targeted intervention (i.e., experienced, perceived, or internalized weight stigma) and facilitate improvements in treatment choices. Combined, our new weight stigma measure will be a starting point for, and generate, new research in this field of study.

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Appendices

Appendix A: Ethics Approval of Projects

2018-41H Exploring the psychometrics of a newly developed measure assessing weight stigma in adults	
Approved	16/02/2018
Low Risk	22/05/2018
Nat Sch Psychology	23/05/2018
Ethics approval end date	31/12/2021

Ecode	Full Name	Type	Position	School / External Org Name
0000017019	**Dr Xochitl De la Piedad Garcia**	Internal	Chief Investigator	School of Psychology (Melbourne)
0000029810	Dr Leah Brennan	Internal	Co-Investigator	School of Psychology (Melbourne)
S00057235	Dr Joel Anderson	Internal	Co-Investigator	School of Psychology (Melbourne)
TB0103661	Stephanie Papadopoulos	HDR Student	Doctoral Student	

No.	EVENT NAME	Category	Action Date	STATUS
1	**2018-41H Modification Approved** *1. Amend cognitive interview from 60 minutes to 2 hours. 2. Inclusion of $30 Coles Myer Vouchers to each participant rather than draw to win an iPad.*	Ethics Modification Approved	27/05/2019	Completed 27/05/2019
2	**2018-41H Ethics Modification Approved** *1. Extension approved to 31/12/2020. 2. Amend support options - removal of CHEW. 3. Amend supervision team - PI changed to Xochitl de la Piedad Garcia, Joel Anderson - Co-supervisor and Dr Leah Brennan (external to ACU is now a co-supervisor). 4. Amend research data management plan as per documentation provided.*	Ethics Modification Approved	23/12/2019	Completed 23/12/2019
3	**2018-41H Ethics Modification Approved** *Amend flyer to be more participant friendly and less technical.*	Ethics Modification Approved	2/03/2020	Completed 2/03/2020
4	**2018-41H Ethics Modification Approved** *1. Increase the number of participants from 350 to approximately 900, in accordance with the COSMIN guidelines.*	Ethics Modification Approved	18/03/2020	Completed 18/03/2020
5	**Extension approved**	Extension approved	22/03/2021	Completed 22/03/2021

6	**Ethics Modification Approved** *1. Addition of a new participant group to the research project - experts in the field of weight-stigma and social psychology. These experts will be presented with items from existing measures and asked to classify each item along two dimensions.* *Associated documents:* *- 2018-41H Modification Form for Research Project 151220* *- 2018-41H Modification 151220 -Items to be classified by experts* *- 2018-41H PILforExperts Modification 151220 docx -*	Ethics Modification Approved	22/03/2021	Completed 22/03/2021
7	**2018-41H Incident** *A potential participant raised concerns with the survey and that components such as weighing participants could raise concerns and they were of the view that low risk was an inadequate risk assessment. The participant was of the view that the survey could contribute to harms when using problematic language such as overweight, underweight, obese and normal which could be considered stigmatising and were of the view that the survey instrument needed more research with the problematic language used within the survey. The complainant was thanked for their feedback, with the responses noting that the study had been peer reviewed and that the language used was clinical terminology, borrowed from the WHO.*	Incident	13/07/2021	Completed 13/07/2021

SOURCE	NO.	DOCUMENT NAME	FILENAME	UPLOADER FULLNAME	DATE CREATED	DATE MODIFIED
Backoffice	1	Confirmation of Candidature_SPapadopoulos (1).pdf	Confirmation of Candidature_SPapadopoulos (1).pdf	Stephanie Papadopoulos	15/02/2018	22/05/2018
	2	SP research proposal 180215.docx	SP research proposal 180215.docx	Stephanie Papadopoulos	15/02/2018	22/05/2018
	3	Information letter full study and cognitive interview study 180215.docx	Information letter full study and cognitive interview study 180215.docx	Stephanie Papadopoulos	15/02/2018	22/05/2018
	4	Full study and cognitive interview advertisements 180215.docx	Full study and cognitive interview advertisements 180215.docx	Stephanie Papadopoulos	15/02/2018	22/05/2018
	5	SP consent form for cognitive interview study 180215.docx	SP consent form for cognitive interview study 180215.docx	Stephanie Papadopoulos	15/02/2018	22/05/2018
	6	2018 NEW ORION RME6 Instructions for HREC reviewed applications.pdf	2018 NEW ORION RME6 Instructions for HREC reviewed applications.pdf	Ms Pratigya Pozniak	20/03/2018	22/05/2018
	7	2018-41H HREC Action Comments March 2018.docx	2018-41H HREC Action Comments March 2018.docx	Ms Pratigya Pozniak	20/03/2018	22/05/2018
	8	Signatures document.pdf	Signatures document.pdf	Stephanie Papadopoulos	17/04/2018	22/05/2018
	9	2018-41H HREC Action Comments March 2018 180521.docx	2018-41H HREC Action Comments March 2018 180521.docx	Stephanie Papadopoulos	21/05/2018	22/05/2018
	10	SP advertisement and ad 180521.docx	SP advertisement and ad 180521.docx	Stephanie Papadopoulos	21/05/2018	22/05/2018
	11	Full study and cognitive interview advertisements 180521.docx	Full study and cognitive interview advertisements 180521.docx	Stephanie Papadopoulos	21/05/2018	22/05/2018

OnlineForm	1	Peer Review	Confirmation of Candidature_SPapadopoulos (1).pdf	Stephanie Papadopoulos	10/01/2018	15/02/2018
	2	Research Proposal	SP research proposal 180215.docx	Stephanie Papadopoulos	15/02/2018	15/02/2018
	3	Participant Information Letter (Revised letters must contain suitably highlighted changes)	Information letter full study and cognitive interview study 180215.docx	Stephanie Papadopoulos	15/02/2018	15/02/2018
	4	Advertisement text / script	Full study and cognitive interview advertisements 180215.docx	Stephanie Papadopoulos	15/02/2018	15/02/2018
	5	Consent Form (Revised forms must contain suitably highlighted changes)	SP consent form for cognitive interview study 180215.docx	Stephanie Papadopoulos	15/02/2018	15/02/2018
	6	HREC INSTRUCTIONS	2018 NEW ORION RME6 Instructions for HREC reviewed applications.pdf	Ms Pratigya Pozniak	20/03/2018	20/03/2018
	7	HREC Action Requests 20 03 2018	2018-41H HREC Action Comments March 2018.docx	Ms Pratigya Pozniak	20/03/2018	20/03/2018
	8	Signatures document	Signatures document.pdf	Stephanie Papadopoulos	27/03/2018	17/04/2018
	9	Response to ethics amendment requests	2018-41H HREC Action Comments March 2018 180521.docx	Stephanie Papadopoulos	21/05/2018	21/05/2018
	10	Advertisement and ad statements	SP advertisement and ad 180521.docx	Stephanie Papadopoulos	21/05/2018	21/05/2018
	11	Fully study and cognitive interview study advertisements	Full study and cognitive interview advertisements 180521.docx	Stephanie Papadopoulos	21/05/2018	21/05/2018

Appendix B Participant Recruitment and Informed Consent

Appendix B – 1 Cognitive Interview Study: Expression of Interest

ACU AUSTRALIAN CATHOLIC UNIVERSITY

Call for Participants:

Weight Stigma in Adults Study

BEWT Body Image, Eating and Weight Clinical Research Team

The goal of this study is to invite individuals of any weight to assist in the review of items developed to create a new scale that measures weight-stigma. Weight-stigma refers to negative beliefs, attitudes, and treatment directed towards individuals because of their weight. This will **improve the measurement of weight-stigma** to better understand the impact that stigmatizing encounters may be having on them.

The study will ask you to complete one (and perhaps a second) face-to-face session with the student researcher at ACU. The review session will last 120 minutes.

During the session, you will be asked to complete a questionnaire and encouraged to make suggestions for modification of the items. A follow-up phone call may be required to clarify any points following the interview.

To be eligible for this study, you must be an **adult**, **male or female** (**aged 18 to 65**) of **any weight**, and feel comfortable providing feedback to the researcher around the wording of items related to weight stigma.

To thank you for participating, you will **receive a $ 30 Coles-Myer voucher**.

If you are interested in participating or would like more information, please contact Stephanie Papadopoulos by email: stephanie.papadopoulos@myacu.edu.au.

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Appendix B – 2 Cognitive Interview Study: Information letter

PARTICIPANT INFORMATION LETTER

PROJECT TITLE: Exploring the factor structure of measures assessing weight-stigma: Cognitive Interviewing Study
PRINCIPAL INVESTIGATOR: Leah Brennan
SECONDARY INVESTIGATOR: Xochitl de la Piedad Garcia
STUDENT RESEARCHER: Stephanie Papadopoulos
STUDENT'S DEGREE: Doctor of Philosophy (PhD)

Dear Participant,

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

What is the project about?
This study is one step in developing a new scale to assess weight stigma. It will use Cognitive Interviewing techniques to obtain feedback on the wording of items in a new questionnaire. This feedback will be used to revise or develop new items so that they can be clearly understood by future participants. These results will be used to develop a new scale to assess weight stigma. The newly developed scale will then be used in future Australian studies aimed at improving the measurement and understanding of stigma related experiences that people with overweight encounter.

Who is undertaking the project?
This project is being conducted by Stephanie Papadopoulos as part of the Body Image, Eating and Weight (BEWT) clinical research at ACU and will form the basis for the Degree of a Doctor of Philosophy (PhD) at Australian Catholic University (ACU) under the supervision of A/Prof Leah Brennan and Dr. Xochitl De La Piedad Garcia. A/Prof Leah Brennan is a clinical, health and developmental psychologist who leads the BEWT team at ACU, and Dr. Xochitl De La Piedad Garcia is an expert in research design and statistics in the BEWT team at ACU.

Are there any risks associated with participating in this project?
There are low risks associated with this project. However, some participants may find some questions confronting and uncomfortable as the research covers a sensitive topic around weight and possible negative experiences associated with being overweight. In these cases, participants may withdraw from the study and are encouraged to call the Melbourne Clinic for Healthy Eating and Weight at ACU to discuss support options. A list of relevant services will also be provided.

What will I be asked to do?
Participants will be asked to attend an interview that will take place face-to-face at the Australian Catholic University (Melbourne campus) research testing room. The interview will be conducted individually. In the interview, participants will be asked to complete a self-report questionnaire and make suggestions for modifications to this questionnaire. The cognitive interview will be conducted using a combination of 'think-aloud' and verbal probing techniques. For example, participants may

be asked the question: “What is this question asking you?”. Emphasis will be placed on format of questions, question wording, and other general concepts that may be identified by the participant(s). It will take approximately 60 minutes to complete.

A follow-up phone call may be required to clarify any points from the interview. The participants responses will be audio recorded and transcribed.

How much time will the project take?

The review of the questionnaire will take approximately 60 minutes to complete in one session. Notably, the time to complete the interview will depend on the amount of feedback offered during the review process. It is expected to take no more than 60 minutes. If the first round of interviews indicates a need for a follow up phone call, then you may be contacted for a brief interview.

What are the benefits of the research project?

There are no direct benefits of participating in the review process of the Cognitive Interview. The information and feedback obtained from this study will inform the development of a new scale which will be used in future Australian studies examining the weight-stigma construct. This research has the potential to improve the measurement of weight-stigma, and improved measurement may result in improved understanding and prevention of weight stigma. Psychology students from ACU will receive a $30 Coles-Myer voucher upon completion of the study to thank them for their time.

Can I withdraw from the study?

Participation is completely voluntary for the current study and participants are not under any obligation to participate in the study. If participants agree to complete the Cognitive Interview, they can withdraw at any time without adverse consequences. Participants will be provided with a list of relevant psychological services and are encouraged to utilise them if they become discomforted at any time throughout the completion of the study.

Will anyone else know the results of the project?

All data from the self-report questionnaire will be collected through paper-and-pencil and each questionnaire will be identified by a number for each participant (e.g., 4312). It is possible that the review process may include the presence of 1 to 3 participants (based on their availability) and therefore responses may become known to other participants through verbal discussion. To minimise risks to confidentiality of personal information, the skilled researcher will inform participants at the beginning of the study that they should try to avoid disclosing personal information that may affect them and do not want the other participants to be aware of. During the review process, the researcher will collect participants responses and randomly read out responses to gain feedback from the group in order to increase confidentiality. The participants responses will also be audio recorded and transcribed. However, the audio data will be deleted once the participants responses are transcribed.

The results will then be discussed and revised by the designers (research supervisors) to propose potential modifications. However, all participant responses will remain confidential and will become electronically stored on the researchers password protected computer. The hard-copy questionnaire will be shredded once it has become electronically stored.

Results of the research will be published in scientific peer-reviewed journals and possibly presented in national and international conferences. No participants will be identifiable as only aggregated data will be reported in any publication or communication. Non-identifiable data may be provided to other researchers for research purposes only.

Will I be able to find out the results of the project?
If participants would like to know the outcome of the study, Leah Brennan may be contacted via email (leah.brennan@acu.edu.au) and participants will be notified on completion of the research project.

Who do I contact if I have questions about the project?
All questions relating to the study are welcome, please direct any concerns to the chief researcher Leah Brennan via email (leah.brennan@acu.edu.au).

What if I have a complaint or any concerns?
The study has been accepted by the Human Research Ethics Committee at Australian Catholic University (review number 2018-41-H). If you have any complaints or concerns about the conduct of the project, you may write to the Manager of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
Ph.: 02 9739 2519
Fax: 02 9739 2870
Email: resethics.manager@acu.edu.au

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

I want to participate! How do I sign up?
If you wish to participate, please contact the student researcher via email: stephanie.papadopoulos@myacu.edu.au. After contact has been made, the researcher will organise a time to meet with you for the Cognitive Interview.

Yours sincerely,

Associate Professor Leah Brennan
Research Chair
School of Psychology
Australian Catholic University

Ms Stephanie Papadopoulos
Doctor of Philosophy Student
School of Psychology
Australian Catholic University

Do you need further support?

If so, please contact your health care practitioner or one of the following services to discuss your concerns:

ACU Melbourne Psychology and Counselling Clinic (MPACC): A training facility for postgraduate provisional psychologists who offer you, your child or family, psychological assessment and intervention. MPACC forms part of the Faculty of Health Sciences at the Australian Catholic University (ACU).

Phone: (03) 9953 3006

Email: melbournepsychologyclinic@acu.edu.au

ACU Melbourne Clinic for Healthy Eating and Weight: A community-based clinic offering high quality, low-cost psychological assessment and treatment of eating, weight and body image concerns. This clinic is a part of the Australian Catholic University (ACU) Melbourne Psychology and Counselling Clinic.

Phone: (03) 9953 3006

Email: melbournepsychologyclinic@acu.edu.au

The Eating Disorders Foundation of Victoria: A source of support, information, community education and advocacy for people with eating disorders and their families in Victoria.

Phone: 1300 550 236 or (03) 9885 0318
Email: help@eatingdisorders.org.au

Dietician Association of Australia: Find an expert on nutrition advice and/or practical and up-to-date information on food and nutrition:

Website: www.daa.asn.au

Health Direct Australia: A source of information and support for people with a range of mental and physical health problems including obesity.

Website: https://www.healthdirect.gov.au/

Beyondblue: A national, independent, not-for-profit organisation working to address issues associated with depression, anxiety and related disorders in Australia.

Phone: 1300 22 4636

Email: infoline@beyondblue.org.au

Lifeline (24 Hours): Offers generalist counselling that does not discriminate. Lifeline counsellors are ready to talk and listen no matter how big or how small the problem might seem.

Phone: 13 11 14

Kids Helpline: Offers telephone, web and email counselling to individuals aged 5-25 24 hours a day, 7 days a week.

Phone: 1800 55 1800

Website: www.kidshelp.com.au

Nurse-on-Call: A phone service that provides immediate, expert health advice from a registered nurse, 24 hours a day, 7 days a week.

Phone: 1300 60 60 24

Australian Psychological Society: The community information section of this site allows you to find a psychologist in your local area.

Phone: (03) 8662 3300 or Toll free: 1800 333 497

Website: www.psychology.org.au

Butterfly Foundation: A national support line and web counselling service for individuals and their families which provide treatment options and connections to other services specifically related to eating disorders.

Phone: **1800 33 4673**

Website: www.thebutterflyfoundation.org.au/web-counselling

Appendix B – 3 Cognitive Interview Study: Consent Form

CONSENT FORM

TITLE OF PROJECT: Exploring the factor structure of measures assessing stigma around overweight and obesity: Cognitive Interviewing Study
PRINCIPAL INVESTIGATOR: Leah Brennan
SECONDARY INVESTIGATOR: Xochitl de la Piedad Garcia
STUDENT RESEARCHER: Stephanie Papadopoulos (PhD)

I …… (*the participant*) have read (or, where appropriate, have had read to me) and understood the information provided in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree to participate in the study as outlined in the information letter that involves participating in the face-to-face review process of the Cognitive Interviewing study. I understand that this will be conducted for one session, but that a follow-up interview may be requested if there is large variability in the participants responses. Additionally, the study encourages verbal feedback from the participant to provide qualitative data around the format and wording of questions, and other general concepts that may be identified by the participant(s). I understand that I will be audio recorded and that I can withdraw my consent at any time (without adverse consequences). I agree that the research data collected for the study may be published or may be provided to other researchers in a form that identifies my responses through transcribed format (which will be erased once responses are transcribed).

NAME OF PARTICIPANT……..

SIGNATURE……DATE……

SIGNATURE OF PRINICPAL INVESTIGATOR (or SUPERVISOR)……..

DATE……

SIGNATURE OF STUDENT RESEARCHER…… DATE……

Please tick this box if you would be interested in hearing about future research projects conducted by the Body Image, Eating and Weight Clinical Research Team at ACU ☐

Please tick this box if you are interested in hearing about the outcomes of the current study ☐

If you have ticked any of the boxes above, please provide your contact details below:

Email……

PH……..D.O.B……..

Appendix B – 4 Cognitive Interview Study: Demographic Questionnaire and Instructions

PARTICIPANT DEMOGRAPHIC QUESTIONNAIRE

Cognitive Interview Study: Weight-Stigma Questionnaire

1. Name:_____
   _____
2. Date of birth:_____
3. Age:_____years_____months
4. What gender do you identify as? Male ☐ Female ☐ Other ☐
5. What is your weight (in kg)_____
6. What is your height (in cm)_____
   Information about height and weight is very important. *If you are not sure of your height and weight, please measure/weigh yourself before answering.*
7. What is your current occupation?_____
8. Current marital status: Married ☐ Defacto ☐ Divorced ☐ Separated ☐ Single ☐
   Never married/never defacto ☐ Widower ☐ In a relationship ☐
9. What is your national background?_____
10. Country of birth (please specify):_____
11. What is your ethnicity: Australian ☐ Other ☐ (please specify)
    _____
12. Is English your first language? Yes ☐ No ☐ (please specify)
    _____

13. What is your current postcode?_____
14. What is your highest level of education you have completed? (please specify)_____
15. Please answer the following by circling what resonates with you: I believe I am underweight/ normal weight/ overweight/ obese
16. Have you ever been underweight? Yes ☐ No ☐
17. Have you ever been overweight? Yes ☐ No ☐

Date:_____

Signature:_____

ITEM REVIEW

This Cognitive Interview study is one step in developing a new scale to assess weight stigma. Please find attached 102 items to be reviewed in order to obtain feedback on their wording for a new questionnaire. The review of items will take approximately two hours to complete. Feedback around the items will occur in the form of Think-Aloud (TA) responses (e.g., "do I understand what I just read?") and Verbal Probes (VP) from the interviewer (e.g., "what does this question mean to you?").

Items

The items tap onto aspects of stigma encountered by people because of their weight.

Please read each item as carefully as you can and provide feedback on the following concepts:

1. **Relevance:** Is this item relevant to the weight stigma construct?
2. **Comprehensibility:** Is this item easy to understand?
3. **Comprehensiveness:** Is the item tapping onto the weight stigma construct? Does the combination of items tap onto the weight stigma construct? Is there any key aspects of the weight stigma construct missing amongst the items presented to you?

Appendix B – 5 Cognitive Interview Study: Worksheet

Weight stigma questionnaire
1. I have been called 'lazy' because of my weight.
2. I have been called 'unintelligent' because of my weight.
3. I have been called 'ugly' (or similar) because of my weight.
4. I have been accused of overeating because of my weight.
5. I have been told that I have poor personal hygiene because of my weight.
6. I have been accused of not trying hard enough to lose weight.
7. I have been called 'disgusting' because of my weight.
8. I have been told by people that they dislike me because of my weight.
9. I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.
10. I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension) because of my weight.
11. I have been judged negatively about my weight by my family.
12. My family has made fun of my weight.
13. I have been excluded by my friends from social gatherings because of my weight.
14. My friends have made fun of my weight.
15. I have been treated disrespectfully by my romantic partner(s) about my weight.
16. I have been told by my romantic partner(s) that they are embarrassed to be seen with me in public because of my weight.
17. I have been told by my romantic partner(s) that they are uncomfortable holding my hand in public because of my weight.
18. I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.
19. I have been shouted at with insults by others about my weight while walking down the street.
20. I have been laughed at in public because of my weight.
21. I have lost a job because of my weight.

22. I have been turned down for a job, for which I was qualified, because of my weight.
23. I have had difficulty in renting an apartment or finding other housing because of my weight.
24. I have been viewed unfavorably for housing opportunities because of my weight.
25. I have been told to lose weight by other people.
26. I have been in situations where I heard others say offensive things about me because of my weight.
27. I have been physically attacked by others because of my weight.
28. I have been ignored by people because of my weight.
29. I have been deliberately left out by people because of my weight.
30. I have been treated without sympathy by other people because of my weight.
31. I have received less support from people (e.g., not having someone to confide in about myself) because of my weight.
32. "Below are questions relating to your role in professional settings. For example, you may be (or have been) an employee or a student, or both. Please consider who your superior(s) (e.g., teachers, boss, managers, supervisors) and associates (e.g., peers, colleagues) are based on your professional status as you answer the following question(s). **1a.** "I have been treated unfairly by my superiors" ...As an employee ...As a student **1b.** "I have been treated unfairly by my associates" ...As an employee ...As a student
33. I feel that other people view me as lazy because of my weight.
34. I feel that others view me as having no willpower because of my weight.
35. I feel that others view me as unintelligent because of my weight.
36. I feel that others view me as ugly because of my weight.
37. I feel that others think that I eat excessive amounts of food because of my weight.
38. I feel that others think that I have poor personal hygiene because of my weight.
39. I feel that others think that I am to blame for my weight.

40. I feel that others view me as disgusting because of my weight.
41. People who are thinner than me dislike me because of my weight.
42. I feel that health staff treat me unfairly because of my weight.
43. I feel that health staff offer me poorer service because of my weight.
44. I feel that I am humiliated during contact with health professionals because of my weight.
45. I feel that my family find interaction with me unpleasant because of my weight.
46. I feel that my family do not provide me with emotional support because of my weight.
47. I feel that my friends exclude me from fun activities because of my weight.
48. I feel that people do not want me to be their friend because of my weight.
49. I feel that people prefer not to be close friends with me because of my weight.
50. I feel that people do not want to go on a date with me because of my weight.
51. I feel that people do not want to have a sexual relationship with me because of my weight.
52. I feel that people do not want to enter a committed relationship with me because of my weight.
53. I feel that people laugh at me in public because of my weight.
54. I feel that staff at restaurants/stores offer me poorer service compared to others because of my weight.
55. I feel that my colleagues would not accept me as their manager because of my weight.
56. I feel that I would not be considered for employment or job advancement because of my weight.
57. I feel that I would have difficulty in finding somewhere to live because of my weight.
58. I feel that people have not given me housing opportunities because of my weight.
59. I feel that people patronize me (e.g., speak to me as if I am not smart) because of my weight.
60. I feel that people stare at me because of my weight.
61. I feel that people laugh at me because of my weight.
62. I feel that people do not treat me nicely because of my weight.
63. I feel that people ignore me because of my weight.

64. I feel that people sometimes exclude me from social gatherings because of my weight.
65. I feel that people judge me when I walk into a room because of my weight.
66. Because of my weight, people do not show me sympathy.
67. I feel that people provide me with less support (e.g., not having someone to talk to, or similar) because of my weight.
68. I feel that people find interacting with me unpleasant because of my weight.
69. I feel that people are not willing to have a close emotional relationship with me because of my weight.
70. People make me think that they are better than me because of my weight.
71. I am lazy because of my weight.
72. I am lacking in willpower because of my weight.
73. I am unintelligent because of my weight.
74. I am unattractive because of my weight.
75. I lead an unhealthy lifestyle because of my weight.
76. I am not confident in my abilities because of my weight.
77. Being the weight that I am is my fault.
78. I am undeserving of the same opportunities that other people have because of my weight.
79. I am undeserving of living a good, rewarding life because of my weight.
80. I cannot contribute anything useful to society because of my weight.
81. I am disgusting because of my weight.
82. I hate myself because of my weight.
83. I am a failure because of my weight.
84. I am not deserving of proper treatment by health staff because of my weight.
85. I do not seek out healthcare services when I should because of my weight.
86. I am not worthy of having good quality relationships with family because of my weight.

87. I do not go to family occasions because of my weight.
88. I am not worthy of having good quality friendships because of my weight.
89. I do not go to events with my friends because of my weight.
90. I am not worthy of having good quality relationships with my peers because of my weight.
91. I do not socialize with my peers because of my weight.
92. I am not worthy of having a romantic relationship with anyone because of my weight.
93. I do not seek romantic partners because of my weight.
94. I am not worth being hired for a good paying job because of my weight.
95. I do not apply for jobs because of my weight.
96. I am not worth being selected when looking for housing because of my weight.
97. I am out of place in the world because of my weight.
98. I am inferior to others because of my weight.
99. I find it difficult to love myself because of my weight.
100.I find it difficult to show myself compassion because of my weight.
101.I am embarrassed because of my weight.
102.I am ashamed of myself because of my weight. **OR** "I am ashamed because I weigh more than I should."

Appendix B – 6 Delphi Study: Expression of Interest

Hi X (expert name),

My name is Stephanie Papadopoulos, an MPsyc/PhD student at Australian Catholic University. I am seeking expert panel members to take part in a Delphi consensus study which forms the initial stages of the development of a new weight-stigma measure. Weight-stigma refers to negative stereotypes (i.e., beliefs), prejudice (i.e., attitudes), and discrimination (i.e., mistreatment) directed toward individuals because of their weight. Overweight and obese individuals frequently *experience* weight-stigma, for example being called 'lazy' because of one's weight, *perceive* weight-stigma, for example feeling that a job rejection was due to one's weight (independent of whether this was the case or not), and *internalize* weight-stigma, for example believing that one is unattractive because of their weight.

Currently available weight-stigma measures do not comprehensively assess all domains (stereotypes, prejudice, discrimination) or types (experienced, perceived, internalized) of stigma. Thus, the aim of the study is to develop a new set of items that reflects all aspects of the weight-stigma construct.

Panel members can be an expert in the field of (a) weight-stigma or obesity related research or (b) stigma in a social psychology context. If you agree to participate, you will be asked to do the following:

1. Answer the questionnaire in two to three rounds
    - Each questionnaire will be completed online via a link that will be sent to you via email
    - Each questionnaire will take no more than one hour to complete
    - Each questionnaire will be sent out 2 weeks apart
2. *Round 1* will present 108 items and will ask that you rate each items suitability (i.e., suitable, not suitable, suitable if modified).
3. When an item is deemed "suitable if modified" you will be asked to give further comments/suggestions to revise/modify the item(s).
    - When rating an item, you may consider the following: item clarity, item difficulty, and relevance of each item to the underlying construct.
4. You are also expected to select the **type** (experienced, perceived, internalized) and **domain** (stereotypes, prejudice, discrimination) of weight-stigma that the item best represents from the drop down box provided (see Table 1 below for an example item of each stigma type and domain)

In Round 2, we will send you a list of the items that were revised as a result of concerns raised by experts in the previous round, as well as an anonymous summary of the feedback from that round for problem items.

- In this round, you will be asked to rate your responses using the same 3-point scale and then comment on the revised items and/or the summary of the feedback

Round 3 will present the revised set of items developed from Round 2 that did not receive consensus (if any).

- Fewer than three rounds may be sufficient if consensus is reached in the previous round

We would be grateful for your participation in the process of developing this questionnaire. If you are interested in participating, please reply to this email so I can send you the link to the first round.

Table 1. *Examples Items that Reflect Weight-Stigma Across its Domains and Types*

	Experienced	**Perceived**	**Internalized**	**Anticipated**
Stereotype	I have been called 'lazy' because of my weight	People think that I am lazy because of my weight.	I am lazy because of my weight.	I expect my friends to think that I am lazy because of my weight.
Prejudice	I have been called 'disgusting' because of my weight	People find me disgusting because of my weight.	I am disgusting because of my weight.	I expect that my date will perceive me as disgusting because of my weight.

Discrimination	I have been physically attacked by others because of my weight	People laugh at me because of my weight.	I am a failure because of my weight.	I expect that I will not be invited to social gatherings because of my weight.

Appendix B – 7 Delphi Study: Information Letter

PANELIST INFORMATION LETTER

PROJECT TITLE: Delphi study to achieve consensus in the development of a self-report weight-stigma questionnaire in adults.
PRINCIPAL INVESTIGATOR: Leah Brennan
SECONDARY INVESTIGATOR: Xochitl de la Piedad Garcia
STUDENT RESEARCHER: Stephanie Papadopoulos
STUDENT'S DEGREE: Doctor of Philosophy (PhD)

Dear Panel Member,

I am writing to invite you to participate in a Delphi study to support the development of a newly developed measure of weight-stigma.

The aim of the Delphi study is to collate experts' opinions on a set of items developed to measure weight-stigma. This will help to improve the measurement and understanding of weight-stigma and its consequences.

Who is undertaking the project?
This project is being conducted by Stephanie Papadopoulos as part of the Body Image, Eating and Weight (BEWT) clinical research at ACU. This will form the basis for the degree of a doctor of philosophy (PhD) at Australian Catholic University (ACU) under the supervision of A/Prof Leah Brennan and Dr. Xochitl De La Piedad Garcia. A/Prof Leah Brennan is a clinical, health and developmental psychologist Dr. Xochitl De La Piedad Garcia has expertise in research design and statistics.

What is weight-stigma?
Weight-stigma refers to negative stereotypes (i.e., beliefs), prejudice (i.e., attitudes), and discrimination (i.e., mistreatment) directed toward individuals because of their weight. Individuals who are overweight/obese are frequently faced with negative stigmatizing experiences in their everyday lives including their home environments, education, workplace and healthcare settings. Therefore, family, friends, colleagues, and health professionals are common sources of weight-stigma. Individuals who are overweight/obese often experience weight-stigma (e.g., being told to lose weight), perceive weight-stigma (e.g., sense that a job rejection was due to one's weight), and *internalize* weight-stigma (e.g., believing that one is unattractive because of their weight). These are all associated with negative biopsychosocial consequences among those vulnerable of encountering weight-stigma, such as low self-esteem and reduced exercise engagement.
What gap is this study filling?

Although there are numerous tools available to measure weight-stigma, these measures do not comprehensively assess all aspects of weight stigma according to its domains (stereotypes, prejudice, discrimination) and types (experienced, perceived, internalized).

As a result of the lack of theory-driven measurement (DePierre and Puhl, 2012) the predictive and construct validity are inadequate. Thus, the aim of the study is to refine a newly developed set of items that reflects all aspects of weight-stigma.

Although the researchers of this study are aware that there are some limitations to presenting our theoretical framework to panel members, we envision this stage of the item development process as both (a) allowing us to get information about the items and (b) obtaining information around whether this theoretical framework is useful to the construct in the eyes of experts.

What will I be asked to do?

We are seeking to obtain the views of established expert in this field regarding comprehensive measurement of weight-stigma and achieve consensus on the suitability and relevance of items developed for the new questionnaire in three rounds. This will then be validated using the data of participants who are willing to participate in a Cognitive Interviewing study and a larger scale study whereby the final questionnaire will be administered to a group of adult participants.

Specifically, we would like to ask your opinion on the items that have been included by encouraging a range of feedback on factors such as item clarity, item difficulty, and their relevance to the underlying weight-stigma construct.

What will each round consist of?

The questionnaire will be completed in two to three rounds:

1. *Round 1* will present 108 items and will ask that you rate each items suitability (i.e., suitable, not suitable, suitable if modified). When an item is deemed "suitable if modified" you will be asked to give further comments/suggestions to revise/modify the item(s) based on item clarity, item difficulty, and relevance of each item to the underlying construct.
2. *In Round 2*, we will send you a list of the items that were revised as a result of concerns raised by experts in the previous round, as well as an anonymous summary of the feedback from that round for problem items.
3. *Round 3* will present the items from Round 2 that still show issues (if any). Fewer than three rounds may be sufficient if consensus is reached in the previous round.

What methods are available to complete the survey?

The survey can be completed on a desktop computer, tablet, or mobile device. If you wish to begin the survey then exit before completing the questionnaire, and then return at a later stage, re-accessing the link will return you to the point that you stopped only if you are using the same device and browser.

How much time will the project take?

We would require approximately two hours of your time, spread over three rounds (and the questionnaire will be sent out 2 weeks apart).

What if I miss a round?
You will be requested to complete each round within the timeframe specified (this information will be provided once the Delphi panel has become established). After the completion date has passed, you will not have access to the first round anymore. However, you will still be invited to participate in subsequent rounds, if you are interested. Reminder emails will be sent to you in order to avoid missing a round of responding.

What are the benefits of the research project?
The newly developed scale will be used in future studies examining weight-stigma. Improving the measurement of weight stigma has the potential to improve understanding of the impact of weight-stigma on health and wellbeing.

Your expertise will be invaluable in consensus on the suitability of the newly developed items and would be very grateful if you would consider participating in the Delphi study. If you would like to contribute please inform Stephanie Papadopoulos via email (stephanie.papadopoulos@myacu.edu.au) and instructions (including the questionnaire) will be forwarded to you for the first Delphi round.

Please do not hesitate to contact Stephanie Papadopoulos if you require further information.

Yours sincerely,

Associate Professor Leah Brennan
Research Chair
School of Psychology
Australian Catholic University

Ms Stephanie Papadopoulos
Doctor of Philosophy Student
School of Psychology
Australian Catholic University

Appendix B – 8 Final Study: Expression of Interest

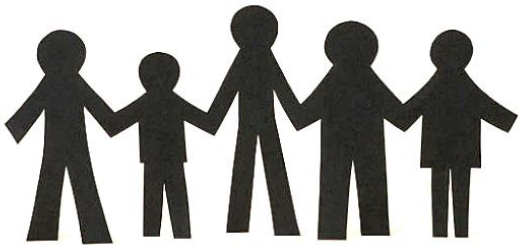
Survey: Measuring Weight Stigma in Adults Study

AUSTRALIAN CATHOLIC UNIVERSITY

BEWT
Body Image, Eating and Weight Clinical Research Team

Stigmatizing encounters can have an impact on individuals with overweight. Currently, studies looking at the impact that stigma has on at risk individuals do not measure weight-stigma comprehensively. This makes it difficult to better understand where stigma may be occurring and how it may be impacting people.

The goal of this study is to invite all adults to assist in completing a newly developed measure of weight-stigma. This will **help to improve the measurement of weight-stigma** for people living in larger bodies, and may contribute to understanding how to improve the health and well-being of those who are mistreated because of their body size.



The study will ask you to complete an online self-report questionnaire which will last approximately 1 hour. You will be asked to complete questions related to weight-stigma and other health-related measures such as self-esteem. You will be encouraged to provide your email to complete a second shortened survey (approximately 45 minutes) assessing similar items approximately four weeks later.

To thank you for participating, you will go into the draw to win an **iPad mini**. ACU School of Psychology students who wish to participate may be eligible to earn **course credit** for participating.

If you are interested in participating, follow the link provided: **https://tinyurl.com/WeightStigmaStudy**. Alternatively, if you would like more information, please contact Xochitl de la Piedad Garcia by email at: Xochitl.DelaPiedadgarcia@acu.edu.au

Appendix B – 9 Final Study: Battery of Measures

Final items for inclusion in Measure Development study

Demographics questions (17 items)

Please complete the following demographics information:

1. Name (in full):
2. Date of birth:
3. Age (in years):
4. What gender do you identify as? Male/Female/Other (please specify)/I'd rather not say
5. Please indicate your weight in kilograms below (e.g., 65 kg):
   Information about weight is very important. If you are not sure of your weight, please measure/weigh yourself before answering.
6. Please indicate your height in centimetres below (e.g., 170 cm):
   Information about height is very important. *If you are not sure of your height, please measure yourself before answering.*
7. What is your current occupation?
8. What is your current relationship status?
9. What is the postcode of your current country of residence? Australia/Other
10. Married/widowed/divorced/separated/never married/defacto/single/in a relationship/engaged/other (please specify)
11. What is your national background? Australian/other (please specify)
12. What is your ethnicity? Australian/Other (please specify)
13. Is English your first language? Yes/No (please specify)
14. What is your highest level of education you have completed? Primary school/High school/TAFE/University degree (please specify e.g., bachelor, masters, PhD)
15. Please answer the following by indicating what resonates with you:
    I believe I am underweight/normal weight/overweight/obese
16. Have you ever been underweight? Yes/No
17. Have you ever been overweight? Yes/No

Newly developed weight stigma items (101 items)

Instructions: The following items relate to situations that people encounter because of their weight. Using the scale below, please rate the extent to which you have experienced the following situations in your day-to-day life (0 = never, 100 = always). Please slide the cursor to indicate the extent to which you have experienced these situations.

