frontiers | Research Topics

The mental health impact of weight stigma

Edited by
D. Catherine Walker, Erin N. Harrop and Lily O'Hara

Published in
Frontiers in Psychiatry

ISSN 1664-8714
ISBN 978-2-8325-7359-4
DOI 10.3389/978-2-8325-7359-4

Generative AI statement
Any alternative text (Alt text) provided alongside figures in the articles in this ebook has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

About Frontiers

Frontiers is more than just an open access publisher of scholarly articles: it is a pioneering approach to the world of academia, radically improving the way scholarly research is managed. The grand vision of Frontiers is a world where all people have an equal opportunity to seek, share and generate knowledge. Frontiers provides immediate and permanent online open access to all its publications, but this alone is not enough to realize our grand goals.

Frontiers journal series

The Frontiers journal series is a multi-tier and interdisciplinary set of open-access, online journals, promising a paradigm shift from the current review, selection and dissemination processes in academic publishing. All Frontiers journals are driven by researchers for researchers; therefore, they constitute a service to the scholarly community. At the same time, the *Frontiers journal series* operates on a revolutionary invention, the tiered publishing system, initially addressing specific communities of scholars, and gradually climbing up to broader public understanding, thus serving the interests of the lay society, too.

Dedication to quality

Each Frontiers article is a landmark of the highest quality, thanks to genuinely collaborative interactions between authors and review editors, who include some of the world's best academicians. Research must be certified by peers before entering a stream of knowledge that may eventually reach the public - and shape society; therefore, Frontiers only applies the most rigorous and unbiased reviews. Frontiers revolutionizes research publishing by freely delivering the most outstanding research, evaluated with no bias from both the academic and social point of view. By applying the most advanced information technologies, Frontiers is catapulting scholarly publishing into a new generation.

What are Frontiers Research Topics?

Frontiers Research Topics are very popular trademarks of the *Frontiers journals series*: they are collections of at least ten articles, all centered on a particular subject. With their unique mix of varied contributions from Original Research to Review Articles, Frontiers Research Topics unify the most influential researchers, the latest key findings and historical advances in a hot research area.

Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers editorial office: frontiersin.org/about/contact

The mental health impact of weight stigma

Topic editors
D. Catherine Walker — Union College, United States
Erin N. Harrop — University of Denver, United States
Lily O'Hara — Griffith University, Australia

Citation
Walker, D. C., Harrop, E. N., O'Hara, L., eds. (2026). *The mental health impact of weight stigma*. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-8325-7359-4

Topic Editor D. Catherine Walker is the sole proprietor of the private practice D. Catherine Walker, Ph.D., Psychology PLLC. The other Topic Editors declare no competing interests with regard to the Research Topic subject.

Table of contents

frontiers | Frontiers in Psychiatry

TYPE Editorial
PUBLISHED 26 December 2025
DOI 10.3389/fpsyt.2025.1753279

OPEN ACCESS

EDITED AND REVIEWED BY
Veena Kumari,
Brunel University London, United Kingdom

*CORRESPONDENCE
D. Catherine Walker
walkerc@union.edu

RECEIVED 24 November 2025
REVISED 24 November 2025
ACCEPTED 08 December 2025
PUBLISHED 26 December 2025

CITATION
Walker DC, O'Hara L and Harrop EN (2025) Editorial: The mental health impact of weight stigma.
Front. Psychiatry 16:1753279.
doi: 10.3389/fpsyt.2025.1753279

Editorial: The mental health impact of weight stigma

D. Catherine Walker[1]*, Lily O'Hara[2] and Erin N Harrop[3]

[1]Union College, Schenectady, NY, United States, [2]Griffith University, Nathan, QL, Australia, [3]University of Denver, Denver, CO, United States

KEYWORDS

weight stigma, weight stigma reduction, weight inclusive care, body acceptance, body neutrality

Editorial on the Research Topic
The mental health impact of weight stigma

Weight stigma, often referred to as anti-fatness or size-based discrimination, is a deeply ingrained and widespread form of prejudice with profound consequences for mental health and well-being (1, 2). Prevalent in individuals, family relationships, health services, education, employment, social media, legal systems, and all aspects of society, weight stigma creates significant barriers to equitable treatment and quality of life (1). This Research Topic examines the lived experiences, predictors, mediators, and moderators of weight stigma and its mental health consequences, as well as the development, implementation, and evaluation of initiatives to reduce weight stigma and its mental health consequences at the intrapersonal, interpersonal, intersectional, institutional, or ideological levels. We aim to bear witness to the harms of weight stigma, while also exploring practical, creative solutions to mitigate harm, and support individual and communal healing.

Regarding our approach, we aimed to protect against inadvertently perpetuating weight stigma (e.g., through pathologizing weight, reiterating fat stereotypes, treating weight loss as inherently salutogenic, medicalizing "obesity," "solving" stigma through weight management). To better accomplish this, we provided guidelines for authors on weight-inclusive language that "affirms the respect and human dignity" of those about whom we speak (3). We also aligned our approach to this topic with a weight-inclusive lens (4). The nine articles in this Research Topic that document harms of weight stigma, strategies for healing from weight stigma, and initiatives to reduce weight stigma are briefly reviewed here.

Regarding mental health harms of weight stigma, a survey of U.S. adults found that weight stigma is associated with a range of poor psychological outcomes including lower global mental health scores, more frequent depressive symptoms, and greater odds of depressive disorder diagnosis, which were consistent across racial and ethnic identity, body size, and socioeconomic status (Gerend et al.), indicating that no group is immune to its effects. Another quantitative study with U.S. adults found that perceived stress mediated the relationship between weight stigma and depressive and anxiety symptoms, accounting for 37% of the link (Figueroa et al.), highlighting weight stigma as a potent psychosocial stressor that contributes to psychological distress.

Weight stigma also affects personal relationships, including within families and romantic relationships. A longitudinal study in Spain found that family-based weight stigma negatively impacted adolescents' psychological well-being, particularly among girls (Anastasiadou et al.). Recent exposure to weight stigma was linked to higher distress, with maternal and paternal comments about weight and dieting associated with increased distress and lower self-esteem, suggesting that educating parents to avoid stigmatizing comments and promote positive, health-oriented, weight-inclusive messages is essential. Romantic relationships are similarly affected. A quantitative study of couples in the U.S. found significant negative associations between an individual's own internalized and anticipated weight stigma and both their own and their partner's mental well-being (Brochu et al.). Thus, weight stigma felt by one partner in a couple harms the mental health of both people in the relationship.

Further, weight-based discrimination intersects with other forms of oppression, shaping experiences for those with less access to power and privilege. A qualitative study of sexual minority women in the U.S. found that dominant cultural norms, intergenerational practices within families, and queer communities were all contexts in which weight stigma was both reinforced and resisted (Fowler et al.). This highlights the need to address intersecting forms of oppressions across the lifespan and community contexts, rather than focusing on weight stigma or certain communities in isolation.

Often described as a hostile environment for larger-bodied people, the health system is not immune to weight stigma (Tomlinson et al.). A scoping review found that mental health professionals frequently observed weight bias in colleagues, even if they did not report it in themselves (Philip et al.). Higher-weight clients were perceived more negatively and received less intensive care for similar symptoms than lower-weight clients (Philip et al.). Paradoxically, professionals rated restrictive eating disorder symptoms in higher-weight clients as less severe and recommended less intensive treatment (Philip et al.). Qualitative studies in the review revealed clients' experiences of weight bias, unsolicited weight loss advice, and differential treatment, which all undermined therapeutic progress and eroded trust in practitioners and the mental health system (Philip et al.).

Turning towards healing, reducing weight stigma requires disrupting traditional paradigms and adopting new strategies, both as individuals and systems. At the individual level, an online survey of racially and ethnically diverse U.S. adults found that those who engaged in adaptive coping, such as cognitive reframing or seeking social support, showed weaker associations between weight stigma and poor mental health outcomes (Gerend et al.), suggesting that more inclusive paradigms and community support could buffer against harms. A case study in a U.S. hospital described the collaborative process of developing a size-inclusive, trauma-informed e-course with separate tracks tailored to clinicians, staff, and patients (Tomlinson et al.), documenting how such paradigmatic shifts and interdisciplinary collaborations happen in the real world.

Online and digital platforms provide effective tools for driving societal change. An online experimental study with women and gender diverse participants in the U.S. found that exposure to brief body positive and body neutral TikTok videos was associated with improved functional appreciation and mood and reduced self-objectification and body dissatisfaction (Kilby and Mickelson). Finally, a qualitative study with US college students with elevated eating disorder psychopathology identified support for a digital adaptation of the Body Advocacy Movement, a program targeting anti-fat bias, as a potential way to buffer eating disorder development (Laboe et al.).

In conclusion, articles in this Research Topic paint a clear picture of weight stigma as a widespread, harmful, intersectional, and complex issue. Weight stigma manifests in families and romantic relationships, influences social interactions across settings, and pervades health services. Its negative effects on mental health are significant, experienced across age, race, sexuality, and other demographic characteristics, often mediated by stress. Reducing weight stigma requires a multi-pronged approach, from educating parents and health service providers to promoting adaptive coping strategies and social support, movements and paradigms that challenge anti-fat bias, promote body acceptance and neutrality, and create size- and weight-inclusive environments.

Author contributions

DW: Writing – review & editing, Writing – original draft. LO'H: Writing – review & editing, Writing – original draft. EH: Writing – review & editing, Writing – original draft.

Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

References

1. Emmer C, Bosnjak M, Mata J. The association between weight stigma and mental health: A meta-analysis. *Obes Rev*. (2020) 21:e12935. doi: 10.1111/obr.12935

2. Zhu XS, Smith RA, Buteau E. A meta-analysis of weight stigma and health behaviors. *Stigma Health*. (2022) 7:1–13. doi: 10.1037/sah0000352

3. Meadows A, Daníelsdóttir S. What's in a word? On weight stigma and terminology. *Front Psychol*. (2016) 7:1527. doi: 10.3389/fpsyg.2016.01527

4. Tylka TL, Annunziato RA, Burgard D, Daníelsdóttir S, Shuman E, Davis C, et al. The weight-inclusive versus weight-normative approach to health: evaluating the evidence for prioritizing well-being over weight loss. *J Obes*. (2014) 2014:983495. doi: 10.1155/2014/983495

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 13 May 2025
DOI 10.3389/fpsyt.2025.1569841

OPEN ACCESS

EDITED BY
D. Catherine Walker,
Union College, United States

REVIEWED BY
Briony Hill,
Nursing & Health Sciences, Monash University, Australia
Fausta Micanti,
University of Naples Federico II, Italy
Angela Pinto,
Baruch College (CUNY), United States
Paula Brochu,
Nova Southeastern University, United States

*CORRESPONDENCE
Katherine E. Schaumberg
kschaumberg@utexas.edu

RECEIVED 01 February 2025
ACCEPTED 11 April 2025
PUBLISHED 13 May 2025

CITATION
Laboe AA, Sheil E, Jennings EL, Steinhoff MF, Goldberg J, Sagat K, Gavuji M and Schaumberg KE (2025) Developing a digital intervention to combat fatphobia and anti-fat bias. *Front. Psychiatry* 16:1569841. doi: 10.3389/fpsyt.2025.1569841

Developing a digital intervention to combat fatphobia and anti-fat bias

Agatha A. Laboe[1,2], Elizabeth Sheil[1], Emma L. Jennings[3], Molly F. Steinhoff[4], Jake Goldberg[4], Kevin Sagat[1], Mahathi Gavuji[1,2] and Katherine E. Schaumberg[1,2]*

[1]Department of Psychiatry, University of Wisconsin-Madison, Madison, WI, United States, [2]Department of Psychology, University of Texas at Austin, Austin, TX, United States, [3]Department of Psychology, Drexel University, Philadelphia, PA, United States, [4]Department of Psychological and Brain Science, Washington University in St. Louis, St. Louis, MO, United States

Introduction: The Body Advocacy Movement (BAM) is an in-person, peer-led, cognitive-dissonance-based eating disorder (ED) prevention program that reduces fatphobia and anti-fat bias. Developing a digital adaptation of BAM has the potential to increase its accessibility and fill a critical gap in existing digital ED interventions, which to date have not specifically targeted anti-fat bias or fatphobia. This study applies a human-centered design approach to inform the development of a digital version of BAM.