1. I have been called 'lazy' because of my weight.
2. I have been called 'unintelligent' because of my weight.
3. I have been called 'ugly' (or similar) because of my weight.
4. I have been accused of overeating because of my weight.
5. I have been told that I have poor personal hygiene because of my weight.
6. I have been accused of not trying hard enough to lose weight.
7. I have been called 'disgusting' because of my weight.
8. I have been told by people that they dislike me because of my weight.
9. I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.
10. I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension) because of my weight. **N/A**
11. I have been judged negatively about my weight by my family.
12. My family has made fun of my weight.
13. I have been excluded by my friends from social gatherings because of my weight.
14. My friends have made fun of my weight.
15. I have been treated disrespectfully by my romantic partner(s) about my weight. **N/A**
16. I have been told by my romantic partner(s) that they are embarrassed to be seen with me in public because of my weight. **N/A**

17. I have been told by my romantic partner(s) that they are uncomfortable eliciting signs of affection in public with me because of my weight. **N/A**
18. I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.
19. I have been shouted at with insults in public because of my weight.
20. I have been laughed at in public because of my weight.
21. I have lost a job because of my weight. **N/A**
22. I have been turned down for a job, for which I was qualified, because of my weight. **N/A**
23. I have had difficulty in renting an apartment or finding other housing because of my weight. **N/A**
24. I have been viewed unfavorably for housing opportunities because of my weight. **N/A**
25. I have been told to lose weight by other people.
26. I have found myself in situations where I have overheard others say offensive things about me because of my weight.
27. I have been physically attacked by others because of my weight.
28. I have been ignored by people because of my weight.
29. I have been deliberately left out by people because of my weight.
30. I have been treated without sympathy by other people because of my weight.
31. I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.
32. "Below are questions relating to your role in professional settings. For example, you may be (or have been) an employee or a student, or both. Please consider who your superior(s) (e.g., teachers, boss, managers, supervisors) and associate(s) (e.g., peers, colleagues) are based on your professional status as you answer the following question(s). **N/A**

    Please note that you do not have to respond to each of the four statements presented below, only what is relevant to your professional status.

    1a . "I have been treated unfairly by my superiors"
    ...As an employee
    ...As a student

    1b. "I have been treated unfairly by my associates"
    ...As an employee
    ...As a student

33. I feel that other people view me as lazy because of my weight.
34. I feel that others view me as having no willpower because of my weight.
35. I feel that others view me as unintelligent because of my weight.
36. I feel that others view me as ugly (or similar) because of my weight.
37. I feel that others think that I eat excessive amounts of food because of my weight.
38. I feel that others think that I have poor personal hygiene because of my weight.
39. I feel that others think that I am to blame for my weight.
40. I feel that others view me as disgusting because of my weight.
41. People who are thinner than me dislike me because of my weight.
42. I feel that health staff treat me unfairly because of my weight.
43. I feel that health staff offer me poorer service because of my weight.
44. I feel humiliated during contact with health professionals because of my weight.
45. I feel that my family find interaction with me unpleasant because of my weight.
46. I feel that my family do not provide me with emotional support because of my weight.
47. I feel that my friends exclude me from fun activities because of my weight.
48. I feel that people do not want me to be their friend because of my weight.
49. I feel that people prefer not to be close friends with me because of my weight.
50. I feel that people do not want to go on a date with me because of my weight.
51. I feel that people do not want to have a sexual relationship with me because of my weight.
52. I feel that people do not want to enter a committed relationship with me because of my weight.
53. I feel that people laugh at me in public because of my weight.
54. I feel that staff at restaurants/stores offer me poorer service compared to others because of my weight.
55. I feel that my colleagues would not accept me as their superior because of my weight.
56. I feel that I would not be considered for employment or job advancement because of my weight.

57. I feel that people have not given me housing opportunities because of my weight.
58. I feel that people patronize me (e.g., speak to me as if I am not smart) because of my weight.
59. I feel that people stare at me because of my weight.
60. I feel that people laugh at me because of my weight.
61. I feel that people do not treat me nicely because of my weight.
62. I feel that people ignore me because of my weight.
63. I feel that people sometimes exclude me from social gatherings because of my weight.
64. I feel that people judge me when I walk into a room because of my weight.
65. Because of my weight, people do not show me sympathy.
66. I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.
67. I feel that people find interacting with me unpleasant because of my weight.
68. I feel that people are not willing to have a close emotional relationship with me because of my weight.
69. People make me think that they are better than me because of my weight.
70. I think that I am lazy because of my weight.
71. I think that I am lacking in willpower because of my weight.
72. I think that I am unintelligent because of my weight.
73. I think that I am unattractive because of my weight.
74. I think that my weight is the result of the lifestyle I lead.
75. I think that I am not confident in my abilities because of my weight.
76. I think being the weight that I am is my fault.
77. I think that I am undeserving of the same opportunities that other people have because of my weight.
78. I think that I am undeserving of living a good, rewarding life because of my weight.
79. I think that I cannot contribute anything useful to society because of my weight.
80. I think that I am disgusting because of my weight.
81. I hate myself because of my weight.
82. I think that I am a failure because of my weight.
83. I think that I am not deserving of proper treatment by health staff because of my weight.
84. I avoid seeking out healthcare services when I should because of my weight.
85. I think that I am not worthy of having good quality relationships with family because of my weight.
86. I avoid family occasions because of my weight.
87. I think that I am not worthy of having good quality friendships because of my weight.
88. I avoid attending events with my friends because of my weight.
89. I think that I am not worthy of having good quality relationships with my peers because of my weight.
90. I avoid socializing with my peers because of my weight.
91. I think that I am not worthy of having a romantic relationship with anyone because of my weight.
92. I avoid seeking romantic partners because of my weight.
93. I think that I am not worth being hired for a good paying job because of my weight.
94. I avoid applying for jobs because of my weight.
95. I think that I am not worth being selected when looking for housing because of my weight.
96. I think that I am out of place in the world because of my weight.
97. I think that I am inferior to others because of my weight.
98. I find it difficult to love myself because of my weight.
99. I find it difficult to show myself compassion because of my weight.
100. I am embarrassed because of my weight.
101. I am ashamed of myself because of my weight

INSTRUCTIONS AND RESPONSE SCALE FOR FINAL QUESTIONNAIRE

Instructions presented prior to completing study:

"Individuals of any weight are welcome to participate in this study, even if you have not experienced weight-stigma, as we are interested in exploring this phenomenon across the weight spectrum.

This survey can be completed on multiple devices.

The survey can be completed on a desktop computer, tablet, or mobile device. You may begin the survey, exit the survey and return to the point where you left off by clicking on the link provided. However, it is important to note that for you to re-access your initial answers (to go back to where you left off), **you must use the same device and browser**.

A total of 128 items (4 questionnaires) will be presented to you. All relate to situations that people encounter because of their weight. You may notice that there are a number of items that are similarly worded. This is an important part of measure development and is needed to ensure that we measure weight-stigma comprehensively. Participants' responses will be used to select the best items that will make up a scale, so that they can be used in future studies.

You will be asked to complete 4 questionnaires (128 items in total)."

Instructions presented before each of the items:

"The following items relate to situations that people encounter because of their weight. Using the scale below, please rate the extent to which you have experienced the following situations in your day-to-day life (0 = never, 100 = always). Please slide the cursor to indicate the extent to which you have experienced these situations."

Existing weight stigma items from developed scales for validation

Stigmatizing Situations Inventory (B-brief; Vartanian, 2015) 10 items	Below is a list of situations that people encounter because of their weight. Please indicate whether, and how often, each of these situations happens to you. 1. Being singled out as a child by a teacher, school nurse, etc., because of your weight. 2. Being stared at in public. 3. Children loudly making comments about your weight to others. 4. Having a doctor recommend a diet, even if you did not come in to discuss weight loss. 5. Having a romantic partner exploit you, because she or he assumed you were 'desperate' and would put up with it. 6. Overhearing other people making rude remarks about you in public. 7. Not being hired because of your weight, shape or size. 8. Having family members feel embarrassed by you or ashamed of you. 9. Having people assume you overeat or binge eat because you are overweight. 10. Being glared at or harassed by bus passengers for taking up 'too much' room.
Perception of Teasing Scale (POTS; Thompson et al., 1995) 6 (weight teasing subscale only)	We are interested in whether you have been teased and how this affected you. **First**, for each question rate how often you think you were teased (using the scale provided, "never" (1) to "always" (5). Never 1 | 2 | Sometimes 3 | 4 | Very Often 5 **Second**, unless you responded "never" to the question, rate how upset you were by the teasing "not upset" (1) to "very upset" (5). Not upset 1 | 2 | Somewhat upset 3 | 4 | Very upset 5

	1. People made fun of you because you were heavy. 1 2 3 4 5 How upset were you? 1 2 3 4 5 2. People made jokes about you being heavy. 1 2 3 4 5 How upset were you? 1 2 3 4 5 3. People laughed at you for trying out for sports because you were heavy. 1 2 3 4 5 How upset were you? 1 2 3 4 5 4. People called you names like "fatso." 1 2 3 4 5 How upset were you? 1 2 3 4 5 5. People pointed at you because you were overweight. 1 2 3 4 5 How upset were you? 1 2 3 4 5 6. People snickered about your heaviness when you walked into a room alone. 1 2 3 4 5 How upset were you? 1 2 3 4 5
Weight Bias Internalisation scale (modified; Pearl & Puhl, 2014) 11 items (modified scale Items)	1. Because of my weight, I feel that I am just as competent as anyone. 2. I am less attractive than most other people because of my weight. 3. I feel anxious about my weight because of what people might think of me. 4. I wish I could drastically change my weight. 5. Whenever I think a lot about my weight, I feel depressed. 6. I hate myself for my weight. 7. My weight is a major way that I judge my value as a person. 8. I don't feel that I deserve to have a really fulfilling social life, because of my weight. 9. I am OK being the weight that I am. [a] 10. Because of my weight, I don't feel like my true self. 11. Because of my weight, I don't understand how anyone attractive would want to date me.
Email	Thank you for participating in this survey. If you would like to receive a link to complete a shortened version of the survey (no more than 30 minutes) around four weeks later, please enter your email address below. Email: [enter email]
Support services	**Do you need support?** (please scroll down to the bottom of the page and click the arrow to take you to the end of the survey) If so, please contact your health care practitioner or one of the following services to discuss your concerns: **ACU Melbourne Psychology Clinic (MPC):** A training facility for postgraduate provisional psychologists who offer you, your child or family, psychological assessment and intervention. MPC forms part of the Faculty of Health Sciences at the Australian Catholic University (ACU).

	Phone: (03) 9953 3006 Email: melbournepsychologyclinic@acu.edu.au **The Eating Disorders Foundation of Victoria:** A source of support, information, community education and advocacy for people with eating disorders and their families in Victoria. Phone: 1300 550 236 or (03) 9885 0318 Email: help@eatingdisorders.org.au **Dietician Association of Australia:** Find an expert on nutrition advice and/or practical and up-to-date information on food and nutrition: Website: www.daa.asn.au **Health Direct Australia:** A source of information and support for people with a range of mental and physical health problems including obesity. Website: https://www.healthdirect.gov.au/ **Beyondblue:** A national, independent, not-for-profit organisation working to address issues associated with depression, anxiety and related disorders in Australia. Phone: 1300 22 4636 Email: infoline@beyondblue.org.au **Lifeline (24 Hours):** Offers generalist counselling that does not discriminate. Lifeline counsellors are ready to talk and listen no matter how big or how small the problem might seem. Phone: 13 11 14 **Kids Helpline:** Offers telephone, web and email counselling to individuals aged 5-25 24 hours a day, 7 days a week. Phone: 1800 55 1800 Website: www.kidshelp.com.au **Nurse-on-Call:** A phone service that provides immediate, expert health advice from a registered nurse, 24 hours a day, 7 days a week. Phone: 1300 60 60 24 **Australian Psychological Society:** The community information section of this site allows you to find a psychologist in your local area. Phone: (03) 8662 3300 or Toll free: 1800 333 497 Website: www.psychology.org.au **Butterfly Foundation:** A national support line and web counselling service for individuals and their families which provide treatment options and connections to other services specifically related to eating disorders. Phone: 1800 33 4673 Website: www.thebutterflyfoundation.org.au/web-counselling

Appendix B – 10 Final Study: Expression of Interest

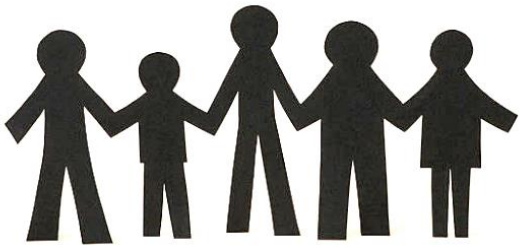
Survey: Measuring Weight Stigma in Adults Study

AUSTRALIAN CATHOLIC UNIVERSITY

BEWT
Body Image, Eating and Weight Clinical Research Team

Stigmatizing encounters can have an impact on individuals with overweight. Currently, studies looking at the impact that stigma has on at risk individuals do not measure weight-stigma comprehensively. This makes it difficult to better understand where stigma may be occurring and how it may be impacting people.

The goal of this study is to invite all adults to assist in completing a newly developed measure of weight-stigma. This will **help to improve the measurement of weight-stigma** for people living in larger bodies, and may contribute to understanding how to improve the health and well-being of those who are mistreated because of their body size.



The study will ask you to complete an online self-report questionnaire which will last approximately 1 hour. You will be asked to complete questions related to weight-stigma and other health-related measures such as self-esteem. You will be encouraged to provide your email to complete a second shortened survey (approximately 45 minutes) assessing similar items approximately four weeks later.

To thank you for participating, you will go into the draw to win an **iPad mini**. ACU School of Psychology students who wish to participate may be eligible to earn **course credit** for participating.

If you are interested in participating, follow the link provided: **https://tinyurl.com/WeightStigmaStudy**. Alternatively, if you would like more information, please contact Xochitl de la Piedad Garcia by email at: Xochitl.DelaPiedadgarcia@acu.edu.au

Appendix C: Systematic Review Supplementary Tables

Supporting Information

Evaluation of the Psychometric Properties of Self-Reported Weight Stigma Measures: A Systematic Literature Review

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Table S1: *Search Terms and Subject Headings across Databases*

	Weight	Proximity operator	Stigma	Adult	Measure	Psychometric
TI or AB	weight fat obese overweight	N5	stigma, discrimination, prejudice, stereotype, anti-fat attitude, shame, bullying, attribution, bias, blame, teasing, harassment, unfair, victim, attitude, unfair treatment	adult, middle aged, young adult	measure, scale, instrument, inventory, survey, tool, assessment, test, questionnaire	psychometric, validity, reliability, development, accuracy, replication, evaluation, adapt, responsive, factor analysis/structure
Medline MeSH (MH)	Overweight Obesity	N5	Social stigma Social discrimination Prejudice Stereotyping Shame Bullying Attitude	Adult Middle aged Young adult	Surveys and questionnaires	Psychometrics Reproducibility of results Validation studies Sensitivity and specificity Evaluation studies Factor analysis, statistical
Psycinfo Thesaurus (DE)	Obesity Overweight	N5	Stigma Stereotyped Attitudes Discrimination Prejudice Stereotyped Behavior Shame Bullying Harassment Teasing Attribution	Adulthood (18 yrs & older) Middle age (40-64 yrs) Thirties (30-39 yrs) Young adulthood (18-29 yrs)	Surveys Statistical measurement Testing Rating scales Inventories Psychological assessment Emotional assessment Questionnaires Attitude measures Measurement Attitude measurement	Psychometrics Test validity Test construction Testing Test sensitivity Test specificity Test interpretation Test standardization Test reliability Factor analysis Factor structure Evaluation
EMBASE Emtree	Obesity Morbid obesity	adj5	Stigma Prejudice Social discrimination Shame Bullying Victim Attitude	Adult Middle aged Young adult	Questionnaire Clinical assessment Measurement	Reliability Validity Factor analysis
Web of Science – no subject headings		NEAR/5				

CINAHL subject headings (MH)	Obesity	N5	Stigma Discrimination Prejudice Stereotyping Shame Bullying Attitude	Adult Middle age Young adult	Surveys Questionnaires Clinical assessment tools	Psychometrics Reliability Validity Sensitivity and specificity Factor analysis Instrument validation
SCOPUS – no subject headings		W/5				
Cochrane MeSH (MH)	Overweight Obesity	NEAR/5	Social stigma Social discrimination Prejudice Stereotyping Shame Bullying Attitude	Adult Middle aged	Surveys and questionnaires	Psychometrics Reproducibility of results Validation studies Sensitivity and specificity Evaluation studies Factor analysis, statistical

Figure 1 S2. *Example Medline search strategy.*

1. (MH "Overweight") OR (MH "Obesity")
2. TI (overweight or over-weight or obes* or fat or anti-fat OR weight) OR AB (overweight or over-weight or obes* or fat or anti-fat OR weight)
3. S1 OR S2
4. (MH "Social Stigma") OR (MH "Social Discrimination") OR (MH "Prejudice") OR (MH "Stereotyping") OR (MH "Shame") OR (MH "Bullying") OR (MH "Attitude")
5. TI (stigma* OR discriminat* OR prejudic* OR stereotyp* OR sham* OR bully* OR bias* OR blam* OR teas* OR harass* OR unfair OR victim* OR attitude* OR weightism OR attribut*) OR AB (stigma* OR discriminat* OR prejudic* OR stereotyp* OR sham* OR bully* OR bias* OR blam* OR teas* OR harass* OR unfair OR victim* OR attitude* OR weightism OR attribut*)
6. S4 OR S5
7. AB ((overweight or over-weight or obes* or fat or anti-fat OR weight) N5 (stigma* OR discriminat* OR prejudic* OR stereotyp* OR sham* OR bully* OR attribut* OR bias* OR blam* OR teas* OR harass* OR unfair OR victim* OR attitude* OR weightism)) OR TI ((overweight or over-weight or obes* or fat or anti-fat OR weight) N5 (stigma* OR discriminat* OR prejudic* OR stereotyp* OR sham* OR bully* OR attribut* OR bias* OR blam* OR teas* OR harass* OR unfair OR victim* OR attitude* OR weightism))
8. S1 AND S6
9. S3 AND S4
10. S7 OR S8 OR S9
11. (MH "Adult") OR (MH "Middle Aged") OR (MH "Young Adult")
12. AB (adult* OR "middle aged") OR TI (adult* OR "middle aged")
13. S11 OR S12
14. AB (measur* OR scale* OR instrument* OR inventory OR inventories OR survey* OR tool* OR assess* OR test* OR question*) OR TI (measur* OR scale* OR instrument* OR inventory OR inventories OR survey* OR tool* OR assess* OR test* OR question*)
15. (MH "Surveys and Questionnaires")
16. S14 OR S15
17. (MH "Psychometrics") OR (MH "Reproducibility of Results") OR (MH "Validation Studies") OR (MH "Sensitivity and Specificity") OR (MH "Evaluation Studies") OR (MH "Factor Analysis, Statistical")
18. AB (psychometric* OR valid* OR reliab* OR develop* OR accura* OR replicat* OR evaluat* OR adapt* OR responsive* OR "factor analysis" OR "factor structure" OR test*) OR TI (psychometric* OR valid* OR reliab* OR develop* OR accura* OR replicat* OR evaluat* OR adapt* OR responsive* OR "factor analysis" OR "factor structure" OR test*)
19. S17 OR S18
20. S10 AND S13
21. S16 AND S20
22. S19 AND S21 (limit to English)

Table S3: *Psychometric Properties of Weight Stigma Measures*

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[a]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[bc]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
Experience of Weight Discrimination (EWD)[41]		.89				Emotional eating r=.29, p<.01 ✓ Body dissatisfaction r=.41, p<.01 ✓ Social support availability r=-.02 (ns) Social support satisfaction r=-.19, p<.05		Emotional eating [R^2=.16, F(3,177) = 11.16, p<.001, R^2 change = .07, p<.001] ✓ Body dissatisfaction [R^2 = .23, F(3,173) = 17.30, p<.001, R^2 change =.12, p<.001] ✓		Scores did not significantly differ for males and females (all ts<1.58) Scores differed significantly between individuals with "non-normal weight" (M=2.71, SD=1.55) and individuals with "normal weight" (M=1.74, SD=.94) [t(74)=-4.33, p<.01]
Feelings and Thoughts about Weight (FATAWS), Weight distress subscale[42]	EFA Revealed two factors Weight distress: 50.31% variance (EV=7.04)	.94	Scale translated into Chinese by two independent bilingual Taiwanese and then compared to original version (translation and two back-translation procedures were utilized)	14-items rated by teachers; average % agreement was 90% for comprehension						Women with a current status of being overweight had 2.75 (95% CI = 1.56Y4.84, p = .000), 2.44 (95% CI = 1.39Y4.27, p=002), and 1.87 (95% CI = 1.06Y3.29, p=.035) higher odds of earning higher weight distress scores than those not currently considered overweight Women who experienced postpartum weight retention had 2.33 (95% CI = 1.37Y3.98, p=.002), 2.53 (95% CI= 1.48Y4.32, p=.001), and 2.42 (95% CI

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[a]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[bc]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
										= 1.40Y4.18, p=.002) higher odds of earning higher weight distress scores
Healthcare Questionnaire (HCQ), Negative interactions concerning weight scale[43]				2-3 weeks 10-items range=.54-.74 (.66 for both mean and median); measured as % agreement		BMI (ns: p>.41) Depression (ns: p>.41) Gender (ns)				BMI (ns): p>.41
Impact of Weight on Quality of Life (IWQOL original), Social/interpersonal subscale[44]		.91		24-hours: .93					Change in mean subscale score: -.25/.0001	Scores differed significantly between individuals affected by lower obesity and individuals affected with higher obesity: F(1,135)=20.47, p<.0001
IWQOL *social/interpersonal subscale construct validity[45]		**Sample 1** (N=64): .91 **Sample 2** (N=347): .79				Functional social support r_s=.36/285 p<.0001 Social health r_s.002/223 ns				Scores did not differ significantly from pretreatment to posttreatment for women and men
Impact of Weight on Quality of Life Lite version (IWQOL-Lite), Public distress subscale original[13]	**CFA** Data fit model adequately: χ^2(424)=2139, NFI=.91,	.90							One-year changes in public distress scores were significant for groups experiencing greater BMI	BMI r=.68, p<.001

SUPPORTING INFORMATION
PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency**[a]	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity**[bc]	**Discriminant Validity**[c]	**Predictive Validity**	**Responsiveness**	**Known Groups Validity**[c]
	TLI=.92, CFI=.93, SRMR=.05								N=160: ES=0.50, $p<.01$	
IWQOL-Lite *public distress subscale psychometric evaluation[38]		N=494: .916 BMI 25 and above (N=274): .916		10-16 days Public distress N=112, ICC: .814 Public distress, n=66 (BMI 25+), ICC: .884		Mental health quality-of-life (SF-36) $r=-.141$, $p\leq.05$ Physical health quality-of-life (SF-36) $r=-.351$, $p\leq.001$ Self-esteem $r=.333$, $p\leq.001$	Marlowe-Crowne Global ratings $r=-0.168$ ($p\leq.001$)			Scores differed significantly for BMI: $F=51.5$, df=4484, $p<.001$ Gender (ns)
IWQOL-Lite *public distress scale: Brazillian version[46]	**EFA** Factor loading ranged from .734-.887	**Clinical sample** N=89: .79 **Community sample** N=156: .93 **Combined sample** .78	No information available	7-days Total: ICC=.91, CI=.84-0.96 Public distress subscale: ICC=.68, CI=.49-.83		**Clinical sample** BMI $r=.65$, $p<.001$ **Community sample** BMI $r=.67$, $p<.001$ **Combined sample** BMI $r=.68$, $p<.001$ Physical health quality-of-life (SF-36) $r=.207$, $p=.010$ Mental health quality-of-life $r=.070$, $p=.385$				Scores differed significantly for sample type: Clinical ($n=89$): $M=91.0$, $SD=14.8$ and Community ($n=156$): $M=96.5$, $SD=12.2$; $p=.002$ Public distress score differed significantly for BMI: <30 (n=207): $M=95.6$, $SD=11.6$, ≥30 ($n=38$): $M=88.5$, $SD=20.1$; $p=.003$

SUPPORTING INFORMATION
PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency**[a]	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity**[bc]	**Discriminant Validity**[c]	**Predictive Validity**	**Responsiveness**	**Known Groups Validity**[c]
IWQOL-Lite *public distress scale: German version[47]	**EFA** Factor loading ranged from -.662 to -.845	.95	IWQOL-Lite translated into German by independent company, forward and backward translations between English and German			Depression $r=.61$, $p<.01$ Cognitive control/restraint $r=.18$, $p<.05$ Disinhibition $r=.31$, $p<.01$ Perceived hunger $r=.24$, $p<.01$ Restraint $r=.25$, $p<.01$ Eating concerns $r=.59$, $p<.001$ Shape concerns $r=.55$, $p<.001$ Weight concerns $r=.56$, $p<.001$ EDE-Q total $r=.61$, $p<.001$ BMI $r=.76$ Mental health quality-of-life $r=-.50$ ($p<.01$)				Scores correlated with BMI ($r=.76$)

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PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Physical health quality-of-life r=-.29 (p<.01)				
IWQOL-Lite *public distress scale: Portugese version[46]	**EFA** Factor loadings of each item above 0.413; Range: 0.413 to 0.899	0.90	Forward and backward translations between English and Portugese performed. The final version was then reviewed by two bilingual Portugese researchers.			SF-36 physical component r=.34 (p<.01) SF-36 mental component r=.15 (p<.05)	Clinical sample reported poorer quality of life than community sample, F=5.23, df=6, 224, p<0.001, partial eta-squared = 0.125			Clinical participants reported poorer quality of life than community participants, F=5.23, df=6, 224, p<0.001, partial eta-squared = 0.125
IWQOL-Lite *public distress scale: Malay version[46]	**EFA** Data supported 5 factor model with all items grouped under correct factor. Factor loading ranged from 0.587 to 0.805	0.92	Back translation performed by two local Malay native speakers. Following this, the scale was pretested before use in the study.	2 weeks Total: 0.83 Public distress subscale: 0.85 (p<0.005)		SF-36 physical component r=.29 (p<.01) SF-36 mental component r=.31 (p<.01)	All domains including public distress domain significantly lowest among those with obesity, and highest among those with normal weight: Kruskal Wallis test: Normal weight (n=40) = 95.13 (15.71)			

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PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
							Overweight (n=40) = 91.50 (17.77) Obese (n=40) = 76.25 (24.33) All p<0.001			
Obesity and Weight-Loss Quality of Life Instrument (OWLQOL), Social stigma scale[53]			2 forward, 1 back translation Field testing with persons in 6 countries (US, France, Germany, Italy, Spain, UK)							
OWLQOL *social stigma scale validation[53]	**EFA** Initial validation sample revealed 2 factors; component 1 = 51% variance (EV=8.7), component 2=8% variance (EV=1.4) Community sample revealed two factors, component 1= 55% variance (EV=9.4), component 2=5% variance (EV=1.0)	**Guttman-Cronbach alpha** Initial validation sample: .93 Community (US) sample: .96 Community (European) sample: .95 Clinical trial: .94		1-week ICC (N=56): .95		Bothersome r=.54, p≤.01 Physical health quality-of-life r=.40, p≤.01 Mental health quality-of-life r=.47, p≤.01 Quality of life total r=.53, p≤.01			≥2.50% decrease in weight (N=81): M=11.19 (SD=14.57) SRM=.77	Scores higher in men than in women (p<.001) Scores improved as age increased (p< .05)

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
	Community sample revealed 1 factor: 60% variance (EV=10.2) Clinical trial revealed 1 factor: 63% variance (EV=10.7)									
Perceived Weight Discrimination (PWD)[20]						Class I obese subjects who perceived weight discrimination faced greater increases in disability (b=.32, p<.05) than severely obese people who did not perceive weight discrimination (b=.01, ns) Effect of Class I obesity (whether accompanied by perceived discrimination or not) on health decline (ns) × Severe obesity (class II and III)				Individuals with underweight (5%), normal weight (2%), overweight (4%), class I obese (11%), and severe obese (33%) perceived weight discrimination Perceived weight discrimination increased the likelihood that one self-identified as being overweight ✓

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						and perceived weight discrimination produced worse health declines than severe obesity without weight discrimination (b=-.33 versus -.23) ✓ **Mediation effects** Weight perceptions mediated the relationship between perceived discrimination and health (coefficient reduced slightly: b=.27 from b=.38) ✓				
Perceived Weight Stigma Scale (PWSS)[21]	Factor analysis confirmed that the items formed one 16-item scale									BMI and perceived weight stigma in females, r=-0.274, p<.001 Frequency of perceived weight stigma scores differed significantly for gender, Females: 33.8±5.3 vs Males: 34.6±4.8; F(4,370)=4.7, p=.001 ✓

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PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency**[a]	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity**[bc]	**Discriminant Validity**[c]	**Predictive Validity**	**Responsiveness**	**Known Groups Validity**[c]
										Frequency of perceived weight stigma scores differed for males with morbid obesity (30.8±5.4) compared to males who were underweight (39.5±0.7) but not for females Males inaccurately misclassified their weight compared to females, 60.3% vs 28.3%, respectively, $p<.001$ ✓
Perceived Weight Stigma Scale - Urdu (PWSS-U)[52]	**EFA** Supported 3 factor structure: Factor 1 EV=19.22, %variance=40.05. Factor 2 EV=2.36, %variance=4.91; Factor 3 EV=1.86, %variance=3.88 **CFA** All factor loadings greater than .40; Good model fit indices χ^2/df =1.42, CFI=.92, IFI=.92, TLI=.91, RMSEA=05	Total: .96 Self-perception subscale: .95 Perceived social rejection subscale: .83 Perceived impact subscale: .92								
Perception of Teasing Scale	**Sample 1**	**Sample 1** .88		**Sample 2**		**Sample 3**		**Sample 3**		

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	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency**[a]	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity**[bc]	**Discriminant Validity**[c]	**Predictive Validity**	**Responsiveness**	**Known Groups Validity**[c]
POTS, Weight-related teasing subscale [27]	Factor analysis using promax oblique rotation indicated the existence of 2 factors	**Sample 2** .75		*Demographics similar to sample 1* 2-weeks Weight teasing frequency (WT-F): .90 Weight teasing effect (WT-E): .85 Competency teasing frequency (CT-F): .82 Competency teasing effect (CT-E): .66		**Weight-related teasing** Body image related anxiety $r=.43$, $p<.001$ Body dissatisfaction $r=.39$, $p<.001$ Drive for thinness $r=.22$, $p<.05$ Bulimia $r=.34$, $p<.001$ Self-esteem $r=-.18$, $p<.05$		**Weight-related teasing** Body image related anxiety $\beta=.259$, $F=7.08$, $p=.009$ Body dissatisfaction $p=.23$ Bulimia $p=.17$ Drive for thinness $p=.64$		
Physical Appearance Related Teasing Scale PARTS[26]	**EFA** W/ST item-total correlations range: .52-.86	W/ST subscale: .91		2-weeks W/ST subscale: .86		**W/ST** Bulimia $r=.17$, $p<.05$ Drive for thinness scale $r=.40$, $p<.001$ Body Dissatisfaction $r=.40$, $p<.001$				Participants presenting with EDI-DT (eating disturbances) had higher levels of teasing ($M=2.4$) on the W/ST scale, $t(26)=3.77$, $p<.001$ than the those without eating disturbances ($M=1.2$)

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Feel-Ideal Discrepancy r=.30, p<.001 Physical Appearance Comparison r=.21, p<.001 Self-esteem r=-.14, p<.10 Depression r=.14, p<.10 Eating disturbance $t(1,148)$=2.48, p<.01				
Quality of Life for Obesity Surgery Questionnaire (QOLOS), Social discrimination/body satisfaction subscale[55]	**EFA** Developmental sample: pre- and post-operative patients, principal axis extraction with oblique rotation **CFA** Sub-sample of post-operative patients demonstrated good fit for correlated factors	Section 1 Range=.72-.95 Social discrimination subscale= .80 Body satisfaction subscale=.90	Items were translated from German to American English			QOLOS total + IWQOL total r=.87, p<.001 ✓ QOLOS total + SF-12 PCS r=.68, p<.001 ✓ QOLOS total + SF-12 MCS r=.59, p<.001✓ QOLOS total + MAQOL total r=.85, p<.001✓				Men and women did not differ on QOLOS total score or subscale scores Social discrimination scores differed for preoperative and postoperative sample, t_{421}=-10.33, p<.001 Body satisfaction scores differed for preoperative and postoperative sample, t_{421}=-17.67, p< .001

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
	RMSEA=0.05; CFI=0.97; TLI=0.97 and the higher-order models RMSEA=0.04; CFI=0.97; TLI=0.97					Preoperative M=2.86 (SD=0.58) and Postoperative M=3.93 (SD=0.72), t_{419}=-17.28, p< .001 ✓ Social discrimination + IWQOL total r=.70, p<.001 Social discrimination + SF-12 PCS r=.49, p<.001 Social discrimination +SF-12 MCS r=.46, p<.001 Social discrimination + MAQOL r=.66, p<.001 Social discrimination + depression r=-.59, p<.001 ✓ Social discrimination +				Social discrimination + BMI r=-.52, p<.001 Body satisfaction + BMI r=-.54, p<.001

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						anxiety r=-.49, p<.001 ✓ Social discrimination + EDE-Q global r=-.52, p<.001 ✓ Social discrimination + BMI r=-.52, p<.001 Body satisfaction + IWQOL total r=.83, p<.001 Body satisfaction + SF-12 PCS r=.62, p<.001 Body satisfaction + SF-12 MCS r=.51, p<.001 Body satisfaction + MAQOL r=.77, p<.001 Body satisfaction + depression, r=-.68, p<.001 ✓ Body satisfaction + anxiety r=-.51, p<.001 ✓				

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Body satisfaction + EDE-Q global r=-.67, p<.001 ✓ Body satisfaction + BMI r=-.54, p<.001				
Stigmatizing Situations Inventory SSI[11]		**Sample 1** .95 **Sample 2** .95				**Study 2** Brief symptom inventory r=.33, p<.001 ✓ Body image r=.29, p<.001 ✓ Self-esteem r=-.24, p<.01 ✓				Scores did not significantly differ for males (M=2.05, SD=1.1) and females (M=1.86, SD=1.1) Patients with severe obesity reported significantly more stigmatizing situations (F(1,135)=20.47, p<0.0001) Endorsed stigma was lower for patients with lower obesity (M=1.05, SD=0.83) compared to patients with higher obesity (M=2.16, SD=1.08)
SSI brief[59]		**Sample 1** SSIBa: .87 SSIBb: .84 **Sample 2** SSIBa: .90 SSIBb: .85 **Sample 3**			Brief version of SSI performed comparably to full SSI; *correlations between all versions of SSI not reported*	**Sample 1** SSI-Ba and BMI r=.55, p<.001 SSI-Bb and BMI r=.53, p<.001				BMI was positively and significantly correlated with SSI, SSI-Ba, and SSI-Bb (where measured) across Sample 1, 3, 4, 5, 6, and 7 (all ps<.01) No significant differences were found overall between

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
		SSIBa: .89 SSIBb: .84				SSI-Ba and self-esteem r=-.26, p<.01 SSI-Bb and self-esteem r=-.27, p<.01 SSI-Ba and Body Dissatisfaction r=.35, p<.001 SSI-Bb and Body Dissatisfaction r=.35, p<.001 SSI-Ba and Drive for Thinness r=.25, p<.01 SSI-Bb and Drive for Thinness r=.26, p<.01 SSI-Ba and Bulimia r=.43, p<.001 SSI-Bb and Bulimia r=.46, p<.001 **Sample 4** SSI-Ba and WBIS r=.38 (p<.001)				men and women in the reported frequency of stigmatizing experiences encountered

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Sample 5 SSI-Ba and WBIS r=.30 (p<.001) **Sample 6** SSI-Bb and WBIS r=.25 (p<.001) SSI-Bb and WBIS r=.44 (p<.001)				
SSI modified[24]		Reliabilities across 11 subscales ranged from .66-.88				**Sample 1** Coping responses r=.11, p<.01 ✓ Dieting earlier in life r=-.06, p<.05 ✓ Self-esteem (ns) × Depression (ns) ×				Gender (ns) **Sample 1** BMI r=.06, p<.05✓ **Sample 2 (matched sample)** BMI (ns) × Scores were negatively associated with age (r=.08, p<.05)
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale[19]	EFA revealed two factor solution: shame=32.3% variance (EV=3.88), guilt=27.5% variance (EV=3.3) CFA confirmed two factor solution, the minimum fit	.92	Scale presented in German language	6-months (no intervention) ICC (N=98) = Shame:.79 Guilt:.72 Differences in subscale scores between Time 1 (T1) and Time 2 (T2; 6-month follow-up)		Shame: r=.64, p<.001 ✓ Guilt r=.42, p<.05 ✓ Distress: r=.69, p<.001 ✓ Body Self-Acceptance r=-.63, p<.01 ✓				Significantly higher means in women for shame subscale (women=12.43; men=6.85); t(329)=7.93, p<.001; d=.94

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[b]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[b,c]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
	function chi-square for the two-factor model was significant, 142.87 (*df* = 53), *p*<.001; *RMSEA* (CI90) = .08 to .12; *SRMS* =.05; CFI=.97			showed no significant differences: *MShame*, T1 =11.38; *MShame*, T2 =10.58; *t*Shame(97) =−1.27, *p*>.20, *d*=.13; *M*Guilt, T1= 14.39; *M*Guilt, T2= 13.49; *t*Guilt (97) =-.65, *p*>.10, *d*=.17		Depressive Symptoms *r*=.48, *p*<.001 ✓ Self-Esteem *r*=-.50, *p*<.05 ✓ Dietary Restraint *r*=.07 (ns) × Rumination *r*=.65, *p*<.001 ✓				
Weight-Based Rejection Sensitivity Scale WBRS[24]	**Sample 1** **EFA** 1 factor: 55.43% variance, factor loadings range: .62-.84 ✓ **CFA** 1 factor: 2(94) =1248.21, *p*<001, SRMR=.04, CFI=.93, RMSEA=.08, factor loadings > .59 and *p*<.001 ✓	.94 ✓		6-8 weeks **Sample 1** *r*=.75, *p*<.01 **Sample 2** *r*=.82, *p*<.001		**Sample 2** Self-esteem *r*=-.453, *p*<.01 ✓ Appearance rejection sensitivity *r*=-.622, *p*<.01 ✓ Appearance based self-worth *r*=-.323, *p*<.01 ✓ Shame *r*=.632, *p*<.01 ✓	**Sample 3** Social desirability *r*=.07, *p*=.09 × Agreeableness *r*=-.08, *p*=.07 × Emotional stability *r*=-.32, *p*<.01 ✓ Extraversion *r*=-.15, *p*<.01 ✓	**Sample 4** Psychological distress *β*=.12, *p*<.05 ✓ College adjustment *β*=-.40, *p*<.001 ✓ General disordered eating *β*=-.03, *p*=.487 × General health-related quality-of-	**Time 1** W-RS total, *M*=2.06, *SD*=1.01 W-RS anxiety, *M*=2.04, *SD*=1.14 W-RS expectation, *M*=2.56, *SD*=1.07 **Time 2**	**Sample 1** Scores differed significantly for gender (*M*=2.02, *SD*=0.85 for women and *M*=1.62, *SD*=0.64 for men), *t*(1683) =10.48, *p*< .001, *d* = 0.53, 95% CI [.32, .47] Scores differed significantly for self-identified weight (*M*=2.44, *SD*=0.97 for overweight, *M*=1.70, *SD*=0.65 for normal weight): *t*(1657)=6.76, *p*<.001, *d*=0.90, 95% CI [.65, .83]

	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[b]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[b,c]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
						Objectified body consciousness *r*=.331, *p*<.01 ✓ Body dissatisfaction *r*=.636, *p*<.01 ✓ Rejection sensitivity *r*=.589, *p*<.01 ✓ Perceived weight stigma *r*=.468, *p*<.01 ✓ WBIS *r*=.755, *p*<.01 ✓ SSI *r*=.441, *p*<.01 ✓ **Mediation effects** All mediation effects of psychological distress *p*<.05 for the relationship between W-RS and bulimia, quality-of-life, and physical illness	Conscientiousness *r*=-.10, *p*=.03 ✓ Openness to experience *r*=-.14, *p*<.01 ✓	life *β*=-.15, *p*=.040 ✓	W-RS total, *M*=1.99, *SD*=1.08 W-RS anxiety, *M*=1.96, *SD*=1.19 W-RS expectation, *M*=2.03, *SD*=1.09	Scores were not correlated with age: *r*=.04 (*p*=.09)

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[b,c]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
Weight Bias Internalization Scale WBIS[12]	**EFA** Revealed two components: Component 1: 44.86% variance (EV=5.83) Component 2: 13.14% variance (EV=1.70) **CFA** Supported one factor solution: EV=5.42	.90 ✓				Self-esteem r=.68, p<.01 ✓ Depression Anxiety Stress Scale-21 r=.51, p<.01 ✓ Satisfaction and concern with body shape: r=.74, p<.01 ✓ Drive for thinness r=.47, p<.01 ✓ Frequency of binge eating (past 3 months): r=.25, p<.01 ✓ past 6 months: r=.32, p<.01 ✓ Anti-fat Attitudes (dislike) r=.31, p<.01 ✓		Self-esteem β=-.64, p<.01 ✓ Depression Anxiety Stress Scale -21 β=.49, p<.01 ✓ Satisfaction and concern with body shape β=.77, p<.01 ✓ Binge eating frequency (past 3 months) β=.21, p<.01 ✓ Binge eating frequency (past 6 months) β=.31, p<.01 ✓		BMI r=0.15 (ns) ×
WBIS psychometric validation[55]	**CFA** Revealed one factor solution: 37.48% variance (EV=3.37) ✓	.75 ✓				Body image concern r=.62, p<.001 ✓ Self-esteem r=-.48, p<.001 ✓		Body image concern β=-.47, p<.001 Self-esteem β=.60, p<.001 ✓		Scores were not significantly different for current clinical sample compared to previous community sample: M=3.95 (SD=1.28), [t(244)=−0.1, p=.90) ×

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[b,c]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Depression r=.24, p<.05 ✓ Anxiety r=.02 (ns) × Stress r=.23, p<.05 ✓ Anti-fat Attitudes (dislike): r=-.03 (ns) ×		Depression β=.23, p<.05 ✓ Anxiety β=.23 p<.05 ✓ Stress β=.02 (ns) ×		BMI ns (r=.13) × Age ns (r=-.17)
WBIS: norms and psychometric properties in German population[28]	**CFA** 1 factor, did not provide good fit to data, χ^2=502.94, p<.01 CFI (.92) and SRMR (.05) indicate a good model fit to the data	.91	WBIS translated from English to German using back translation			Depression r=.27, p<.01 Somatic symptoms r=.24, p<.01		Depression β=-.27, p<.01 Somatic symptoms β=-.24, p<.01		Scores differed significantly for gender with women having higher WBIS scores than men (p<.01) Scores differed significantly for BMI: obesity: M=3.07, SD=1.29; overweight: M=2.55, SD=1.15 (p<.01) Scores differed significantly for age among women; Age 35–44 (M=3.42, SD=1.16) vs age 55–64 (M= 2.77, SD=1.12); 65–74 years: M= 2.68, (SD=1.06); all p<.01), no differences between age groups in men (p>.05)
WBIS: modified in Turkish population[56]	**Factor analysis** Factor loadings of all items between	.92		2-weeks .75 (p=.00)		BMI r=-0.13, p<0.00				

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	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[a]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[bc]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
	0.60 and 0.80; variance 69.17%									
WBIS assessed self-perceived versus BMI weight status[27]	**CFA** BMI-based group and perception-based group did not produce good model fit (chi square) statistics (all $p<.001$) ×	Perception based grouping: .90 ✓ BMI-based grouping: .91 ✓								
WBIS validation and modification[21]	WBIS-modified EV= 7.19, all factor loadings ≥ .50	.94 ✓			WBIS-modified M=3.27 (SD=1.50), Cronbach α=.94, EV= 7.19, all factor loadings ≥ .50. Findings comparable to those reported for the original WBIS (M= 3.95, SD=1.28, Cronbach α=.90, EV=5.42 ✓	Satisfaction and concern with body shape r=.77, p<.01 ✓ Drive for thinness r=.56, p<.01 ✓ Self-esteem r=-.56, p<.01 ✓ Depression Anxiety Stress Scale-21 r=.44, p<.01 Binge eating frequency (3 months) r=.36, p<.01 ✓ Binge eating frequency (6		Satisfaction and concern with body shape β=.72, p<.01 ✓ Drive for thinness β=.45 (ns) × Self-esteem β=-.51, p<.01 ✓ Depression Anxiety Stress Scale-21 β=.45, p<.01 ✓ Binge eating frequency (3 months) β=.35, p<.01 ✓ Binge eating frequency (6		Scores correlated positively with BMI (r=.47, p<.01) × Scores differed significantly for gender (higher for females, M=3.67, SD=1.64 than males M=2.88, SD=1.25); $F(1, 146) = 10.74$, p=.001, η^2=.07 ✓

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	Internal structure			Remaining psychometric properties						
	Structural Validity	**Internal Consistency[a]**	**Cross-Cultural Validity**	**Reliability (test-retest, inter-rater, intra-rater)**	**Criterion Validity**	**Convergent Validity[bc]**	**Discriminant Validity[c]**	**Predictive Validity**	**Responsiveness**	**Known Groups Validity[c]**
						months) r=.47, p<.01 ✓ Anti-fat Attitudes (dislike) r=.17, p<.05		months) β=.47, p<.01 ✓		
WBIS-2F[25]	**EFA** WBIS-13 produced two factors: Factor 1 (weight related distress) internal reliability=0.926 Factor 2 (weight related self-devaluation) internal Reliability=0.768 **CFA** WBIS-13 supported two factors χ^2/df=180/64, RMSEA (90% CI)=0.064 (0.053, 0.075); CFI=0.957; SRMR=0.045					BMI r=-.05 (ns) Self-esteem r=-.74, p<.01 Stigma consciousness r=.307, p<.01 Group-level self-definition r=.02 (ns) Group-level self-investment r=-.45, p<.01 Stigma resistance r=-.49, p<.01				BMI r=-.05 (ns)
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-	**CFA** 3 factors provided good fit to the data, χ^2	Inadequate self-subscale: .80				Inadequate self + body image shame r=.64, p<.001	Inadequate self + reassured self r^2=.41			Inadequate self + BMI r=.23, p<.001

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
Reassuring Scale (WFSCRS)[22]	(206)=1095.98, p<.001; χ^2/df=5.32; TLI=.87; CFI=.88; RMSEA=.08, p<.001; SRMR=.05	Hated self-subscale: .80 Reassured self-subscale: .84				Inadequate self + disinhibition r=.37, p<.001 Inadequate self + hunger r=.30, p<.001 Inadequate self + restraint r=-.13, p<.001 Inadequate self + flexible control r=-.25, p<.001 Inadequate self + rigid control r=.13, p<.001 Inadequate self + binge eating r=.55, p<.001 Inadequate self + depression r=.60, p<.001 Inadequate self + anxiety r=.48, p<.001 Inadequate self + stress r=.57, p<.001	Hated self and reassured self r^2=.55 Inadequate self + hated self r^2=.74			Reassured self + BMI r=-.19, p<.001 Hated self + BMI r=.34, p<.001

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Inadequate self + BMI r=.23, p<.001 Reassured self + body image shame r=-.53, p<.001 Reassured self + disinhibition r=-.29, p<.001 Reassured self + hunger r=-.22, p<.001 Reassured self + restraint r=.24, p<.001 Reassured self + flexible control r=.29, p<.001 Reassured self + rigid control (ns) Reassured self + binge eating r=-.45, p<.001 Reassured self + depression r=-.52, p<.001				

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Reassured self + anxiety r=-.31, p<.001 Reassured self + stress r=-.41, p<.001 Reassured self + BMI r=-.19, p<.001 Hated self + body image shame r=.67, p<.001 Hated self + disinhibition r=.34, p<.001 Hated self + hunger r=.28, p<.001 Hated self + restraint r=-.16, p<.001 Hated self + flexible control r=-.27, p<.001 Hated self + rigid control r=.11, p<.01				

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Hated self + binge eating r=.58, p<.001 Hated self + depression r=.69, p<.001 Hated self + anxiety r=.52, p<.001 Hated self + stress r=.56, p<.001 Hated self + BMI r=.34, p<.001				
Weight Self Stigma Questionnaire (WSSQ)[59]	**EFA** Fear of enacted stigma factor loading ranged from .67-.86 Self-devaluation factor loading ranged from .55-.81	.878 Fear of enacted stigma subscale: .869 Self-devaluation subscale: .812		3-months .787 Fear of enacted stigma: .804 Self-devaluation: .618		Acceptance of weight-related thoughts and feelings r=.76, p>.01 Experiential avoidance, cognitive fusion, and action r=.51, p>.01 Obesity-related quality-of-life r=.68, p>.01 General health r=.30, p>.01			**Sample 2** 3-month follow-up changes in WSSQ total and subscale scores after 1-day intervention: 1. Total WSSQ: F(1, 83)=28.59, p< 0.001, partial η^2=0.26, large effect 2. Self-devaluation: F(1, 83)=17.79, p<	Gender r=.29, p>.01 Age r=.02 (ns) Income r=.15 (ns) BMI r=.40, p>0.01 Scores higher in treatment seeking sample (M=35.98, SD=8.69) than non-treatment seeking sample (M=26.46, SD=9.19)

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Brief symptoms r=.42, p>.01 Eating disorder symptoms r=.36, p>.01			0.001, partial η^2=0.18, large effect 3. Enacted stigma: F(1, 83)=22.97, p< 0.001, partial η^2=0.22, large effect	
WSSQ: Chinese version[60]	**EFA** Two factors: 67.05% variance Fear of enacted stigma factor loading ranged from .617-8.20 ✓ Self-devaluation factor loading ranged from .505-.886 ✓ **CFA** Supported two factor model, 95% CI ranged from .7008 to .7792	.881 Fear of enacted stigma subscale: .776 Self-devaluation subscale: .880	WSSQ translated from English to Chinese using forward translation by 2 translators, and back translated by 2 experts	2-weeks Fear of enacted stigma: .857 Self-devaluation: .843		Fear + appearance evaluation r=-.238, p<.05 Self-devaluation + appearance evaluation r=-.414, p<.005 Total + appearance evaluation r=-.397, p<.005 Fear + appearance orientation r=.135 Self-devaluation + appearance evaluation r=.207 Total + appearance evaluation r=.195				Fear + BMI r=.211, p<.005 Self-devaluation + BMI r=.384, p<.005 Total + BMI r=.335, p<.005

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	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Fear + body areas satisfaction r=-.324, p<.005 Self-devaluation + Body areas satisfaction r=-.418, p<.005 Total + Body areas satisfaction r=-.409, p<.005				
WSSQ: German version[22]		.84 Fear of enacted stigma subscale: .74 Self-devaluation subscale: .83	WSSQ translated by a German eating disorders expert and back-translated by a professional English translator			Quality of life: r=.47, p<.001 Depression: r=.44, p<.001 Physical health quality-of-life (SF-12) r=-.14, p=.20 Mental health quality-of-life (SF-12) r=-.36, p<.001 General health r=.45, p<.001 Shame r=.39, p<.001 Guilt r=.44, p<.001		Guilt p<.0001 Dissociative symptoms p=.035 BMI (>50) p=.017		BMI r=.14, p=.178

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Dissociative symptoms r=.31, p<.001				
WSSQ (Turkish version)[61]	EFA Two factors 49.2% variance Fear of enacted stigma (14.05% variance Self-devaluation (35.15%)	.83 Fear of enacted stigma subscale: .81 Self-devaluation subscale: .74	WSSQ translated by a Turkish eating disorders expert and back-translated in English by bilingual translator			Total + Depression r=0.509, p<.01 Total + Anxiety r=0.332, p<.01 Total + EDE-Q r=0.337, p<.01 Total + restraint (ns) Total + binge eating r=0.265, p>.01 Total + eating concern r=0.382, p>.01 Total + shape concern r=0.314, p>.01 Total + weight concern r=0.315, p>.01 Total + DEBQ-E r=0.293, p<.01				Age (ns) BMI r=.206, p<.05

	Internal structure			Remaining psychometric properties						
	Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
						Total + Self-esteem r=0.403, p<.01 Total + IWQOL physical function r=0.302, p<.01 Total + IWQOL self-esteem r=0.434, p<.01 Total + IWQOL public distress r=0.560, p<.01 Total + IWQOL work r=0.284, p<.01 Total + IWQOL sexual life (ns) Self-devaluation + depression r=0.357, p<.01 Self-devaluation + anxiety r=0.255, p<.01 Self-devaluation + EDE-Q r=0.219, p<.05				

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Internal structure			Remaining psychometric properties						
Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
					Self-devaluation + restraint concern (ns) Self-devaluation + binge eating r=0.190, p<.05 Self-devaluation + eating concern r=0.220, p<.05 Self-devaluation + shape concern r=0.230, p<.05 Self-devaluation + weight concern r=0.226, p<.05 Self-devaluation + DEBQ-E r=0.313, p<.01 Self-devaluation + self-esteem r=0.281, p<.01 Self-devaluation + IWQOL physical function (ns) Self-devaluation + IWQOL self-esteem r=0.315, p<0.01				

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Internal structure			Remaining psychometric properties						
Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
					Self-devaluation + IWQOL sexual life (ns) Self-devaluation + IWQOL public distress r=0.286, p<0.01 Self-devaluation + IWQOL work (ns) Fear + depression r=0.504, p<.01 Fear + anxiety r=0.310, p<.01 Fear + EDE-Q r=0.350, p<.01 Fear + restraint (ns) Fear + binge eating r=0.259, p<.01 Fear + eating concern r=0.423, p<.01 Fear + shape concern r=0.303, p<.01				

Internal structure			Remaining psychometric properties						
Structural Validity	Internal Consistency[a]	Cross-Cultural Validity	Reliability (test-retest, inter-rater, intra-rater)	Criterion Validity	Convergent Validity[bc]	Discriminant Validity[c]	Predictive Validity	Responsiveness	Known Groups Validity[c]
					Fear + weight concern r=0.307, p<.01 Fear + DEB-Q r=0.193, p<.05 Fear + self-esteem r=0.401, p<.01 Fear + IWQOL physical function r=0.341, p<.01 Fear + IWQOL self-esteem r=0.420, p<.01 Fear + sexual life r=0.215, p<.05 Fear + IWQOL sexual life r=0.215, p<.01 Fear + IWQOL public distress r=0.653, p<.01 Fear + IWQOL work r=0.385, p<.01				

Note. Where results are not reported, data was not available; data are reported as presented in each article; Only the main results of studies are presented; Additional results from studies which formulated additional hypothesis(es) that were not important to include in the table (because the data was not focused on weight stigma specifically), are included in Appendix B.

✓=consistent with hypothesis (100%), ×=not consistent with hypothesis (note that where ticks and crosses are not provided, hypotheses were not formed for this data which was extracted; refer to Appendix B for full summary of hypothesis testing); sic=to indicate the use of language is such because of citing an original source.

[a]Internal consistency is presented as Cronbach's alpha coefficients unless otherwise specified; total score coefficients, not subscale score coefficients, were the main reliability estimate reported unless otherwise specified

[b]Convergent validity results are included for only the main findings of studies, not all possible convergent validity data from included studies are presented as it is outside the scope of the review

[c]Convergent, discriminative, or known-groups validity data are characteristics of the property 'hypothesis testing for construct validity', and these results were presented separately in the table for ease of readability of results

Table S4. *Hypotheses Testing and Results (Construct Validity) of Included Studies*

Reference	Hypothesis(es)	Assessment[a]	Results	Consistent?
Experience of Weight Based Discrimination (EWD)[41, p. 1024]	1. "It was hypothesised that recollections of personal experiences of weight-based discrimination would be associated with more maladaptive eating and weight-related behaviours and attitudes, specifically emotional eating and body dissatisfaction."	•	**Emotional eating** r=.29, p<.01; R^2=.16, F(3,177)=11.16, p<.001, R^2 change=.07, p<.001	✓
	2. "It was hypothesised that perceptions of ingroup social consensus concerning overweight people (sic) would moderate the relationships between personal experiences of weight-based discrimination and negative eating-related attitudes and behaviours."	•	**Body dissatisfaction** r=.41, p<.01; R^2 = .23, F(3,173) = 17.30, p<.001, R^2 change =.12, p<.001	✓
			Body dissatisfaction Moderator at the mean: B=.27, t(186)=5.65, p<.001 One SD below the mean: B=.37, t(186)=6.34, p<.001 One SD above the mean: B=.18, t(186)=2.40, p<.005	✓
			Emotional eating Moderator at the mean: B=.17, t(190)=3.38, p<.01 One SD below the mean: B=.27, t(190)=4.45, p<.001 One SD above the mean: B=.07, t(190)=.87, p>.05	✓
Feelings and Thoughts about Weight (Weight Distress) Scale[42]	n/p			

Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight scale[43]	n/p			
Impact of Weight on Quality of Life (IWQOL original), Social/Interpersonal scale[44]	n/p			
IWQOL *social/interpersonal scale (construct validity)[45]	n/p			
IWQOL-Lite *public distress scale (original)[13]	n/p			
IWQOL-Lite *public distress scale (psychometric evaluation)[24]	n/p			
IWQOL-Lite *public distress scale (Brazillian version)[46]	n/p			
IWQOL-Lite *public distress scale (German version)[47]	n/p			

IWQOL-Lite *public distress scale (Portugese version)[48]	n/p				
IWQOL-Lite *public distress scale (Malay version)[49]	n/p				
Obesity and Weight-loss Quality-of-Life (OWLQOL) Questionnaire, Social Stigma scale[23]	n/p				
OWQOL *social stigma scale (validation)[50]	n/p				
Perceived Weight Discrimination (PWD)[20, p. 80-81]	1.	"Perceived weight discrimination increases the likelihood that a person self-identifies as being overweight"	•	20% of individuals with overweight, 67% of individuals with obesity, and 73% of individuals with extreme obesity who perceived discrimination felt very overweight. Overall, perceived discrimination contributes to ones identified weight status, RRR=2.58 for perceptions of feeling somewhat overweight versus not overweight; RRR=4.08 for perceptions of feeling very overweight versus not overweight	✓
	2.	"Perceived weight discrimination increases the likelihood of health problems, exacerbating the effect due to body weight alone"	•	Effect of Class I obesity (whether accompanied by perceived discrimination or not) on health decline (ns)	×
	3.	"Weight perceptions mediate the exacerbating effect of perceived weight discrimination on health"	•	Individuals with severe obesity and perceived weight discrimination produced worse health declines than individuals with severe obesity but without weight discrimination (b=2.33 versus 2.23). Wald test produces	✓

				non-significant result when testing the difference in the size of the coefficients	
				"Unstandardized change coefficient largest for those who were severely obese and perceived weight discrimination (b=.38, p<.01)"	✓
				"Class I obese subjects (sic) who perceived weight discrimination faced greater increases in disability (b=.32, p<.05) than severely obese people (sic) who did not perceive weight discrimination (b=.01, ns); Wald comparison test of effect sizes reveal that weight class and discrimination are greater than weight class and no discrimination (F=4.73, p<.01)"	✓
				Weight perceptions mediated the relationship between perceived discrimination and health (coefficient reduced slightly: b=.27 from b=.38)	✓
Perceived Weight-Based Stigmatization Scale (PWSS)[51, p. 197]	1.	"We hypothesized that males, compared to females, would be less accurate in their perceived weight status and,"	•	Males inaccurately misclassified their weight status compared to females. Specifically, more males with overweight/obesity than females with overweight/obesity did not perceive themselves as overweight (60.3% vs 28.3%, respectively, p<.001)	✓
	2.	"Would perceive less negative perceptions of weight-based stigmatization"	•	Females had greater perceptions of weight-based stigma than males (33.865.3 vs 34.664.8; note that lower scores indicate greater perceived stigma), respectively; $F(4,370)$=4.7, p=.001)	✓
Perceived Weight Stigma Scale - Urdu (PWSS-U)[52]	n/p				

Perception of Teasing Scale (POTS)[27]	n/p			
Physical Appearance Related Teasing Scale (PARTS)[26]	n/p			
Quality of Life for Obesity Surgery (QOLOS) Questionnaire, Social Discrimination/Body Satisfaction subscale [53]	1. High correlations between QOLOS and generic and obesity-specific quality-of-life measures	×	QOLOS total + IWQOL total r=.87, p<.001 QOLOS total + SF-12 PCS r=.68, p<.001 QOLOS total + SF-12 MCS r=.59, p<.001 QOLOS total + MAQOL total r=.85, p<.001	✓
	2. High correlations between psychological domains of QOLOS and anxiety, depression, and eating disorders	×	QOLOS eating disturbances + anxiety r=-.49, p<.001 QOLOS physical functioning + anxiety r=-.46, p<.001 QOLOS body satisfaction + anxiety r=-.67, p<.001 QOLOS family support + anxiety r=-.28, p<.001 QOLOS social discrimination + anxiety r=-.49, p<.001 QOLOS positive activities + anxiety r=-.54, p<.001 QOLOS partnership + anxiety r=-.21, p<.001 QOLOS eating disturbances + depression r=-.56, p<.001 QOLOS physical functioning + depression r=-.68, p<.001 QOLOS body satisfaction + depression r=-.68, p<.001 QOLOS family support + depression r=-.39, p<.001 QOLOS social discrimination + depression r=-.59, p<.001 QOLOS positive activities + depression r=-.74, p<.001 QOLOS partnership + depression r=-.28, p<.001 QOLOS eating disturbances + EDEQ r=-.60, p<.001 QOLOS physical functioning + EDEQ r=-.50, p<.001 QOLOS body satisfaction + EDEQ r=-.67, p<.001 QOLOS family support + EDEQ r=-.26, p<.001 QOLOS social discrimination + EDEQ r=-.52, p<.001 QOLOS positive activities + EDEQ r=-.54, p<.001 QOLOS partnership + EDEQ r=-.25, p<.001	✓

	3. For discriminant validity, higher HRQOL on QOLOS in postoperative patients compared to preoperative patients	×	Preoperative M=2.86 (SD=0.58) and Postoperative M=3.93 (SD=0.72), $t_{(37)}$=-17.28, p< .001	✓
Stigmatizing Situations Inventory (SSI)[11, p. 222]	1. "No study has empirically demonstrated a relation between stigmatizing experiences and mental health symptoms. Exploring this relation was a[n] objective of this study"	×	Brief symptom inventory r=.33 p<.001 Body image r=.29, p<.001 Self-esteem r=-.24, p<.01	✓
	2. "Identify the common strategies that obese persons (sic) use to cope with stigma and to evaluate the relation between their coping strategies and mental health adjustment"	×	The most frequent coping responses included use of positive self-statements, attempts to 'head off' negative remarks, and using faith, religion and prayer for self-consolation.	✓
	3. "Explore the relation between forms for coping with obesity stigmatization and psychological adjustment"	×	Brief symptom inventory r=.32, p<.001 Body image r=.29, p<.001 Self-esteem r=-.14 (ns)	✓
SSI brief[36]	n/p			
SSI modified[54, p. 1803]	1. "Increasing weight would be associated with more stigmatizing experiences"	•	Sample 1: BMI r=.06, p<.05 Sample 2 (matched sample): BMI (ns)	✓
	2. "Individuals experiencing more stigmatization would report poorer outcomes on variables of emotional functioning"	•	Sample 1: Dieting earlier in life r=-.06, p<.05; Coping responses r=.11, p<.01; stigma did not predict self-esteem or depression	✓
	3. "It was expected that coping responses would be related to emotional well-being"	○	Sample 1: Coping by obtaining social support related to self-esteem: r=.08, p<.05; Coping by engaging in positive self-talk related to depression: r=-.07, p<.05, Coping unrelated to binge eating disorder (ns)	✓

Weight-and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale only[19, p. 319]	1.	"To test convergent validity, [the authors] included two scales measuring guilt and shame feelings (SG, SG-Distress)"	○	Shame: r=.64 (p<.001); Guilt r=.42 (p<.05); Distress-SG: r=.69 (p<.001)	✓
	2.	"To test discriminant validity, [the authors] included measures of depression, self-esteem, body self-acceptance, and dietary restraint"	○	Body Self-Acceptance: r=-.63 (p<.001); Depressive Symptoms: r=.48 (p<.001); Self-Esteem: r=-.50 (p<.05); Dietary Restraint: r=.07 (ns); Rumination r=.65 (p<.001)	✓
Weight Based Rejection Sensitivity (WBRS)[34, p. 81, 83]	1.	"Study 1 involved creation of the W-RS scale and an examination of the underlying factor structure of the scale and its reliability"	×	**Factor structure:** EFA= 1 factor: 55.43% variance, factor loadings range: .62-.84; CFA=1 factor: 2(94) =1248.21, p<001, SRMR=.04, CFI=.93, RMSEA=.08, factor loadings >.59 and p<.001; **Reliability:** Cronbach α=.94	✓
	2.	"Studies 2a and 2b examined correlates of W-RS to determine convergent and divergent validity"	×	**Convergent validity:** Self-esteem: r=-.453, p<.01; Appearance rejection sensitivity: r=- .622, p<.01; Appearance based self-worth: r=-.323, p<.01; Shame: r=.632, p<.01; Objectified body consciousness: r=.334, p<.01; Body dissatisfaction: r=.636, p<.01; Rejection sensitivity: r=.589, p<.01	✓
				Divergent validity: Social desirability: r=.07, p=.09; Agreeableness: r=-.08, p=.07; Emotional stability: r=-.32, p<.01; Extraversion: r=-.15, p<.01; Conscientiousness: r=-.10, p=.03; Openness to experience: r=-.14, p<.01	✓

		2b (i). "W-RS would be associated with poorer psychological well-being overtime"		Psychological distress: β=.12, p<.05	✓
		2b (ii). "Those high in W-RS would not adjust to college as successfully as those low in W-RS"		College adjustment: β=-.40 (p<.001)	✓
		2b (iii). "W-RS would be associated with poorer physical well-being over time (in the context of disordered eating and general health status)"		General disordered eating patterns: β=-.03, p=.487	×
		Summary: WR-S was hypothesized to predict psychological distress, poorer college adjustment, and poorer physical well-being over students' first semester in college		General health-related quality-of-life: β=-.15, p=0.40	✓
	3.	"Study 3 examined the long-term outcomes and indirect effects of W-RS in a longitudinal study spanning a college semester" **Specifically:** the relationship between W-RS and poorer physical well-being would be partially mediated by poorer psychological well-being	•	**Psychological distress mediated relationship between W-RS and bulimia** **Disordered eating,** direct effect: β<.01, p=.936; Sobel test: z=−2.08, p=.038 **Psychological distress mediated the relationship between W-RS and Quality of Life (QOL)** **QOL,** direct effect: β=.004, p=.96; Sobel test: z=−2.01, p=.04 **Psychological distress partially mediated the relationship between W-RS and physical illness symptoms** **Physical illness,** indirect effect: z= 2.15, p=.04	✓

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Weight Bias Internalization Scale (WBIS)[12, p. 81]	1.	"It was hypothesized that the WBIS would be a reliable and valid measure"	×	**Reliability:** Cronbach α=.85 **Validity:** Anti-fat Attitudes (dislike): r=.31, p<.01; Satisfaction and concern with body shape: r=.74, p<.01; Drive for thinness r=.47, p<.01; Self-esteem r=.68, p<.01; Depression Anxiety Stress Scale-21 r=.51, p<.01; Frequency of binge eating (past 3 months: r=0.25, p<.01; past 6 months: r=.32. p<.01, BMI (ns)	✓
	2.	"Weight bias internalization would be associated with greater psychopathology"	×	Body shape questionnaire: β=.77, (p<.01) DASS-21: β=.49 (p<.01) Self-esteem: β=-0.64 (p<.01) Binge eating frequency (3 months): β=.21 (p<.01) Binge eating frequency (past 6 months): β=.31 (p<.01) *Results presented above (evidence for hypothesis 1) also applies to hypothesis 2*	✓
WBIS (psychometric validation)[55, p.105]		"[It was] hypothesized that within a treatment seeking sample of overweight adults (sic),"			
	1.	"The WBIS would be an internally consistent measure and represent a unidimensional construct"	×	Cronbach α=.75; EV=3.37; WBIS explained 37.48% of variance in scores	✓
	2.	"Levels of internalized weight bias would be elevated among those seeking behavioral weight loss treatment, as compared to a	•	WBIS mean score in current clinical sample, 3.93 (SD =1.04), was not significantly different from the WBIS mean score in previous community sample of adults with	×

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		previously assessed community sample of overweight adults (sic)"		overweight and obesity, 3.95 (SD=1.28), (t(244)=−0.13, p=.90)	
	3.	"Greater internalized weight bias would be related to higher levels of anti-fat attitudes, depressive symptoms, anxiety, body image concern, and to poor self-esteem (did not discuss stress hypothesis)"	•	WBIS and Antifat Attitudes Questionnaire: r=-0.03 (ns) WBIS and depression: r=.24 (p<.05) WBIS and anxiety: r=.02 (ns) WBIS and body image concern: r=.62 (p<.001) WBIS and self-esteem: r=-0.48 (p<.001) WBIS and stress: r=.23 (p<.05)	✓
	4.	"WBIS scores would significantly and independently predict self-esteem, depressive symptoms, anxiety, and body image concern, over and above the contribution of anti-fat attitudes and body mass index (did not discuss hypothesis with stress)"	•	WBIS significantly predicted self-esteem: Total R^2=.25 (p<.001) WBIS significantly predicted DASS depression: Total R^2=.11 (p<.05) WBIS and anxiety: β=.23 p<.05 WBIS significantly predicted body image concern: Total R^2=.40 (p<.001) WBIS and stress (ns)	✓
WBIS (norms and psychometric properties in German population)[28]	n/p				
WBIS (Turkish version)[56]	n/p				
WBIS (assessed on self-perceived versus BMI weight status)[57, p. 26]	1.	"Perceived weight status was expected to perform similarly to BMI in analyses of the WBIS's psychometric properties"	×	Initial Cronbach alpha estimates were similar in the perception-based grouping (α=.90) and the BMI-based grouping (α=.91)	✓

	2. "Model fit was expected to be borderline for the 11-item scale and to improve with Item 1 removed"	×	Item 1 removed due to poor model fit > Assessment of reduced 10-item model still fell short of good model fit > Other indices including CFI and TLI (that are less sensitive to sample size) also indicated poor model fit, except for SRMR (all below .10)	✗
WBIS (validation and modification)[21, p. 90]	1. "It was hypothesized that the modified WBIS would demonstrate similar psychometric properties and correlates as the original scale in this sample of individuals of varying weight statuses and,"	×	WBIS-modified *M*=3.27 (*SD*=1.50), Cronbach α=.94, EV= 7.19, all factor loadings ≥ .50. These statistics are comparable to those reported for the original WBIS (*M*= 3.95, *SD*=1.28, Cronbach α=.90, EV=5.42	✓
			Unlike the original WBIS validation paper, WBIS-modified correlated positively with BMI (*r*=.47, *p*<.01); full and partial correlations (controlling for BMI) for all other measures were highly comparable to those reported in the initial validation study (highest difference of .17):	✓
			Satisfaction and concern with body shape *r*=.77, *p*<.01; Drive for thinness *r*=.56, *p*<.01; Self-esteem *r*=-.56, *p*<.01; Depression Anxiety Stress Scale-21 *r*=.44, *p*<.01; Eating disorder psychopathology (3 months) *r*=.36, *p*<.01; Eating disorder psychopathology (6 months) *r*=.47, *p*<.01	✓
	2. "While gender differences could emerge, the scale would generalize to men as well as women"	×	WBIS-M scores predicted all outcomes (except drive for thinness) regardless of gender, suggesting the generalizability of the scale to men and women (all *p*'s<.01):	✓
			Satisfaction and concern with body shape *β*=.72, *p*<.01 ✓; Drive for thinness *β*=.45 (ns); Depression Anxiety Stress Scale-21 *β*=.45, *p*<.01; Self-esteem *β*=-.51, *p*<.01; Binge	✓

			frequency (3 months) *β*=.35, *p*<.01; Binge frequency (6 months) *β*=.47, *p*<.01	
WBIS-2F[25]	n/p			
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale (WFSCRS)[58]	n/p			
Weight Self-Stigma Questionnaire (WSSQ)[59]	n/p			
WSSQ (Chinese version)[60, p. 2]	1. "WSSQ should estimate self-evaluation and stigmatization resulting from the weight of the obese person (sic) and could contribute to the assessment of weight-loss interventions"	○	Two extracted factors properly identified the domain structures of the WSSQ: Self-devaluation factor loadings ranged from .505 to .886 Fear of enacted stigma factor loadings ranged from .617 to .820	✓
WSSQ (German version)[22]	n/p			
WSSQ (Turkish version)[61]	n/p			

Note. Information was filled in square brackets to add information to make the sentence read more clearly but does not alter the meaning of the sentence; n/p=hypotheses not provided; where information is not provided, data was not available from the relevant study; ✓= consistent with hypothesis (100%), ✓_= mostly consistent with hypotheses (75%), ✗ = not consistent with hypothesis; M=Mean; SD=Standard Deviation; EV=Eigenvalue; BMI=Body Mass Index; W-RS= Weight-based Rejection Sensitivity; ns= not significant; RRR=Relative Risk Ratio; EFA=Exploratory Factor Analysis; CFA=Confirmatory Factor Analysis; SRMR=Standardized Root Mean Square Residual; CFI=Confirmatory Fit Index; TLI=Tucker Lewis Index; DASS-21=Depression, Anxiety, Stress Scale-21; sic=to indicate the use of language is such because of citing an original source.

* ●=Clear hypothesis(es) provided; ○=Hypothesis(es) not explicit but implied; ×=Hypothesis(es) insufficient (i.e., not enough information available to determine hypothesis(es) due to not being specific, lacking direction, strength, and magnitude).