Methods: Semi-structured interviews were conducted with 31 participants, including 17 college students with elevated ED psychopathology and 14 past BAM participants. College students with elevated ED psychopathology shared experiences with fatphobia and anti-fat bias, how they use mental health technology, and thoughts on digitizing BAM. Past BAM participants shared experiences with BAM, how they use mental health technology, and thoughts on digitizing BAM. Interviews were analyzed using reflexive thematic analysis with a critical realist lens.

Results: College students with elevated ED psychopathology described pervasive and harmful experiences of anti-fat bias and fatphobia, coupled with difficulties accessing action-oriented mental health support, underscoring a gap in care that a digital adaptation of BAM could address. Both groups expressed strong interest in a hybrid digital format that combines synchronous and asynchronous components for a balance of social connection and flexibility.

Discussion: Findings suggest that a digital adaptation of BAM could address unmet needs in ED prevention by providing accessible, action-oriented content focused on reducing anti-fat bias and fatphobia. Incorporating synchronous social connection within a flexible, interactive framework may promote engagement and impact. A critical next step will involve designing and pilot testing this digital adaptation of BAM to evaluate its feasibility and effectiveness.

KEYWORDS

eating disorders, digital intervention, college mental health, fatphobia, anti-fat bias, fear of weight gain, human-centered design

1 Introduction

Weight stigma refers to the societal devaluation of individuals based on body size or weight and is expressed through stereotypes (e.g., believing individuals at higher weights are lazy), prejudice (e.g., feelings of disgust toward individuals at higher weights) and discrimination (e.g., denying medical care to individuals at higher weights). It is prevalent among young adults and is linked to deleterious physical and mental health consequences (1). Burgeoning research suggests that in addition to weight-based stereotypes and discrimination, internalized weight stigma—the application of societal weight biases to oneself—is particularly harmful (2–4). Internalized weight stigma is associated with anxiety, depression, low self-esteem, body-image distress, and negative psychosocial outcomes across weight and gender groups (2–7). It is also linked to disordered eating behaviors, including dietary restraint, binge eating, and compensatory behaviors (2, 5). Furthermore, in one study of 8,504 young adults, those experiencing weight stigma and weight-related discrimination were 15.5% more likely to have an ED (8). Thus, preventing eating disorders (EDs) by addressing weight stigma—a rampant yet modifiable risk ED factor, with its own negative health effects—is paramount to promoting the well-being of young adults who are at high risk for developing an ED.

The Body Advocacy Movement (BAM) is a two-session, peer facilitated ED prevention program that employs cognitive dissonance and exposure-based strategies to combat two manifestations of weight stigma: fatphobia (i.e., the fear of becoming fat) and anti-fat bias (i.e., negative evaluations, stereotypes, or discrimination toward individuals perceived as fat), both of which are elevated among individuals with EDs (9–11). Table 1 depicts the relationship between weight stigma, fatphobia, and anti-fat bias. To date, BAM has been implemented as a primary prevention program, delivered to a general college student population rather than specifically targeting individuals with elevated levels of anti-fat bias or fatphobia, although future work may focus on more targeted and/or high-risk samples.

BAM sessions, which are two hours long, are currently scheduled one week apart, and participants complete exposure-based exercises between meetings. In the first session, participants review terminology central to the intervention, including 'fat', 'fatphobia', and 'anti-fat bias.' They identify examples of fatphobia and anti-fat bias at three levels: (1) intrapersonal (i.e., within the self), (2) interpersonal (i.e., in interactions with others), and (3) institutional (i.e., within broader societal systems and organizations). Then, participants explore how fatphobia and anti-fat bias impact individuals of different body sizes. While some forms of discrimination specifically affect those at higher weights, concerns about weight gain can be present across the weight spectrum. After the session, participants complete an exposure-based 'worst-case scenario' exercise, in which they write about the most distressing possible consequences they associate with significant weight gain. At the beginning of the second session, participants are encouraged to share their 'worst-case scenario' reflections and identify strategies for challenging fatphobia. They then participate in a role-playing exercise, responding to and countering common messages rooted in fatphobia (e.g., 'I really need to tone up') and anti-fat bias (e.g., 'I avoid being friends with fat people because they can't be active with me') produced by peer facilitators. Finally, the group brainstorms ways to combat anti-fat bias at the institutional level, and each participant shares one way they plan to act against institutional anti-fat bias. As a final reflection, participants write a response to their 'worst-case scenario,' incorporating insights from intervention discussions.

While BAM targets fatphobia and anti-fat bias, it is situated within a broader context in which these constructs are upheld by cultural norms, institutional practices, and systemic inequities. The intervention is not intended to place responsibility on individuals to 'fix' the consequences of societal oppression. Rather, BAM equips participants with tools to recognize and challenge fatphobia and anti-fat bias at multiple levels, including the institutional level, and is best understood as one component of a multi-level approach to stigma reduction that must also include policy change, public health advocacy, and structural reform.

Empirical research supports BAM's effectiveness: it has been found to reduce fatphobia, anti-fat bias, and ED psychopathology (i.e., body dissatisfaction, binge eating, and excessive exercise) with

TABLE 1 Weight stigma's relation to fatphobia and anti-fat bias.

Term	Definition	Example	Relationship to Other Terms
Fatphobia	An individual's fear of becoming fat and/or gaining weight.	Persistent unfounded fears that an individual will lose close relationships if they gain weight.	A specific, internal fear that can motivate or result from internalized weight stigma or anti-fat bias.
Anti-fat Bias	Negative attitudes, beliefs, or stereotypes about people perceived to be fat.	Assuming a fat person is unhealthy, lazy, or lacking self-control.	A cognitive and attitudinal expression of weight stigma; can be perpetuated by individuals or systems.
Internalized weight stigma	The adoption of negative societal beliefs about weight and applying them to oneself.	Feeling ashamed or unworthy because of one's body size.	A self-directed outcome of exposure to weight stigma and/or anti-fat bias.
Weight stigma	The societal devaluation of individuals based on body size or weight. This stigma is embedded in cultural norms and systems and manifests through stereotypes, prejudice, and discrimination toward individuals in larger bodies.	Being denied medical care due to body size.	A broader, often systemic phenomenon; anti-fat bias, internalized weight stigma, and fatphobia are expressions or consequences of weight stigma.

small-to-moderate effects (12). While it was initially developed as an in-person intervention, digital implementation of BAM has the potential to increase its accessibility. Digital mental health interventions are widely used, effective, and perceived as helpful by young adults (13–18). Furthermore, multiple mobile health and internet-based interventions have proven effective at reducing ED symptoms (19, 20). However, existing digital interventions do not specifically address anti-fat bias or fatphobia, leaving a gap in ED prevention that could be addressed with a digital version of BAM.

A digital version of BAM has the potential to be widely disseminated, yet it will only be effective if its users are engaged and satisfied with its new format. Reviews of current mobile health technology indicate that dissatisfaction with the user experience, concerns about personalization and customizability, and a perceived disconnect between app functions and personal goals are primary reasons for participant disengagement from digital interventions, highlighting salient barriers to overcome with the digitization of BAM (13, 19, 21). A human-centered design approach, which centralizes the design of digital interventions on those who will be using them, may help circumvent these potential challenges (22).

Human-centered design is an iterative, multi-phase approach commonly used in the development of digital health tools to improve usability, acceptability, and real-world effectiveness (23). While several frameworks for human-centered design exist, the process typically encompasses six phases: (1) investigate, which includes understanding users' needs, goals, and preferences, (2) ideate, during which ideas for designs are brainstormed, (3) prototype, when different iterations of a product are developed, (4) evaluate, during which prototype designs are finalized, (5) refine and develop, when usability testing is conducted and product design is optimized, and (6) validate, during which the product is tested (23). This study focuses on the investigate and ideate phases of human-centered design to inform the development of a digital adaptation of BAM.

In preparation for the study (ideate phase), we collaborated with eight BAM peer facilitators to generate five possible formats for the digital adaptation of BAM. These formats ranged from fully asynchronous to fully synchronous and included 1) an asynchronous, self-paced, individually-completed intervention that would be completed on a website, app, or other digital platform and would be a space to learn about anti-fat bias and fatphobia and challenge experiences of anti-fat bias and fatphobia; 2) the same asynchronous intervention, with the option to connect with a trained peer facilitator via a video call and/or messaging to discuss experiences completing the intervention; 3) the same asynchronous intervention, with the option to connect with others going through the intervention via a moderated online discussion board; 4) a mixed asynchronous and synchronous intervention, in which participants would complete activities on their own time on a website, app, or other digital platform, then would debrief on short video calls with a group and trained peer facilitator; and 5) a fully synchronous intervention in which BAM would be translated to a live, video call-based format. During semi-structured interviews, participants from both groups provided direct feedback on the five proposed adaptation ideas. Their insights helped evaluate the acceptability of and interest in each format, laying the foundation for future human-centered design phases.

In the next phase (investigate), we conducted semi-structured interviews with individuals from two key groups—college students with elevated ED psychopathology and past BAM participants. These groups were selected to capture complementary perspectives. College students with elevated ED psychopathology represent the intended users of the digital adaptation of BAM and provided insight into their experiences with anti-fat bias and fatphobia, as well as their perceptions of how a digital intervention could address these challenges. Their input was essential for identifying needs of the target population and anticipating potential barriers to engagement. Past BAM participants, who had firsthand experience of the in-person program, offered content-specific feedback on which elements should be retained, adapted, and reimagined in a digital format, helping to ensure the relevance and integrity of BAM's core components.

Overall, this study demonstrates how early-phase human-centered design can be used to inform the development of a digital adaptation of BAM, an ED prevention program, that is both evidence-based and responsive to the needs of intended users. By integrating perspectives from both target users and individuals familiar with intervention content, findings will guide design decisions to enhance user engagement and ultimately, clinical impact.

2 Materials and methods

2.1 Participants and recruitment

College students with elevated ED psychopathology were recruited through social media, as well as direct outreach based on participation in prior studies conducted by the study team. Before enrolling in the study, their eligibility was assessed via an online self-report eligibility screen. They were eligible if they were at least 18 years old, were enrolled at any college or university at any level of study, were English-speaking, and had a probable ED or were at high risk for an ED based on results from the Stanford-Washington University ED Screen (SWED; 24). Of the 23 people who completed the eligibility screen, four were ineligible based on results from the SWED (i.e., were considered low risk based on their responses) and were notified of their ineligibility for the study. Two were lost to follow-up and the remaining 17 participated in the study.