Table S5. *Characteristics of Studies Reporting the Development and/or Validation of Weight Stigma Measures (Information is Presented in Alphabetical Order, by Measure).*

Author	Measure; Concept Definition	Country	Sample (N; Gender[1]; Age[2]; BMI; Ethnicity)	Sample Type (source)	Intended Population or Context of Use	Subscales # of items Example item	Rating Scale	Theoretical or conceptual model?
[41]	Experience of Weight Discrimination (EWD); n/a	UK	N=190, M_{BMI}=22.95 (*SD*=4.11); n=12 underweight (BMI<18.49) n=128 overweight (25<BMI>29.9) n=13 obese (BMI>30)	Community (undergraduate students)	n/a	6-item scale "I feel like I am personally a victim of society because of my weight"	7-point scale ranging from 1 (totally disagree) to 7 (agree very much)	No
[42, p. 145]	Feelings and Thoughts about Weight Scale (FATAWS, Weight Distress subscale); "thoughts and feelings about postpartum weight retention"	Taiwan	N=252; Age range=19-40 (*M*=29.7, *SD*=4.3) n=181 non-overweight (BMI<24), n=71 overweight (BMI>24) All female	Community (postpartum women)	Validation in Taiwanese post-partum women	14-item scale; Two subscales; Weight Distress (10 items), Weight Salience (4 items; this subscale is not relevant for our assessment purposes) "I feel ashamed of myself because of my weight"	7-point scale *Response options not specified*	No
[43]	Healthcare Questionnaire (HCQ) "Negative Interactions Concerning Weight subscale; n/a	USA	N=259; Age=44.0 ± 10.0; All female; BMI=35.2 ± 4.5; 65.6 % Caucasian	Treatment seeking (seeking treatment around weight and eating disorders)	n/a	10-item scale "I feel that I have been treated disrespectfully by the medical profession" because of my weight"	5-point scale ranging from 1 (always) to 5 (never)	No
[44]	Impact of Weight on Quality of Life	USA	**Sample 1** N=64 (58% female);	Treatment seeking	n/a	11-item scale	5-point scale ranging from 1	No

	(IWQOL) original *Social/Interpersonal subscale; n/a		BMI *M* for males=40.4 and 34.6 for females; Age *M*= 45 **Sample 2** N=181 (64.64% female); M_{age}: 48.7 (*SD*=13.7), M_{BMI}: 38.3 (*SD*=10.2); mainly Caucasian	(outpatients in treatment for obesity, both samples)		"Because of my weight I experience ridicule, teasing or unwanted attention"	(never true) to 5 (always true	
[45]	IWQOL validation; n/a	USA	N=394 (62% female); Female age: *M*=46 (*SD*=14.96), Male age: *M*=49 (*SD*=12.98); Female BMI *M*=35.90 (*SD*=9.38), Male BMI *M*=42.37 (*SD*=10.74)	Treatment seeking (patients in obesity treatment)	n/a	11-item scale "Because of my weight I experience ridicule, teasing or unwanted attention"	5-point scale ranging from 1 (never true) to 5 (always true)	No
[13]	Impact of Weight on Quality of Life Lite version (IWQOL-Lite) original *Public Distress subscale; n/a	USA	N=1987 (69% female); Male age: 47.3±14.1, Female age: 45.9±14.3; BMI male 37.2±10.8, BMI female 36.6±9.4 **Development sample** N=996 **Cross validation sample** N=991; mainly Caucasian	Community (volunteers) and treatment seeking (research studies, day treatment program, undergoing gastric bypass surgery)	Individuals with obesity participating in clinical trials for obesity treatment	5-item subscale "Because of my weight I experience ridicule, teasing or unwanted attention"	5-point scale ranging from 1 (never true) to 5 (always true)	No
[24]	IWQOL-Lite validation *Public Distress subscale; n/a	USA	N=494 (69% female); Age range for males=18-74[2] (*M*=38.6, *SD*=13.1)	Community (adults)	n/a	5-item subscale "Because of my weight I experience	5-point scale ranging from 1 (never true) to 5 (always true)	No

			Age range for females=18-90[2] (*M*=37.6, *SD*=13.4); BMI range=18.6-73.0 (*M*=27.4, *SD*=7.1), BMI *M* for males=28.0 (*SD*=6.7), BMI *M* for females=27.1 (*SD*=7.3); 60.1% Caucasian **Test-retest sample** (N=112, 71.43% female); Age range for males=20-72[2] (*M*=40.1, *SD*=13.5) Age range for females=18-76 (*M*=38.7, *SD*=12.5)			ridicule, teasing or unwanted attention"		
[46]	IWQOL-Lite Brazilian *Public Distress subscale; n/a	Brazil	**Clinical sample** N=89, Age *M*=36 (*SD*=7.8); BMI *M*=29.3 (*SD*=5.3) **Community sample** N=156, Age *M*=34.0 (*SD*=5.0); BMI *M*=24.4 (*SD*=5.0)	Community (volunteers) and treatment seeking (Weight-Watchers® sample)	Validation in Brazilian population	5-item subscale "Because of my weight I experience ridicule, teasing or unwanted attention"	Scores range from 0 (worst health-related quality of life) and 100 (best health-related quality of life)	No
[47]	IWQOL-Lite German *Public Distress subscale; n/a	Germany	N=351 individuals with overweight/obesity N=127 adults with normal weight, N=126 subgroup sample;	Community (volunteers) and treatment seeking (bariatric surgery candidates)	Validation in German population	5-item subscale "Because of my weight I experience ridicule, teasing or unwanted attention"	5-point scale ranging from 1 (never true) to 5 (always true	No

			*Both samples combined: Age *M*=43.4; BMI *M*=33.74					
[48]	IWQOL-Lite Portugese *Public Distress subscale; n/a	USA	N=388 (all female and Caucasian) Clinical sample (*n*=138): Age *M*=38.3 (*SD*=5.8); BMI *M*=30.8 (*SD*=3.7) Community sample (*n*=250): Age *M*=36.1 (*SD*=6.9), BMI *M*=24.8 (*SD*=4.6)	Community and treatment seeking	Evaluate sample comparisons	5-item subscale "Because of my weight, I have difficulty getting up from chairs"	5-point scale ranging from 1 (never true) to 5 (always true)	No
[49]	IWQOL-Lite Malaysian *Public Distress subscale; n/a	Malaysia	N=120 (54.2% female); Age *M*=35.72 (*SD*=11.4); BMI normal *n*=40, BMI overweight *n*=40, BMI obese *n*=40	Treatment seeking	Evaluate psychometric properties for future use in local studies	5-item subscale "Because of my weight, I have difficulty getting up from chairs"	5-point scale ranging from 1 (never true) to 5 (always true)	No
[23]	Obesity and Weight-Loss Quality of Life Scale (OWLQOL) original - *Social Stigma subscale; n/a	USA	N=68 (49% female); Age range=28-70[2] (*M*=52, *SD*=10.5); BMI range=27-40 (M=33.4, SD=4.1); 60% Caucasian	Community	n/a	61-item scale; Two subscales: Obesity and Weight Loss Quality of Life Questionnaire (41 items), Weight-Related Symptom Measure (20 items) "Because of my weight, I try to wear clothes that hide my shape"	7-point scale (not at all, hardly, somewhat, moderately, a good deal, a great deal, a very great deal)	No

[50]	OWQOL validation - *Social Stigma subscale; n/a	USA	**Initial validation sample:** N=340 **Clinical trial sample:** N=1282 **Community sample:** N=1478 **European community sample:** N=3007 *All sample data combined: Age *M*=47.2; BMI *M*=35.03; Mainly female and Caucasian	Community (volunteers) and treatment seeking (weight loss clinical trial)	Tool to be used alongside other patient-reported outcomes of functioning	37-item scale; Two subscales: Obesity and Weight Loss Quality of Life Questionnaire (17 items), Weight-Related Symptom Measure (20 items) "I feel ugly because of my weight"	7-point scale ranging from 0 (not at all) to 6 (a very great deal)	No
[20]	Perceived Weight Discrimination (PWD); perceived mistreatment around a person's weight	USA	N=1856; Age range=25-74[2]; BMI range= 9-61 (*M*=26.69, *SD*=5.30)	Community (adults across the weight spectrum)	n/a	9-item scale "People act as if you are inferior"	5-point scale ranging from 1 (very often) to 5 (never)	No
[51, p.198]	Perceived Weight Stigma Scale (PWSS); "perceptions of potentially negative weight-based attitudes and impressions by family, friends, and peers"	USA	N=371 (69.54% female); approximately 47.7% overweight/obese	Community (university students)	n/a	16-item scale "Because of my weight people think I am lazy"	5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree)	No

52	Perceived Weight Stigma Scale – Urdu (PWSS-U); n/a	Pakistan	N=300 (*n*=161 female); BMI>25	Community	Gain clear understanding of challenges being faced by people with obesity through correct assessment of frequency and range of perceived weight stigma	43-item scale (items not available)	5-point scale ranging from strongly disagree to strongly agree	No, but extensive literature informed scale development in this study
27	Perception of Teasing Scale (POTS); teasing around weight	USA	**Sample 1** N=227 (all female); Age range=17-42[2], 90% Caucasian **Sample 2** N=87 **Sample 3** N=92	Community (college women)	n/a	11-item scale; Two subscales: Weight-Related Teasing (6 items), Competency Teasing (5 items) "1. People made fun of you because you were heavy. 1a. How upset were you?"'	5-point scale ranging from 1 (never) to 5 (very often)	No
26	Physical Appearance Related Teasing Scale (PARTS); teasing around weight	USA	**Scale construction (independent) sample:** N=94 (all female); Age range: 17-25[2] **Re-validation (independent) sample:** N=153	Community (undergraduate women)	n/a	18-item scale; Two subscales: Weight/Size Teasing (12 items), General Appearance Teasing (6 items) "Were you the brunt of family jokes because of your weight?"	5-point scale ranging from 1 (never) to 5 (frequently)	No

			Test-retest (independent) sample: N=47					
53	Quality of Life for Obesity Surgery (QOLOS) Questionnaire *Social Discrimination/Body Satisfaction subscale (Section 1); n/a	Germany	**Preoperative sample:** N=220 **Postoperative sample:** N=219	Treatment seeking (patients undergoing bariatric surgery, preoperative and postoperative adults	Assess impact of excess skin after weight loss on appearance and health-related quality-of-life	Two subscales: Section 1: 36 items relevant for both preoperative and postoperative patients), Section 2 for postoperative patients only (20 items) "Because of my looks, I have many disadvantages in my daily life"	5-point scale ranging from 1 (completely true) to 5 (completely not true)	No
11	Stigmatizing Situations Inventory (SSI) original; n/a	USA	**Development sample:** N=63 clinical (66.67% female); BMI $\geq$ 40 N=38 non-clinical (84.21% female) **Validation sample** N=146 (76.71% female); Age range=16-70[2] (*M*=42.13, *SD*=9.8); BMI range=27.1-80.9 (*M*=49.55, *SD*=12.8); 91.1% Caucasian	Community and treatment seeking (patients with obesity undergoing gastric bypass surgery)	n/a	149-item scale; Two subscales: Stigmatizing Situations (50 items) and Coping Responses (99 items) "Being stared at in public"	10-point scale ranging from 0 (never) to 9 (daily)	No
36	SSI (Stigmatizing Situations subscale); n/a	USA/ Australia	*All data reported for 7 samples combined: N=1089; Mainly Caucasian females;	Community (individuals with overweight/obesity)	n/a	10-item scale "Not being hired because of your	10-point scale ranging from 0 (never) to 9 (daily)	No

			Age *M*=32.52; BMI *M*=32.55			weight, shape or size"		
54	SSI modified (Stigmatizing Situations subscale); n/a	USA	**Sample 1** N=2449 (all Caucasian females); Age *M*=49.85 (*SD*=13.79); BMI *M*=37.6 (*SD*=9.39) **Sample 2** N=222; Female M_{age}=50.42 (*SD*=13.87), Male M_{age}=50.71 (*SD*=13.54); Female M_{BMI}=39.73 (*SD*=11.62), Male M_{BMI}=38.05 (*SD*=9.35)	Treatment seeking (adults from a weight loss support group)	n/a	11 subscales; 50 items "Being avoided, excluded, ignored"	4-point scale ranging from 0 (never) to 3 (multiple times)	No
19	Weight- and Body-Related Shame and Guilt Scale (WEB-SG, Shame subscale), German version; how one feels about oneself (around weight)	Germany	N=331 (68.9% female); Age range=18-70[2] (*M*=45.50, *SD*=13.28); BMI range=30-63 (*M*=36, *SD*=5.18)	Community (individuals with overweight/obesity)	n/a	12-item scale; Two subscales: Shame subscale (6 items), Guilt subscale (6 items) "Since the size of my clothes is embarrassing for me, I would rather avoid shopping for new clothes"	5-point scale ranging from 1 (not at all) to 5 (completely)	No, but extensive literature informed scale development in this study
34	Weight-Based Rejection Sensitivity (WBRS); anticipated rejection around weight	USA	**Sample 1 (scale development)** N=1686 (57.3% female), M_{age}=18.54 (*SD*=1.65);	Community (college students)	n/a	16-scenarios; "Imagine that you are at work, and someone brings in a	6-point scale assessing anxiety (1-very unconcerned, 6-very concerned)	Yes

			BMI range=15.5-43.6 (*M*=22.62, *SD*=4.08); 77.2% Caucasian **Sample 2a (construct validity; subsample of sample 1)** N=220; 71.4% female; M_{BMI}=24.56 (*SD*=4.04, range= 17.97-41.82); M_{age}=18.45 (*SD*=1.06); 80.5% Caucasian **Sample 2b (discriminant validity)** N=612; 54.3% female; 72.7% Caucasian; M_{age}=19.04 (SD=1.52), M_{BMI}=23.46 (*SD*=4.03, range= 15.3-53.1) **Sample 2c (predictive utility)** N=265; 79.25% female; M_{age}=18.12 (*SD*=0.96); Time 1: M_{BMI}=24.36 (*SD*=4.71, range=16.9-44.5) Time 2: M_{BM}=24.38 (*SD*=4.71, range=16.2-41.6); 79.6% Caucasian			box of donuts for the office to share. As you are leaning to pick one up, your co-worker walks by and comments on the number of calories in the donuts."	and rejection (1-very unlikely, 6-very likely)	
12	Weight Bias Internalization Scale (WBIS) original; beliefs that negative stereotypes and self-statements about	USA	N=198 (82.82%); Age range=18-67[2] (*M*=30.53); BMI range=25.02-79.71 (*M*=33.21, *SD*=8.58);	Community (self-referred internet users with overweight/obesity)	n/a	11-item scale "I hate myself for being overweight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No

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	being overweight/obese apply to oneself		75.4% Caucasian					
[55]	WBIS validation; beliefs that negative stereotypes and self-statements about being overweight/obese apply to oneself	USA	N=58 (64.4% female); Age *M*=49.65 (*SD*=12.33); BMI *M*=35.80 (*SD*=7.93); 24.4% Caucasian, 23.3% Asian-American, 10% Native Hawaiian/Pacific Islander, 1.1% African American, 1.1% Latino/a	Treatment seeking (adults with overweight and enrolled in a behavioural weight loss program)	n/a	11-item scale "I hate myself for being overweight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No
[28]	WBIS - German population; beliefs that negative stereotypes and self-statements about being overweight/obese apply to oneself	Germany	N=1092 (47.1% female); Age range=14-89[2] (*M*=53.90, *SD*=16.12), BMI range= 24.97-66.92 (*M*=28.30, *SD*=3.73)	Community (individuals with overweight/obesity)	n/a	10-item scale "I hate myself for being overweight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No
[56]	WBIS – Turkish population; acceptance of negative stereotypes present in society about oneself, resulting in societal withdrawal and negative emotions (e.g., unworthiness and embarrassment)	Turkey	N=279 (79.6% female); *M*age=20.50 (*SD*=1.7); BMI <18.5=10.8%, BMI 18.5-25.0=72.8%, BMI 25.0-30+=16.5%	Community	Validation in Turkish population	11-item scale "It's my fault that I am overweight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No

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[57, p. 25]	WBIS – validated by BMI categories; "self-directed weight-based stigma involving internalization of negative weight-related stereotypes and negative self-statements about one's own weight status"	USA	N=243 (82% female); Age range=18-54 (*M*=22.57); BMI range=18.72-60.73 (*M*=28.56); Majority Caucasian (71%)	Community (undergraduate students)	n/a	10-item scale "I hate myself for being overweight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No
[21, p. 89]	WBIS modified; "(when) people apply weight-based stereotypes to themselves and base their self-evaluations on weight"	USA	N=148 (50% female); Age range=19-70[2] (*M*=35.57, *SD*=11.95); BMI range=16.44-72.06 (*M*=27.97, *SD*=7.27)	Community (individuals recruited online)	n/a	11-item scale "Because of my weight I feel that I am just as competent as anyone"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No
[25]	WBIS-2F; awareness and/or endorsement, of negative societal stereotypes resulting in personal devaluing of oneself	UK	N=931 (85.5% female); Age range=18-69 (*M*=40.2, *SD*=11.4)[2]; BMI range=25.0-95.0 (*M*=40.2, *SD*=10.8); Majority Caucasian (83.7%)	Community	n/a	13-item scale "I wish I could drastically change my weight"	7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree)	No, but extensive literature informed scale modification
[58]	Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale (WFSCRS); how individuals relate to themselves when experiencing failures, limitations,	UK	N=724 (all female); Age range=19-65 (*M*=44.89, *SD*=11.30); BMI range=25.06-66.14 (*M*=32.81, *SD*=6.40)	Treatment seeking (attendance to a diet/lifestyle community-based weight management programme)	Increase understanding among researchers and practitioners of denigratory self-criticism and self-reassurance	22-item scale; Three subscales: Inadequate Self (9 items), Hated Self (5 items), Reassured Self (8 items) "[When it comes to my eating and	5-point scale ranging from 0 (not at all like me) to 4 (extremely like me)	Yes; social rank theory

	or threats to social status				present among individuals with overweight/obesity in relation to self-regulation of eating behaviours and psychological adjustment	weight] …I stop caring about myself"		
[59]	Weight Self Stigma Questionnaire (WSSQ) original; self-devaluation and fear of directly experiencing stigma due to weight status	USA	N=169 (combined samples) *No demographics reported*	Community (self-referred adults) and treatment seeking (undergoing structured weight loss treatment)	To determine intervention effects	12-item scale "Others will think I lack self-control because of my weight problems"	5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree)	No, but extensive literature informed scale development in this study
[60]	WSSQ validation in Chinese population; self-stigma related to weight status	Taiwan	N=156 (53.84% female) Age range=20-50 (*M*=22.19, *SD*=9.74); BMI range=24.02-45.17 (*M*=27.36, *SD*=3.22)	Community (adults with overweight/obesity)	Validation n Chinese population	12-item scale "Others will think I lack self-control because of my weight problems"	5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree)	No (referenced original article)
[22]	WSSQ German; self-stigma related to weight status	Germany	N=94 (68% female); Age range=21-68[2]; BMI *M*=45.4 (*SD*=7.6)	Treatment seeking (university hospital outpatients)	Validation in German population	12-item scale "Others will think I lack self-control because of my weight problems"	5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree)	No (referenced original article)

[61]	WSSQ Turkish; self-stigma related to weight status	Turkey	N=120 (80% female); Age *M*=37.65 (*SD*=12.419); BMI range=36.44-65.69 (*M*=46.05, *SD*=6.052)	Treatment seeking	Validation in Turkish population	12-item scale "Others will think I lack self-control because of my weight problems"	5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree)	No (referenced original article)

Note. Where results are not reported, data were not available; data are reported as presented in each article (this applies to descriptives such that when a mean is reported without a standard deviation, this is so because it was not reported in the article; Results are presented separately for different versions of the same scale (original development study, validation study of the same scale); N=total sample; BMI=Body Mass Index; *M*=Mean; *SD*=Standard Deviation; n/a=not available.

[1]When % of females reported throughout table, article reported on two genders (female and male)

[2]Samples also included age range (14-17 and 65 to 90) outside of specified criteria (adults aged 18-65) but were not removed from further analyses

Table S6. *COSMIN Risk of Bias Ratings (Methodological Quality) and GRADE ratings of Pooled and Individual Measure Development and Content Validity Studies* [62]

Measure	Pooled results		Measure Development		Content Validity				
					Asking Patients			Asking Experts	
	Rating[c]	Quality of Evidence[d]	Design (item generation)	Cognitive interview or Pilot test	Relevance	Comprehensiveness	Comprehensibility	Relevance	Comprehensiveness
Experience of Weight Discrimination EWD[51 a,b]	±	VL	-						
Feelings and Thoughts about Weight Scale (FATAWS)[a]	-	L	-	-				+	
Weight Distress subscale [42a]									
Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight scale [43 a]	±	L	-						
Impact of Weight on Quality of Life (IWQOL original), Social/Interpersonal scale [44a]	±	L	-	+				-	-
Impact of Weight on Quality of Life Lite version (IWQOL-Lite), Public Distress scale original[13]	±	L	-						
IWQOL-Lite, Public Distress scale Brazilian version[45]			n/r	n/r					
IWQOL-Lite, Public Distress scale German version[47]			n/r	n/r				-	-
IWQOL-Lite, Public Distress scale Portugese version[48]			n/r	n/r					
IWQOL-Lite, Public Distress scale Malaysian version[49]			n/r	n/r					
Obesity and Weight-Loss Quality of Life Instrument (OWLQOL), Social Stigma scale [23a]	±	M	-	+	+	+	+	+	+
Perceived Weight Discrimination PWD[20 a,b]	±	L	-						
Perceived Weight Stigma Scale PWSS[51 a,b]	±	L	-						
Perceived Weight Stigma Scale Urdu (PWSSU)[52]	•	•	+	-					

Perception of Teasing Scale POTS[27 a]	±	L	-						
Physical Appearance Related Teasing Scale PARTS[26 a]	±	L	-					-	-
Quality of Life for Obesity Surgery (QOLOS), Social Discrimination/Body Satisfaction subscale[53 a,c]	±	L	+		+	+	+	-	-
Stigmatizing Situations Inventory SSI[11]	+	L	-		-	-	-	-	-
SSI brief[36@]			-						
SSI modified[54@]			-	-					
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale [19 a]	±	L	-					+	
Weight-Based Rejection Sensitivity WBRS[54 a]	±	L	-						
Weight Bias Internalization Scale WBIS[12]	±	M	+					-	-
WBIS norms and psychometric properties in German population[25]			n/r	n/r					
WBIS Brazilian population[46]			n/r	n/r					
WBIS Turkish population[56]			n/r	n/r				-	-
WBIS validation and modification[21@]			+					-	-
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale WFSCRS[58 a,b]	±	L	-						
Weight Self Stigma Scale WSSQ[59]	±	M	-	+	-	-	-	+	+
WSSQ Chinese version[60]			n/r	n/r					
WSSQ German version[22]			n/r	n/r					
WSSQ Turkish version[61]			n/r	n/r					

Note. Only scale development and content validity studies are presented in this table; Scale development studies are presented in bold; Content validity studies (including cross-cultural studies) are presented in italics; Studies which are modified weight-stigma scales of existing weight-stigma measures and are neither scale development studies or content validity studies are presented in roman

text; Ratings for pooled findings are as follows: + = sufficient, - = insufficient, ± = inconsistent; Ratings for individual studies are as follows: +++ = Very good; ++ = Adequate; + = Doubtful; – = Inadequate (including studies which assessed content validity but not adequately); blank spaces indicate information was not available in respective paper; n/r = not required for the purpose of the study to assess this property.

[a]Pooled ratings and quality of evidence based on a single study

[b]Studies which included a set of items to measure the relevant weight-stigma construct, but the scale was not tested, and the study was not a measure development or content validity study.

[c]Pooled rating refers to the overall rating which combines results from measure development and content validity studies (where available), and reviewer ratings based on the 10 criteria for good content validity

[d]Quality of evidence is the total body of evidence of the content validity of a measure and indicates how confident the reviewers are that the overall ratings are trustworthy. The evidence is regarded as High (H), Moderate (M), Low (L), or Very Low (VL) depending on the risk of bias (number and quality of available studies), inconsistency (variability in study and reviewers ratings), and/or indirectness (where content validity studies were performed in a sample or context different to the intended use of the original measure or current systematic review.

[e]Study referenced external paper describing content validity method in detail but this was in the German language, impacting the quality assessment for the cognitive interviews conducted

*As per COSMIN guidelines, the rating of the quality of the measure development study for a modified version of a measure should be based on the development of the original version of the measure (see pg. 9 of COSMIN content validity manual).

● Unable to provide rating as the items were not accessible for review

Table S7. *COSMIN Risk of Bias and Results Assessments of Individual Studies for Remaining Psychometric Properties (Methodological Quality, Rating of Results)* [17]

Weight stigma Measure	Structural Validity		Internal Consistency		Cross-Cultural Validity		Reliability		Criterion Validity		Hypothesis Testing[1]		Responsiveness[1]	
	MQ	R	MQ	R	MQ	R	MQ	R	MQ	R	MQ	R	MQ	R
Experience of Weight Discrimination (EWD)[41]			+++	?	n/r						++	+		
Feelings and Thoughts about Weight (FATAWS), Weight Distress Scale[42]	++	?	+++	+	+	?	-	?				?		
Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight scale[43]					n/r		+	?				?		
Impact of Weight on Quality of Life (IWQOL original), Social/Interpersonal scale[44]			+++	?	n/r		+	?				?	-	?
IWQOL *social/interpersonal scale (construct validity)[45]			+++	?	n/r							?		
Impact of Weight on Quality of Life Lite version (IWQOL-Lite), Public Distress scale original[13]	+++	+	+++	+	n/r							?	-	?
IWQOL-Lite *public distress scale psychometric evaluation[24]			+++	?	n/r		++	?				?		
IWQOL-Lite *public distress scale (Brazillian version)[46]	++	?	+++	?	+	?	++	-				?		
IWQOL-Lite *public distress scale (German version)[47]	++	?	+++	+	-	?						?		
IWQOL-Lite *public distress scale (Portugese version)[48]	+	-	+++	?	-	?								
IWQOL-Lite *public distress scale (Malay version)[49]	-	?	+++	?	-	?	-	?						

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Obesity and Weight Loss Quality of Life Instrument (OWLQOL), Social Stigma scale[23]					+	?						?				
OWLQOLvalidation *social stigma scale[50]	++	?	+++	+	n/r		++	+				?		-		?
Perceived Weight Discrimination (PWD)[20]					n/r						-	+				
Perceived Weight Stigma Scale (PWSS)[51]	+	?			*						-	+				
Perceived Weight Stigma Scale (PWSS; Urdu)[52]	++	+	+++	+												
Perception of Teasing Scale (POTS)[27]	+	?	+++	+	n/r		+	?				?				
Physical Appearance Related Teasing Scale (PARTS)[26]	++	?	+++	+	n/r		+	?				?				
Quality of Life for Obesity Surgery (QOLOS), Social Discrimination/Body Satisfaction subscale[53]	++	+	+++	+	*						+++	+				
Stigmatizing Situations Inventory (SSI)[11]			+++	?	n/r						-	+*				
SSI brief [36]			-	?	n/r				+++	+		?				
SSI modified[54]			-	?	n/r						+	+				
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale[19]	+++	+	+++	+	*		+	+			+++	+				
Weight Based Rejection Sensitivity (WBRS)[34]	+++	+	+++	+	n/r		+	?			-	+		++		-
Weight Bias Internalization Scale (WBIS)[12]	+++	?	+++	+	n/r						+++	+				
WBIS (psychometric validation)[55]	+++	?	+++	+	n/r						+	+				

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WBIS (norms and psychometric properties in German population)[28]	+++	-	+++	+	+	?			-	?		?				
WBIS (modified in Turkish population)[56]	+	-	+++	?	-	?	+	?								
WBIS (assessed on self-perceived versus BMI weight status)[57]	+++	?	+++	+	*						-	+				
WBIS (validation and modification)[21]	+	?	+++	+	*						-	+				
WBIS-2F[25]	+++	+	+++	+	n/r											
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale (WFSCRS)[58]	+++	+	+++	+	n/r							?				
Weight Self Stigma Questionnaire (WSSQ)[59]	++	?	+++	+	n/r		+	?				?		-		?
WSSQ (Chinese version)[60]	+++	?	+++	+	+	?	+	?			-	+				
WSSQ (German version)[22]			+++	?	+	?						?				
WSSQ (Turkish version)[61]	++	?	+++	+	+	?						?				

Note. Risk of bias ratings for methodological quality of studies are presented first (outside the brackets), the scoring for this rating is: +++ = Very good; ++ = Adequate; + = Doubtful; – = Inadequate; n/r = not required for the purpose of the study to assess this property; Ratings for 'good measurement properties' of results are presented next (inside brackets), the scoring for this rating is + = sufficient; - = insufficient; ? = indeterminate; MQ=Methodological Quality rating; R=Rating of results.

[1]Ratings for hypothesis testing and responsiveness are based on studies which provided hypothesis(es) in their study. Note that when hypothesis(es) for only convergent, discriminative or known-groups validity were provided, only the relevant COSMIN criteria were filled out accordingly, but if both properties were assessed, both criteria were completed, and combined results were considered together.

[2]Studies which did not conduct structural validity were subsequently not rated for internal consistency (p. 29 of COSMIN guidelines).

*These studies required cross-cultural validity assessment to be conducted, which suggests that cultural populations include not only different ethnicity or language groups, but also includes age, gender, or different population groups (p. 51 of COSMIN guidelines).

Table S8. *COSMIN Pooled Result Ratings and Overall Quality across all Studies for Each Measure, per Measurement Property (and Review of Implications of Psychometric Limitations)*

Weight Stigma Measure	Structural Validity		Internal Consistency		Cross-Cultural Validity		Reliability		Criterion Validity		Hypothesis Testing[1]		Responsiveness[1]		Implications of Psychometric Limitations
	R	Q	R	Q	R	Q	R	Q	R	Q	R	Q	R	Q	
Experienced Weight Discrimination (EWD)[1]			?	H	n/r						+	M			Factor structure unknown thus unclear if items tap single construct
Feelings and Thoughts about Weight (FATAWS), Weight Distress Scale[1]	?	M	+	H	?	L	-	VL							A priori hypotheses lacking thus authors conclusions may be biased
Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight scale[1]					n/r		?	L							Factor structure unknown thus unclear if items tap single construct
Impact of Weight on Quality of Life (IWQOL original), Social/Interpersonal scale (*n*=2)			?	H	n/r		?	L					?	VL*	Factor structure unknown thus unclear if items tap single construct
Impact of Weight on Quality of Life Lite version (IWQOL-Lite), Public Distress scale (*n*=6)	?	M*	±	H	?°	L***	-	H***					?	VL**	Original factor structure of IWQOL not established so uncertain whether the factor structure of the modified version is reflective of full scale
Obesity and Weight Loss Quality of Life Instrument	?	M*	+	H*	?	L*	+	M*					?	VL*	Factor structure unknown thus unclear if items tap single construct

(OWLQOL), Social Stigma scale (*n*=2)															
Perceived Weight Discrimination (PWD)[1]					n/r						+	VL			Hypotheses tested on this scale despite not knowing how the different items in this scale are (un)related
Perceived Weight Stigma Scale (PWSS)[1]	?	L			°						+	VL			The degree of interrelatedness among the items is unknown
Perceived Weight Stigma Scale - Urdu (PWSS-U)[1]	+	M	+	H											A priori hypotheses lacking thus authors conclusions may be biased
Perception of Teasing Scale (POTS)[1]	?	L	+	H	n/r		?	L							Validated in Caucasian females from the community in the USA, thus may not generalise to other affected population groups
Physical Appearance Related Teasing Scale (PARTS)[1]	?	M	+	H	n/r		?	L							As above
Quality of Life for Obesity Surgery (QOLOS), Social Discrimination/Body Satisfaction subscale[1]	+	M	+	H	°						+	H			Unknown whether patients are stable on the construct being measured between repeated measurements
Stigmatizing Situations Inventory (SSI; *n*=3)			?	H	n/r				+	H**	±	L*			Widely used but factor structure unknown thus unclear if items tap single construct
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale[1]	+	H	+	H	°		+	L			+	H			Validated in German population only

Weight Based Rejection Sensitivity (WBRS)[1]	+	H	+	H	n/r		?	L			+	VL	-	M	Validated in mainly Caucasian females from the community in the USA, thus may not generalise to other affected population groups
Weight Bias Internalization Scale (WBIS; *n*=7)	?	H	+	H	?°	VL***	+	L**	?	VL	+	H*			Widely used but only suitable for English or German speaking individuals
Weight-Focused Forms of Self-Critcising/Self-Attacking and Self-Reassuring Scale (WFSCRS)[1]	+	H	+	H	n/r										Unknown whether patients are stable on the construct being measured between repeated measurements
Weight Self Stigma Questionnaire (WSSQ; n=4)	?	H*	+	H	?	M*	?	M			-	VL***	?	VL**	Confirmatory Factor Analysis only conducted for Chinese population, thus unknown whether the items are reflective of a grounded model in other population groups

Note. The pooled ratings of results for all available studies per measurement property are compared against the criteria for good measurement properties and rated as sufficient (+), insufficient (-), inconsistent (±), or indeterminate (?); n/a = not assessed, n/r = not required for this property to be assessed in the relevant study; R=ratings of pooled results; Q=Quality of evidence rated as per GRADE method (following COSMIN guidelines, p. 31-37). The grading of the pooled results is graded as High (H), Moderate (M), Low (L), or Very Low (VL) evidence. Italicised results were indicated if a property was not assessed by a particular study, but it was required (e.g., a study did not assess cross-cultural validity, but this was required based on the participants sampled). If all studies consistently indicated sufficient or insufficient results, the overall rating was rated accordingly. Explanations were explored if there were inconsistencies in studies. If no explanations were found, the overall rating was considered inconsistent. If not enough information was available, the overall rating was considered indeterminate.

[1]Overall results are based on only one study.

*One study did not report results and therefore the study is removed from pooled analysis.

**Only one study assessed this psychometric property.

***Two or more studies did not assess this psychometric property.

°These studies required cross-cultural validity assessment to be conducted, which suggests that cultural populations include not only different ethnicity or language groups, but also includes age, gender, or different population groups (p. 51 of COSMIN guidelines)

Table S9. *Interpretability of Measures Per Study*

Measure	Distribution of scores in the study population[1]	% of missing items and % of missing total scores	Floor and ceiling effects	Scores and change scores available for relevant (sub)groups	Minimal important change (MIC) or minimal important difference (MID)	Information on response shift[2]
Experience of Weight Discrimination (EWD)[41]	*M*=2.03, *SD*=1.24	•		○	○	
Feelings and Thoughts about Weight Scale (FATAWS), Weight Distress subscale[42]				○	○	
Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight subscale[43]				○	○	
Impact of Weight on Quality of Life (IWQOL) original, Social/Interpersonal subscale[44]	Female *M*=23.1, *SD*=9.3 Male *M*=20.6, *SD*=8.8			Social interpersonal (mean scale score) Day 1, 23.17 Day 28, 19.30 *t/p*-value: -3.08/.004		
IWQOL validation [45]	Pre-treatment M=22.47, SD=9.05 Post-treatment M=18.08, SD=7.07	•		Pre-treatment *M*=22.47, *SD*=9.05 Post-treatment *M*=18.08, *SD*=7.07 *t/p* value: -10.06/.0001		

IWQOL-Lite original, Public Distress subscale[13]				1-year public distress change correlations: *n*=25: 0.28 *n*=77: 0.47 *n*=58: 0.62 *n*=160: 0.50 Sensitivity (effect size): *d*=0.44		
IWQOL-Lite validation, Public Distress subscale[24]	BMI <25 (*n*=220) *M*=36.3, *SD*=8.4 BMI 25-29.9 (*n*=146) *M*=38.9, *SD*=10.9 BMI 30-34.9 (*n*=65) *M*=45.1, *SD*=13.3 BMI 35-39.9 (*n*=38) *M*=56.2, *SD*=21.3 BMI 40+ (*n*=25) *M*=76.2, *SD*=28.3			○	○	
IWQOL-Lite, Brazilian, Public Distress subscale[46]	Clinical sample: *M*=91.0, *SD*=14.8 Community sample: *M*=96.5, *SD*=12.2			○	○	
IWQOL-Lite, German, Public Distress subscale[47]	BMI 18.5-24.9 (control group) *M*=5.1, *SD*=0.4	•		○	○	

	BMI 25-29.9 *M*=6.0, *SD*=1.9 BMI 30-34.9 *M*=6.7, *SD*=2.3 BMI 35-39.9 *M*=10.8, *SD*=5.2 BMI 40+ *M*=17.3, *SD*=6.0			
IWQOL-Lite *public distress scale[48]	Clinical: BMI 25-29.9 *M*=95.6, *SD*=8.4 BMI 30-34.9 *M*=91.3, *SD*=11.4 BMI 35+ *M*=67.4, *SD*=25.3 Community: BMI 25-29.9 *M*=98.5, *SD*=4.5 BMI 30-34.9 *M*=94.9, *SD*=8.7 BMI 35+ *M*=82.9, *SD*=23.4			

IWQOL-Lite *public distress scale[49]	Normal weight (*n*=40) *M*=92.13, *SD*=15.71 Overweight (*n*=40) *M*=91.50, *SD*=17.77 Obese (*n*=40) *M*=76.25, *SD*=24.33			
Obesity and Weight-Loss Quality of Life Scale (OWQOL) original, Social Stigma subscale[23]			○	○
OWLQOL validation, Social Stigma subscale[50]	Initial validation *M*=54.5, *SD*=22.0 U.S. clinical trial *M*=51.9, *SD*=22.1 U.S. community obese population *M*=61.5, *SD*=21.5 European community obese population *M*=64.9, *SD*=23.7	Minimal missing data (<0.1%) observed for all questionnaires	Responsiveness calculated with effect size (standardized response mean). Using cut-point of a ≥2.5% decrease in weight over 12-week initial validation study, SRM was 0.77 In the clinical trial, for a ≥10% weight decrease, the effect size was 1.38 for the OWLQOL. Effect sizes were smaller for less weight change but remained moderately high for the OWLQOL.	
Perceived Weight Discrimination (PWD)[20]	*M*=6.84%	•	○	○

Perceived Weight Stigma Scale (PWSS)[51]	*M*=34.3, *SD*=4.9			○	○
Perceived Weight Stigma Scale - Urdu (PWSS-U)[52]					
Perception of Teasing Scale (POTS)[27]				○	○
Physical Appearance Related Teasing Scale (PARTS)[26]				○	○
Quality of Life for Obesity Surgery (QOLOS) Questionnaire, Social Discrimination/Body Satisfaction subscale[53]	Pre-operative sample (N=220) *M*=2.96, *SD*=1.07 Post-operative sample (N=219) *M*=3.98, *SD*=0.97	Missing item responses were 2.5% for social discrimination subscale		○	○
Stigmatizing Situations Inventory (SSI original)[11]	*M*=1.90, *SD*=2.0			○	○
SSI brief, Stigmatizing Situations subscale[36]				○	○
SSI modified, Stigmatizing Situations subscale[54]	Sample 1 *M*=0.98, *SD*=0.62 Sample 2 (women) *M*=1.03, *SD*=0.58 Sample 2 (men) *M*=1.00, *SD*=0.57	•	Stigma unrelated to variables of self-esteem and depression possibly due to ceiling effect present (unclear on what variable but most participants reported depressive symptoms in the mild clinical range)	○	○

Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale - German version[19]	*M*Shame =10.69, *SD*=6.66 *M*Guilt=13.84, *SD*=5.15)			○	○
Weight-Based Rejection Sensitivity (WBRS)[34]	W-RS total Time 1, *M*=2.06, *SD*=1.01 Time 2, *M*=1.99, *SD*=1.08 W-RS anxiety Time 1, *M*=2.04, *SD*=1.14 Time 2, *M*=1.96, *SD*=1.19 W-RS expectation Time 1, *M*=2.09, *SD*=0.99 Time 2, *M*=2.063, *SD*=1.09			W-RS total Time 1, *M*=2.06, *SD*=1.01 Time 2, *M*=1.99, *SD*=1.08 W-RS anxiety Time 1, *M*=2.04, *SD*=1.14 Time 2, *M*=1.96, *SD*=1.19 W-RS expectation Time 1, *M*=2.09, *SD*=0.99 Time 2, *M*=2.063, *SD*=1.09	

Weight Bias Internalization Scale (WBIS original)[12]	*M*=3.95, *SD*=1.28			○	○
WBIS validation[55]	*M*=3.93, *SD*=1.04			○	○
WBIS (German population)[28]	Female *M*=2.90, *SD*=1.11 Male *M*=2.44, *SD*=1.14	<5% missing data on WBIS	Participants mostly endorsed items indicating low to moderate weight bias internalisation Mostly flat distribution (low kurtosis) with long tail to right (positive skew)	○	○
WBIS (modified in Turkish population)[56]	Underweight: *M*=2.34, *SD*=1.11 Normal weight: *M*=2.12, *SD*=1.18 Overweight/obese: *M*=3.17, *SD*=1.42				
WBIS – validated by BMI categories[57]	BMI-based group *M*=3.76, *SD*=0.67	Missing data were <1% for every item		○	○

	Perception-based group *M*=4.12, *SD*=0.81				
WBIS modified [21]	*M*=3.27, *SD*=1.50	•		○	○
WBIS-2F[25]	*M*=3.6, *SD*=1.1	Total of 3 participants had missing responses on one (*n*=2) or two (*n*=1) items. Data was missing completely at random, $\chi^2(75) = 9.17$, $p=0.09$. Factor analyses conducted with listwise deletion as the number of missing data was small.	Low Skewness: -0.174, *SE*=0.08 Low kurtosis: -0.554, *SE*=0.16		
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale (WFSCRS)[58]				○	○
Weight Self Stigma Questionnaire (WSSQ original)[59]	Total scale *M*=31.24, *SD*=10.11 WSSQ (self-devaluation) *M*=17.19, *SD*=5.61			Sensitivity to change (3-month follow-up) WSSQ total score (F (1, 83) = 28.59, $p< 0.001$, partial η^2 = 0.26 (large effect);	

	WSSQ (enacted) *M*=14.15, *SD*=5.96		significantly lower levels of self-stigma WSSQ self-score (*F* (1, 83) = 17.79, *p*< 0.001, partial η^2 = 0.18 (large effect); significantly lower levels of enacted stigma WSSQ enacted score (*F* (1, 83) = 22.97, *p*< 0.001, partial η^2 = 0.22 (large effect)	
WSSQ, Chinese[60]	Mean WSSQ-C score ranged from 2.17 to 3.84 on the self-devaluation subscale and from 1.92 to 2.81 on the fear of enacted stigma subscale	The skewness of each item for the C - WSSQ ranged from −1.154 to .805 on the self - devaluation subscale and from .076 to 1.010 on the fear of enacted stigma subscale	○	○
WSSQ, German[22]	*M*=34.0, *SD*=9.0		○	○
WSSQ, Turkish[61]			○	○

Note. Where information is not presented, data was not available in the respective study; Data are reported as presented in each article.