Past BAM participants were originally recruited to complete BAM from the general Madison, Wisconsin area through (1) flyers at businesses (e.g., fitness centers, coffee shops), (2) social media, (3) direct, peer-to-peer recruitment by peer facilitators, and (4) university clubs and organizations. Eligibility criteria for BAM include being English-speaking and between the ages of 18 and 30 years old. Past BAM participants were eligible for the current

study if they completed both sessions of an in-person BAM workshop in in February or March of 2024. They were informed of the study at the end of the second session and could opt in to being contacted about participating by supplying their contact information on a study sign-up sheet. Of the 19 individuals who completed a BAM workshop in February or March of 2024, 15 supplied their contact information, and 14 ended up completing the study.

2.2 Procedure

2.2.1 College students with elevated ED psychopathology

College students with elevated ED psychopathology first provided consent online. Then, they completed an online questionnaire, including the measures described below. Upon completion of the questionnaire, participants completed a one-on-one, video-call based, audio-recorded semi-structured interview with a study team member during which they shared their experiences with fatphobia and anti-fat bias, how they use technology to support their mental health, and their thoughts on the five different BAM digital adaptations ideated by the study team (see Figure 1). The interview was expected to take 60 minutes (range = 25–75 minutes). Participants were compensated $25 upon completion of these study activities.

2.2.2 Past BAM participants

After providing informed consent online, past BAM participants took part in a semi-structured interview that was one-on-one, video-call based, and audio-recorded. During the interview, they reflected on their experiences with BAM, how they use technology to support their mental health, and their thoughts on adapting BAM to a digital format. Participants shared their initial ideas for digitizing BAM and then provided feedback on five digital BAM adaptations ideated by the study team (see Figure 1). The interview was expected to take 60 minutes (range = 30–65 minutes).

Notably, most past BAM participants (n=13/14) were enrolled in a separate study testing the effectiveness of the in-person BAM workshop. For this separate study, they completed online questionnaires at baseline (i.e., prior to completing the workshop), immediately after completing the workshop, and 8 weeks after completing the workshop. During the informed consent process, participants agreed to allow data collected during their participation in this separate study to be used in the present

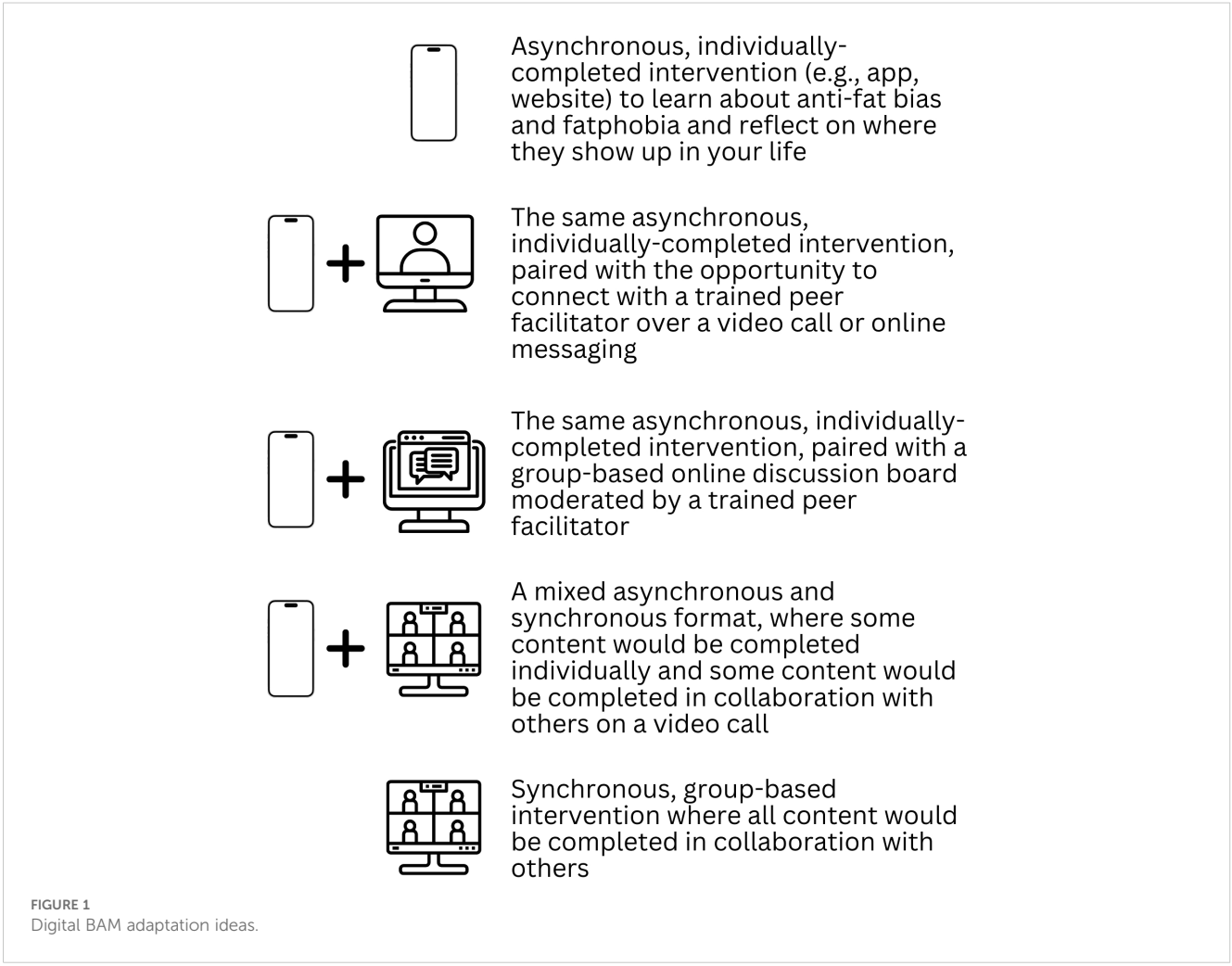


FIGURE 1
Digital BAM adaptation ideas.

study. For the present study, their baseline data for the measures described below was included. The one past BAM participant who did not participate in the separate BAM study completed the online questionnaire, including the measures described below, upon completion of their interview. Participants were compensated $25 for their participation in this study, which included both the interview and the online questionnaire.

This study received a Not Human Subjects Research exemption from ethical approval and written informed consent. The study was conducted in accordance with local legislation and institutional requirements, and all participants indicated their agreement online prior to continuing with the study after the study was described.

2.3 Measures

2.3.1 Descriptive data

Demographic information, including gender, age, race, and sexual orientation, was collected from both groups. Descriptive data (see below) was also collected from both groups to contextualize qualitative findings and explore patterns that may inform future research.

The ED100K Plus was administered to gauge levels of ED psychopathology. The ED100k Plus combines selected items from the ED100k (25; 90 items), the Eating Disorder Diagnostic Scale (26; 10 items), the Eating Disorder Examination-Questionnaire (27; 40 items), and the Dieting and Weight History Questionnaire (28; 10 items), along with 54 additional questions to clarify all criteria needed to assess current and historical diagnoses of DSM-5 EDs. Questions were administered logically with minimal responses necessary; thus, portions of the assessment detailing certain ED experiences were skipped if screening items related to these experiences were not endorsed. Average time to completion for the ED100k Plus was 17.4 minutes. This self-report questionnaire uses DSM-5 criteria to assess both current and history of: anorexia nervosa, atypical anorexia nervosa, bulimia nervosa, subclinical bulimia nervosa, binge eating disorder, subclinical binge eating disorder, and purging disorder.

The Goldfarb Fear of Fat Scale (GFFS) was used to measure fatphobia (29). The GFFS is a 10-item measure designed to evaluate an individual's thoughts and fears related to becoming fat. Participants rate each item on a 4-point Likert scale ranging from 1 ("Very untrue") to 4 ("Very true"), with total scores ranging from 10 (indicating no fear of fat) to 40 (indicating extreme fear of fat). The GFFS has demonstrated strong psychometric properties and test-retest reliability across both clinical and non-clinical populations (30). Cronbach's alpha for the GFFS with the present sample was 0.83 for college students with elevated ED psychopathology and 0.89 for past BAM participants, demonstrating good internal consistency.

The Eating Psychopathology Symptoms Inventory-Negative Attitudes Towards Obesity (EPSI-NATO) subscale is one of eight subscales in the EPSI that was used to measure levels of anti-fat bias in this study (31). The EPSI-NATO is a 5-item subscale that assess feelings towards individuals in larger bodies. Participants rate each item on a 5-point Likert scale from 0 ("Never") to 4 ("Very Often") and the responses are then summed to create a total score. The EPSI has been validated in both clinical and college samples (32). Cronbach's alpha for the EPSI NATO subscale with the present sample was 0.90 for college students with elevated ED psychopathology and 0.90 for past BAM participants, demonstrating excellent internal consistency.

Finally, during the semi-structured interview, participants shared their interest in participating in five different BAM digital adaptations ideated by the study team using a whole-number scale from 1 (not at all interested) to 5 (very interested). These adaptation ideas were presented in a counterbalanced order and are described above and depicted in Figure 1. The purpose of these ratings was not to draw definitive conclusions about preference strength, but rather to complement qualitative data with a basic snapshot of comparative interest across five design ideas.

2.3.2 Qualitative data

Semi-structured interviews with college students with elevated ED psychopathology were conducted to answer the research questions: How do college students with elevated ED psychopathology experience anti-fat bias and fatphobia, and how might a digital intervention address these experiences? Interviews began by getting a sense of current struggles with body image and food (i.e., "I'm curious to hear about your struggles with body image and food. What does this look like for you right now?"). From there, definitions of fatphobia and anti-fat bias were reviewed and personal experiences and observations of others' experiences with fatphobia and anti-fat bias were assessed (e.g., "How have experiences of fatphobia affected your mental health or well-being?" "Have you ever noticed fatphobia in others?" "Have you ever been on the receiving end of anti-fat bias?"). Participants were then asked about their prior use of technology to support their mental health (e.g., "Are you currently using technology to support your mental health or well-being?"). Finally, they were informed that the research team was developing a digital intervention to address anti-fat bias and fatphobia. Participants were presented with five preliminary adaptation ideas, one at a time, then provided their reactions and suggestions (e.g., "What are your initial reactions to this idea?").

Semi-structured interviews with past BAM participants were conducted to answer the research question: What aspects of BAM should be retained or modified to effectively adapt the program to a digital format? Interviews began by reviewing an outline of BAM and assessing feedback on BAM (e.g., "How did you feel about the time commitment?" "How relevant did you find BAM to you, personally? Can you give an example?" "What information/session/activity stood out to you the most? Why)?. Participants were then asked about their use of technology to support their mental health (e.g., "Have you ever used technology to support your mental health or well-being?"). Finally, they were informed that the research team was developing a digital version of BAM and were presented with the five adaptation ideas, one at a time, for which they provided their reactions and suggestions (e.g., "What are your initial reactions to this idea?").

2.4 Analytic strategy

2.4.1 Descriptive analysis

Means and standard deviations (SDs) for the quantitative measures were calculated for each group to provide descriptive context about the sample. Independent samples t-tests were conducted to examine potential group differences on psychological constructs of interest. Mann Whitney U-tests were conducted to examine potential group differences on ratings of digital adaptation ideas. While these analyses were not intended to formally test hypotheses and were underpowered, t values, U values and p-values are reported for transparency, and effect sizes are included to support interpretation and contextualize observed patterns.

2.4.2 Qualitative analysis

Team-based, reflexive thematic analysis was used to develop themes from participants' experiences (33). Grounded in a critical realist ontology, our analysis acknowledged the interplay between participants' subjective experiences and the broader social, cultural, and structural influences (e.g., weight stigma, cultural ideals of appearance, disparities in access mental health treatment) shaping these experiences. We adopted an inductive approach, meaning our analysis was driven directly by the data rather than prior theory or research. Within a critical realist framework, this inductive process allowed us to identify and contextualize how subjective experiences were shaped by external forces. Reflexivity also played a central role in this process, as described further below.

Prior to analysis, interviews were transcribed manually based on audio-recordings. During transcription, identifying information (e.g., school name) was replaced with a non-identifying description (e.g., [School Name]) and participants were assigned participant pseudonyms which are used below when quoting individual interviews. Coding and analysis were led by the first author using Braun and Clarke's (33) approach to reflexive thematic analysis. The same coding and analytic process, detailed below, was completed separately for past BAM participants and college students with elevated ED psychopathology.

First, members of the coding team (A.A.L., M.F.S., E.S., E.L.J., J.G., K.S.) individually read all transcripts to assess the size and adequacy of the dataset in relation to information power (i.e., breadth and depth of the data given the study's aim and approach; 34). Review of the data indicated sufficient richness to complete analysis, so the team moved forward with analysis instead of collecting more data. To develop the coding guides, each member of the coding team inductively generated initial codes. Then, the coding team met to refine codes and create an initial coding guide, which was used for test-coding of 12 transcripts (each member of the coding team test-coded two transcripts). After test-coding, the coding team met again to finalize the coding guide, which comprised semantic codes (i.e., codes that capture surface-level meaning of the data). From there, each member of the coding team coded 8–14 transcripts total, across groups, using *Dedoose*, version 9.2.22. Each transcript was coded twice, by two different coders. Coding discrepancies were identified and discussed in coding pairs, fostering reflexivity and deeper insight into the data. For initial theme generation, the coding team collaboratively clustered codes, drawing on their familiarization with and understanding of the data. Once initial themes were generated, the first author went back to the dataset to confirm the themes accurately represented the data and further revised the themes, which the team reviewed.

At the core of reflexive thematic analysis is the understanding that research is inherently subjective, necessitating reflexivity throughout the research process (33). Within the present analysis, reflexivity was both individual and collaborative. All interviews were conducted by the first author, who identifies as a White, heterosexual, smaller-bodied woman. Her lived experience with anti-fat bias, fatphobia, and an ED provided her with a personal connection to the topics discussed, fostering empathy and rapport with participants. Hearing participants' struggles firsthand underscored, for her, the need to increase accessibility of BAM, a sentiment she discussed frequently with M.G. and K.E.S.

Before analyzing transcripts, the coding team engaged in bracketing exercises to reflect on their positionalities and preconceived ideas about digital interventions for eating disorders. This process aimed to increase awareness of potential assumptions that might shape data interpretation. Some team member assumptions included: (a) engagement will be a challenge with digitizing BAM; (b) experiences of anti-fat bias and fatphobia are common; and (c) a digital version of BAM would increase accessibility. The coding team brought disciplinary expertise in psychology and medicine, and multiple members have lived experience of EDs and/or working with patients with EDs. The team also reflected certain demographic characteristics: White (6/6), heterosexual (3/6), woman-identifying (4/6), smaller-bodied (6/6), and holding Bachelor's degrees as their highest level of education (3/6). Recognizing that these identities were similar in some instances, and different in others, to identities of the participants, the team prioritized regular reflexive discussions to critically examine how their positionalities might influence the analysis. These collaborative discussions shaped the analysis by prompting the team to question initial interpretations, ensure that findings were grounded in the data, and consider how both shared and differing perspectives informed the themes identified. For example, frequent discussions of anti-fat bias and accessibility led the team to interrogate whether they were unintentionally prioritizing themes aligned with their professional goals over less familiar participant perspectives. This iterative reflexive process ensured the analysis remained attuned to participants' experiences.

3 Results

3.1 Descriptive statistics

A total of 31 participants were enrolled, including 17 college students with elevated ED psychopathology and 14 past BAM participants. Grounded in information power, these sample sizes were determined to be sufficient for a comprehensive exploration of themes and meaningful group comparisons (34). Participants were predominantly woman-identifying (94.1% college ED; 71.4% past BAM) and White (76.5% college ED; 57.1% past BAM), with a mean age of 22.6 years for college students with elevated ED

psychopathology and 23.4 years for past BAM participants. The mean age of both groups reflects the inclusion of graduate students. Most participants fell into a Mid-Range Body Mass Index (BMI) category of 18.5-24.9 (58.8% college ED; 71.4% past BAM), based on self-reported height and weight. See Table 2 for full details on study participant demographics.

Regarding ED psychopathology, based on the ED100k Plus, a greater proportion of college students with elevated ED psychopathology reported a lifetime ED diagnosis (n = 13, 76.5%) compared to past BAM participants (n = 6, 42.9%). This difference aligns with sample eligibility criteria: college students with elevated ED psychopathology were required to screen as 'at risk' or have a probable ED based on the SWED, whereas this criterion did not apply to past BAM participants. Notably, not all college students reported a lifetime ED diagnosis, as being classified as 'at risk' on the SWED was sufficient for study enrollment. See Table 2 for a complete breakdown of ED diagnoses.

TABLE 2 Sample demographics.

Variable	College ED (N=17)	Past BAM (N=14)
Gender Identity: N (%)		
Man	1 (5.88%)	2 (14.29%)
Nonbinary	0 (0.00%)	2 (14.29%)
Woman	16 (94.12%)	10 (71.43%)
Gender Identity – Transgender/Cisgender: (N%)		
Cisgender	15 (88.24%)	12 (85.71%)
Transgender	1 (5.88%)	2 (14.29%)
Unsure	1 (5.88%)	0 (0.00%)
Race: N (%)		
Asian	3 (17.65%)	5 (35.71%)
Black	1 (5.88%)	0 (0.00%)
Pacific Islander	0 (0.00%)	1 (7.14%)
White	13 (76.47%)	8 (57.14%)
Sexual Identity: N (%)		
Asexual	2 (11.76%)	1 (7.14%)
Bisexual/Bi+/Pansexual	3 (17.65%)	6 (42.86%)
Heterosexual	11 (64.71%)	7 (50.00%)
Lesbian/Gay	1 (5.88%)	0 (0.00%)
Age: Mean (SD) [Range]	22.59 (2.76) [19-28]	23.43 (3.65) [19-29]
BMI: Mean (SD) [Range]	23.17 (3.94) [17.9-31.2]	23.44 (3.46) [18.7-31]
Eating Disorder Diagnosis*		
Anorexia Nervosa History	1 (7.1%)	5 (29.4%)
Current Anorexia Nervosa	0 (0%)	0 (0%)
Atypical Anorexia Nervosa History	2 (14.3%)	6 (35.3%)
Current Atypical Anorexia Nervosa	1 (7.1%)	2 (11.8%)
Bulimia Nervosa History	0 (0%)	1 (5.9%)
Current Bulimia Nervosa	0 (0%)	1 (5.9%)
Binge Eating Disorder History	0 (0%)	1 (5.9%)

*In line with the DSM-5, participants could only have one current eating disorder diagnosis at a time, but could report multiple historical diagnoses.

To further characterize the sample, exploratory, descriptive group comparisons were conducted for psychological constructs. These analyses were descriptive in nature and not intended to test formal hypotheses but rather to provide preliminary insights into group differences that may inform future research. Effect sizes are reported to provide context for interpreting these preliminary patterns. College students with elevated ED psychopathology scored slightly higher on the GFFS (M = 12.82, SD = 5.55) compared to past BAM participants (M = 10.14, SD = 7.36), $t = 1.12$, $p = 0.272$, with a medium positive effect size (d = 0.41). On the EPSI NATO, past BAM participants scored higher (M = 5.29, SD = 5.11) compared to college students (M = 4.53, SD = 4.21), $t = -0.45$, $p = 0.656$, with a small negative effect size (d = -0.16). See Table 3 for full details.

3.2 Digital adaptation idea preferences

Participants rated their interest in five digital adaptation ideas (see Figure 1) for BAM using a Likert scale (ranging from 1 = not at all interested to 5 = very interested), and comparisons were made between college students with elevated ED psychopathology and past BAM participants. Descriptively, the mix of asynchronous and synchronous format received the highest average ratings from both groups, with the mean score for college students with elevated ED psychopathology being 3.94 (SD = 0.75) and the mean score for past BAM participants being 3.57 (SD = 1.34). In contrast, the fully asynchronous format received the lowest average ratings from both groups, with the mean score for college students with elevated ED psychopathology being 2.94 (SD = 1.39) and the mean score for past BAM participants being 2.29 (SD = 1.27). A statistically significant difference between groups emerged for the asynchronous plus peer facilitator format ($U = 46.5$, $p = .003$). College students with elevated ED psychopathology rated this format significantly higher (Median = 4, IQR = 1) than past BAM participants (Median = 3, IQR = 0.75), demonstrating a large effect size ($r = 0.539$), where r represents the rank-biserial correlation derived from the z-approximation of the Mann-Whitney U test. See Table 4 for full details of the ratings and comparisons across all formats.

3.3 Qualitative results: College students with elevated ED psychopathology

The following analysis explores the themes identified through semi-structured interviews with college students with elevated ED psychopathology. Figure 2 depicts these themes in relationship with one another. Ultimately, this analysis answers the research questions:

TABLE 3 Fears of fat and negative attitudes toward obesity across groups.

Variable	College ED – Mean (SD)	Past BAM – Mean (SD)	t value	p value	Cohen's d
GFFS	12.82 (5.55)	10.14 (7.36)	1.12	0.272	0.41
EPSI NATO	4.53 (4.21)	5.29 (5.11)	-0.45	0.656	-0.16

How do college students at risk for EDs experience anti-fat bias and fatphobia, and how might a digital intervention address these experiences? We use participant pseudonyms when sharing quotes and include a participant quote when presenting each theme. Table 5 provides demographic and descriptive information for college students at risk for EDs for contextualization.

3.3.1 Theme 1: Fatphobia and anti-fat bias are ingrained: "knee-jerk reactions" (Irene)

Participants described in detail the insidious nature of fatphobia and anti-fat bias in their daily lives, highlighting their presence across intrapersonal, interpersonal, and institutional domains. They reflected on how these biases affected them personally and shaped their interactions with others. Notably, *all* participants shared experiences of fatphobia and anti-fat bias (as targets of this bias or as individuals who perpetuated it).