[1]Distribution of participants scores are means and standard deviations of weight stigma measures used in the relevant study

[2] There was no exploration of potential response shift to identify changes in the meaning of the weight stigma construct. ●Study provided information on missing data but not specific to weight stigma measure

○ Studies that were cross-sectional and the purpose was not to generate data for change scores

Table S10. *Feasibility Information for Available Weight Stigma Measures*

Measure	Patients comprehensibility	Type and ease of administration	Length of the instrument (number of items and subscales)	Completion time	Patients required mental and physical ability level[a]	Ease of standardization	Ease of score calculation	Copyright	Cost of an instrument	Required equipment	Availability in different settings[b]	Regulatory agency's requirement for approval
Experience of Weight Discrimination (EWD)	C	Self-report; Easy administration	6-item scale		Intact				Freely accessible online	No	✓	
Feelings and Thoughts about Weight Scale (FATAWS),	NC	Self-report; Easy administration	14-item scale	10-15 mins	Intact				Freely accessible online	No	✓	
Weight Distress subscale			Two subscales; Weight Distress (10 items), Weight Salience (4 items)									
Healthcare Questionnaire (HCQ), Negative Interactions Concerning Weight subscale	LC	Self-report; Easy administration	10-item scale		Intact				Freely accessible online	No	✓	
Impact of Weight on Quality of Life (IWQOL),	LC	Self-report; Easy	74-item scale		Intact	Easy (information			Freely accessible online	No	✓	

Social/Interpersonal subscale		administration	Social/interpersonal subscale: 11 items			provided in study)						
IWQOL-Lite	LC	Self-report; Easy administration	31-item scale		Intact	Easy (information provided in study)			Freely accessible online	No	✓	
			Public distress subscale: 5 items									
Obesity and Weight-Loss Quality of Life Scale (OWLQOL), Social Stigma subscale	LC	Self-report; Easy administration	31-item scale		Intact				Freely accessible online	No	✓	
			Public distress subscale: 5 items									
Perceived Weight Discrimination (PWD)	C	Self-report; Easy administration	9-item scale		Intact				Freely accessible online	No	✓	
Perceived Weight Stigma Scale (PWSS)	C	Self-report; Easy administration	16-item scale		Intact	Easy (information provided in study)			Freely accessible online	No	✓	

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Perceived Weight Stigma Scale - Urdu (PWSS-U)	Unknown as items not reported (developed in Urdu language)	Self-report; Easy administration	43-item scale		Intact		No	No	No
Perception of Teasing Scale (POTS)	LC	Self-report; Easy administration	11-item scale		Intact	Easy (information provided in study)	Freely accessible online	No	✓
			Two subscales: Weight-Related Teasing (6 items), Competency Teasing (5 items)						
Physical Appearance Related Teasing Scale (PARTS)	LC	Self-report; Easy administration	18-item scale	Unclear*	Intact		Freely accessible online	No	✓
			Two subscales: Weight/Size Teasing (12 items), General Appearance Teasing (6 items)						

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Quality of Life for Obesity Surgery (QOLOS) Questionnaire, Social Discrimination/Body Satisfaction subscale	NC	Self-report; Easy administration	Two subscales: Section 1: 36 items relevant for both preoperative and postoperative patients), Section 2 (20 items)		Intact	Easy (information provided in study)	Freely accessible online	No	✓
			Section 1 social discrimination subscale: 4 items; Body satisfaction subscale: 6 items						
Stigmatizing Situations Inventory	C	Self-report; Easy administration	149-item scale; Two subscales: Stigmatizing situations (50 items) and Coping responses (99 items)		Intact		Freely accessible upon author request	No	✓

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PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale - German version	C	Self-report; Easy administration	12-item scale Two subscales: Shame subscale (6 items), Guilt subscale (6 items)	Intact	Easy (information provided in study)	Freely accessible online	No	✓
Weight-Based Rejection Sensitivity (WBRS)	C	Self-report; Easy administration	16-scenarios	Intact	Easy (information provided in study)	Freely accessible upon author request	No	✓
Weight Bias Internalization Scale (WBIS)	LC	Self-report; Easy administration	11-items for original measure	Intact		Freely accessible online	No	✓
Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale (WFSCRS)	LC	Self-report; Easy administration	22-item scale Three subscales: Inadequate Self (9 items), Hated Self (5 items), Reassured Self (8 items)	Intact		Freely accessible online	No	✓

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PSYCHOMETRIC PROPERTIES OF WEIGHT STIGMA MEASURES

Weight Self Stigma Questionnaire (WSSQ)		Self-report; Easy administration	12-item scale	Unclear*	Intact	Easy (information provided in study)	Freely accessible online	No	✓

Note. Where information is absent, data was not reported; The comprehensibility property was rated against the four criteria (of 10 criteria) for good measurement properties related to comprehensibility (comprehensibility of instructions, items and response options, appropriate wording of items, and whether response options match each item); C=Comprehensible, LC=Limited Comprehensibility; NC=Not Comprehensible.

[a]Studies did not specify mental and physical capacity required to complete the questionnaires. However, it is important for respondents to have an intact mental and physical capacity when providing responses to questions about themselves to ensure they are reflective and truthful of their experience. In this way, we define 'intact' as one who does not present with an acquired brain injury, physical and/or intellectual disability, low literacy skills, and other concerns that may impact upon physical and mental capacity to respond.

[b]All measures are available for use in research and clinical settings where appropriate (e.g., if the measure is relevant for the purpose of research or clinical presentation of respondent).

*Time of completion based on the administration of all measures (including validation measures), therefore it is unknown what length of time it takes to complete the individual measure.

Table S11. *Recommendations for Future Research Directions*

Short term recommendations for existing weight stigma measures
• Report on all available psychometric properties that have been (or could be) tested in a study
• Attempt to test the less commonly reported psychometric properties of existing weight stigma measures, including cross-cultural validity, reliability, criterion validity, and responsiveness
• Achieve expert consensus on what the 'gold standard' measure is of weight stigma, through the use of a Delphi panel of experts
• Create specific apriori hypothesis(es) to be tested, and specify the magnitude and direction of what is expected, to avoid reporting bias
• Use theory to inform the evaluation and modification of weight stigma measures
• Test the model fit of existing weight stigma measures using factor analysis
• Validate existing measures in various population groups, demographic, and cultural backgrounds to strengthen cross-cultural validity
Recommendations for a new weight stigma measure (based on COSMIN Guidelines)
• Use current Social Psychology, and weight stigma theory to inform item development of new weight stigma measures
• Conduct Delphi Studies to reach expert consensus on the relevance and comprehensiveness of newly developed items
• Conduct Cognitive Interview or Focus Group Studies to ask individuals from the community about the relevance, comprehensibility, and comprehensiveness of the newly developed items
• Test model fit of new measure using factor analysis (both EFA and CFA)
• Ensure adequate reporting of all psychometric properties being tested, following COSMIN guidelines, to ensure new measures reaches the highest possible standards in line with clinimetrics and psychometrics
• Determine a benchmark for MIC through obtaining expert agreement on what is a clinically meaningful change of weight stigma with regard to interventions
• Researchers who examine change scores should present effect sizes (or report means, standard deviations and sample sizes so effect sizes can be calculated)

Appendix D: Content Validity Study Supplementary Tables

Supporting Information

The Development of a New Weight Stigma Measure: A Content Validity Study

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Supplementary Table 1

Key themes from Qualitative Accounts Among Individuals affected by Stigma due to their Weight (n = 12 studies)

Author	**Participants sampled**	**Key Themes**
Mold & Forbes (2011)	A review of original research identifying patients' experiences on obesity in relation to uptake of healthcare services	Reports of feelings of powerlessness (e.g., accepting negative stereotypes such as being lazy, an overeater, and unintelligent), treatment avoidant, patient ambivalence (e.g., feeling that healthcare professionals were ambivalent toward their health needs), feeling personally responsible for one's condition, and poor psycho-emotional functioning (e.g., maladaptive coping, poor self-esteem).
Blackstone (2016)	Patient's perspective on living with obesity	Reports of humiliation in the school setting, finding comfort in food, feeling helpless, poor emotional health (anxiety, low self-esteem, anger, withdrawal, defensiveness), repeated cycles of failure (in the form of weight loss from dieting), feeling misunderstood by health professionals.
Forhan, Risdon, & Solomon (2013)	Patients with a BMI of 30kg/m^2 and above	Reports of barriers to treatment avoidance and adherence among patients with obesity included feeling judged, limited provider knowledge about obesity, poor communication (e.g., care providers assuming understanding of what it is like to live with obesity), lack of privacy (e.g., feeling embarrassed when the scale was in an open area).
Puhl, Moss-Racusin, Schwartz & Brownell (2008)	Experience of weight-stigma among overweight and "obese" individuals	Reports of experiencing weight-stigma across a range of contexts (e.g., home, work) and from different interpersonal sources (e.g., family, friends). Internalization of weight-based stereotypes (e.g., association between being "obese" and lazy) and negative self-beliefs such as self-blame.
Kaminsky & Gadaleta (2002)	Bariatric patients' experiences of weight-stigma during peri-operative period	Reports of perceived indifference, lack of concern, and negative attitude from care providers.
Malterud & Ulriksen (2011)	A review of original research identifying patients' experiences on obesity in healthcare settings	Reports of feeling patronized by care providers, internalizing responsibility and self-blame for being unable to manage weight, feeling dismissed due to material and spatial norms that do not accommodate for people of all sizes, shape, and weight.
Raves, Brewis, Trainer, Han & Wutich (2016)	Experiences of weight-stigma among post-operative bariatric patients	Reports of difficulty with dietary adherence, healthcare professionals blaming unrelated problems on weight.

Setchell, Watson, Jones & Gard (2015)	Patients perceptions of interactions with physiotherapists that involved weight	Reports of judgment perception and unnecessary emphasis placed on weight by physicians.
Vartanian, Pinkus, & Smyth (2014)	The momentary experiences of weight-stigma in the everyday lives of adults	Reports of stigma occurring from various sources (e.g., strangers, spouses, media), in different settings (e.g., restaurant, public transport), and through different modalities (e.g., verbal comments, electronic platforms such as email, physical contact, exclusion).
Wadden, et al., (2000)	The perception of women with obesity (participating in obesity clinical trials) regarding their experience of weight-stigma	Reports of frequent, negative interactions with physicians concerning their weight such as receiving insults and criticism from care providers (e.g., for not trying hard enough to lose weight); feeling misunderstood by care providers and perceptions of being treated in healthcare as inferior to those of "average weight".
Schafer (2014)	Women with obesity in psychotherapy	Reports of weight-based microaggressions in psychotherapy (e.g., narrow interpretation about cause of weight); difficulty providing honest responses to therapists due to internalised weight shame (e.g., attributing social avoidance to anxiety rather than fear of judgment around one's weight); internalisation of weight-based stereotypes, experiences of receiving overtly rude negative weight-related comments or feedback; feeling ignored or invisible due to weight.
Creel & Tillman (2011)	Women who are overweight or "obese" and experiencing weight-stigma from nurses	Reported experiences of exposure to unintentional harm (e.g., nurses communicating negatively about one's weight status), presuppositions made about someone based on their appearance or weight, reluctant care (e.g., patients being refused care such as being showered due to one's weight). Also, perceptions of stigma often manifest as shame, marginalization, and anxiety in seeking healthcare.

Supplementary Table 2

Measures that Informed the Development of Items for the Current Study

Developed Item	Published Measure Used to Inform Item Wording
1. I have been called 'lazy' because of my weight.	PWSS (Scott-Johnson et al., 2010)
2. I have been called 'unintelligent' because of my weight.	
3. I have been called 'ugly' because of my weight.	OWLQOL (Niero et al., 2002)
4. I have been accused of overeating because of my weight.	SSI (Myers & Rosen, 1999)
5. I have been told that I have poor personal hygiene because of my weight.	OWLQOL (Niero et al., 2002)
6. I have been accused of not trying hard enough to lose weight.	HCQ (Wadden et al., 2000)
7. I have been called 'disgusting' because of my weight.	WFSCRS (Duarte et al., 2019)
8. I have been told by people that they dislike me because of my weight.	
9. I have been treated disrespectfully in education (e.g., school, college, university, vocational courses) about my weight.	SSI (Myers & Rosen, 1999)
10. I have been treated unfairly by my teachers/lecturers because of my weight.	SSI (Myers & Rosen, 1999); MED (Williams et al., 2008); InDI-A (Scheim & Bauer, 2019)
11. I have been treated unfairly by health professionals (e.g., less rapport building) because of my weight.	HCQ (Wadden et al., 2000)
12. I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension) because of my weight.	
13. Health professionals have blamed unrelated health problems on my weight.	SSI (Myers & Rosen, 1999)
14. I have been judged negatively about my weight by my family.	
15. I have been made fun of about my appearance because of my weight by my family.	PARTS (Thompson et al., 1991)
16. I have been excluded from social gatherings because of my weight by my friends.	
17. I have been made fun of about my appearance because of my weight by my friends.	SSI (Myers & Rosen, 1999)
18. I have been picked last among my peers for a work assignment because of my weight.	
19. I have been excluded by my peers because of my weight.	
20. I have been treated disrespectfully about my weight by my romantic partner.	
21. I have been told by my romantic partner that they are embarrassed to be seen with me in public because of my weight.	SSI (Myers & Rosen, 1999)
22. I have been told by my romantic partner that they are uncomfortable holding my hand in public because of my weight.	SSI (Myers & Rosen, 1999)
23. I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	SSI (Myers & Rosen, 1999)

Supplementary Table 2

Measures that Informed the Development of Items for the Current Study

Developed Item	Published Measure Used to Inform Item Wording
24. I have been shouted at with insults by others about my weight while walking down the street.	SSI (Myers & Rosen, 1999); GPSS and GESS (Donaldson et al., 2015)
25. I have been laughed at when using public transport (e.g., by passengers, drivers) because of my weight.	
26. I have been treated unfairly by my colleagues because of my weight.	SSI (Myers & Rosen, 1999)
27. I have been treated unfairly by my boss/supervisor because of my weight.	SSI (Myers & Rosen, 1999)
28. I have been treated unfairly in keeping a job because of my weight.	MED (Williams et al., 2008)
29. I have been turned down for a job, for which I was qualified, because of my weight.	SSI (Myers & Rosen, 1999)
30. I have had difficulty in renting an apartment or finding other housing because of my weight.	MED (Williams et al., 2008); InDI-A (Scheim & Bauer, 2019)
31. I have been viewed unfavorably for housing opportunities because of my weight.	MED (Williams et al., 2008); InDI-A (Scheim & Bauer, 2019)
32. I have been told to lose weight by other people.	
33. I have been in situations where I heard others say offensive things about me because of my weight.	SSI (Myers & Rosen, 1999)
34. I have been physically attacked by others because of my weight.	SSI (Myers & Rosen, 1999); InDI-A (Scheim & Bauer, 2019)
35. I have been ignored by people around me because of my weight.	
36. I have been excluded by people around me because of my weight.	
37. I have been treated with no sympathy because of my weight.	
38. I have received less support from other people because of my weight.	
39. People think that I am lazy because of my weight.	PWSS (Scott-Johnson et al., 2010)
40. People think that I am weak-willed because of my weight.	WSSQ (Lillis et al., 2010)
41. People think that I am unintelligent because of my weight.	PWD (Schafer & Ferraro, 2011)
42. People think that I am ugly because of my weight.	OWLQOL (Niero et al., 2002)
43. People think that I eat excessive amounts of food because of my weight.	SSI (Myers & Rosen, 1999)
44. People think that I have poor personal hygiene because of my weight.	OWLQOL (Niero et al., 2002)
45. People think that I am to blame for my weight.	WSSQ (Lillis et al., 2010)
46. People find me disgusting because of my weight.	WFSCRS (Duarte et al., 2019)
47. People who are thinner than me dislike me because of my weight.	
48. Health staff treat me unfairly because of my weight.	SSI (Myers & Rosen, 1999)
49. Health staff offer me poorer service because of my weight.	SSI (Myers & Rosen, 1999)
50. I am humiliated during contact with health professionals (e.g., being weighed) because of my weight.	SSI (Myers & Rosen, 1999)

Supplementary Table 2

Measures that Informed the Development of Items for the Current Study

Developed Item	Published Measure Used to Inform Item Wording
51. My family find interaction with me unpleasant because of my weight.	SSI (Myers & Rosen, 1999)
52. My family do not provide me with emotional support because of my weight.	
53. My friends do not want to engage in fun activities with me because of my weight.	
54. People do not want me to be their friend because of my weight.	
55. People can never be really comfortable with being close friends with me because of my weight.	GPSS (Donaldson et al., 2015)
56. My peers would prefer not to be friends with me because of my weight.	
57. People do not want to go on a date with me because of my weight.	SSI (Myers & Rosen, 1999)
58. People do not want to have a sexual relationship with me because of my weight.	SSI (Myers & Rosen, 1999)
59. People do not want to enter a committed relationship with me because of my weight.	SSI (Myers & Rosen, 1999); GPSS (Donaldson et al., 2015)
60. People laugh at me when using public transport (e.g., by passengers, drivers) because of my weight.	SSI (Myers & Rosen, 1999)
61. Staff at restaurants/stores offer me poorer service than to others because of my weight.	SSI (Myers & Rosen, 1999); EDS (Williams et al., 2008)
62. My colleagues would not accept me as their manager because of my weight.	SSI (Myers & Rosen, 1999)
63. People do not consider me for employment or job advancement because of my weight.	LFAIS (Morgan, 1996); PGD (Kobrynowicz & Branscombe, 1997)
64. I have had difficulty in renting an apartment or finding other housing because of my weight.	
65. People view me unfavorably for housing opportunities because of my weight.	
66. People patronize me (e.g., speak to me as if I am not smart) because of my weight.	PWD (Schafer & Ferraro, 2011)
67. People stare and point at me because of my weight.	SSI (Myers & Rosen, 1999)
68. People laugh at me because of my weight.	SSI (Myers & Rosen, 1999)
69. People do not treat me nicely because of my weight.	
70. People ignore me because of my weight.	
71. People exclude me from social gatherings because of my weight.	
72. People make me sense rejection from them when I walk into a room because of my weight.	
73. People do not show me sympathy because of my weight.	
74. People provide me with less support because of my weight.	
75. People find interaction with me unpleasant because of my weight.	
76. People would not be willing to have a close emotional relationship with me because of my weight.	
77. People make me think that I have an unequal relationship with them because of my weight.	
78. I am lazy because of my weight.	PWSS (Scott-Johnson et al., 2010)
79. I am weak-willed because of my weight.	WBIS (Durso & Latner, 2008)
80. I am unintelligent because of my weight.	PWD (Schafer & Ferraro, 2011)

Supplementary Table 2

Measures that Informed the Development of Items for the Current Study

Developed Item	Published Measure Used to Inform Item Wording
81. I am unattractive because of my weight.	WBIS (Durso & Latner, 2008)
82. I lead an unhealthy lifestyle because of my weight.	
83. I am not confident in my abilities because of my weight.	FATAWS (Chang & Chen, 2009)
84. Being the weight that I am is my fault.	WBIS (Durso & Latner, 2008)
85. People who are thinner than me are probably happier than I am.	
86. I am undeserving of the same opportunities that other people have because of my weight.	
87. I am undeserving of living a good, rewarding life because of my weight.	WBIS (Durso & Latner, 2008)
88. I cannot contribute anything useful to society because of my weight.	PGD (Kobrynowicz & Branscombe, 1997)
89. I am disgusting because of my weight.	WFSCRS (Duarte et al., 2019)
90. I hate myself because of my weight.	WBIS (Durso & Latner, 2008)
91. I am a failure because of my weight.	WFSCRS (Duarte et al., 2019)
92. I am not deserving of proper treatment by health staff because of my weight.	
93. I do not seek out healthcare services because of my weight.	
94. I am not worthy of having good quality relationships with family because of my weight.	
95. I do not go to family occasions because of my weight.	
96. I am not worthy of having good quality friendships because of my weight.	WBIS (Durso & Latner, 2008)
97. I do not go to events with my friends because of my weight.	
98. I am not worthy of having good quality relationships with my peers because of my weight.	
99. I do not socialize with my peers because of my weight.	
100. I am not worthy of having a romantic or intimate relationship with anyone because of my weight.	WBIS (Durso & Latner, 2008)
101. I do not seek romantic partners because of my weight.	
102. I am not worth being hired for a good paying job because of my weight.	
103. I do not apply for jobs because of my weight.	
104. I am not worth being viewed favorably when looking for housing because of my weight.	
105. I am out of place in the world because of my weight.	
106. I am inferior to others because of my weight.	PWD (Schafer & Ferraro, 2011)
107. I find it difficult to love myself because of my weight.	
108. I find it difficult to show myself compassion because of my weight.	
109. I am embarrassed because of my weight.	WEB-SG (Conradt et al., 2007)
110. I am ashamed of myself because of my weight.	FATAWS (Chang & Chen, 2009); GESS (Donaldson et al., 2015)

Supplementary Table 2

Measures that Informed the Development of Items for the Current Study

Developed Item	Published Measure Used to Inform Item Wording

Note. A total of 17 established measures inspired the items for our measure and the measures were based on different stigmatized conditions including weight (*n*=10), gambling (*n*=2), race (*n*=2), and gender (*n*=3). Where there are blank spaces, these items were inspired by qualitative accounts among weight stigma victims, rather than specific measures. PWSS = Perceived Weight-Based Stigmatization Scale; OWLQOL = Obesity and Weight-Loss Quality-of-Life Questionnaire; SSI = Stigmatizing Situations Inventory; HCQ = Healthcare Questionnaire; WFSCRS = Weight-Focused Forms of Self-Criticising/Self-Attacking and Self-Reassuring Scale; MED = Major Experiences of Discrimination; InDI-A = Intersectional Discrimination Index; PARTS = Physical Appearance Related Teasing Scale; WSSQ = Weight Self-Stigma Questionnaire; PWD = Perceived Weight Discrimination; GPSS = Gambling Perceived Stigma Scale; EDS = Everyday Discrimination Scale; LFAIS = Liberal Feminist Attitude and Ideology Scale; PGD = Perceived Gender Discrimination; WBIS = Weight Bias Internalisation Scale; FATAWS = Feelings and Thoughts about Weight Scale; GESS = Gambling Experienced Stigma Scale.

Supplementary Table 3

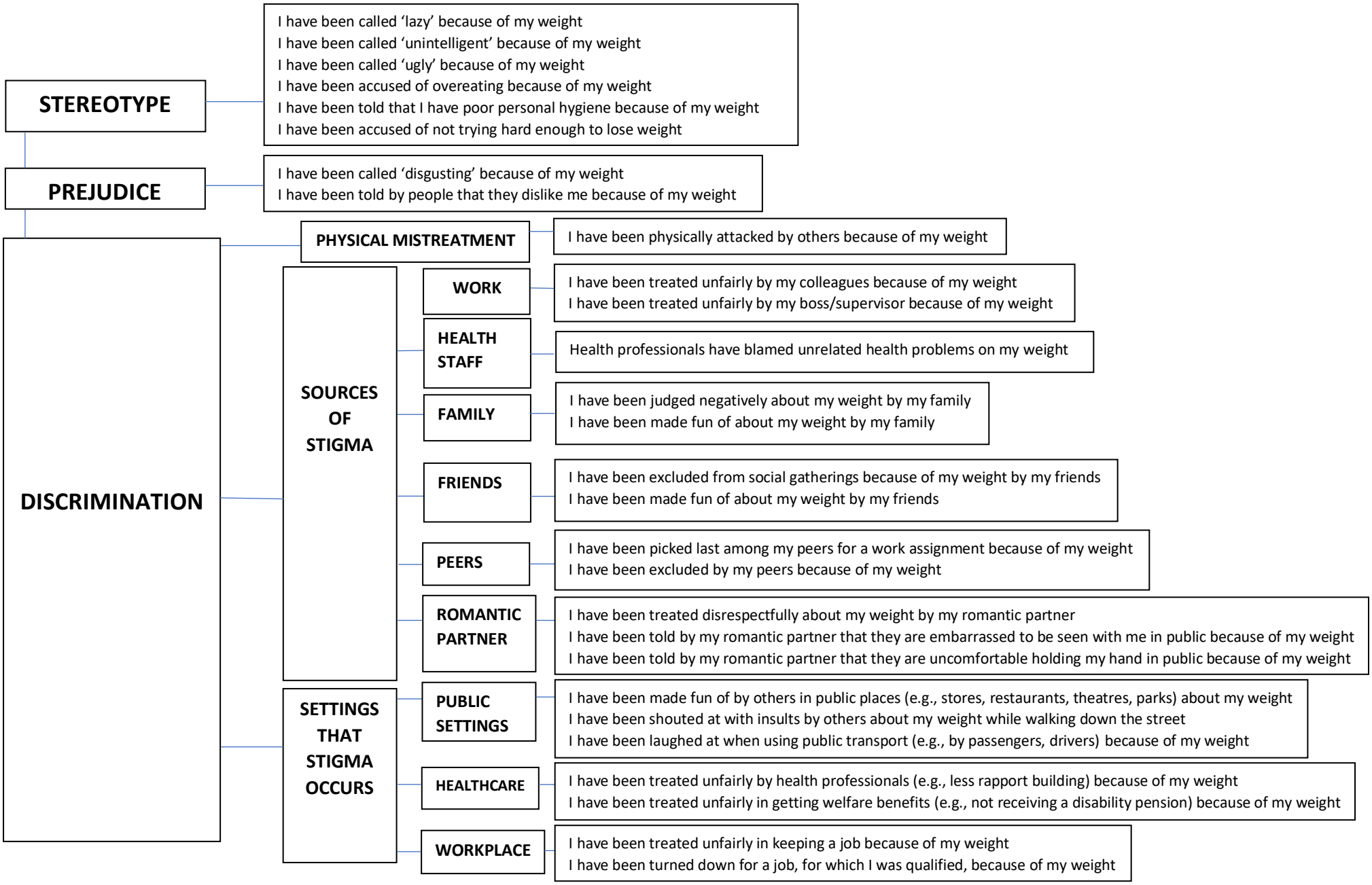
Brief Outline of the Key Stigma Themes Identified in the Existing Literature of Different Stigmatized Conditions (to Inform the New Weight-Stigma Scale)

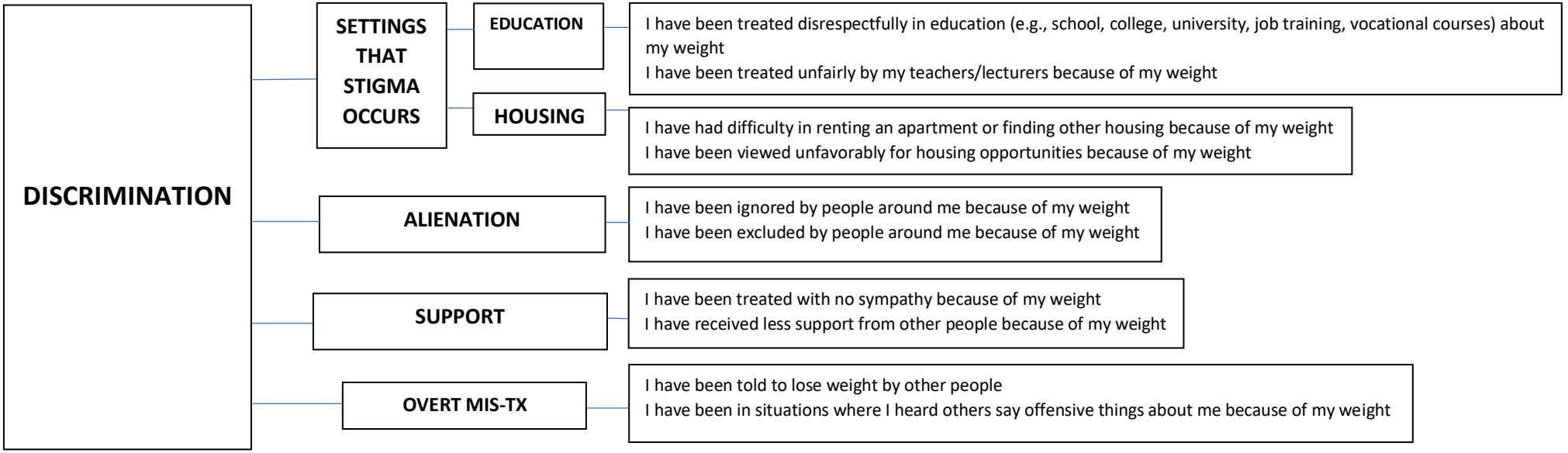
Stigmatized condition	Key Themes
Weight	• Experiences: The identity of those affected is spoiled – they lose status and reputation due to being treated as inferior. • Stigma occurs in different ways (experienced, perceived, internalised). • Stigma occurs from various sources (e.g., family, friends, healthcare professionals, educators, employers, employees, peers, intimate partners). • Stigma occurs in various settings (e.g., home, social settings, education settings, healthcare settings, the workplace). • Blame attached to those who were seen to have failed to make the necessary choices to avoid the condition • Stigmatizing weight results in negative outcomes (e.g., low motivation to exercise or eat healthy, binge eating).
Gambling	• Belief that gambling is controllable, and that it is a behavioural choice. • Stigma occurs in different ways (experienced, perceived). • Gambling is a disruptive condition that is perpetuated by stressful life circumstances, but it is recoverable. • People are reluctant to form enduring personal relationships with problem gamblers, perpetuating public devaluation and discrimination. • Common self-stigmatizing beliefs of gamblers include feeling ashamed, weak, and a failure.
Race/Ethnicity	• Certain groups are perceived as dangerous (e.g., individuals with darker skin) • Character assaults such as being treated as inferior or dishonest • Stigma occurs in different ways (experienced, perceived, internalised) • Encounters of discrimination in different settings such as when purchasing a home or in the criminal justice system • Unhelpful coping with stigma (e.g., acceptance of mistreatment, keeping feelings to oneself)
Mental health	• Stigma occurs in different ways (experienced, perceived, internalised) • Individuals with mental illness are often perceived as being personally responsible for the onset and maintenance of their poor mental health due to weakness or poor self-control • Perception that people with mental illness are dangerous and unpredictable • People with mental health issues often viewed as incompetent (e.g., cannot live or work independently) and/or may not be empowered to claim their rights • Tendency among people to avoid and distance themselves from those who experience mental illness • Anticipated stigma, or worry about acute acts of discrimination that may happen such as getting fired from a job

Physical health and disability	• The onset of 'controllable' physical problems is believed to be due to behavioural choices • Vulnerable to minority stressors that include discrete experiences of discrimination (e.g., being denied a job or housing, receiving everyday slights in public, and poor service at restaurants or stores) • Ongoing awareness of social devaluation or the potential for negative treatment • Experience of restricted social participation, isolation, and rejection • Common self-stigmatizing beliefs include being incompetent and unworthy
Gender	• Differences experienced in access to employment. • Gender pay gap that perpetuates discrimination. • Treatment seeking differences among individuals who identify as male or female as a result of the stigma around defined gender roles.
Age	• Benevolent experiences of stigma (e.g., whereby one may receive unwanted help) or hostile experiences of stigma (e.g., experience of rejection). • Difficulty accessing employment in older age groups. • People may internalise discriminatory sentiment around their age, which may in turn create weaker attachment to different life domains (e.g., weak attachment to work or social engagement).