3.3.1.1 Subtheme 1: Fatphobia and anti-fat bias are pervasive: "always coming up in conversation" (Bridget)

Participants identified several specific contexts in which they frequently experienced fatphobia and anti-fat bias, such as "eating out," "dressing up," "exercising at the gym," "at the doctor," and "in conversations with friends and family." Bridget shared, "[Fatphobia] comes up in conversations that, 'Ah, I'm getting fat … I'm putting on weight, so I feel like I should start going to the gym.' Sometimes … friends say that to me. Family-wise … my mom's always overly concerned with her weight and body image." Tatiana expressed, "My brother and I have both been … called obese … at the doctor's office … [The doctors] show you … a chart and … a bunch of … normal curves and they're like, 'This is a healthy person at your weight. This is a really active person at your height and weight. This is like a less active person. And this is you.' They find somewhere way off the curves and they're like, 'Yep, this looks really bad. You're so obese.'" Participants also discussed anti-fat bias they held themselves. For example, Irene admitted, "I think my initial reaction to seeing a fat person or talking to them is like, 'You eat everything. You have no self-control. You can't make yourself do anything.' And then it's like obviously resetting my brain and being like, that's not a thing." Participant accounts illustrated the pervasive and multifaceted nature of fatphobia and anti-fat bias, showing how they manifest not only internally but also interpersonally and institutionally.

3.3.1.2 Subtheme 2: Fatphobia and anti-fat bias are detrimental: "driving forces behind my eating and body image struggles" (Maria)

Participants frequently reflected on the profound impact experiences of anti-fat bias and fatphobia had on their mental health, body image, and eating behaviors. Sarah reflected on how anti-fat bias affected her sense of self-worth, explaining, "I've gone through periods of time where I felt like my parents aren't as proud of me as they would be if I was thin." Participants also discussed how fatphobia and anti-fat bias contributed to the development or exacerbation of their eating disorders. For example, Alexis described the emotional toll of experiencing anti-fat bias and how it fueled her disordered eating behaviors: "There was all the shame, embarrassment, guilt for the body that I had that I couldn't make it different … I couldn't deal with it anymore … I couldn't deal with … how I felt after people … were making comments [rooted in anti-fat bias] … That anger and the lack of control is what fueled … the eating disorder."

The emotional burden of fatphobia extended beyond disordered eating, with participants describing its pervasive influence on their mental health. For example, Anna shared, "[Fatphobia] is one of the harder things I've gone through in the past … For whatever reason, it really consumes my brain … It makes me super anxious. I feel like it's contributed to a lot of my sadness. So yeah, it's … definitely been … a big struggle for me. It started a little bit after college started and … I'm gonna be a senior—so in a way, it's been a big part of my journey [in college]."

TABLE 4 Digital adaptation of BAM ratings.

Digital Adaptation Idea	College ED – Mean (SD)	Past BAM – Mean (SD)	College ED - Median (IQR)	Past BAM – Median (IQR)	U value	p value	Effect size (r)
Fully Asynchronous	2.94 (1.39)	2.29 (1.27)	3 (2)	2 (2.75)	88.0	0.212	0.224
Asynchronous + Peer Facilitator	3.76 (0.97)	2.57 (0.94)	4 (1)	3 (0.75)	46.5	0.003	0.539
Asynchronous + Online Discussion Board	3.29 (1.21)	3.07 (1.33)	3 (2)	3 (2)	108.0	0.669	0.081
Asynchronous + Synchronous Meetings	3.94 (0.75)	3.57 (1.34)	4 (1)	4 (2.5)	107.5	0.646	0.086
Fully Synchronous	3.41 (1.18)	3.57 (1.28)	4 (1)	4 (1.75)	129.5	0.682	0.077

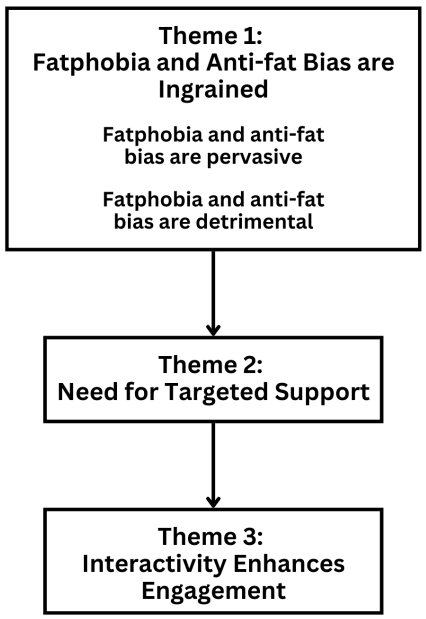


FIGURE 2
Need for a digital adaptation of BAM.

Family dynamics were another area where participants experienced the detrimental effects of fatphobia. Several participants reflected on how comments and attitudes from family members, particularly mothers, shaped their body image and anxieties. Maria explained: "I think [my mom's fatphobia] definitely … made me more aware of my body growing up which probably … in turn contributed to me having these anxieties about my body and stuff like that. And hearing that growing up, I think it's tough especially when you're … a little girl and you … see your mom and you think your mom is so pretty and then … all she says is like 'I don't think I'm pretty,' so it's like well then I don't think I'm pretty because I look like you. And that's kind of really hard." The emotional and behavioral experiences participants described highlight the detrimental effects of anti-fat bias and fatphobia.

3.3.2 Theme 2: Need for targeted support: "I'm looking for a solution" (Scott)

Participants emphasized a need for specific, focused support for their struggles with eating and body image concerns, as well as related issues of fatphobia and anti-fat bias. Many participants described negative experiences with therapy, particularly due to working with therapists who were not ED-informed and a lack of direction in therapy sessions.

Maria reflected on her experience working with a therapist who lacked training in EDs, sharing, "[My therapist] didn't really know what to do [when I brought up my body image struggles], I think. I would tell her about … what I was feeling and she wouldn't necessarily really … validate me at all … So when that was going on, I just kind of … shut down from the process because I was like, well, I'm not getting what I want out of this." Similarly, Alexis explained how working with a therapist unfamiliar with EDs could feel invalidating and even be harmful. She shared, "I'm working with this therapist on other stuff and … occasionally … the ED does come up because, I mean, it's part of my mental health … and not that they're doing it intentionally, but it's just they don't know how to talk about it. So there can be … potentially triggering things that are said or … misunderstandings about how an ED works so … I would say that's not a helpful thing." These experiences reflect a common frustration among participants who felt their therapists were not equipped to provide the specialized care they needed for body image and eating struggles.

Participants also emphasized that a lack of structure in therapy sessions often made therapy feel unproductive. Irene described her experience bluntly: "Counseling is … a waste of time … I just feel like we talk and talk and talk and accomplish nothing." Scott echoed this frustration, highlighting the need for action-oriented approaches, sharing, "Too much listening [has been unhelpful in therapy] because it was just kind of me saying, 'Here's what's going on. Here's the problem. This is probably why it happens.' Too much listening and not enough … questions or action plans [is unhelpful]." Even in group therapy settings, participants expressed a need for more structure and focus on practical skills. Stephanie shared, "I feel like maybe we needed to … have more organization. How these [group therapy was] conducted was just … very free for all to talk about whatever … It's better if they were … focusing on some coping skills besides 'Let's just talk.'"

Overall, participants' accounts highlighted significant gaps in therapy experiences, with many feeling that therapy fell short in addressing their eating and body image concerns. Whether due to a lack of ED-specific expertise or the absence of clear, goal-directed approaches, these findings underscore the need for targeted support for individuals struggling with these issues.

3.3.3 Theme 3: Interactivity enhances engagement: "the more interactive, the better" (Annie)

Participants emphasized the importance of interactivity in the proposed digital adaptation of BAM, describing it as a key factor in maintaining engagement and promoting meaningful learning. Feedback centered on the value of both interactive activities and opportunities to interact with others.

Participants highlighted the need for engaging, interactive content that went beyond passive learning. Annie shared, "Quizzes would keep me engaged." Maria suggested, "If you made … interactive content that might honestly be better than having someone just … presenting something. I feel like you could get more out of it … I'm thinking matching activities or … drag and drop."

In contrast, participants expressed that less interactive formats, such as discussion boards, felt uninspiring and lacked engagement. Irene explained, "I don't think [the asynchronous + group discussion board adaptation] would go too well … It kind of just makes it feel like a homework assignment that you're

TABLE 5 College ED participant pseudonyms, demographic information, and ED history.

Pseudonym	Race/Ethnicity	Gender	BMI[a]	ED History
Stephanie	White	Woman	Lower BMI	Yes
Lauren	White	Woman	Higher BMI	No
Alicia	Asian	Woman	Mid-Range BMI	Yes
Scott	White	Man	Mid-Range BMI	Yes
Anna	White	Woman	Mid-Range BMI	Yes
Jessie	White	Woman	Mid-Range BMI	No
Sarah	White	Woman	Higher BMI	No
Bridget	Asian	Woman	Mid-Range BMI	No
Annie	White	Woman	Mid-Range BMI	Yes
Maria	White	Woman	Higher BMI	Yes
Caitlin	White	Woman	Mid-Range BMI	Yes
Tatiana	White	Woman	Higher BMI	Yes
Claire	Black	Woman	Higher BMI	Yes
Irene	White	Woman	Mid-Range BMI	Yes
Coco	Asian	Woman	Mid-Range BMI	Yes
Courtney	White	Woman	Lower BMI	Yes
Alexis	White	Woman	Higher BMI	Yes

[a]Lower BMI = BMI<18.5, Mid-Range BMI= 18.5-24.9, Higher BMI=BMI>25, determined based on self-reported height and weight.

doing to get it over with." Alicia noted that interactivity was critical to ensuring sustained engagement across a diverse audience, sharing, "If there are some activities … where they can engage with the intervention itself, instead of just, only reading about the information, I think that would be good. I feel like only people who have an interest would continue reading and then those who might not would probably … have no inclination to continue further."

Participants also emphasized the importance of social interaction in enhancing engagement. For example, Coco noted, "[The fully asynchronous version] is … not bad, but it might not differentiate itself from other things … [The human connection] would make … everything stick a bit better and be more applicable." Similarly, Scott expressed that he would be "more inclined to do [the asynchronous + group discussion board adaptation] than the purely asynchronous one because it would be nice to have that community aspect. It would be nice to have the external support." The opportunity to connect with a peer facilitator was also highlighted as a key motivator for participation. Alexis reflected, "I think that having at least the opportunity [to connect with a peer facilitator] would probably pull a lot more people to utilize it … I just think that … the opportunity to work one-on-one with someone is comforting." Others emphasized the value of group-based interactions. For instance, Anna shared, "I would prefer the [fully synchronous version] just because I think that group aspect is really helpful to grow and learn from."

Overall, participants emphasized that interactivity—whether through interactive activities or interactions with others—would be critical to fostering engagement in a digital adaptation of BAM.

3.4 Qualitative results: Past BAM participants

The following analysis explores the themes in past BAM participants' responses during the semi-structured interviews. Figure 3 depicts these themes in relationship with one another, highlighting past BAM participants' perspectives on a digital adaptation of BAM. Ultimately, this analysis answers the research question: What aspects of BAM should be retained and modified to effectively adapt the program to a digital format? We use participant pseudonyms when sharing quotes and include a participant quote when presenting each theme. Table 6 provides demographic and descriptive information for past BAM participants for contextualization.

3.4.1 Theme 1: Community is imperative: "the human connection part of [BAM] is very important" (Marie)

Through semi-structured interviews, it became clear that processing one's experiences of fatphobia and anti-fat bias during BAM was facilitated by connection with others. Participants valued hearing others' experiences and ideas and expressed that a sense of community was an essential aspect of BAM that should be retained in a digital adaptation.

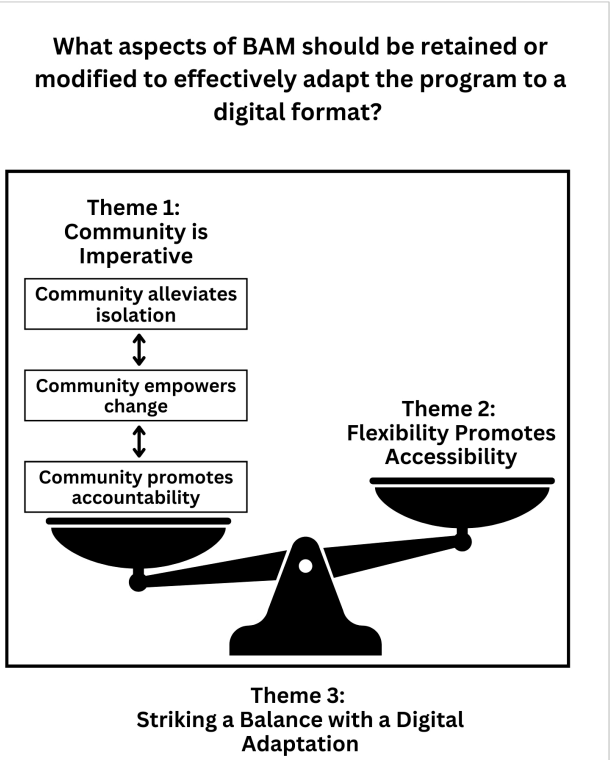


FIGURE 3
Adapting BAM to a digital format.

3.4.1.1 Subtheme 1: Community alleviates isolation: "I'm not alone in these feelings and these thoughts" (Isabel)

Participants explained that connections were initially formed through a sense of shared experiences. Despite their diverse intersectional identities, participants noted that they struggled in similar ways, which helped them feel less isolated. For example, Alex reflected, "Because I'm an international student, I sometimes think, 'Well, am I different from others, for example, from a different cultural background?'… Listening to Americans talking about how body size influences their daily life and how they … advocate against anti-fat bias in their interpersonal communications, I … see that, 'Okay, we're the same.' That's a great encouragement to me that … I'm not alone." Participants also noted that although they shared overarching struggles with anti-fat bias and fatphobia, these struggles manifested differently for each person. For example, Joey shared, "We tend to only think about our own experience of what it's like to … have a body we're in. So it was really interesting to hear … everyone else's … personal idea of being embodied." Overall, participants experienced solidarity with others and were able to learn from others' experiences, which laid the groundwork for collective growth within the group.

3.4.1.2 Subtheme 2: Community empowers change: "discussions really helped me think differently about my own body and society" (Riley)

Ultimately, the sense of community that was established through shared experiences and learning from others allowed participants to meaningfully engage with the intervention and practice combatting fatphobia and anti-fat bias. Every participant identified that interactive exercises (i.e., quick comebacks, role plays), in which participants practiced responding to fatphobic comments or comments exemplifying anti-fat bias, were highly relevant. For example, Isabel shared, "[The quick comebacks and role plays] were important because … when you're faced with these real-life situations, you don't always know what the best thing is to

TABLE 6 Past BAM participant pseudonyms, demographic information, and ED history.

Pseudonym	Race/Ethnicity	Gender	BMI[a]	ED History
Isabel	Asian	Woman	Mid-Range BMI	No
Helen	White	Woman	Mid-Range BMI	No
Katie	Asian	Woman	Higher BMI	Yes
Joey	White	Man	Higher BMI	No
Alex	Asian	Nonbinary	Mid-Range BMI	No
Janet	Hispanic/Latinx	Woman	Mid-Range BMI	No
Marcia	White	Woman	Lower BMI	Yes
Rachel	White	Woman	Higher BMI	Yes
Ellen	Asian	Woman	Higher BMI	No
Marie	White	Woman	Mid-Range BMI	Yes
Denise	White	Woman	Higher BMI	Yes
Riley	White	Nonbinary	Mid-Range BMI	Yes
Lily	White	Woman	Mid-Range BMI	No
Brooke	Asian	Woman	Higher BMI	No

[a]Lower BMI = BMI<18.5, Mid-Range BMI= 18.5-24.9, Higher BMI=BMI>25, determined based on self-reported height and weight.

say. So, I thought it was really nice that we got … actual situations that could happen. And we got to … work out how to react and respond to those." Furthermore, Alex shared, "The most shocking and probably effective activities were [the role plays and quick comebacks]. I think that's a really good practice … in an inclusive environment. Because when I … face those scenarios in my real life, that someone is saying that, 'You are getting a lot of fat,' I now got great feedbacks [on how to respond]."

In addition to equipping participants with the confidence to respond to challenging comments exemplifying fatphobia or anti-fat bias in everyday life, the group community also facilitated internal change in participants' own experiences of fatphobia and anti-fat bias. For example, one BAM activity entails unpacking the associations between weight, health, and worth as a group. Riley expressed that this interactive activity helped them "point out those … little hypocrisies and … why we ascribe … certain aspects of health to worth … which really helped me break down … those attributions to myself." Furthermore, Helen shared that this activity "increased [her] awareness of [her] underlying bias and unconscious thoughts." Together as a group, participants developed the skills, confidence, and self-awareness necessary to challenge fatphobia and anti-fat bias both in themselves and in the world around them. Doing these activities in isolation, as expressed by Isabel, would "defeat the whole purpose of the workshop."

3.4.1.3 Subtheme 3: Community promotes accountability: "[video-based group] meetings would hold me accountable" (Katie)

Participants emphasized that the presence of a community not only enhances the impact of the intervention but also fosters accountability in completing it, particularly when considering a digital adaptation of BAM. For example, Janet shared, "If it's just … me individually [doing the asynchronous intervention] … it's just really hard for me to do that on my own." Similarly, regarding the proposed asynchronous intervention, Isabel expressed, "I'm not sure how motivated I would be to learn these things and do these activities by myself."

When considering the digital adaptation ideas that have a connection component, participants felt that those that included group-based videoconferencing would promote the greatest amount of accountability, as opposed to connection with a peer facilitator or a group discussion board. Regarding the discussion board, Janet emphasized, "I just don't think there would be enough accountability for people to post on a discussion board or ask questions … Especially if it's … an open discussion board, you don't want to be the first to ask … a sensitive question." Also regarding the discussion board option, Joey shared, "I just feel like I wouldn't get anything out of this one … discussion boards never feel connected to me." Web-based videoconferencing, by contrast, was described as fostering accountability and active engagement. Katie explained that they would "keep me responsible for actually completing the intervention and being able to engage in discussion," while Marie shared that they would be "really beneficial for accountability." Overall, participants believed that incorporating synchronous elements like group-based videoconferencing would enhance the digital adaptation's ability to foster connection and consequently, a sense of accountability.

3.4.2 Theme 2: Flexibility promotes accessibility: "having it digital makes it more accessible" (Marie)

Participants consistently highlighted how the flexibility afforded by a digital adaptation of BAM would significantly enhance accessibility. For those "on a time crunch" (Marcia), the digital format would allow participation without rigid scheduling. Similarly, it would be beneficial for "people who do not feel comfortable joining an in-person group" (Ellen) or those facing logistical barriers such as "transportation, like getting to the facility and back" (Janet). The asynchronous format, in particular, was noted as the most flexible option, enabling individuals to complete the intervention on their own time. Participants also emphasized that this flexibility would facilitate access to the intervention whenever needed. Ellen explained, "I think a lot of people … like the independence and accessibility of an app … assuming that this would be available 24/7. It wouldn't be like 'Oh, we have a session at this time, this date.' Whenever they need to access it, they would have the ability to do so without any restrictions. I think that's … really important." Similarly, Katie shared, "[Time] was a barrier for [my participation in BAM] and I had to … move around some things to … get there … so I think definitely having … the time where you can do it asynchronously … would be really helpful and a lot more feasible to … work it into your day."

3.4.3 Theme 3: Striking a balance with a digital adaptation: "the best of both worlds" (Rachel)

Building on the themes related to community and flexibility, participants emphasized the importance of designing a digital adaptation of BAM that strikes a balance between these elements. They identified the mixed asynchronous and synchronous digital format as a way to preserve the human connection central to BAM while expanding access through flexible, individually-completed components. The majority (n = 8) of participants said that out of all the digital adaptations proposed, the mixed asynchronous and synchronous adaptation is what they would prefer as a replacement for in-person BAM sessions. For example, Marie shared, "I prefer [the mixed synchronous and asynchronous version] because I like the human connection aspect, but then I also think with … a technology-based approach … it makes sense … to have time to … do stuff on your own time." Furthermore, Riley emphasized that with this hybrid format, as compared to proposed formats without a human interaction component, they would "actually do this work. [They] would actually attend. [They'd] be interested. And [they] wouldn't … be prompted to … take any shortcuts or try to rush through any work because … it would feel like a more meaningful use of [their] time." These perspectives reflect participants' high level of interest in participating in this digital BAM adaptation.

Beyond identifying that a mixed asynchronous and synchronous digital adaptation would preserve the important community aspect of BAM while also promoting greater flexibility, participants offered specific suggestions on how to maximize both elements. For example, to ensure the synchronous component foregrounded

connection, participants emphasized smaller groups for videoconferencing. Through small groups, each participant would have an opportunity to contribute to discussion. For example, Riley suggested, "Probably smaller groups of … five to eight … definitely never larger than 10." Marcia shared, "I'd say … maybe six to seven … eight [people] tops, I think. So everybody can share their ideas." In general, participants' recommendations around group size converged between 5 and 10 people. In addition to recommending small group sizes, multiple participants emphasized the importance of establishing norms for participation, such as keeping cameras on and microphones unmuted, to foster a sense of connection and further strengthen the community aspect of the synchronous component.

Participants also shared insights regarding the ideal length and frequency of synchronous sessions. They highlighted that shorter (i.e., less than 2 hours) sessions would be more engaging and easier to integrate into their schedules. For instance, Katie suggested, "I think maybe…45 minutes per session," while Marcia proposed, "30-minute sessions … or one-hour sessions" as a manageable length for synchronous videoconferencing. Regarding frequency, participants recommended synchronous check-ins at key intervals, such as "at the very beginning, middle, and end" (Marie) of the intervention. Multiple participants suggested dividing the synchronous meetings across specific lessons, such as having "a [group-based videoconference] check-in after the first two lessons and then after the last two" (Riley). Ultimately, shorter sessions with a clear focus that were spread out over time were seen to retain participants' attention and foster meaningful engagement with a digital adaptation of BAM.

Participants also provided suggestions for the individually completed, asynchronous components. Many emphasized the need for interactivity, whether that be through quizzes, drag-and-drop features, videos, or animations, to "keep it from feeling … like a chore" (Riley). Oftentimes, these suggestions were based on experiences with other apps. For example, Denise recommended, "Anything that seems exciting and is … colorful and … brings us back into it and … keeps that attention span … To use Duolingo as an example … they have the typing, they have the speaking, they have the … putting things in as a puzzle, they have the matching. And so just having different forms of exercises so that it's not just like, 'Oh, every time I'm reading the scenario and responding' or 'Every time I'm like matching this to that.'" Beyond encouraging interactive components, given their experience completing BAM, participants also had recommendations for specific activities that would be best suited to be completed asynchronously and how to best adapt them. For example, multiple participants expressed that the weight, health, and worth activity could be adapted to an engaging drag-and-drop activity that people could complete on their own then reflect on as a group. Additionally, multiple participants shared that having those completing the intervention identify examples of anti-fat bias and fatphobia on their own and submitting that to facilitators ahead of synchronous sessions would be beneficial.