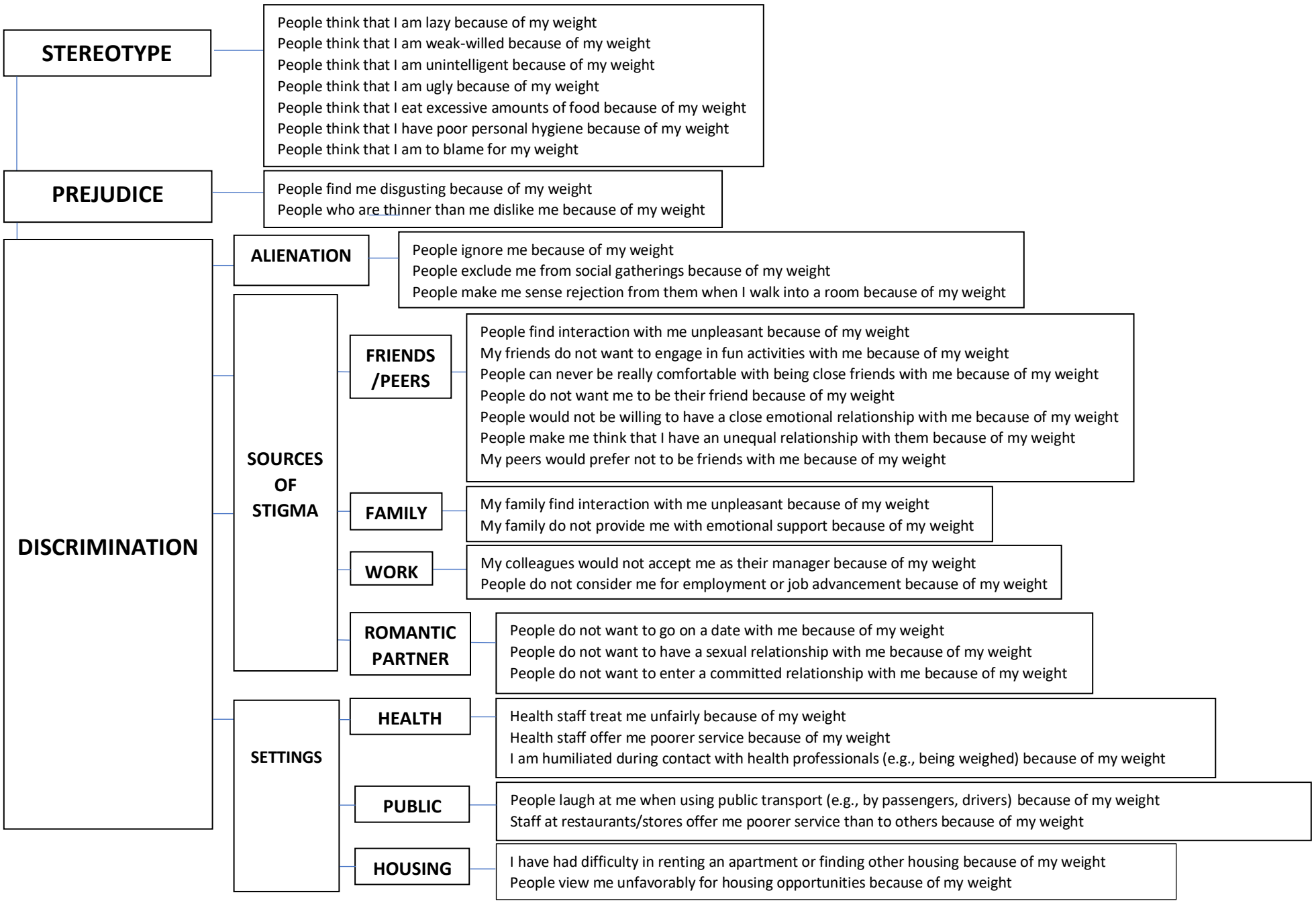
Note. The stigmatized conditions and contributions reported here are not an exhaustive list, and instead focused on the common stigmatizing encounters reported in the relevant literature on each of the stigmatized conditions

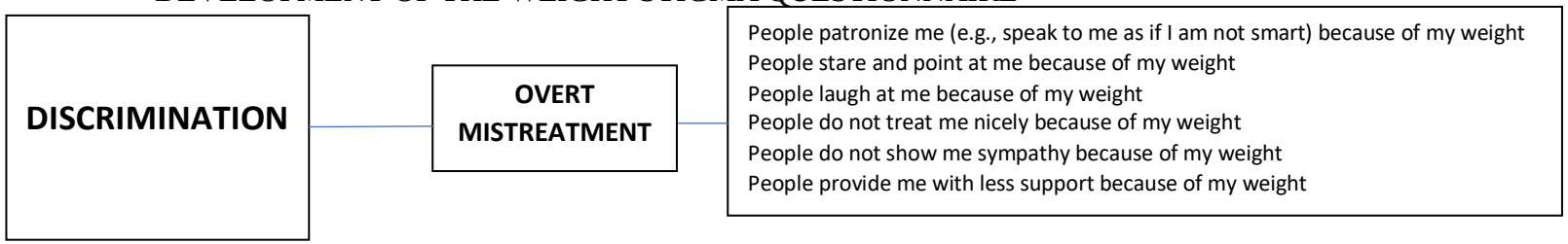
S4 Concept Map: Experienced Weight Stigma Items



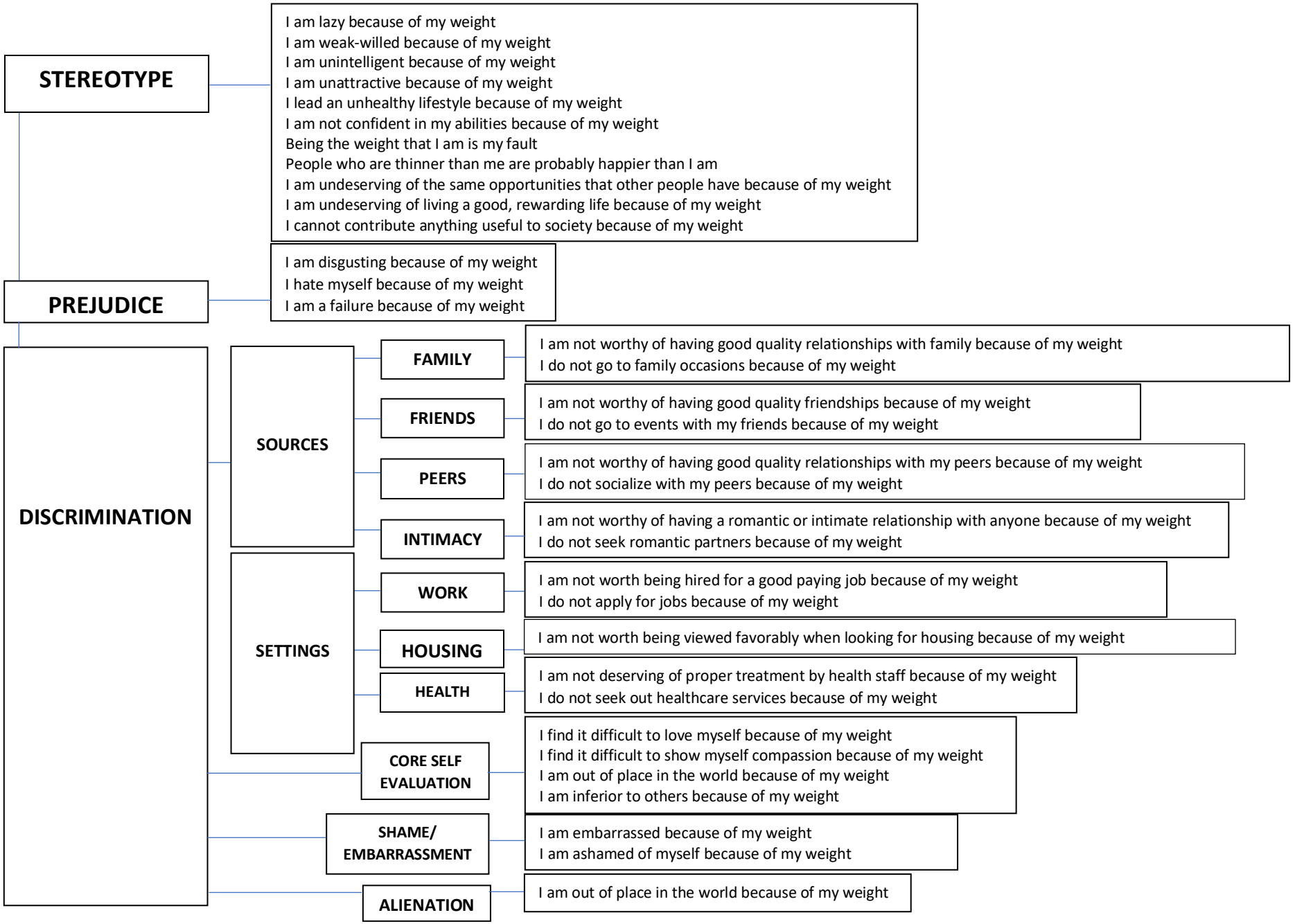

DISCRIMINATION
SETTINGS THAT STIGMA OCCURS
EDUCATION
I have been treated disrespectfully in education (e.g., school, college, university, job training, vocational courses) about my weight
I have been treated unfairly by my teachers/lecturers because of my weight
HOUSING
I have had difficulty in renting an apartment or finding other housing because of my weight
I have been viewed unfavorably for housing opportunities because of my weight
ALIENATION
I have been ignored by people around me because of my weight
I have been excluded by people around me because of my weight
SUPPORT
I have been treated with no sympathy because of my weight
I have received less support from other people because of my weight
OVERT MIS-TX
I have been told to lose weight by other people
I have been in situations where I heard others say offensive things about me because of my weight

Concept Map: Perceived Weight Stigma Items




DISCRIMINATION
OVERT MISTREATMENT
People patronize me (e.g., speak to me as if I am not smart) because of my weight
People stare and point at me because of my weight
People laugh at me because of my weight
People do not treat me nicely because of my weight
People do not show me sympathy because of my weight
People provide me with less support because of my weight

Concept Map: Internalised Weight Stigma Items



Supplementary Table 5

Sample Analysis of Participant Ratings and Feedback, Coded by Independent Researchers

Frequency Ratings of Participant Responses							
Item	**Participant 1 response**		**Rater 1**		**Rater 2**		**Theme identified**	**Decision**
I have been called 'lazy' because of my weight.	R	C	R	C	R	C		

Themes Identified in Participant Responses					
Item	**Participant responses**	**Rater 1**	**Rater 2**	**Theme identified**	**Decision**
I have been called 'unintelligent' because of my weight.	P5: "What does intelligence have to do with weight?" P6: "Intelligence is not related to weight" P7: "Overweight people can be successful" P8: "Intelligence has nothing to do with weight?" P9: "Intelligence has nothing to do with weight" P13: "Intelligence has nothing to do with weight, but I understand the stereotype associated with weight and not being smart"	Concept of intelligence problematic	Concept of intelligence problematic	Intelligence considered to be unrelated to weight	The connection between intelligence and weight has been made by association in the media and is a commonly reported stereotype in the literature among those affected by weight stigma. For this reason, the item was retained.

Note. R=Relevant; C=Comprehensive; P=Participant

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
1.	I have been called 'lazy' because of my weight.	5/5	5/5			5/5			✓		
2.	I have been called 'unintelligent' because of my weight.	5/5	4/5		1/5	4/5	1/5		✓		
3.	I have been called 'ugly' because of my weight.	6/6	3/6	1/6	2/6	5/6	1/6		✓		
4.	I have been accused of overeating because of my weight.	5/6 1/6 (M)	3/6		3/6	5/6	1/6		✓	The wording makes it unclear if it is a stereotype or discrimination. Consider changing the item wording to "People accuse me of overeating."	As the aim was to tap the experienced concept, the wording was not changed because it would otherwise tap the perceived concept.
5.	I have been told that I have poor personal hygiene because of my weight.	5/6	2/5		3/5	5/5			✓		
6.	I have been accused of not trying hard enough to lose weight.	5/5	3/5	1/5	1/5	5/5			✓		
7.	I have been called 'disgusting'	5/5	1/5	4/5	5/5	5/5			✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	because of my weight.										
8.	I have been told by people that they dislike me because of my weight.	5/5	1/5	2/5	2/5	4/5	1/5		✓		
9.	I have been treated disrespectfully in education (e.g., school, college, university, vocational courses) about my weight.	5/5		1/5	4/5	5/5			✓		
10.	I have been treated unfairly by my teachers/lecturers because of my weight.	4/5 1/5 (NR)			4/4	2/4	2/4		✓	No feedback provided.	
11.	I have been treated unfairly by health professionals (e.g., less rapport building) because of my weight.	5/6 1/6 (NR)			5/5	1/5	4/5		✓	No feedback provided.	
12.	I have been treated unfairly in	3/5 1/5 (NR) 1/5 (M)			5/5	2/5	3/5		✓	Too specific as there may be people who	This is a commonly reported

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	getting welfare benefits (e.g., not receiving a disability pension) because of my weight.									have never applied for welfare benefits.	experience and thus this item was retained.
13.	Health professionals have blamed unrelated health problems on my weight.	4/6 2/6 (NR)	1/4	1/4	2/4	4/4			✓	No feedback provided.	
14.	I have been judged negatively about my weight by my family.	3/5 1/5 (NR) 1/5 (M)		3/3		1/3	2/3		✓	The domain to which this item belongs is unclear.	Further review required.
15.	I have been made fun of about my appearance because of my weight by my family.	5/6 1/6 (M)		1/6	5/6	6/6			✓	Simplify wording as the question has too many parts...have been/about/because of/by.	The wording was changed to the following: "I have been made fun of about my weight by my family" (this change was also made for item #17)
16.	I have been excluded from social gatherings because of my weight by my friends.	5/5			5/5	3/5	2/5		✓		
17.	I have been made fun of about my	5/5	1/5	4/5		5/5			✓		"I have been made fun of about

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	appearance because of my weight by my friends.										my weight by my friends"
18.	I have been picked last among my peers for a work assignment because of my weight.	5/6 1/6 (NR)			5/5	4/5	1/5		✓	No feedback provided.	
19.	I have been excluded by my peers because of my weight.	6/6			6/6	5/6	1/6		✓		
20.	I have been treated disrespectfully about my weight by my romantic partner.	4/5 1/5 (NR)		1/4	3/4	4/4			✓	No feedback provided.	
21.	I have been told by my romantic partner that they are embarrassed to be seen with me in public because of my weight.	5/5		2/5	3/5	5/5			✓		
22.	I have been told by my romantic partner that they	5/5		1/5	4/5	5/5			✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	are uncomfortable holding my hand in public because of my weight.										
23.	I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	5/5		1/5	4/5	5/5			✓		
24.	I have been shouted at with insults by others about my weight while walking down the street.	5/5		2/5	3/5	5/5			✓		
25.	I have been laughed at when using public transport (e.g., by passengers, drivers) because of my weight.	4/5 1/5 (M)		1/5	4/5	5/5			✓	Consider wording change: "I have been laughed at when using..." as it makes it difficult to ascertain if it is perceived or experienced stigma.	The wording was changed to the following: “I have been laughed at when using public transport (e.g., by passengers, drivers) because of my weight.”
26.	I have been treated unfairly by my colleagues because of my weight.	5/5			5/5	3/5	2/5		✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
27.	I have been treated unfairly by my boss/supervisor because of my weight.	5/5			5/5	3/5	2/5		✓		
28.	I have been treated unfairly in keeping a job because of my weight.	4/5 1/5 (NR)			4/4	3/4	1/4		✓		
29.	I have been turned down for a job, for which I was qualified, because of my weight.	5/5		1/5	4/5	3/5	2/5		✓		
30.	I have had difficulty in renting an apartment or finding other housing because of my weight.	5/5		1/5	4/5	3/5	2/5		✓		
31.	I have been viewed unfavorably for housing opportunities because of my weight.	5/5	1/5		4/5	2/5	2/5	1/5	✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
32.	I have been told to lose weight by other people.	4/5 1/5 (M)	2/4		2/4	4/4			✓	This may be valid for health reasons.	No modification required.
33.	I have been in situations where I heard others say offensive things about me because of my weight.	4/5 1/5 (NR)		1/4	3/4	4/4			✓	No feedback provided.	
34.	I have been physically attacked by others because of my weight.	6/6		1/6	5/6	4/6	2/6		✓		
35.	I have been ignored by people around me because of my weight.	5/5			5/5	2/5	3/5		✓		
36.	I have been excluded by people around me because of my weight.	6/6			6/6	4/6	2/6		✓		
37.	I have been treated with no sympathy because of my weight.	4/5 1/5 (NR)		1/4	3/4	2/4	2/4		✓	No feedback provided.	
38.	I have received less support from other people	5/6 1/6 (NR)			5/5	1/5	4/5		✓	No feedback provided.	

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	because of my weight.										
39.	People think that I am lazy because of my weight.	5/5	5/5				5/5		✓		
40.	People think that I am weak-willed because of my weight.	5/5	3/5	2/5			5/5		✓		
41.	People think that I am unintelligent because of my weight.	5/5	5/5				5/5		✓		
42.	People think that I am ugly because of my weight.	5/5	4/5	1/5			5/5		✓		
43.	People think that I eat excessive amounts of food because of my weight.	5/5	5/5				5/5		✓		
44.	People think that I have poor personal hygiene because of my weight.	5/5	3/5	2/5			5/5		✓		
45.	People think that I am to blame for my weight.	5/5	4/5	1/5		1/5	3/5	1/5	✓		
46.	People find me disgusting	5/5		5/5			5/5		✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	because of my weight.										
47.	People who are thinner than me dislike me because of my weight.	4/5 1/5 (NR)	1/4	3/4			3/4	1/4	✓	No feedback provided.	
48.	Health staff treat me unfairly because of my weight.	5/5		1/5	4/5	1/5	4/5		✓		
49.	Health staff offer me poorer service because of my weight.	5/5	1/5		4/5	1/5	4/5		✓		
50.	I am humiliated during contact with health professionals (e.g., being weighed) because of my weight.	5/6 1/6 (NR)	2/5	3/5		1/5	1/5	3/5	✓	No feedback provided.	
51.	My family find interaction with me unpleasant because of my weight.	5/6 1/6 (NR)		3/5	2/5	1/5	4/5		✓	No feedback provided.	
52.	My family do not provide me with emotional support	5/5		1/5	4/5	3/5	2/5		✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	because of my weight.										
53.	My friends do not want to engage in fun activities with me because of my weight.	5/5	1/5		4/5	1/5	4/5		✓		
54.	People do not want me to be their friend because of my weight.	5/5		3/5	2/5		5/5		✓		
55.	People can never be really comfortable with being close friends with me because of my weight.	4/6 1/6 (NR) 1/6 (M)		6/6			6/6		✓	Difficult to distinguish between domains.	Further review required.
56.	My peers would prefer not to be friends with me because of my weight.	5/5	2/5		3/5	1/5	4/5		✓		
57.	People do not want to go on a date with me because of my weight.	5/5	1/5	2/5	2/5	1/5	4/4		✓		
58.	People do not want to have a	5/5	2/5	2/5	1/5		5/5		✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	sexual relationship with me because of my weight.										
59.	People do not want to enter a committed relationship with me because of my weight.	5/5		2/5	3/5		4/5	1/5	✓		
60.	People laugh at me when using public transport (e.g., by passengers, drivers) because of my weight.	6/6		1/6	5/6	2/6	4/6		✓		
61.	Staff at restaurants/stores offer me poorer service than to others because of my weight.	4/5 1/5 (M)	1/5	4/5		2/5	3/5		✓	Consider wording change: "...offer me poorer service compared to other people..."	Wording changed to the following: "Staff at restaurants/stores offer me poorer service compared to others because of my weight"
62.	My colleagues would not accept me as their manager because of my weight.	5/5	2/5	2/5	1/5		5/5		✓		
63.	People do not consider me for	5/5		1/5	4/5	1/5	4/5		✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	employment or job advancement because of my weight.										
64.	I have had difficulty in renting an apartment or finding other housing because of my weight.	6/6	1/6		5/6	4/6	2/6		✓		
65.	People view me unfavorably for housing opportunities because of my weight.	4/5 1/5 (M)	3/5		2/5		4/5	1/5	✓	Difficult to distinguish between domains.	Further review required.
66.	People patronize me (e.g., speak to me as if I am not smart) because of my weight.	6/6	1/6		5/6	3/6	3/6		✓		
67.	People stare and point at me because of my weight.	4/5 1/5 (NR)		1/4	3/4	1/4	3/4		✓	No feedback provided.	
68.	People laugh at me because of my weight.	5/5		1/4	3/4		5/5		✓		
69.	People do not treat me nicely	4/5 1/5 (NR)			4/4	1/4	3/4		✓	No feedback provided.	

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	because of my weight.										
70.	People ignore me because of my weight.	6/6			6/6	1/6	5/6		✓		
71.	People exclude me from social gatherings because of my weight.	5/5		1/5	4/5	1/5	4/5		✓		
72.	People make me sense rejection from them when I walk into a room because of my weight.	3/6 1/6 (NR) 2/6 (M)	1/4	2/4	1/4		4/4		✓	Consider wording change: “People make me feel rejected when I walk into a room because of my weight”.	Wording changed to the following: “People make me feel rejected when I walk into a room because of my weight”.
73.	People do not show me sympathy because of my weight.	4/5 1/5 (M)	1/5	1/5	3/5		5/5		✓	Clarify the term ‘sympathy’ in this item.	Requires further review.
74.	People provide me with less support because of my weight.	4/5 1/5 (NR)	1/4		3/4		4/4		✓		
75.	People find interaction with me unpleasant because of my weight.	5/5	1/5	4/5			5/5		✓		
76.	People would not be willing to have	5/5	1/5	4/5			4/5	1/5	✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	a close emotional relationship with me because of my weight.										
77.	People make me think that I have an unequal relationship with them because of my weight.	3/5 1/5 (NR) 1/5 (M)	1/4	2/4	1/4		4/4		✓	Difficult to distinguish between domains.	Requires further review.
78.	I am lazy because of my weight.	5/5	5/5					5/5	✓		
79.	I am weak-willed because of my weight.	5/5	4/5	1/5				5/5	✓		
80.	I am unintelligent because of my weight.	4/5 1/5 (NR)	4/4					4/4	✓	No feedback provided.	
81.	I am unattractive because of my weight.	6/6	4/6	2/6				6/6	✓		
82.	I lead an unhealthy lifestyle because of my weight.	5/6 1/6 (NR)	5/5					5/5	✓	No feedback provided.	
83.	I am not confident in my abilities because of my weight.	3/5 1/5 (NR) 1/5 (M)	1/4	3/4				4/4	✓	Unsure whether ‘confident’ is an attitude or a feeling?	No modification required.

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
84.	Being the weight that I am is my fault.	5/5	4/5	1/5				5/5	✓		
85.	People who are thinner than me are probably happier than I am.	5/5	4/5	1/5			2/5	3/5	✓		
86.	I am undeserving of the same opportunities that other people have because of my weight.	5/5	2/5	2/5	1/5		1/5	4/5	✓		
87.	I am undeserving of living a good, rewarding life because of my weight.	5/5	2/5	3/5				5/5	✓		
88.	I cannot contribute anything useful to society because of my weight.	5/5	4/5	1/5				5/5	✓		
89.	I am disgusting because of my weight.	6/6		6/6				6/6	✓		
90.	I hate myself because of my weight.	5/6 1/6 (NR)	1/5	4/5				5/5	✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
91.	I am a failure because of my weight.	6/6	5/6	1/6				6/6	✓		
92.	I am not deserving of proper treatment by health staff because of my weight.	5/5	2/5	1/5	2/5			5/5	✓		
93.	I do not seek out healthcare services because of my weight.	4/5 1/5 (M)	1/5		4/5			5/5	✓	Difficult to distinguish between domains.	Requires further review.
94.	I am not worthy of having good quality relationships with family because of my weight.	5/5	2/5	2/5	1/5			5/5	✓		
95.	I do not go to family occasions because of my weight.	5/5		1/5	4/5			5/5	✓		
96.	I am not worthy of having good quality friendships because of my weight.	5/5	2/5	3/5				5/5	✓		
97.	I do not go to events with my	5/5			5/5			5/5	✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item		Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
	friends because of my weight.										
98.	I am not worthy of having good quality relationships with my peers because of my weight.	5/5	3/5	1/5	1/5			5/5	✓		
99.	I do not socialize with my peers because of my weight.	5/5			5/5			5/5	✓		
100.	I am not worthy of having a romantic or intimate relationship with anyone because of my weight.	6/6	3/6	2/6	1/6			6/6	✓		
101.	I do not seek romantic partners because of my weight.	4/5 1/5 (M)			5/5			5/5	✓	No feedback provided.	
102.	I am not worth being hired for a good paying job because of my weight.	6/6	3/6	2/6	1/6			6/6	✓		
103.	I do not apply for jobs because of my weight.	5/5		1/5	4/5			5/5	✓		

Supplementary Table 6

BEWT Team Results from One Round of Item Analysis

Item	Relevance	Domain			Type			Include in final scale	Justification for item modification	Final decision
		Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised			
104. I am not worth being viewed favorably when looking for housing because of my weight.	4/5 1/5 (NR)	2/4	1/4	1/4			4/4	✓	No feedback provided.	
105. I am out of place in the world because of my weight.	4/5 1/5 (NR)	1/4	3/4				4/4	✓	No feedback provided.	
106. I am inferior to others because of my weight.	6/6	4/6	2/6				6/6	✓		
107. I find it difficult to love myself because of my weight.	5/5	1/5	4/5				5/5	✓		
108. I find it difficult to show myself compassion because of my weight.	6/6	1/6	3/6	2/6			6/6	✓		
109. I am embarrassed because of my weight.	3/5 1/5 (NR) 1/5 (M)	1/4	3/4				4/4	✓	Difficult to distinguish between domains.	Requires further review.
110. I am ashamed of myself because of my weight.	3/4 1/4 (NR)	1/3	2/3				3/3	✓	No feedback provided.	

Note. Due to different drop-out rates from participants (participants could dropout before completing all items), the number of participants who rated each item was not the same for all items.

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
1.	I have been called 'lazy' because of my weight	6/6	6/6			6/6			✓	×				
2.	I have been called 'unintelligent' because of my weight	6/7 1/7 (M)	5/7	1/7	1/7	7/7			✓	×				
3.	I have been called 'ugly' because of my weight	5/8 3/8 (M)	2/8	4/8	2/8	8/8			✓	✓	Wording change	I have been called 'ugly' (or similar) because of my weight.	None	Unchanged
4.	I have been accused of overeating because of my weight	7/7	5/7		2/7	7/7			✓	×				
5.	I have been told that I have poor personal hygiene because of my weight	6/6	3/6	2/6	1/6	6/6			✓	×				
6.	I have been accused of	7/7	5/7	1/7	1/7	6/7	1/7		✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	not trying hard enough to lose weight													
7.	I have been called 'disgusting' because of my weight	7/7		7/7		7/7			✓	×				
8.	I have been told by people that they dislike me because of my weight	6/7 1/7 (NR)		6/7	1/7	7/7			✓	×	No feedback provided regarding non-relevance thus item retained			
9.	I have been treated disrespectfully in education (e.g., school, college, university, vocational courses) about my weight	6/7 1/7 (NR)			7/7	5/7	2/7		✓	✓	Item assumes student status	Below are questions relating to your role in professional settings. For example, you may be (or have been) an employee or a student, or both. Please consider who your superior(s) (e.g., teachers, boss, managers) and associates (e.g., peers, colleagues) are based on your professional status as you answer the following question(s). "I have been treated unfairly by my superiors"	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
												…As an employee (0-100 response scale + N/A option) …As a student (0-100 response scale + N/A option) "I have been treated unfairly by my associates" …As an employee (0-100 response scale + N/A option) …As a student (0-100 response scale + N/A option)		
10.	I have been treated unfairly by my teachers/lecturers because of my weight	4/7 1/7 (NR) 2/7 (M)			7/7	7/7			×	×	Item too specific, not relevant for all people, and assumes student status. Item modified as per item #9			
11.	I have been treated unfairly by health professionals (e.g., less rapport building)	4/7 1/7 (NR) 2/7 (M)			7/7	7/7			✓	✓	Jargon based Unhelpful example	I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	because of my weight.													
12.	I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension) because of my weight.	6/7 1/7 (M)			7/7	6/7	1/7		✓	×	Not applicable to all persons – n/a response option added			
13.	Health professionals have blamed unrelated health problems on my weight.	4/6 1/6 (NR) 1/6 (M)	1/6		5/6	6/6			×	×	Item removed because it formed part of an example for item 11			
14.	I have been judged negatively about my weight by my family.	6/7 1/7 (M)	1/7	6/7		6/7	1/7		✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
15.	I have been made fun of about my weight by my family.	5/7 2/7 (M)		3/7	4/7	7/7			✓	✓	Grammatical issue	My family has made fun of me about my weight.	Simplify	My family has made fun of my weight.
16.	I have been excluded from social gatherings because of my weight by my friends.	5/7 1/7 (M)			7/7	6/7	1/7		✓	✓	Grammatical issue	I have been excluded by my friends from social gatherings because of my weight.	None	Unchanged
17.	I have been made fun of about my weight by my friends.	5/7 2/7 (M)		3/7	4/7	7/7			✓	✓	Grammatical issue	My friends have made fun of me about my weight.	Simplify	My friends have made fun of my weight
18.	I have been picked last among my peers for a work assignment because of my weight.	6/7 1/7 (NR)		1/7	6/7	4/7	3/7		×	×	Item too specific			
19.	I have been excluded by	6/7 1/7 (M)			7/7	7/7			×	×	Not applicable to all persons. Item removed			

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	my peers because of my weight.										and reframed to be captured in the revision of item #9			
20.	I have been treated disrespectfully about my weight by my romantic partner.	4/6 2/6 (M)			6/6	6/6			✓	✓	Assumes relationship status, and grammatical issue	I have been treated disrespectfully by my romantic partner(s) about my weight. (n/a response option added)	None	Unchanged
21.	I have been told by my romantic partner that they are embarrassed to be seen with me in public because of my weight.	5/7 2/7 (M)		4/7	3/7	7/7			✓	×	Assumes relationship status. Modified as per item #20			
22.	I have been told by my romantic partner that they are uncomfortabl	4/6 1/6 (NR) 1/6 (M)		1/6	5/6	6/6			✓	×	Assumes relationship status. Modified as per item #20			

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item	Round 1									Round 2		Final item after modification from Delphi rounds
	Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
		Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	e holding my hand in public because of my weight.												
23.	I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	6/7 1/7 (M)		3/7	4/7	7/7		✓	×	Consider qualifying weight status for this (and all other) items. Item unchanged, see written response in 'Results' section for more information.			
24.	I have been shouted at with insults by others about my weight while walking down the street.	6/7 1/7 (M)		1/7	6/7	7/7		✓	×				
25.	I have been laughed at when using public transport (e.g., by passengers,	5/7 2/7 (M)		1/7	6/7	7/7		✓	✓	Item too specific	I have been laughed at in public because of my weight.	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	drivers) because of my weight.													
26.	I have been treated unfairly by my colleagues because of my weight.	6/7 1/7 (M)			7/7	7/7			×	×	Assumes employment status. Item modified as per item #9			
27.	I have been treated unfairly by my boss/supervisor because of my weight.	5/7 2/7 (M)			7/7	7/7			×	×	Assumes employment status. Item modified as per item #9			
28.	I have been treated unfairly in keeping a job because of my weight.	2/6 4/6 (M)			6/6	5/6	1/6		✓	✓	Grammatical issue	I have lost a job because of my weight.	None	Unchanged
29.	I have been turned down for a job, for which I was qualified,	6/7 1/6 (M)			7/7	7/7			✓	×	Not applicable option applied			

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	because of my weight.													
30.	I have had difficulty in renting an apartment or finding other housing because of my weight.	7/7			7/7	6/7	1/7		✓	×	Not applicable option applied			
31.	I have been viewed unfavorably for housing opportunities because of my weight.	5/7 1/7 (NR) 1/7 (M)	1/7	1/7	5/7	6/7	2/7		✓	×	Not applicable option applied			
32.	I have been told to lose weight by other people.	7/7	2/7	3/7	2/7	7/7			✓	×				
33.	I have been in situations where I heard others say offensive things about	6/7 1/7 (M)		5/7	2/7	7/7			✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	me because of my weight.													
34.	I have been physically attacked by others because of my weight.	8/8			8/8	8/8			✓	×				
35.	I have been ignored by people around me because of my weight.	5/7 2/7 (M)			7/7	4/7	3/7		✓	✓	Grammatical issue	I have been ignored by people because of my weight	None	Unchanged
36.	I have been excluded by people around me because of my weight.	6/7 1/7 (NR)			7/7	5/7	2/7		✓	✓	Poor comprehension	I have been deliberately left out by people because of my weight	None	Unchanged
37.	I have been treated with no sympathy because of my weight.	3/7 4/7 (M)	1/7	2/7	4/7	5/7	2/7		✓	✓	Grammatical issue	I have been treated without sympathy from other people because of my weight.	Grammatical issue	I have been treated without sympathy by other people because of my weight.
38.	I have received less support from other people	3/6 2/6 (NR) 1/6 (M)			6/6	5/6	1/6		✓	✓	Item too vague	I have received less support from people (e.g., not having someone to confide	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type		Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised					
	because of my weight.										in about myself) because of my weight		
39.	People think that I am lazy because of my weight.	6/7 1/6 (M)	7/7				7/7		✓	×			
40.	People think that I am weak-willed because of my weight.	5/6 1/6 (M)	5/6	1/6			6/6		✓	✓	Poor comprehension	People think that I have no will power because of my weight	None	Unchanged
41.	People think that I am unintelligent because of my weight.	6/6	3/6	3/6			6/6		✓	×				
42.	People think that I am ugly because of my weight.	7/8 1/8 (M)	4/8	4/8			8/8		✓	×				
43.	People think that I eat excessive amounts of food because of my weight.	6/6	6/6				5/6	1/6	✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
44.	People think that I have poor personal hygiene because of my weight.	7/7	6/7	1/7			7/7		✓	×				
45.	People think that I am to blame for my weight.	6/8 2/8 (M)	5/8	3/8		1/8	7/8		✓	×				
46.	People find me disgusting because of my weight.	6/7 1/7 (M)		7/7			7/7		✓	×				
47.	People who are thinner than me dislike me because of my weight.	6/6	1/6	5/6			5/6	1/6	✓	×				
48.	Health staff treat me unfairly because of my weight.	5/6 1/6 (M)		1/6	5/6	4/6	2/6		✓	×				
49.	Health staff offer me	5/7 2/7 (M)			7/7	6/7	1/7		✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	poorer service because of my weight.													
50.	I am humiliated during contact with health professionals (e.g., being weighed) because of my weight.	5/6 1/6 (M)		3/6	3/6	1/6	3/6	2/6	✓	✓	Change example	I have been humiliated during contact with health professionals (e.g., being weighed, or similar) because of my weight.	Remove example	I have been humiliated during contact with health professionals because of my weight
51.	My family find interaction with me unpleasant because of my weight.	6/7 1/7 (M)		6/7	1/7	1/7	6/7		✓	×				
52.	My family do not provide me with emotional support because of my weight.	5/6 1/6 (M)		1/6	5/6	3/6	3/6		✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised					
53.	My friends do not want to engage in fun activities with me because of my weight.	5/6 1/6 (M)	2/6	1/6	3/6	1/6	4/6	1/6	✓	✓	Item difficulty	My friends would prefer not to include me in fun activities with them because of my weight	None	Unchanged
54.	People do not want me to be their friend because of my weight.	5/7 2/7 (NR)	2/7	3/7	2/7		6/7	1/7	✓	×				
55.	People can never be really comfortable with being close friends with me because of my weight.	3/7 1/7 (NR) 3/7 (M)	1/7	5/7	1/7		4/7	3/7	✓	✓	Grammatical issue	People prefer not to be close friends with me because of my weight	None	Unchanged
56.	My peers would prefer not to be friends with me because of my weight.	5/7 2/7 (M)	1/7	3/7	3/7		7/7		×	×	Item removed as it is similar to item #55 (after item modification of item #55)			

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
57.	People do not want to go on a date with me because of my weight.	5/6 1/6 (M)		1/6	5/6		5/6	1/6	✓	×				
58.	People do not want to have a sexual relationship with me because of my weight.	5/6 1/6 (M)		2/6	4/6		5/6	1/6	✓	×				
59.	People do not want to enter a committed relationship with me because of my weight.	6/7 1/7 (M)	2/7	2/7	3/7		6/7	1/7	✓	×				
60.	People laugh at me when using public transport (e.g., by passengers, drivers)	5/7 2/7 (M)		1/7	6/7	3/7	3/7	1/7	✓	✓	Item too specific	People laugh at me in public because of my weight	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	because of my weight.													
61.	Staff at restaurants/stores offer me poorer service compared to others because of my weight.	5/6 1/6 (M)		1/6	5/6	3/6	3/6		✓	×				
62.	My colleagues would not accept me as their manager because of my weight.	7/8 1/8 (M)	1/8	4/8	3/8	1/8	7/8		✓	×				
63.	People do not consider me for employment or job advancement because of my weight.	6/7 1/7 (NR)			7/7	2/7	5/7		✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
64.	I have had difficulty in renting an apartment or finding other housing because of my weight.	3/6 3/6 (M)			6/6	6/6			✓	✓	Simplify item, double barrelled	I have had difficulty in finding somewhere to live because of my weight	None	Unchanged
65.	People view me unfavorably for housing opportunities because of my weight.	5/6 1/6 (M)		3/6	3/6		6/6		✓	✓	Improve item expression	People have not given me the opportunity to buy or rent a house because of my weight	Too specific, simplify item	People have not given me housing opportunities because of my weight
66.	People patronize me (e.g., speak to me as if I am not smart) because of my weight.	5/7 1/7 (M)	2/7	1/7	4/7	4/7	3/7		✓	×				
67.	People stare and point at me because of my weight.	6/8 2/8 (M)		1/8	7/8	6/8	2/8		✓	✓	Item double barrelled	People stare at me because of my weight.	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
68.	People laugh at me because of my weight.	5/6 1/6 (M)			6/6	1/6	5/6		✓	×				
69.	People do not treat me nicely because of my weight.	5/6 1/6 (M)		1/6	5/6	3/6	3/6		✓	×				
70.	People ignore me because of my weight.	5/6 1/6 (M)		3/6	3/6	1/6	5/6		✓	×				
71.	People exclude me from social gatherings because of my weight.	5/7 2/7 (M)			7/7	2/7	5/7		✓	✓	Item too broad	People exclude me from some social gatherings because of my weight	Improve expression	People sometimes exclude me from social gatherings because of my weight
72.	People make me sense rejection from them when I walk into a room because of my weight.	2/7 3/7 (NR) 2/7 (M)		5/7	2/7		6/7	1/7	✓	✓	Grammatical issue, item difficulty	People judge me when I walk into a room because of my weight	None	Unchanged
73.	People do not show me sympathy	5/7 2/7 (M)		3/7	4/7	2/7	5/7		✓	✓	Item open for different interpretation	Because of my weight, people do not show me sympathy	None	Unchanged

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	because of my weight.													
74.	People provide me with less support because of my weight.	4/6 1/6 (NR) 1/6 (M)		1/6	5/6	1/6	5/6		✓	✓	Unclear wording	People provide me with less support (e.g., not having someone to talk to about myself, or similar) because of my weight	Too specific	People provide me with less support (e.g., not having someone to talk to, or similar) because of my weight.
75.	People find interaction with me unpleasant because of my weight.	4/6 2/6 (M)		5/6	1/6		6/6		✓	✓	Unclear wording	People find interacting with me unpleasant because of my weight	None	Unchanged
76.	People would not be willing to have a close emotional relationship with me because of my weight.	6/8 1/8 (NR) 1/8 (M)	2/8	3/8	3/8		7/8	1/8	✓	✓	Item difficulty	People are not willing to have a close emotional relationship with me because of my weight	None	Unchanged
77.	People make me think that	4/7 2/7 (NR) 1/7 (M)	1/7	5/7	1/7		7/7		✓	✓	Poor comprehension	People make me think that they are better than me because of my weight	Simplify wording	People think they are better than me