Ultimately, participants expressed that the synchronous and asynchronous components would nicely complement one another, providing both the flexibility needed to accommodate diverse schedules and the community connection central to BAM's impact. By combining shorter, focused synchronous sessions with engaging, interactive asynchronous activities, the mixed digital adaptation was seen as "the best of both worlds" (Rachel).

4 Discussion

Human-centered design has the potential to improve engagement with and effectiveness of digital interventions for EDs (23). This study informs the development of a digital adaptation of BAM, an ED prevention program that reduces anti-fat bias, fatphobia, and ED psychopathology, by leveraging two phases of human-centered design—investigate and ideate—to explore the experiences of college students with elevated ED psychopathology related to anti-fat bias and fatphobia and to gather feedback from past BAM participants on which aspects of the program should be retained and modified in a digital format. Individuals from both groups also offered feedback on five digital adaptation ideas developed by the study team and BAM peer facilitators. Results offer useful implications for the development of a digital BAM adaptation and future digital mental health research.

First, our findings point to a clear need for interventions that reduce anti-fat bias and fatphobia. All college students with elevated ED psychopathology reported experiences of fatphobia and anti-fat bias that they identified as detrimental to their well-being, aligning with prior research highlighting the pervasive and damaging nature of these experiences (35). The socioecological model of well-being emphasizes the interdependence of intrapersonal, interpersonal, and institutional influences on well-being (36). Thus, the experiences of anti-fat bias and fatphobia that college students reported across domains underscore the importance of addressing these issues at multiple levels through interventions like BAM.

Many college students with ED psychopathology also expressed dissatisfaction with mental health treatment experiences that prevented them from healing their relationships with food and their bodies. One area of dissatisfaction stemmed from a lack of action-oriented support in psychotherapy. This finding mirrors previous research that found that college students desire personal guidance when being treated for mental health concerns (37), demonstrating a need for more structured, action-based mental health interventions for college students. Additionally, multiple participants reported working with mental health providers untrained in EDs, which served as a barrier to overcoming body image and eating concerns. Indeed, there is a documented shortage of providers offering evidence-based treatments for EDs (38). Together, our findings strongly support the need for accessible interventions that integrate actionable strategies to address anti-fat bias, fatphobia, and ED psychopathology—a gap that a digital adaptation of BAM can fill.

Regarding such an adaptation, college students with elevated ED psychopathology and past BAM participants showed similar overall patterns in their ratings of the five proposed digital formats, with average ratings for both groups the lowest for a fully asynchronous adaptation and the highest for a mixed synchronous and asynchronous adaptation. One notable difference was observed with the asynchronous plus peer facilitator format: college students with elevated ED psychopathology rated this option significantly

higher than past BAM participants. This preference may reflect participants' desire for personalized, structured support, particularly given their reported dissatisfaction with unstructured or non-specialized mental health services. In contrast, past BAM participants, who had already experienced the original in-person program and described the essential role of the group community, may have placed comparatively less value on one-on-one facilitator support. Future work should explore how varied levels of facilitator involvement, such as one-on-one support versus group-based interaction, impact engagement, satisfaction, and outcomes among diverse user groups. Overall, though, participants across both groups underscored the importance of (1) social support and (2) flexibility in a digital adaptation of BAM.

Turning first to social support, interaction with others was seen not only as a way to promote engagement and accountability but also as a means of fostering a sense of community. Past BAM participants viewed this sense of community as essential for raising critical consciousness (i.e., recognizing and taking action against systems of oppression) in combatting anti-fat bias and fatphobia. Notably, synchronous group-based videoconferencing was identified as the most effective way to cultivate this community, as real-time interaction fosters an understanding of shared experiences and deeper social connection. These findings align with prior research highlighting the importance of social connection in recovering from body image and eating struggles (39) and in coping with and resisting weight stigma (35).

Although participants emphasized the importance of community-building through synchronous meetings, they also highlighted the value of asynchronous activities in promoting flexibility. These activities would reduce reliance on real-time components while providing accessible support that participants could engage with at their convenience. To ensure asynchronous activities remained engaging, both groups suggested incorporating a variety of interactive features such as quizzes, drag-and-drop exercises, matching activities, and videos, which have previously been identified as facilitators of engagement with digital mental health interventions (40). For example, the BAM activity identifying intrapersonal, interpersonal, and institutional levels of fatphobia and anti-fat bias could be adapted into a drag-and-drop sorting activity, where users classify real-world examples. Additionally, the role play activity could be reimagined as a choose-your-response simulation, allowing users to practice responding to statements rooted in fatphobia or anti-fat bias in a low-stakes manner. For the final reflection activity of sharing one way to act against institutional anti-fat bias, users could submit their commitment to a virtual 'wall' and optionally browse anonymized responses from others. While these formats are promising, future research is needed to evaluate their specific impact on reducing anti-fat bias, fatphobia, and ED psychopathology within the context of a digital adaptation of BAM.

The characteristics of the two participant groups provide important context for understanding the qualitative themes that were identified from their feedback on the proposed digital adaptation of BAM. College students with elevated ED psychopathology were more likely to have a lifetime history of an ED and also reported higher fatphobia scores, quantitative findings that align with their identification of fatphobia as a pervasive and detrimental influence. Indeed, prior research demonstrates that fatphobia is a central mechanism of ED onset and maintenance (10, 11). This group also rated the asynchronous plus peer facilitator format significantly higher than past BAM participants, suggesting a desire for structured individualized support, possibly reflecting the severity of their ED symptoms and dissatisfaction with prior treatment. Notably, anti-fat bias scores were comparable across groups, underscoring the robustness of anti-fat bias as a relevant target for BAM. The convergence in qualitative themes—such as the importance of social support, flexibility, and interactivity—despite differences in ED severity and fatphobia, suggests that these preferences may be broadly applicable and valuable to diverse users. Finally, both samples were comprised of young adults, a demographic that has been shown to be open to and benefit from digital mental health interventions (13–18). Given their familiarity with technology and the central role it plays in their daily lives, it is unsurprising that participants emphasized the importance of interactivity and flexibility in a digital adaptation of BAM. Indeed, young adults tend to seek digital experiences that are customizable, engaging, and have gamified elements (13, 19, 21).

Integrating participant feedback into the design of a digital adaptation of BAM is a critical next step. The proposed mixed asynchronous and synchronous format represents a promising starting point, given that both groups rated this format highly, but future research is needed to evaluate its feasibility, acceptability, and effectiveness in reducing anti-fat bias, fatphobia, and ED psychopathology. Additionally, with a digital adaptation, BAM's reach can be expanded to include populations beyond college students, including individuals outside of college settings or those in larger bodies, and its effectiveness can be tested with these new populations as well.

This study has several notable strengths, one of which lies in its use of human-centered design, which ensures that the digital adaptation of BAM is directly informed by the needs and preferences of its intended users, enhancing its relevance and potential effectiveness. Furthermore, the study addresses a critical gap in the literature by focusing on the integration of anti-fat bias and fatphobia reduction within a digital intervention, an area that has received limited attention despite its importance in ED prevention.

However, limitations of the study must also be acknowledged. Self-selection bias may have influenced the findings, as individuals with a particular interest in addressing anti-fat bias and fatphobia may have been more likely to participate in the study. Similarly, participants' preference for a format including synchronous components may further reflect selection bias, as those who chose to engage in the initial BAM study—which featured a fully-synchronous, in person format—may be more inclined toward group-based, real-time interaction. However, this limitation can be tempered given that a mixed asynchronous and synchronous format was rated highly across both groups. Additionally, while the study offers initial insights into the acceptability of different digital formats, the findings should be interpreted as preliminary and specific to the participant sample. Future work is needed to explore whether these findings extend to

populations with different demographic characteristics and experiences. Furthermore, participant feedback was elicited based on five proposed study formats rather than open-ended, exploratory input, which may have constrained the range of ideas or preferences participants might have otherwise shared. Moreover, the use of digital technology presents its own challenges. Access to and comfort with digital tools, including variation in digital literacy and cultural attitudes toward technology, may affect engagement. Finally, the measure of fatphobia used, the GFFS, has not been validated across genders (Przybyla-Basista et al., 2022) and the measure of anti-fat bias used, the EPSI-NATO, has not been validated across racial and ethnic groups (31). However, the majority of participants identified as White women.

Overall, this study contributes to the growing body of research utilizing human-centered design to develop digital interventions for EDs (22) and addresses the need for digital tools to combat anti-fat bias and fatphobia. The pervasive and harmful experiences of fatphobia and anti-fat bias reported by college students with elevated ED psychopathology, coupled with their struggles to access specific, action-oriented mental health treatment, underscore a significant gap in care that a digital adaptation of BAM could address. Both college students and past BAM participants expressed high interest in a mixed-format digital adaptation that incorporates both synchronous and asynchronous components. To enhance engagement, participants emphasized the importance of synchronous videoconference-based social connection alongside asynchronous interactive features, such as quizzes and matching activities. A critical next step will involve designing and pilot testing this digital adaptation of BAM to evaluate its feasibility and effectiveness.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The requirement of ethical approval was waived by University of Wisconsin-Madison School of Medicine and Public Health for the studies involving humans because this study was deemed 'Stakeholder Engagement' instead of 'Human Subjects Research' and thus received a 'Not Human Subjects Research exemption' from ethical approval. The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board also waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because this study was deemed 'stakeholder engagement' instead of 'human subjects research' and thus received a 'not human subjects research exemption' from written informed consent. However, all participants did indicate their agreement online (selecting 'yes') to continue with the study after the study was described.