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	I have an unequal relationship with them because of my weight.													because of my weight.
78.	I am lazy because of my weight.	6/6	6/6					6/6	✓	×				
79.	I am weak-willed because of my weight.	6/7 1/7 (M)	6/7	1/7				7/7	✓	✓	Grammatical issue	I am lacking in will power because of my weight	None	Unchanged
80.	I am unintelligent because of my weight.	5/6 1/6 (NR)	4/6	2/6				6/6	✓	×				
81.	I am unattractive because of my weight.	6/7 1/7 (M)	4/7	3/7				7/7	✓	×				
82.	I lead an unhealthy lifestyle because of my weight.	6/8 1/7 (NR) 1/8 (M)	7/8		1/8			8/8	✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
83.	I am not confident in my abilities because of my weight.	5/6 1/6 (M)	3/6	2/6	1/6			6/6	✓	×				
84.	Being the weight that I am is my fault.	5/7 2/7 (M)	5/7	2/7				7/7	✓	×				
85.	People who are thinner than me are probably happier than I am.	5/7 2/7 (NR)	6/7	1/7		1/7	3/7	3/7	×	×	Not relevant to weight-stigma construct			
86.	I am undeserving of the same opportunities that other people have because of my weight.	6/7 1/7 (M)	3/7	3/7	1/7			7/7	✓	×				
87.	I am undeserving of living a good,	7/7	4/7	3/7				7/7	✓	×				

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Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	rewarding life because of my weight.													
88.	I cannot contribute anything useful to society because of my weight.	5/6 1/6 (NR)	4/7					7/7	✓	×				
89.	I am disgusting because of my weight.	6/7 1/7 (M)		7/7				7/7	✓	×				
90.	I hate myself because of my weight.	5/6 1/6 (M)		4/6	2/6			6/6	✓	×				
91.	I am a failure because of my weight.	6/7 1/7 (M)	4/7	3/7				7/7	✓	×				
92.	I am not deserving of proper treatment by health staff because of my weight.	5/7 1/7 (NR) 1/7 (M)		1/7	6/7			7/7	✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type		Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
93.	I do not seek out healthcare services because of my weight.	6/7 1/7 (M)		3/7	4/7			7/7	✓	✓	Item confusion	I do not seek out healthcare services when I should because of my weight	None	Unchanged
94.	I am not worthy of having good quality relationships with family because of my weight.	6/7 1/7 (M)	2/7	5/7			1/7	6/7	✓	×				
95.	I do not go to family occasions because of my weight.	6/7 1/7 (NR)	1/7		6/7			7/7	✓	×				
96.	I am not worthy of having good quality friendships because of my weight.	6/7 1/7 (NR)	3/7	4/7			1/7	6/7	✓	×				
97.	I do not go to events with	5/6 1/6 (M)			6/6			6/6	✓	×				

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Delphi Results from Experts from Two Rounds of Item Analysis

Item		Round 1									Round 2		Final item after modification from Delphi rounds
		Relevance	Domain			Type		Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
			Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised					
	my friends because of my weight.												
98.	I am not worthy of having good quality relationships with my peers because of my weight.	6/7 1/7 (NR)	3/7	4/7			1/7	6/7	✓	×			
99.	I do not socialize with my peers because of my weight.	4/6 2/6 (M)			6/6			6/6	✓	✓	Too specific	I do not socialize with people I know because of my weight	None	Unchanged
100.	I am not worthy of having a romantic or intimate relationship with anyone because of my weight.	4/6 2/6 (M)	2/6	3/6	1/6			6/6	✓	✓	Item double barrelled	I am not worthy of having a romantic relationship with anyone because of my weight	Simplify	I am not worthy of having a romantic relationship because of my weight.
101.	I do not seek romantic	6/7 1/7 (M)			7/7			7/7	✓	×				

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item	Round 1									Round 2		Final item after modification from Delphi rounds
	Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
		Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
	partners because of my weight.												
102.	I am not worth being hired for a good paying job because of my weight.	6/7 1/7 (M)		3/7	4/7		1/7	6/7	✓	×			
103.	I do not apply for jobs because of my weight.	5/6 1/6 (M)			6/6			6/6	✓	×			
104.	I am not worth being viewed favorably when looking for housing because of my weight.	6/7 1/7 (M)		2/7	5/7			7/7	✓	✓	Simplify wording	I am not worth being selected when looking for housing because of my weight	None	Unchanged
105.	I am out of place in the world because of my weight.	6/6	4/6	2/6				6/6	✓	×			
106.	I am inferior to others	8/8	6/8	2/8				8/8	✓	×			

Supplementary Table 7

Delphi Results from Experts from Two Rounds of Item Analysis

Item	Round 1									Round 2		Final item after modification from Delphi rounds
	Relevance	Domain			Type			Include in final scale	Include in next Delphi round	Justification for item removal (from the scale) or second round Delphi review	Item presented in round 2	Modification(s)	
		Stereotype	Prejudice	Discrimination	Experienced	Perceived	Internalised						
because of my weight.													
107. I find it difficult to love myself because of my weight.	5/6 1/6 (M)		4/6	2/6			6/6	✓	×				
108. I find it difficult to show myself compassion because of my weight.	5/6 1/6 (M)		3/6	3/6			6/6	✓	×				
109. I am embarrassed because of my weight.	5/6 1/6 (M)		6/6				6/6	✓	×				
110. I am ashamed of myself because of my weight.	6/7 1/7 (M)		6/7	1/7			7/7	✓	×				

Note. NR = Not Relevant; M = Modify. Due to different drop-out rates from participants (participants could dropout before completing all items), the number of participants who rated each item was not the same for all items.

Supplementary Table 8

Topic Guide for the Cognitive Interviews

Researcher explanation: This Cognitive Interview study is one step in developing a new scale to assess weight stigma. Weight-stigma refers to negative stereotypes, prejudice, and discrimination that people may experience because of their weight. For example, a person may be told that their weight is a result of a lack of engagement in physical exercise. Another example of weight-stigma is when a person visits a health professional who blames an unrelated health problem on their weight. These are just some of the common experiences that people may encounter because of their weight. In this study, you will be presented with 102 items that tap onto aspects of stigma encountered by people because of their weight. For each item you will be required to provide feedback on their relevance, comprehensibility, and comprehensiveness.

The review of items will take approximately two hours to complete, and you will be audio recorded for transcription purposes. Feedback around the items will occur in the form of written responses and verbal feedback (e.g., to assess relevance: "is the item relevant to the construct of weight stigma?").

Does this make sense to you?

[provide and explain 'Item Review Worksheet']

First half, researcher asks:

1. For relevance: Is the item relevant to the construct of weight stigma?
2. For comprehensibility: Is the item comprehensible?

Prompts for follow-up probes (if needed)

3. What did that question mean to you?
4. Was the item easy to understand?
5. Was it easy to respond to this item with the response option provided? (frequency, agreement scale)

Second half (after reviewing each item), research asks:

6. For comprehensiveness: Did the combination of all the items reflect weight-stigma? Can you think of other items that may be reflective of weight-stigma that was not considered in the items presented to you here?
7. Researcher explanation: You may have realised that there were some items that sounded repetitive throughout the questionnaire. This was because every single item was intended to reflect one of three different types of weight-stigma. Therefore, most of the items were presented more than once but with slight variations to the item wording so that they reflected the different types of weight-stigma. The different types of weight-stigma are:
    - Experienced weight-stigma: the actual frequent experiences of weight-stigma a person may encounter (e.g., being told explicitly to lose weight or watch what food one is consuming)

- Perceived weight-stigma: the sense of being stigmatized even when this may not actually be the case (e.g., attributing the reason why people are watching them eat is because of their weight)
- Internalised weight-stigma: this is often the result of ongoing stigma that is experienced or perceived which leads to an individual accepting the mistreatment and viewing themselves in a way that is consistent with negative stereotypes such as believing that they are lazy or lacking willpower.

Was it easy to understand the difference of the weight-stigma types from the wording of the items? [review in context of examples – different variations of the item stem were presented to participants who were asked to select the best fitting item stem that helped to distinguish the items according to the intended stigma type]

8. Based on the instructions presented at the beginning of the questionnaire, it was important to keep in mind that you were required to respond to the items as they occur in your day-to-day life (with no specific time point defined e.g., the past week or month). Was the recall period suitable for all the items?
9. All the items that were presented to you were worded in such a way that they reflected the type of experience(s) that people who encounter weight-stigma commonly experience. They were specifically worded in one direction (e.g., "I am undeserving of the same opportunities that other people have because of my weight."). Items were not worded in the opposite direction (e.g., "I am deserving of the same opportunities that other people have because of my weight."). What are your thoughts around including items that are positively worded? Do you think it changes the meaning of the item?

At interview end, researcher asks:

10. Overall, did you find the questionnaire easy or difficult to complete?
11. Now you have finished, do you feel like changing any responses?
12. Do you have any final feedback you would like to provide?

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
1. I have been called 'lazy' because of my weight.	13/13	13/13					✓	Unchanged
2. I have been called 'unintelligent' because of my weight.	7/13 6/13 (NR)	13/13	Intelligence unrelated to weight.	The connection between intelligence and weight has been made by association in society and the media and is a commonly reported stereotype in the literature. For this reason, the item was retained.			✓	Unchanged
3. I have been called 'ugly' (or similar) because of my weight.	13/13	13/13					✓	Unchanged
4. I have been accused of overeating because of my weight.	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
5. I have been told that I have poor personal hygiene because of my weight.	13/13	13/13					✓	Unchanged
6. I have been accused of not trying hard enough to lose weight.	13/13	13/13					✓	Unchanged
7. I have been called 'disgusting' because of my weight.	13/13	13/13	Query regarding whether 'disgusting' was different from 'ugly' in previous item. Clarify the term 'disgusting' - physical vs non-physical related disgust, perhaps with an example.	Unchanged. Disgusting can be attributed to one's physical appearance (e.g., weight) or non-physical (e.g., odor, personal hygiene). This is different from 'ugly' which can be considered specifically physical. Providing an example			✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				may make this item too specific.				
8. I have been told by people that they dislike me because of my weight.	12/13 1/13 (NR)	13/13					✓	Unchanged
9. I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.	12/13 1/13 (NR)	13/13					✓	Unchanged
10. I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension)	9/13 4/13 (NR)	11/13 2/13 (NC)	Difficult to understand. Welfare benefits may not consistently have a link to weight.	Weight is stereotypically viewed as controllable and changeable and the reported experience associated with receiving welfare			✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
because of my weight.				benefits (or not) is often due to individuals attributing the rejection of such benefits to their weight. Thus, this item was retained.				
11. I have been judged negatively about my weight by my family.	13/13	13/13	Wording change suggestion: "My weight has been judged negatively by my family" OR "I have been judged negatively by my family about my weight".	Unchanged. The suggested changes were the wording of the original items that were modified in the Delphi review.			✓	Unchanged
12. My family has made fun of my weight.	13/13	13/13					✓	Unchanged
13. I have been excluded by my friends from social	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
gatherings because of my weight.								
14. My friends have made fun of my weight.	13/13	13/13					✓	Unchanged
15. I have been treated disrespectfully by my romantic partner(s) about my weight.	13/13	13/13					✓	Unchanged
16. I have been told by my romantic partner(s) that they are embarrassed to be seen with me in public because of my weight.	13/13	13/13					✓	Unchanged
17. I have been told by my romantic partner(s) that they are uncomfortable	13/13	13/13	Modify as it may be too specific. Consider changing wording to 'eliciting signs of affection'	Item wording was changed to generalize the experience: "I have been told by my romantic partner(s)			✓	I have been told by my romantic partner(s) that they are uncomfortable eliciting signs of

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
holding my hand in public because of my weight.				that they are uncomfortable eliciting signs of affection in public with me because of my weight."				affection in public with me because of my weight.
18. I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	13/13	13/13					✓	Unchanged
19. I have been shouted at with insults by others about my weight while walking down the street.	13/13	13/13	Simplify wording.	Item wording was changed to create simplicity: "I have been shouted at with insults in public because of my weight."			✓	I have been shouted at with insults in public because of my weight.
20. I have been laughed at in public because of my weight.	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
21. I have lost a job because of my weight.	13/13	13/13					✓	Unchanged
22. I have been turned down for a job, for which I was qualified, because of my weight.	13/13	13/13					✓	Unchanged
23. I have had difficulty in renting an apartment or finding other housing because of my weight.	8/13 5/13 (NR)	12/13 1/13 (NC)	Queries regarding whether this experience happens. Housing experiences may not consistently have a link to weight.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.	May not relate to everyone in society.	As per initial response, item was retained.	✓	Unchanged
24. I have been viewed unfavorably for housing opportunities	8/13 5/13 (NR)	12/13 1/13 (NC)	Housing experiences may not consistently have a link to weight.	Research demonstrates this is a commonly reported experience among individuals with overweight and	May not relate to everyone in society.	As per initial response, item was retained.	✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
because of my weight.				obesity thus this item was retained.				
25. I have been told to lose weight by other people.	13/13	13/13					✓	Unchanged
26. I have been in situations where I heard others say offensive things about me because of my weight.	13/13	13/13	Simplify wording.	Item wording was changed to improve clarity: "I have found myself in situations where I have overheard others say offensive things about me because of my weight."	"People commenting on me being slim and that I am lucky and should never complain and I'm being a brat when I talk about wanting to exercise"	Unchanged. We considered adding items that specify the type of content that is overheard. However, changing the item to be more specific (and qualified in the direction of lower weight) may become less applicable to the wider population thus the item was left unchanged.	✓	I have found myself in situations where I have overheard others say offensive things about me because of my weight.
27. I have been physically attacked	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
by others because of my weight.								
28. I have been ignored by people because of my weight.	13/13	13/13					✓	Unchanged
29. I have been deliberately left out by people because of my weight.	13/13	13/13					✓	Unchanged
30. I have been treated without sympathy by other people because of my weight.	13/13	13/13					✓	Unchanged
31. I have received less support from people (e.g., not having someone to confide in about myself) because of my weight.	13/13	13/13	Specify type of support, for example emotional or financial support.	Item wording changed to reflect what type of support is being measured: "I have received less emotional support from people (e.g., not having someone to			✓	I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				confide in about myself) because of my weight".				
32. "Below are questions relating to your role in professional settings. For example, you may be (or have been) an employee or a student, or both. Please consider who your superior(s) (e.g., teachers, boss, managers, supervisors) and associates (e.g., peers, colleagues) are based on your professional status	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
as you answer the following question(s). 1a. "I have been treated unfairly by my superiors" ...As an employee ...As a student 1b. "I have been treated unfairly by my associates" ...As an employee ...As a student								
33. I feel that other people view me as lazy because of my weight.	13/13	13/13					✓	Unchanged
34. I feel that others view me as having	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
no willpower because of my weight.								
35. I feel that others view me as unintelligent because of my weight.	1/13 2/13 (NR)	13/13	Intelligence considered to be unrelated to weight.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.	Intelligence considered to be unrelated to weight.	As per previous response, item was left unchanged.	✓	Unchanged
36. I feel that others view me as ugly because of my weight.	13/13	13/13					✓	I feel that others view me as ugly (or similar) because of my weight.
37. I feel that others think that I eat excessive amounts of food because of my weight.	13/13	13/13					✓	Unchanged
38. I feel that others think that I have	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
poor personal hygiene because of my weight.								
39. I feel that others think that I am to blame for my weight.	13/13	13/13					✓	Unchanged
40. I feel that others view me as disgusting because of my weight.	13/13	13/13					✓	Unchanged
41. People who are thinner than me dislike me because of my weight.	13/13	13/13					✓	Unchanged
42. I feel that health staff treat me unfairly because of my weight.	13/13	13/13					✓	Unchanged
43. I feel that health staff offer me	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
poorer service because of my weight.								
44. I feel that I am humiliated during contact with health professionals because of my weight.	13/13	13/13	Change item wording to “I feel humiliated during…” Item may be interpreted in different ways by different people.	Item wording changed to "I feel humiliated during contact with health professional(s) because of my weight".			✓	I feel humiliated during contact with health professional(s) because of my weight.
45. I feel that my family find interaction with me unpleasant because of my weight.	13/13	13/13	Consider changing the word “unpleasant” to “not satisfying”.	Unchanged. These terms are different, and we aimed to capture the sense of unpleasantness (feeling discomfort) rather than ‘not satisfying’ (which relates to a sense of			✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				pleasure and fulfillment.				
46. I feel that my family do not provide me with emotional support because of my weight.	13/13	13/13					✓	Unchanged
47. I feel that my friends exclude me from fun activities because of my weight.	13/13	13/13	Consider adding items that contextualize the activity (e.g., physical activities).	Unchanged. Contextualizing the item to be more specific may become less applicable to the wider population thus the item was left unchanged.			✓	Unchanged
48. I feel that people do not want me to be their friend because of my weight.	13/13	13/13					✓	Unchanged
49. I feel that people prefer not to be	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
close friends with me because of my weight.								
50. I feel that people do not want to go on a date with me because of my weight.	13/13	13/13	This might occur independent of weight.	This is a commonly reported experience for people with overweight or obesity. Thus, this item was retained.	"I'm on the smaller side"	We acknowledge that individuals of any weight may endorse these items but qualifying the weight direction will impact our ability to obtain known-groups validity data.	✓	Unchanged
51. I feel that people do not want to have a sexual relationship with me because of my weight.	13/13	13/13	This might occur independent of weight.	This is a commonly reported experience for people with overweight or obesity. Thus, this item was retained.			✓	Unchanged
52. I feel that people do not want to enter a committed relationship with	13/13	13/13	This might occur independent of weight, and perhaps in the context of 'survival of the fittest'.	Unchanged.			✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
me because of my weight.								
53. I feel that people laugh at me in public because of my weight.	13/13	13/13					✓	Unchanged
54. I feel that staff at restaurants/stores offer me poorer service compared to others because of my weight.	12/13 1/13 (NR)	13/13	Consider replacing "offer me poorer service" with the word "judgment" or add a similar item that refers to judgment experienced from staff.	Unchanged. Judgment taps the perceived construct and therefore by replacing "offer me poorer service" with "judgment" will change the stigma type this item aims to capture.			✓	Unchanged
55. I feel that my colleagues would not accept me as their manager because of my weight.	11/13 2/13 (NR)	13/13	Replace "manager" with "superior".	Item wording was changed be generalised to 'superiors': "I feel that my colleagues would not accept me as their			✓	I feel that my colleagues would not accept me as their superior because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				superior because of my weight"				
56. I feel that I would not be considered for employment or job advancement because of my weight.	13/13	13/13	This may depend on job context (e.g., modelling, trades work).	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.			✓	Unchanged
57. I feel that I would have difficulty in finding somewhere to live because of my weight.	13/13	13/13	Consider narrowing down the item to be specific as this may happen in a share-house but less likely from a landlord. This may depend on the space and size of the residence (e.g., homes in Paris/England generally have	This item aimed to capture the perception that it may be difficult for people to be granted housing opportunities due to weight which is captured in item #94 and #96, thus this item was removed.			✗	

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
			smaller homes than Australia).					
58. I feel that people have not given me housing opportunities because of my weight.	12/13 1/13 (NR)	13/13	Consider narrowing down the item to be specific as this may happen in a share-house but less likely from a landlord.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.	This item may not relate to everyone.	As per previous response, this item was retained.	✓	Unchanged
59. I feel that people patronize me (e.g., speak to me as if I am not smart) because of my weight.	11/13 2/13 (NR)	13/13	Considered not weight specific.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.			✓	Unchanged
60. I feel that people stare at me because of my weight.	13/13	13/13					✓	Unchanged
61. I feel that people laugh at me because of my weight.	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
62. I feel that people do not treat me nicely because of my weight.	13/13	13/13					✓	Unchanged
63. I feel that people ignore me because of my weight.	13/13	13/13					✓	Unchanged
64. I feel that people sometimes exclude me from social gatherings because of my weight.	13/13	13/13					✓	Unchanged
65. I feel that people judge me when I walk into a room because of my weight.	13/13	13/13					✓	Unchanged
66. Because of my weight, people do not show me sympathy.	13/13	13/13	Replace "sympathy" with either "empathy" or "understanding".	Unchanged. The use of the word "sympathy" was debated in the Delphi			✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				study. Individuals with overweight or obesity may be more affected by the act of not showing sympathy rather than empathy thus the item was left unchanged.				
67. I feel that people provide me with less support (e.g., not having someone to talk to, or similar) because of my weight.	13/13	13/13	Specify the type of support for example emotional or financial support.	Item wording changed to reflect what type of support is being measured: "I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight".			✓	I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.
68. I feel that people find interacting with me unpleasant because of my weight.	13/13	13/13					✓	Unchanged

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
69. I feel that people are not willing to have a close emotional relationship with me because of my weight.	12/13 1/13 (NR)	13/13					✓	Unchanged
70. People make me think that they are better than me because of my weight.	13/13	13/13					✓	Unchanged
71. I am lazy because of my weight.	13/13	13/13					✓	I think that I am lazy because of my weight.
72. I am lacking in willpower because of my weight.	13/13	13/13	Specify the type of willpower (e.g., mental vs physical).	Unchanged. Willpower is a physical and psychological experience, and may influence each other (e.g., one's mental			✓	I think that I am lacking in willpower because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				determination may influence one's subsequent actions). As we were not particularly interested in the type of willpower, the item was kept general.				
73. I am unintelligent because of my weight.	8/13 5/13 (NR)	12/13 1/13 (NC)	Intelligence considered to be unrelated to weight.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.	Intelligence considered to be unrelated to weight.	As per previous response, this item was retained.	✓	I think that I am unintelligent because of my weight.
74. I am unattractive because of my weight.	13/13	13/13					✓	I think that I am unattractive because of my weight.
75. I lead an unhealthy lifestyle because of my weight.	12/13 1/13 (NR)	11/13 2/13 (NC)	Specify the meaning of "unhealthy lifestyle" for example, whether	This item aimed to attribute one's weight to their lifestyle which is a commonly reported stereotype in			✓	"My weight is because of the lifestyle I lead."

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
			this refers to mental and/or physical state. Difficult to ascertain whether the item was attributed to lifestyle or weight.	the literature. The item was changed accordingly: "My weight is because of the lifestyle I lead."				
76. I am not confident in my abilities because of my weight.	13/13	13/13					✓	I think that I am not confident in my abilities because of my weight.
77. Being the weight that I am is my fault.	12/13 1/13 (NR)	13/13	Possibly too general as some people may have health issues that impact weight in the context of genetics and environmental issues.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.			✓	I think being the weight that I am is my fault.
78. I am undeserving of the same	12/13 1/13 (NR)	13/13	There are real examples of this (e.g., paying for an	Unchanged.			✓	I think that I am undeserving of the same opportunities

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
opportunities that other people have because of my weight.			extra seat on aeroplane, inability to participate in physical activities such as sky diving or bunjee jumping due to regulated rules) and thus may accurately apply to people. Consider changing the word "underserving" to improve the sensitivity of the item.	Feeling undeserving of proper treatment is a commonly reported experience in the weight stigma literature, and it is a characteristic of the internalized weight stigma construct which this item is tapping. Thus, the wording was not changed to ensure that it reflected this stigma type accurately.				that other people have because of my weight.
79. I am undeserving of living a good, rewarding life because of my weight.	9/13 4/13 (NR)	12/13 1/13 (NC)	Considered to be unrelated to weight. Consider changing the word "underserving" to improve the	Research demonstrates this is a commonly reported experience among individuals with overweight and			✓	I think that I am undeserving of living a good, rewarding life because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
			sensitivity of the item.	obesity thus this item was retained.				
80. I cannot contribute anything useful to society because of my weight.	12/13 1/13 (NR)	13/13	"Anything" is too general.	Unchanged. Our items were created to be as general as possible to be applicable to most individuals.			✓	I think that I cannot contribute anything useful to society because of my weight.
81. I am disgusting because of my weight.	13/13	13/13	Clarify whether this relates to physical disgust (or other) perhaps with an example.	Unchanged. Providing an example may make this item too specific.			✓	I think that I am disgusting because of my weight.
82. I hate myself because of my weight.	13/13	13/13					✓	Unchanged
83. I am a failure because of my weight.	13/13	13/13	Consider adding an example of failure to clarify meaning.	Unchanged. Providing an example may make this item too specific.			✓	I think that I am a failure because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
84. I am not deserving of proper treatment by health staff because of my weight.	9/13 4/13 (NR)	13/13	Queries regarding whether this is experienced.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.			✓	I think that I am not deserving of proper treatment by health staff because of my weight.
85. I do not seek out healthcare services when I should because of my weight.	10/13 3/13 (NR)	13/13	This may include a gender bias as males generally do not seek out treatment.	Research demonstrates this is a commonly reported experience among individuals with overweight and obesity thus this item was retained.			✓	I avoid seeking out healthcare services when I should because of my weight.
86. I am not worthy of having good quality relationships with family because of my weight.	12/13 1/13 (NR)	13/13	Consider changing the word "not worthy" to improve the sensitivity of the item.	Unchanged. The item aimed to capture the sense of worth.			✓	I think that I am not worthy of having good quality relationships with family because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
87. I do not go to family occasions because of my weight.	13/13	13/13					✓	I avoid family occasions because of my weight.
88. I am not worthy of having good quality friendships because of my weight.	12/13 1/13 (NR)	13/13	This is relevant for individuals independent of weight. Consider changing the word "not worthy" to improve the sensitivity of the item.	Unchanged. The item aimed to capture the sense of worth.			✓	I think that I am not worthy of having good quality friendships because of my weight.
89. I do not go to events with my friends because of my weight.	13/13	13/13					✓	I avoid attending events with my friends because of my weight.
90. I am not worthy of having good quality relationships with	12/13 1/13 (NR)	13/13	Consider changing the word "not worthy" to improve	Unchanged.			✓	I think that I am not worthy of having good quality

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
my peers because of my weight.			the sensitivity of the item.	The item aimed to capture the sense of worth.				relationships with my peers because of my weight.
91. I do not socialize with my peers because of my weight.	13/13	13/13					✓	I avoid socializing with my peers because of my weight.
92. I am not worthy of having a romantic relationship with anyone because of my weight.	12/13 1/13 (NR)						✓	I think that I am not worthy of having a romantic relationship with anyone because of my weight.
93. I do not seek romantic partners because of my weight.	13/13	13/13					✓	I avoid seeking romantic partners because of my weight.
94. I am not worth being hired for a good paying job because of my weight.	12/13 1/13 (NR)	13/13	This may be specific to the job context (e.g., modelling, trade work).	Research demonstrates this is a commonly reported experience among individuals with overweight and			✓	I think that I am not worth being hired for a good paying job because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
				obesity thus this item was retained.				
95. I do not apply for jobs because of my weight.	13/13	13/13					✓	I avoid applying for jobs because of my weight.
96. I am not worth being selected when looking for housing because of my weight.	10/13 3/13 (NR)	13/13	Consider narrowing down the item to be specific as this may happen in a share-house but less likely from a landlord.	Unchanged. Our items were designed to be as widely applicable as possible to capture the experiences that are commonly endorsed by most individuals.	This item may not relate to everyone.	As per previous response, this item was retained.	✓	I think that I am not worth being selected when looking for housing because of my weight.
97. I am out of place in the world because of my weight.	13/13	13/13			The use of the word "world" might be "a bit dramatic."	The reported experience of feeling like an outsider is not often attributed to the society in which one lives alone, but even outside of that. Thus, the item was left unchanged.	✓	I think that I am out of place in the world because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
98. I am inferior to others because of my weight.	13/13	13/13					✓	I think that I am inferior to others because of my weight.
99. I find it difficult to love myself because of my weight.	13/13	13/13					✓	Unchanged
100. I find it difficult to show myself compassion because of my weight.	13/13	13/13					✓	Unchanged
101. I am embarrassed because of my weight.	13/13	13/13					✓	Unchanged
102. I am ashamed of myself because of my weight. OR "I am ashamed because I weigh	13/13	13/13	Either item considered suitable: 10/13. Preference for first item: 2/13	First item selected due to item difficulty of first item.			✓	I am ashamed of myself because of my weight.

Supplementary Table 9

Cognitive Interview Results from Community Individuals in Each Round

Item	Round 1 (in-person)				Round 2 (online)		Outcome after completion of both rounds	
	Relevance	Comprehensibility	Participant Verbal Feedback	Measure Developers Response	Participant Written Feedback	Measure Developers Response	Item retained in final scale?	Final item after modification[1]
more than I should."			It is difficult to know what one should weigh and someone may weigh more than they should but not feel ashamed. Preference for second item: 1/13 The direction of weight is clearer than in the first item.					

Note. NR = Not Relevant; NC = Not Comprehensible

Appendix E: Weight Stigma Questionnaire Study Supplementary Tables

Table S1

List of Self-Report Weight Stigma Measures Grouped by Type and Domain as Proposed by Developer, and Classification of Items by Author

Measures of weight stigma (*n* = 18)[a]	**Stigma Type and Domain as Assessed by Author[a]**						
	Stigma Type				**Stigma Domain**		
	EXP	**PER**	**INT**	**ANT**	**ST**	**PR**	**DI**
Experienced							
Experience of Weight Based Discrimination (EWD; Farrow & Tarrant, 2009)	•	×					•
Stigmatizing Situations Inventory (SSI; Myers & Rosen, 1999)	•	×					•
Physical Appearance Related Teasing Scale (PARTS; Thompson et al., 1991)	•	×					•
Perceived (or anticipated)							
Perceived Weight-based Stigmatization Scale (PWSS; Scott-Johnson et al., 2010)		•			*		*
Perceived Weight Discrimination PWD (PWD; Schafer & Ferraro, 2011)		×			×		•
Perceived Weight Stigma Scale (PWSS-U; Rafeh & Hanif, 2019)	×	•			*		*
Perception of Teasing Scale (POTS; Thompson et al., 1995)	•	×					•
Weight Based Rejection Sensitivity (WBRS; Brenchley & Quinn, 2016)				•	•		•
Internalized							
Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008)			•		*		*
Weight- and Body-Related Shame and Guilt Scale (WEB-SG), Shame subscale (Conradt et al., 2007)			•				*
Weight Self-Stigma Questionnaire (WSSQ; Lillis et al., 2010)		×	•		*		*
Feelings and Thoughts about Weight (weight distress in postpartum women) Scale (Chang & Chen, 2009)			*				*
Weight-Focused Forms of Self-Critcising/Self-Attacking and Self-Reassuring Scale (Duarte et al., 2019)			•		*	*	*
Quality of Life Instruments[b]							
Impact of Weight on Quality Of Life *public distress scale (IWQOL original; Kolotkin et al., 1995)	*			*			*

Obesity and Weight-Loss Quality-of-Life Questionnaire *social stigma scale (OWLQOL; Niero et al., 2002)	*		*	*	*	*
Healthcare Questionnaire *negative interactions concerning weight scale (HCQ; Wadden et al., 2000)	*	*				*
Quality of Life for Obesity Surgery Questionnaire *social discrimination/body satisfaction subscale (QOLOS; Muller et al., 2018)		*				*

Note. EXP = Experienced; PER = Perceived; INT = Internalised; ANT = Anticipated; ST = Stereotypes; PR = Prejudice; DI = Discrimination. The information presented in this table was gathered based on an in-depth item analysis conducted by the authors of the current study. This was to review the proposed type and domain of weight stigma that the measure aimed to capture based on the developers intentions. On the right, the table shows the domain and types that items seem to belong to based on the authors' analysis. **Circles** indicate that the stigma domain or type is consistent with what the items intend to capture based on item analysis by the current researchers; **Crosses** indicate that the proposed weight stigma type or domain assessed is inconsistent with what the items actually assess in the appropriate questionnaire; **Asterisks** are indicated when the study does not state clearly what the measure intends to capture, but item analysis (from the authors of the current study) classifies the weight stigma type that is being captured across the items.

[a]The measures included under each of the weight stigma types or domains are categorised based on their intended purpose as stated in their relevant article.

[b]Note that quality of life instruments are not originally developed for the purpose of measuring stigma and therefore do not explicitly state the purpose of measurement despite being a useful tool for weight-related stigma.

Table S2

Participant Demographic Characteristics for Sample 1

Variable			*n*	%	*M*	*SD*	Range
Age			991		28.59	10.37	18 - 65
Gender Identity			999				
Male			129	12.9			
Female			861	86.2			
Other			7	.7			
Gender not disclosed			2	.2			
Ethnicity		999					
Australian		571					
Other		428					
'Other' specified		*424*		*42.4*			
White		243		24.3			
Black		14		1.4			
Hispanic		14		1.4			
Asian		94		9.4			
HW/PI/NA		19		1.9			
Aboriginal and Torres Strait Islander		1		.1			
Mixed		38		3.8			
None		1	.1				
Highest Education level			999				
Primary school			1	.1			
High school			404	40.4			
TAFE			97	9.7			
University			497	49.7			
Student sample	498	49.8					
Community individuals	501	50.2					
Relationship status			999				
Single			388	38.8			
In a relationship			261	26.1			
Engaged			22	2.2			
Defacto			77	7.7			
Married			190	19.0			
Never married			18	1.8			
Widowed			3	.3			
Separated			16	1.6			
Divorced			20	2.0			
Other			4	.4			
Language			999				
English (1st language)			867	86.8			
English (2nd language)			132	13.2			
BMI (original) [1]			995		27.2	9.7	15.35 - 137.17

BMI (pounds conversion)			995	26.7	7.2	15.35 - 62.28
BMI (*n* = 10 extreme cases deleted)			985	26.5	7.0	15.35 - 55.02
Weight category[2]						
Underweight	34	3.4				
Normal weight	481	48.1				
Overweight	233	23.3				
Obese	247	24.7				
Weight belief ("I believe I am…")			999			
…Underweight			32	3.2		
…Normal weight			487	48.7		
…Overweight			344	34.4		
…Obese			136	13.6		

Note. Only available demographic information is presented for those participants who provided complete survey data (*n* = 999); HW = Hawaiian, PI = Pacific Islander, NA = Native American.

[1]BMI (original) was the default variable reported for analyses throughout Study 1

[2]Sample reported based on BMI (original)

Table S3

Items Administered to Participants (n = 101)

Instructions: The following items relate to situations that people encounter because of their weight. Using the scale below, please rate the extent to which you have experienced the following situations in your day-to-day life (0 = never, 100 = always). Please slide the cursor to indicate the extent to which you have experienced these situations.

1. I have been called 'lazy' because of my weight.
2. I have been called 'unintelligent' because of my weight.
3. I have been called 'ugly' (or similar) because of my weight.
4. I have been accused of overeating because of my weight.
5. I have been told that I have poor personal hygiene because of my weight.
6. I have been accused of not trying hard enough to lose weight.
7. I have been called 'disgusting' because of my weight.
8. I have been told by people that they dislike me because of my weight.
9. I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.
10. I have been treated unfairly in getting welfare benefits (e.g., not receiving a disability pension) because of my weight. **N/A**
11. I have been judged negatively about my weight by my family.
12. My family has made fun of my weight.
13. I have been excluded by my friends from social gatherings because of my weight.
14. My friends have made fun of my weight.
15. I have been treated disrespectfully by my romantic partner(s) about my weight. **N/A**
16. I have been told by my romantic partner(s) that they are embarrassed to be seen with me in public because of my weight. **N/A**
17. I have been told by my romantic partner(s) that they are uncomfortable eliciting signs of affection in public with me because of my weight. **N/A**
18. I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.
19. I have been shouted at with insults in public because of my weight.
20. I have been laughed at in public because of my weight.
21. I have lost a job because of my weight. **N/A**
22. I have been turned down for a job, for which I was qualified, because of my weight. **N/A**
23. I have had difficulty in renting an apartment or finding other housing because of my weight. **N/A**
24. I have been viewed unfavorably for housing opportunities because of my weight. **N/A**
25. I have been told to lose weight by other people.
26. I have found myself in situations where I have overheard others say offensive things about me because of my weight.
27. I have been physically attacked by others because of my weight.
28. I have been ignored by people because of my weight.
29. I have been deliberately left out by people because of my weight.
30. I have been treated without sympathy by other people because of my weight.
31. I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.
32. "Below are questions relating to your role in professional settings. For example, you may be (or have been) an employee or a student, or both. Please consider who your superior(s) (e.g., teachers, boss, managers, supervisors) and associate(s) (e.g., peers, colleagues) are based on your professional status as you answer the following question(s). **N/A**

    Please note that you do not have to respond to each of the four statements presented below, only what is relevant to your professional status.
    "I have been treated unfairly by my superiors"

a. ...As an employee
b. ...As a student

"I have been treated unfairly by my associates"
a. ...As an employee
b. ...As a student

33. I feel that other people view me as lazy because of my weight.
34. I feel that others view me as having no willpower because of my weight.
35. I feel that others view me as unintelligent because of my weight.
36. I feel that others view me as ugly (or similar) because of my weight.
37. I feel that others think that I eat excessive amounts of food because of my weight.
38. I feel that others think that I have poor personal hygiene because of my weight.
39. I feel that others think that I am to blame for my weight.
40. I feel that others view me as disgusting because of my weight.
41. People who are thinner than me dislike me because of my weight.
42. I feel that health staff treat me unfairly because of my weight.
43. I feel that health staff offer me poorer service because of my weight.
44. I feel humiliated during contact with health professionals because of my weight.
45. I feel that my family find interaction with me unpleasant because of my weight.
46. I feel that my family do not provide me with emotional support because of my weight.
47. I feel that my friends exclude me from fun activities because of my weight.
48. I feel that people do not want me to be their friend because of my weight.
49. I feel that people prefer not to be close friends with me because of my weight.
50. I feel that people do not want to go on a date with me because of my weight.
51. I feel that people do not want to have a sexual relationship with me because of my weight.
52. I feel that people do not want to enter a committed relationship with me because of my weight.
53. I feel that people laugh at me in public because of my weight.
54. I feel that staff at restaurants/stores offer me poorer service compared to others because of my weight.
55. I feel that my colleagues would not accept me as their superior because of my weight.
56. I feel that I would not be considered for employment or job advancement because of my weight.
57. I feel that people have not given me housing opportunities because of my weight.
58. I feel that people patronize me (e.g., speak to me as if I am not smart) because of my weight.
59. I feel that people stare at me because of my weight.
60. I feel that people laugh at me because of my weight.
61. I feel that people do not treat me nicely because of my weight.
62. I feel that people ignore me because of my weight.
63. I feel that people sometimes exclude me from social gatherings because of my weight.
64. I feel that people judge me when I walk into a room because of my weight.
65. Because of my weight, people do not show me sympathy.
66. I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.
67. I feel that people find interacting with me unpleasant because of my weight.
68. I feel that people are not willing to have a close emotional relationship with me because of my weight.
69. People make me think that they are better than me because of my weight.
70. I think that I am lazy because of my weight.
71. I think that I am lacking in willpower because of my weight.
72. I think that I am unintelligent because of my weight.
73. I think that I am unattractive because of my weight.
74. I think that my weight is the result of the lifestyle I lead.

75. I think that I am not confident in my abilities because of my weight.
76. I think being the weight that I am is my fault.
77. I think that I am undeserving of the same opportunities that other people have because of my weight.
78. I think that I am undeserving of living a good, rewarding life because of my weight.
79. I think that I cannot contribute anything useful to society because of my weight.
80. I think that I am disgusting because of my weight.
81. I hate myself because of my weight.
82. I think that I am a failure because of my weight.
83. I think that I am not deserving of proper treatment by health staff because of my weight.
84. I avoid seeking out healthcare services when I should because of my weight.
85. I think that I am not worthy of having good quality relationships with family because of my weight.
86. I avoid family occasions because of my weight.
87. I think that I am not worthy of having good quality friendships because of my weight.
88. I avoid attending events with my friends because of my weight.
89. I think that I am not worthy of having good quality relationships with my peers because of my weight.
90. I avoid socializing with my peers because of my weight.
91. I think that I am not worthy of having a romantic relationship with anyone because of my weight.
92. I avoid seeking romantic partners because of my weight.
93. I think that I am not worth being hired for a good paying job because of my weight.
94. I avoid applying for jobs because of my weight.
95. I think that I am not worth being selected when looking for housing because of my weight.
96. I think that I am out of place in the world because of my weight.
97. I think that I am inferior to others because of my weight.
98. I find it difficult to love myself because of my weight.
99. I find it difficult to show myself compassion because of my weight.
100. I am embarrassed because of my weight.
101. I am ashamed of myself because of my weight

Supplementary S4: Method for dealing with extreme weight/height entries

First, some participants reported height in feet and inches (n = 4) and weight in stones (n = 1). In this case, we converted to cm and kg to calculate BMI. Second, six participants provided an unreasonable entry (e.g., reporting weight as '6', height as '63'). These cases were treated as missing for analyses that used BMI but not from any other analyses. Third, eight participants included symbols in their report (e.g., height: '1,76'). In these cases, the entry was corrected by removing the symbol. Fourth, two participants reported weight as a range (e.g., 58 - 60). In these cases, we used the midpoint of the range as the measure of weight. Finally, six participants from the U.S.A. reported very high weight figures (e.g., 385, 360, 302). Although these values are possible, it is also possible that participants, being American, entered weight information in pounds, even though the instructions asked for kg. Because of the uncertainty introduced by this data, we estimated the BMI for participants whose reported weight was larger than M+3SD (i.e., 56.29) in three different ways. First, BMI was estimated with weight as reported ($BMI_{original}$). Second, BMI was estimated assuming the number reported was stated in pounds (BMI_{pounds}). Third, we treated the cases as missing ($BMI_{removed}$). A total of 10 participants' $BMI_{original}$ exceeded this value. Only BMI data for these 10 participants underwent the treatment described above. As can be seen in the table below, we report the correlation analyses using all three BMI estimates. The results were identical regardless of the method of dealing with the extreme cases of reported weight.

Table S4

Concurrent and Convergent Validity (N = 960)

	WeSQ Scale						
Validity Measure	PWS	IWS	FSD	EWS	SiH	Int	WeSQ total
Known Groups Validity							
BMI_{pounds}[1]	.51**	.43**	.39**	.45**	.61**	.45**	.54**
$BMI_{original}$[2]	.51**	.43**	.39**	.45**	.61**	.45**	.54**
$BMI_{removed}$[3]	.51**	.43**	.39**	.45**	.61**	.45**	.54**

Note. PWS = Perceived Weight Stigma; IWS = Internalised Weight Stigma; FSD = Functional Self-Devaluation; EWS = Experienced Weight Stigma; SiH = Stigma in Healthcare; Int = Intimate Relationships; WeSQ total = Weight Stigma Questionnaire total; BMI = Body Mass Index.

All correlation coefficients are significant at the $p < .01$ level (2-tailed).

[1]BMI pounds (default variable)
[2]BMI original
[3]BMI with extreme cases removed ($n = 10$)

Table S5

Item and Subscale Statistics including Mean, Standard Deviation, Skewness, Kurtosis, Floor and Ceiling Effects (N = 999)

	Mean	SD	Skewness[1]	SE	Kurtosis[1]	SE	Floor effects %[2]	Ceiling effects %[2]
Q1 I have been called 'lazy' because of my weight.	27.96	34.67	0.78	0.07	-1.01	0.16	46.1	3.9
Q2 I have been called 'unintelligent' because of my weight.	7.21	18.47	**2.98**	0.08	**8.54**	0.16	77	0.4
Q3 I have been called 'ugly' (or similar) because of my weight.	25.34	33.01	0.98	0.08	-0.55	0.16	44.8	3.9
Q4 I have been accused of overeating because of my weight.	34.58	37.36	0.48	0.08	-1.43	0.16	39.0	6.2
Q5 I have been told that I have poor personal hygiene because of my weight.	7.53	18.72	**2.94**	0.08	**8.47**	0.16	75.4	0.8
Q6 I have been accused of not trying hard enough to lose weight.	34.28	36.79	0.52	0.08	-1.34	0.16	37.6	6.4
Q7 I have been called 'disgusting' because of my weight.	15.44	27.56	1.73	0.08	1.68	0.16	62.3	2.2
Q8 I have been told by people that they dislike me because of my weight.	11.58	23.68	**2.16**	0.08	3.63	0.16	68.1	1.4
Q9 I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.	17.06	29.96	1.62	0.08	1.15	0.16	63.3	2.8
Q11 I have been judged negatively about my weight by my family.	38.28	35.52	0.31	0.08	-1.44	0.16	27.1	6.7
Q12 My family has made fun of my weight.	33.15	34.73	0.57	0.08	-1.20	0.16	32.3	5.9
Q13 I have been excluded by my friends from social gatherings because of my weight.	9.67	21.34	**2.45**	0.08	5.22	0.16	70.5	0.8
Q14 My friends have made fun of my weight.	17.67	26.76	1.42	0.08	0.69	0.16	52.0	1.0
Q18 I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.	14.06	25.57	1.86	0.08	2.27	0.16	60.7	1.4
Q19 I have been shouted at with insults in public because of my weight.	11.40	24.18	**2.24**	0.08	3.88	0.16	68.6	1.2
Q20 I have been laughed at in public because of my weight.	13.823	25.42	1.84	0.08	2.17	0.16	64.1	1.0
Q25 I have been told to lose weight by other people.	38.96	36.30	0.28	0.08	-1.49	0.16	29.2	7.0
Q26 I have found myself in situations where I have overheard others say offensive things about me because of my weight.	25.21	31.79	0.88	0.08	-0.77	0.16	44.1	1.8
Q27 I have been physically attacked by others because of my weight.	6.64	18.00	**3.23**	0.08	**10.30**	0.16	77.7	0.6

Q28 I have been ignored by people because of my weight.	19.43	29.70	1.23	0.08	0.069	0.16	56.3	1.2
Q29 I have been deliberately left out by people because of my weight.	15.66	26.56	1.53	0.08	0.883	0.16	60.4	0.5
Q30 I have been treated without sympathy by other people because of my weight.	17.34	27.36	1.43	0.08	0.685	0.16	56.8	0.9
Q31 I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.	16.35	27.19	1.60	0.08	1.333	0.16	59.2	1.9
Q32 I feel that other people view me as lazy because of my weight.	36.62	37.90	0.42	0.08	-1.467	0.16	36.2	8.6
Q33 I feel that others view me as having no willpower because of my weight.	34.52	36.93	0.53	0.08	-1.323	0.16	36.4	7.7
Q34 I feel that others view me as unintelligent because of my weight.	16.98	28.03	1.54	0.08	1.043	0.16	59.4	1.7
Q35 I feel that others view me as ugly (or similar) because of my weight.	38.37	37.30	0.38	0.08	-1.456	0.16	29.7	9.0
Q36 I feel that others think that I eat excessive amounts of food because of my weight.	38.07	38.82	0.37	0.08	-1.538	0.16	36.0	10.2
Q37 I feel that others think that I have poor personal hygiene because of my weight.	15.70	27.33	1.67	0.08	1.502	0.16	61.3	2.1
Q38 I feel that others think that I am to blame for my weight.	45.18	40.08	0.09	0.08	-1.683	0.16	29.1	14.2
Q39 I feel that others view me as disgusting because of my weight.	27.52	35.12	0.87	0.08	-0.837	0.16	46.5	5.7
Q41 People who are thinner than me dislike me because of my weight.	18.39	27.73	1.41	0.08	0.722	0.16	52.8	1.3
Q42 I feel that health staff treat me unfairly because of my weight.	13.89	26.59	1.90	0.08	2.331	0.16	64.6	1.5
Q43 I feel that health staff offer me poorer service because of my weight.	13.21	25.89	1.99	0.08	2.790	0.16	67.0	1.7
Q44 I feel humiliated during contact with health professionals because of my weight.	23.52	32.65	1.12	0.08	-0.248	0.16	49.5	4.0
Q45 I feel that my family find interaction with me unpleasant because of my weight.	10.58	22.32	**2.35**	0.08	4.717	0.16	69.4	1.3
Q46 I feel that my family do not provide me with emotional support because of my weight.	14.74	26.19	1.81	0.08	2.133	0.16	60.4	2.0
Q47 I feel that my friends exclude me from fun activities because of my weight.	10.62	22.18	**2.30**	0.08	4.463	0.16	68.0	1.1
Q48 I feel that people do not want me to be their friend because of my weight.	14.34	25.46	1.80	0.08	2.080	0.16	61.2	1.3
Q49 I feel that people prefer not to be close friends with me because of my weight.	12.74	24.23	1.99	0.08	2.948	0.16	63.9	1.2

Q50 I feel that people do not want to go on a date with me because of my weight.	30.20	36.98	0.75	0.08	-1.083	0.16	45.4	7.5
Q51 I feel that people do not want to have a sexual relationship with me because of my weight.	31.99	36.83	0.67	0.08	-1.162	0.16	40.8	7.7
Q52 I feel that people do not want to enter a committed relationship with me because of my weight.	26.26	34.86	0.97	0.08	-0.622	0.16	49.2	5.8
Q53 I feel that people laugh at me in public because of my weight.	17.95	28.52	1.42	0.08	0.616	0.16	57.3	1.3
Q54 I feel that staff at restaurants/stores offer me poorer service compared to others because of my weight.	13.12	24.94	1.93	0.08	2.551	0.16	65.0	0.9
Q55 I feel that my colleagues would not accept me as their superior because of my weight.	13.74	25.66	1.85	0.08	2.198	0.16	64.6	1.3
Q56 I feel that I would not be considered for employment or job advancement because of my weight.	14.58	26.60	1.80	0.08	1.970	0.16	63.4	1.3
Q57 I feel that people have not given me housing opportunities because of my weight.	4.70	14.22	**3.68**	0.08	**14.203**	0.16	82.1	0.1
Q58 I feel that people patronize me (e.g., speak to me as if I am not smart) because of my weight.	16.37	27.49	1.59	0.08	1.209	0.16	59.2	1.7
Q59 I feel that people stare at me because of my weight.	25.85	32.57	0.94	0.08	-0.611	0.16	43.1	3.6
Q60 I feel that people laugh at me because of my weight.	21.41	31.02	1.19	0.08	-0.076	0.16	52.3	2.5
Q61 I feel that people do not treat me nicely because of my weight.	17.77	27.04	1.36	0.08	0.508	0.16	54.7	0.8
Q62 I feel that people ignore me because of my weight.	20.63	30.29	1.21	0.08	-0.023	0.16	54.0	1.6
Q63 I feel that people sometimes exclude me from social gatherings because of my weight.	14.41	25.65	1.78	0.08	1.948	0.16	62.0	1.0
Q64 I feel that people judge me when I walk into a room because of my weight.	33.47	36.08	0.57	0.08	-1.269	0.16	35.9	6.2
Q65 Because of my weight, people do not show me sympathy.	15.33	24.98	1.56	0.08	1.230	0.16	58.1	0.4
Q66 I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.	13.75	24.39	1.81	0.08	2.149	0.16	61.5	0.7
Q67 I feel that people find interacting with me unpleasant because of my weight.	15.77	26.20	1.60	0.08	1.316	0.16	58.4	1.0
Q68 I feel that people are not willing to have a close emotional relationship with me because of my weight.	19.76	30.38	1.33	0.08	0.303	0.16	56.1	2.4
Q69 People make me think that they are better than me because of my weight.	30.42	34.42	0.65	0.08	-1.167	0.16	39.0	3.7
Q70 I think that I am lazy because of my weight.	34.78	35.74	0.50	0.08	-1.317	0.16	32.5	6.0

Q71 I think that I am lacking in willpower because of my weight.	38.27	36.72	0.36	0.08	-1.435	0.16	30.7	8.4
Q72 I think that I am unintelligent because of my weight.	8.69	19.91	2.69	0.08	6.918	0.16	72.1	0.9
Q73 I think that I am unattractive because of my weight.	47.76	37.15	0.02	0.08	-1.536	0.16	18.2	13.6
Q74 I think that my weight is the result of the lifestyle I lead.	61.27	33.50	-0.56	0.08	-0.972	0.16	9.4	19.7
Q75 I think that I am not confident in my abilities because of my weight.	35.19	35.75	0.47	0.08	-1.335	0.16	33.3	5.4
Q76 I think being the weight that I am is my fault.	58.03	36.67	-0.43	0.08	-1.309	0.16	14.1	20.9
Q77 I think that I am undeserving of the same opportunities that other people have because of my weight.	15.94	27.87	1.76	0.08	1.883	0.16	60.6	3.0
Q78 I think that I am undeserving of living a good, rewarding life because of my weight.	17.54	28.69	1.54	0.08	1.043	0.16	58.1	2.4
Q79 I think that I cannot contribute anything useful to society because of my weight.	11.19	22.77	**2.26**	0.08	4.248	0.16	65.9	1.0
Q80 I think that I am disgusting because of my weight.	32.15	36.34	0.69	0.08	-1.081	0.16	37.8	8.3
Q81 I hate myself because of my weight.	36.49	36.71	0.48	0.08	-1.313	0.16	29.9	9.1
Q82 I think that I am a failure because of my weight.	29.41	34.62	0.76	0.08	-0.958	0.16	40.3	4.9
Q83 I think that I am not deserving of proper treatment by health staff because of my weight.	8.16	19.43	**2.82**	0.08	7.569	0.16	73.8	0.7
Q84 I avoid seeking out healthcare services when I should because of my weight.	15.78	28.37	1.69	0.08	1.431	0.16	63.1	1.9
Q85 I think that I am not worthy of having good quality relationships with family because of my weight.	12.20	23.99	**2.11**	0.08	3.460	0.16	65.4	1.5
Q86 I avoid family occasions because of my weight.	17.87	29.25	1.49	0.08	0.856	0.16	59.1	2.2
Q87 I think that I am not worthy of having good quality friendships because of my weight.	12.74	24.189	**2.03**	0.08	3.107	0.16	63.8	1.1
Q88 I avoid attending events with my friends because of my weight.	26.00	33.13	**0.92**	0.08	-0.690	0.16	44.3	2.5
Q89 I think that I am not worthy of having good quality relationships with my peers because of my weight.	15.20	26.78	1.72	0.08	1.677	0.16	61.4	1.2
Q90 I avoid socializing with my peers because of my weight.	24.23	32.81	1.05	0.08	-0.425	0.16	48.0	3.1
Q91 I think that I am not worthy of having a romantic relationship with anyone because of my weight.	27.09	35.88	0.95	0.08	-0.699	0.16	48.4	7.3
Q92 I avoid seeking romantic partners because of my weight.	28.81	36.19	0.84	0.08	-0.885	0.16	46.6	7.1
Q93 I think that I am not worth being hired for a good paying job because of my weight.	10.24	22.27	**2.46**	0.08	5.308	0.16	70.0	1.1

Q94 I avoid applying for jobs because of my weight.	11.96	24.66	**2.14**	0.08	3.497	0.16	69.5	1.5
Q95 I think that I am not worth being selected when looking for housing because of my weight.	6.08	16.80	**3.43**	0.08	**12.315**	0.16	78.7	0.8
Q96 I think that I am out of place in the world because of my weight.	28.01	35.15	0.84	0.08	-0.856	0.16	46.9	5.5
Q97 I think that I am inferior to others because of my weight.	31.50	34.82	0.65	0.08	-1.102	0.16	37.0	5.6
Q98 I find it difficult to love myself because of my weight.	46.33	37.73	0.07	0.08	-1.560	0.16	21.2	12.9
Q99 I find it difficult to show myself compassion because of my weight.	38.42	37.38	0.36	0.08	-1.467	0.16	31.1	8.9
Q100 I am embarrassed because of my weight.	45.74	37.96	0.11	0.08	-1.577	0.16	20.6	13.6
Q101 I am ashamed of myself because of my weight.	41.80	37.84	0.25	0.08	-1.524	0.16	24.6	12.3

Note. There was no missing data on the items presented here for $N = 999$.

[1]**Bold** signifies asymmetry and kurtosis. The acceptable range is between -2 and +2 for skewness and between -7 and +7 for kurtosis (Hair et al., 2010).

[2]Significant floor/ceiling effects have been set at 15% as an acceptable benchmark and is indicated by the percentage of participants who achieved the lowest or highest possible score on the WeSQ.

Figure S6

Parallel Analysis Scree Plot Suggesting Extraction of Six Factors

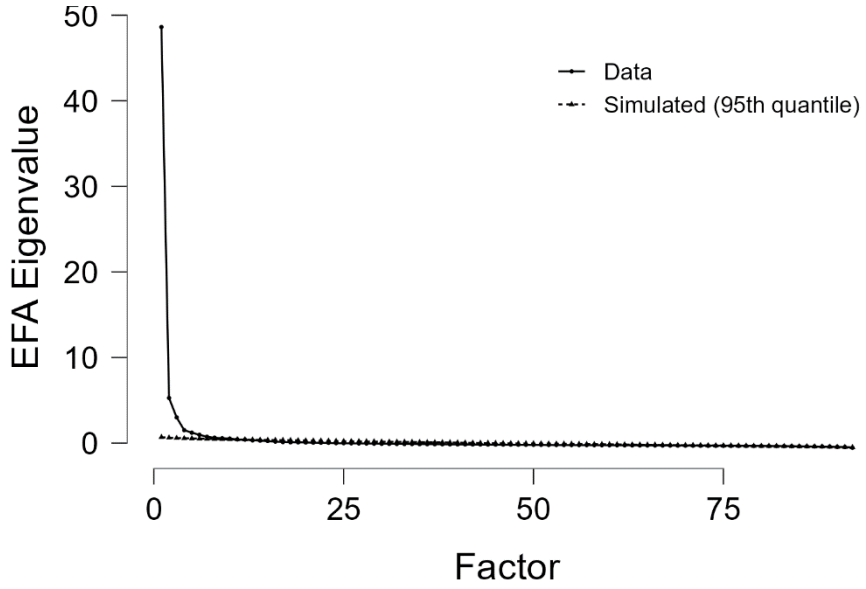

Table S7

Final Weight Stigma Questionnaire (WeSQ) Items and Scoring Instructions

Items begin with the following text: "The following items relate to situations that people encounter because of their weight. Using the scale below, please rate the extent to which you have experienced the following situations in your day-to-day life (0 = *never*, 100 = *always*). Please slide the cursor to indicate the extent to which you have experienced these situations."
1: Perceived weight stigma
I feel that people sometimes exclude me from social gatherings because of my weight.
I feel that my friends exclude me from fun activities because of my weight.
I feel that people prefer not to be close friends with me because of my weight.
I have been excluded by my friends from social gatherings because of my weight.
I feel that people do not want me to be their friend because of my weight.
I have been deliberately left out by people because of my weight.
I feel that people provide me with less emotional support (e.g., not having someone to talk to, or similar) because of my weight.
I feel that people do not treat me nicely because of my weight.
Because of my weight, people do not show me sympathy.
I feel that people ignore me because of my weight.
People who are thinner than me dislike me because of my weight.
I feel that people find interacting with me unpleasant because of my weight.
I have received less emotional support from people (e.g., not having someone to confide in about myself) because of my weight.
I have been ignored by people because of my weight.
2: Internalised weight stigma
I think being the weight that I am is my fault.
I think that I am lacking in willpower because of my weight.
I am embarrassed because of my weight.
I think that I am unattractive because of my weight.
I am ashamed of myself because of my weight.
I think that I am lazy because of my weight.
I find it difficult to love myself because of my weight.
I hate myself because of my weight.
I think that my weight is the result of the lifestyle I lead.
I find it difficult to show myself compassion because of my weight.
I think that I am not confident in my abilities because of my weight.
I think that I am disgusting because of my weight.
I think that I am a failure because of my weight.
I feel that others think that I am to blame for my weight.
3: Functional self-devaluation
I think that I am unintelligent because of my weight.
I think that I cannot contribute anything useful to society because of my weight.
I think that I am not worth being selected when looking for housing because of my weight.
I think that I am undeserving of living a good, rewarding life because of my weight
I think that I am undeserving of the same opportunities that other people have because of my weight.
I think that I am not worthy of having good quality relationships with family because of my weight

I think that I am not deserving of proper treatment by health staff because of my weight.
I think that I am not worthy of having good quality friendships because of my weight.
I think that I am not worth being hired for a good paying job because of my weight.
I think that I am not worthy of having good quality relationships with my peers because of my weight.

4: Experienced weight stigma

I have been called 'disgusting' because of my weight.
I have been told by people that they dislike me because of my weight.
I have been called 'ugly' (or similar) because of my weight.
I have been shouted at with insults in public because of my weight.
I have found myself in situations where I have overheard others say offensive things about me because of my weight.
I have been called 'unintelligent' because of my weight.
I have been told that I have poor personal hygiene because of my weight.
I have been made fun of by others in public places (e.g., stores, restaurants, theaters, parks) about my weight.
I have been laughed at in public because of my weight.
I have been physically attacked by others because of my weight.
I have been called 'lazy' because of my weight.
My family has made fun of my weight.

5: Healthcare

I feel that health staff treat me unfairly because of my weight.
I feel that health staff offer me poorer service because of my weight.
I have been treated unfairly by health professionals (e.g., professionals blaming unrelated health problems on my weight, or similar) because of my weight.
I feel humiliated during contact with health professionals because of my weight.
I avoid seeking out healthcare services when I should because of my weight.

6: Intimate Relationships

I feel that people do not want to enter a committed relationship with me because of my weight.
I feel that people do not want to go on a date with me because of my weight.
I feel that people do not want to have a sexual relationship with me because of my weight
I think that I am not worthy of having a romantic relationship with anyone because of my weight.
I avoid seeking romantic partners because of my weight.

Scale: A 0-100 visual analogue scale indicates the extent of weight stigma experienced; items are rated from 0 (*never*) to 100 (*always*).

Scoring instructions: Calculate the mean score for each subscale to obtain a composite factor score.

Scoring Interpretation: Higher mean scores on any subscale are representative of high endorsement of weight stigma on the respective domain. For example, high mean scores on the ‘perceived weight stigma’ subscale is suggestive of high endorsement of perceived weight stigma.

Table S8

Participant Demographic Characteristics for Sample 2 (N = 614)

Variable	*n*	%	*M*	*SD*	Range
Age	613		39.86	12.71	18 - 76
Gender Identity					
Male	78	12.7			
Female	508	82.7			
Non-binary	22	3.6			
Other	2	.3			
Gender not disclosed	4	.7			
Ethnicity					
Australian	258	42			
Other	356	58			
Other specified					
White	567	92.3			
Black	1	.1			
Hispanic	7	1.1			
Asian	11	1.8			
HW/PI/NA	6	1.0			
Aboriginal and Torres Strait Islander	5	0.8			
Mixed	14	2.3			
Not reported	3	0.5			
Highest Education level					
Primary school	8	1.3			
High school	116	18.9			
TAFE	96	15.6			
University	394	64.2			
Relationship status					
Single	123	20			
In a relationship	68	1.1			
Engaged	15	2.4			
Defacto	59	9.6			
Married	241	39.3			
Never married	56	9.1			
Widowed	4	.7			
Separated	12	2.0			
Divorced	28	4.6			
Other	8	1.3			
Language					
English (1st language)	575	93.6			
English (2nd language)	39	6.4			
Weight category					
Underweight	11	1.8			
Normal weight	99	16.1			

Overweight	56	9.1
Obese	373	60.7

Note. Only available demographic information is presented for those participants who provided complete survey data; HW = Hawaiian, PI = Pacific Islander, NA = Native American.

Table S9

Interpretability and Feasibility of the WeSQ

Interpretability of WeSQ

Distribution of scores in the study population	% of missing items and % of missing total scores	Floor and ceiling effects	Scores and change scores available for relevant (sub)groups	Minimal important change (MIC) or minimal important difference (MID)	Information on response shift[1]
Mean and standard deviation provided for each score, subscale and total WeSQ; present in Table S5	Nil	Present in Table S5	Scores available for relevant sub(groups) Change scores = not applicable in this cross-sectional study	Unable to assess in current study; future studies are needed to conduct distribution- and/or anchor-based methods to obtain this data	Unable to assess in current study; studies on responsiveness (change scores in response to an intervention) are needed to obtain this data

Feasibility Information for WeSQ[2]

Patients' comprehensibility	Type and ease of administration	Length of the instrument (number of items and subscales)	Completion time	Patients required mental and physical ability level	Ease of standardization	Ease of score calculation	Copyright	Cost of an instrument	Required equipment	Availability in different settings	Regulatory agency's requirement for approval
It is a requirement that individuals completing the scale understand the items presented to ensure accurate responding	Self-report; Level of administration: easy	F1: 14 items F2: 14 items F3: 9 items F4: 12 items F5: 5 items F6: 5 items Total: 59 items	Approximately 30 minutes	General mental ability level required to complete measure[3]	N/A	Level: Easy Compute average of subscale(s) and total scale scores	Nil	Nil	N/A	Suitable for use in research and clinical settings when weight stigma is the construct of interest	Freely available

Note. N/A = not applicable

[1]Response shift is a change in a person's self-evaluation on the construct and can be the result of a change in health status and therefore reconceptualization of the target construct.

[2]Feasibility information attempts to answer the question: "Can the measure be applied easily in its intended setting, given constraints of time, money, and interpretability?".

[3]Respondent should not have an acquired brain injury, physical and/or intellectual disability, low literacy skills, and other concerns that may impact upon capacity to respond.

Appendix F: Research Portfolio

Appendix F - 1 Acceptance of Study 1 Publication

From: David York <onbehalfof@manuscriptcentral.com>
Sent: Tuesday, 9 March 2021 1:59 AM
To: Xochitl.DelaPiedadGarcia@acu.edu.au
Cc: Stephanie.papadopoulos@acu.edu.au; Xochitl.DelaPiedadGarcia@acu.edu.au; Leah Brennan <Leah.Brennan@latrobe.edu.au>
Subject: Obesity Reviews - Decision on Manuscript ID OBR-11-20-4835.R1

08-Mar-2021

Dear Dr. de la Piedad Garcia,

Manuscript ID OBR-11-20-4835.R1 entitled "Evaluation of the Psychometric Properties of Self-Reported Weight Stigma Measures: A Systematic Literature Review" which you submitted to Obesity Reviews, has now been reviewed by two experts in the field whose comments are included at the bottom of this letter.

On the basis of these reports, I am pleased to inform you that your manuscript in principle can be accepted for publication in Obesity Reviews, provided that you address all the points raised by the reviewers. However, there are problems with the submission formats:
1. I think the Prisma Flow chart needs to be in the main document and not in Supplementary materials.
2. The format of S4 is not acceptable. Please note that all supplementary material may be submitted as a single pdf.

To revise your manuscript, log into https://mc.manuscriptcentral.com/obr and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text.

Once the revised manuscript is prepared, you can upload it and submit it through your Author Centre.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewers in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewers.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to Obesity Reviews, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

This journal offers a number of license options, information about this is available here: https://authorservices.wiley.com/author-resources/Journal-Authors/licensing/index.html. All co-authors are required to confirm that they have the necessary rights to grant in the submission, including in light of each co-author's funder policies. For example, if you or one of your co-authors received funding from a member of Coalition S, you may need to check which licenses you are able to sign.

Once again, thank you for submitting your manuscript to Obesity Reviews and I look forward to receiving your revision.

Yours sincerely,
Dr. David York
Editor-in-Chief, Obesity Reviews
obreditor@gmail.com, david.a.york1@gmail.com

Managing Editor Comments to Author:

Reviewers' Comments to Author:
Referee: 1

Comments to the Author
none

Referee: 2

Comments to the Author
Overall the authors did a great job addressing my concerns from the first round of reviews. I look forward to seeing (and citing) this review in the literature!

Appendix F - 2 License Confirmation for Copyrighted Work (Study 1)

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Dear Miss. Stephanie Papadopoulos,
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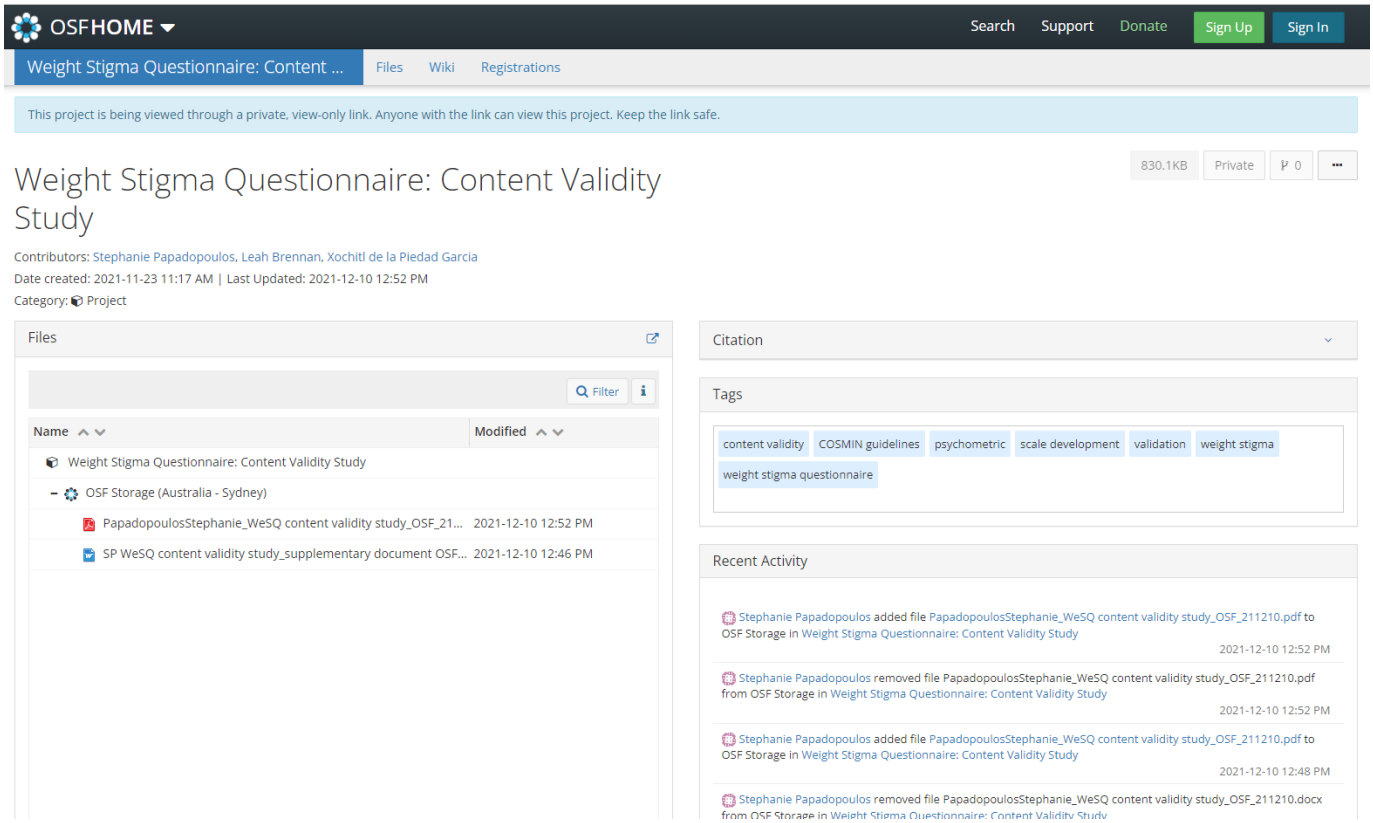
Appendix F – 4 Proof of Data Sharing of Study 2 on Open Science Framework (OSF)

URL: https://tinyurl.com/WeSQCVstudy



Appendix F – 5 Proof of Study 3 Submission to Body Image Journal

Confirm co-authorship of submission to Body Image

BI em.bodyimage.0.7806c6.ce62dd0d@editorialmanager.com on behalf of Body Image <em@editorialmanager.com>
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Journal: Body Image
Title: Weight Stigma Questionnaire (WeSQ): Development and Validation of a Weight Stigma Scale for Adults across the Weight Spectrum Corresponding Author: Dr Xochitl de la Piedad Garcia
Co-Authors: Stephanie Papadopoulos; Leah Brennan; Joel Anderson Manuscript Number:

Dear Stephanie,

The corresponding author Dr Xochitl de la Piedad Garcia has listed you as a contributing author of the following submission via Elsevier's online submission system for Body Image.

Submission Title: Weight Stigma Questionnaire (WeSQ): Development and Validation of a Weight Stigma Scale for Adults across the Weight Spectrum

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If you did not co-author this submission, please contact the corresponding author directly at xochitl.delapiedadgarcia@acu.edu.au.

Thank you,

Body Image

Appendix F - 6 Statement of Contribution for Study 1

Title: Evaluation of the psychometric properties of self-reported weight stigma measures: A systematic literature review

Status: Accepted for publication in journal *Obesity Reviews*

I acknowledge that my contribution to the above paper is 50%.

Stephanie Papadopoulos

I acknowledge that my contribution to the above paper is 25%.

Dr. Xochitl de la Piedad Garcia

I acknowledge that my contribution to the above paper is 25%.

Associate Professor Leah Brennan

Appendix F - 7 Statement of Contribution for Study 2

Title: The development of a new weight stigma measure: Establishing content validity

Status: Intended for project sharing in Open Science Framework (OSF)

I acknowledge that my contribution to the above paper is 60%.

Stephanie Papadopoulos

I acknowledge that my contribution to the above paper is 20%.

Dr. Xochitl de la Piedad Garcia

I acknowledge that my contribution to the above paper is 20%.

Associate Professor Leah Brennan

Appendix F - 8 Statement of Contribution for Study 3 and 4

Title: Weight Stigma Questionnaire (WeSQ): Development and validation of a weight stigma scale for adults across the weight spectrum

Status: Submitted for publication in *Body Image*

I acknowledge that my contribution to the above paper is 50%.

Stephanie Papadopoulos

I acknowledge that my contribution to the above paper is 20%.

Dr. Xochitl de la Piedad Garcia

I acknowledge that my contribution to the above paper is 20%.

Associate Professor Leah Brennan

I acknowledge that my contribution to the above paper is 10%.

Dr. Joel Anderson

Appendix F - 9 Conference Presentations

Papadopoulos, S., O'Brien, P., De La Piedad Garcia, X., Brennan, L (2017). Does weight stigma have a mediating effect on obesity-related outcomes?. Poster presentation at the Australia & New Zealand Academy for Eating Disorders conference, Sydney

Papadopoulos, S., O'Brien, P., De La Piedad Garcia, X., Brennan, L (2017). Does weight stigma have a mediating effect on obesity-related outcomes?. Oral presentation at the Australian Catholic University Psychology Conference, Melbourne, Australia

Papadopoulos, S., De La Piedad Garcia, X., Brennan, L (2019). Evaluation of the psychometric properties of self-reported weight stigma measures: A systematic literature review. Poster presentation at the Weight Stigma Conference, London, Ontario, Canada

Papadopoulos, S., De La Piedad Garcia, X., Brennan, L (2019). Evaluation of the psychometric properties of self-reported weight stigma measures: A systematic literature review. Oral presentation at the Australian Catholic University Psychology Conference, Melbourne, Australia