Author contributions

AL: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing. ES: Formal analysis, Writing – original draft, Writing – review & editing. EJ: Formal analysis, Writing – original draft, Writing – review & editing. MS: Formal analysis, Writing – original draft, Writing – review & editing. JG: Formal analysis, Writing – original draft, Writing – review & editing. KS: Formal analysis, Writing – original draft, Writing – review & editing. MG: Formal analysis, Writing – original draft, Writing – review & editing. KS: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. AL is supported by TL1TR002375 within the Institute for Clinical and Translational Research at the University of Wisconsin-Madison, supported by U54TR002373. KS is supported by grants from the National Institute of Health (K01MH123914, R21MH131787). MS is supported by NIMH - F31MH137979.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Generative AI was used in the creation of this manuscript. For help with generating data-analysis code; for help with making writing more accessible and more concise.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1569841/full#supplementary-material

References

1. Alimoradi Z, Golboni F, Griffiths MD, Broström A, Lin CY, Pakpour AH. Weight-related stigma and psychological distress: A systematic review and meta-analysis. *Clin Nutr (Edinburgh Scotland)*. (2020) 39:2001–13. doi: 10.1016/j.clnu.2019.10.016

2. Romano KA, Heron KE, Henson JM. Examining associations among weight stigma, weight bias internalization, body dissatisfaction, and eating disorder symptoms: Does weight status matter? *Body image*. (2021) 37:38–49. doi: 10.1016/j.bodyim.2021.01.006

3. Foster T, Eaton M, Probst Y. The relationship between internalised weight bias and biopsychosocial outcomes in children and youth: a systematic review. *J eating Disord*. (2024) 12:38. doi: 10.1186/s40337-023-00959-w

4. O'Brien KS, Latner JD, Puhl RM, Vartanian LR, Giles C, Griva K, et al. The relationship between weight stigma and eating behavior is explained by weight bias internalization and psychological distress. *Appetite*. (2016) 102:70–6. doi: 10.1016/j.appet.2016.02.032

5. Pearl RL, Puhl RM. Weight bias internalization and health: a systematic review. *Obesity Reviews: Off J Int Assoc Study Obesity*. (2018) 19:1141–63. doi: 10.1111/obr.12701

6. Marshall RD, Latner JD, Masuda A. Internalized weight bias and disordered eating: The mediating role of body image avoidance and drive for thinness. *Front Psychol*. (2020) 10:2999. doi: 10.3389/fpsyg.2019.02999

7. Sienko RM, Saules KK, Carr MM. Internalized weight bias mediates the relationship between depressive symptoms and disordered eating behavior among women who think they are overweight. *Eating Behav*. (2016) 22:141–4. doi: 10.1016/j.eatbeh.2016.06.002

8. Cohrdes C, Santos-Hövener C, Kajikhina K, Hölling H. The role of weight- and appearance-related discrimination on eating disorder symptoms among adolescents and emerging adults. *BMC Public Health*. (2021) 21:1751. doi: 10.1186/s12889-021-11756-y

9. Paslakis G, Scholz-Hehn AD, Sommer LM, Kühn S. Implicit bias to food and body cues in eating disorders: a systematic review. *Eating weight disorders: EWD*. (2021) 26:1303–21. doi: 10.1007/s40519-020-00974-9

10. Levinson CA, Zerwas S, Calebs B, Forbush K, Kordy H, Watson H, et al. The core symptoms of bulimia nervosa, anxiety, and depression: A network analysis. *J Abnormal Psychol*. (2017) 126:340–54. doi: 10.1037/abn0000254

11. Ralph-Nearman C, Hooper MA, Hunt RA, Levinson CA. Dynamic relationships among feeling fat, fear of weight gain, and eating disorder symptoms in an eating disorder sample. *Appetite*. (2024) 195:107181. doi: 10.1016/j.appet.2023.107181

12. Pictor LE, Laboe AA, Dillon K, Frank M, Gavuji M, Krawczyk A, et al. A pilot randomized trial of the body advocacy movement: a novel, dissonance-based intervention designed to target fear of weight gain and anti-fat bias in young adults. *Eating Disorders: J Treat Prev*. (2024) 32:603–22. doi: 10.1080/10640266.2024.2332823

13. Lattie EG, Adkins EC, Winquist N, Stiles-Shields C, Wafford QE, Graham AK. Digital mental health interventions for depression, anxiety, and enhancement of psychological well-being among college students: Systematic review. *J Med Internet Res*. (2019) 21(7):e12869. doi: 10.2196/12869

14. Ong WY, Sündermann O. Efficacy of the mental health app "Intellect" to improve body image and self-compassion in young adults: A randomized controlled trial with a 4-week follow-up. *JMIR mHealth uHealth*. (2022) 10:e41800. doi: 10.2196/41800

15. Lin YH, Lou MF. Systematic review: Effect of mobile applications on college students with depressive symptoms. *J Advanced Nurs*. (2023) 79:3214–24. doi: 10.1111/jan.15716

16. Holtz BE, Kanthawala S, Martin K, Nelson V, Parrott S. Young adults' adoption and use of mental health apps: efficient, effective, but no replacement for in-person care. *J Am Coll Health*. (2023) 73(2):602–10. doi: 10.1080/07448481.2023.2227727

17. Litvin S, Saunders R, Jefferies P, Seely H, Pössel P, Lüttke S. The impact of a gamified mobile mental health app (eQuoo) on resilience and mental health in a student population: large-scale randomized controlled trial. *JMIR Ment Health*. (2023) 10:e47285. doi: 10.2196/47285

18. Harrer M, Adam SH, Baumeister H, Cuijpers P, Karyotaki E, Auerbach RP, et al. Internet interventions for mental health in university students: A systematic review and meta-analysis. *Int J Methods Psychiatr Res*. (2019) 28:e1759. doi: 10.1002/mpr.1759

19. Anastasiadou D, Folkvord F, Lupiañez-Villanueva F. A systematic review of mHealth interventions for the support of eating disorders. *Eur Eating Disord Rev*. (2018) 26:394–416. doi: 10.1002/erv.2609

20. Taylor CB, Graham AK, Flatt RE, Waldherr K, Fitzsimmons-Craft EE. Current state of scientific evidence on Internet-based interventions for the treatment of depression, anxiety, eating disorders and substance abuse: An overview of systematic reviews and meta-analyses. *Eur J Public Health*. (2021) 31:i3–i10. doi: 10.1093/eurpub/ckz208

21. Torous J, Nicholas J, Larsen ME, Firth J, Christensen H. Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements. *Evidence-Based Ment Health*. (2018) 21:116–9. doi: 10.1136/eb-2018-102891

22. Graham AK, Kosmas JA, Massion TA. Designing digital interventions for eating disorders. *Curr Psychiatry Rep*. (2023) 25:125–38. doi: 10.1007/s11920-023-01415-x

23. Graham AK, Wildes JE, Reddy M, Munson SA, Taylor CB, Mohr DC. User-centered design for technology-enabled services for eating disorders. *Int J Eating Disord*. (2019) 52:1095–107. doi: 10.1002/eat.23130

24. Graham AK, Trockel M, Weisman H, Fitzsimmons-Craft EE, Balantekin KN, Wilfley DE, et al. A screening tool for detecting eating disorder risk and diagnostic symptoms among college-age women. *J Am Coll Health*. (2019) 67:357–66. doi: 10.1080/07448481.2018.1483936

25. Thornton LM, Munn-Chernoff MA, Baker JH, Juréus A, Parker R, Henders AK, et al. The anorexia nervosa genetics initiative (ANGI): overview and methods. *Contemp Clin Trials*. (2018) 74:61–9. doi: 10.1016/j.cct.2018.09.015

26. Stice E, Telch CF, Rizvi SL. Development and validation of the Eating Disorder Diagnostic Scale: a brief self-report measure of anorexia, bulimia, and binge-eating disorder. *psychol Assess*. (2000) 12:123–31. doi: 10.1037//1040-3590.12.2.123

27. Fairburn CG, Beglin S. Eating disorder examination questionnaire. In: Fairburn CG, editor. *Cognitive behavior therapy and eating disorders*. Guilford Press, New York, NY (2008). p. 309–13.

28. Witt AA, Katterman SN, Lowe MR. Assessing the three types of dieting in the Three-Factor Model of dieting. The Dieting and Weight History Questionnaire. *Appetite*. (2013) 63:24–30. doi: 10.1016/j.appet.2012.11.022

29. Goldfarb LA, Dykens EM, Gerrard M. The goldfarb fear of fat scale. *J Pers Assess*. (1985) 49:329–32. doi: 10.1207/s15327752jpa4903_21

30. Przybyła-Basista H, Buszman K, Flakus M. An examination of the factor structure of the Goldfarb Fear of Fat Scale in clinical and non-clinical samples of Polish women. *Body Image*. (2022) 40:58–66. doi: 10.1016/j.bodyim.2021.11.003

31. Forbush KT, Wildes JE, Pollack LO, Dunbar D, Luo J, Patterson K, et al. Development and validation of the eating pathology symptoms inventory (EPSI). *psychol Assess*. (2013) 25:859–78. doi: 10.1037/a0032639

32. Coniglio KA, Becker KR, Tabri N, Keshishian AC, Miller JD, Eddy KT, et al. Factorial integrity and validation of the Eating Pathology Symptoms Inventory (EPSI). *Eating Behaviors*. (2018) 31:1–7. doi: 10.1016/j.eatbeh.2018.07.004

33. Braun V, Clarke V. *Thematic analysis: A practical guide* Vol. 6. SAGE Publications Ltd. (2022).

34. Malterud K, Siersma VD, Guassora AD. Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qualitative Health Research*. (2016) 26 (13):1753–60. doi: 10.1177/1049732315617444

35. Brownstone LM, Kelly DA, Harrop EN, Norling HN, Palazzolo LP, Wright O, et al. Healing from weight stigma in community: A thematic analysis of a group intervention for large-bodied individuals. *Psychotherapy (Chicago, Ill.)*. (2023) 60 (4):455–66. doi: 10.1037/pst0000509

36. Bronfenbrenner U. Toward an Experimental Ecology of Human Development. *American Psychologist*. (1977) 32(7):513–31.

37. Moore CA, Renner P, Ryder A, Seah E. Students' perceived needs and expectations from university counselling services: A qualitative review. *JANZSSA: Journal of the Australian and New Zealand Student Services Association*. (2016) (47):31–43. doi: 10.3316/informit.476526886174648

38. Waller G. Treatment protocols for eating disorders: Clinicians' attitudes, concerns, Adherence and difficulties delivering evidence-based psychological interventions. *Curr Psychiatry Rep*. (2016) 18:36. doi: 10.1007/s11920-016-0679-0

39. Wolfe H, Shepherd CB, Boswell RG, Genet J, Oliver-Pyatt W. Discovering a "sense of community": Patient experiences of connection in intentionally remote eating disorder care. *J Eating Disord*. (2024) 12:171. doi: 10.1186/s40337-024-01127-4

40. Lipschitz JM, Pike CK, Hogan TP, Murphy SA, Burdick KE. The engagement problem: A review of engagement with digital mental health interventions and recommendations for a path forward. *Current Treatment Options in Psychiatry*. (2023) 10(3):119–35. doi: 10.1007/s40501-023-00297-3

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 06 June 2025
DOI 10.3389/fpsyt.2025.1576406

OPEN ACCESS

EDITED BY
D. Catherine Walker,
Union College, United States

REVIEWED BY
Dakota Leget,
University of Florida, United States
Mariah Purol,
Union College, United States

*CORRESPONDENCE
Paula M. Brochu
pbrochu@nova.edu

RECEIVED 13 February 2025
ACCEPTED 22 May 2025
PUBLISHED 06 June 2025

CITATION
Brochu PM, Georgia EJ, Jubran M, Robbins M, West K, Crocker J, Schmidt AM, Rinaldi K, Joseph E and Roddy MK (2025) Associations between weight stigma and mental well-being among people in romantic relationships: an actor-partner interdependence model investigation. *Front. Psychiatry* 16:1576406. doi: 10.3389/fpsyt.2025.1576406

Associations between weight stigma and mental well-being among people in romantic relationships: an actor-partner interdependence model investigation

Paula M. Brochu[1]*, Emily J. Georgia[1], Madeline Jubran[1], Molly Robbins[1], Katherine West[1], Jillian Crocker[1], Alexandria M. Schmidt[1], Katerina Rinaldi[1], Em Joseph[1] and McKenzie K. Roddy[2]

[1]Department of Clinical and School Psychology, Nova Southeastern University, Fort Lauderdale, FL, United States, [2]Department of Medicine, Vanderbilt University Medical Center, Nashville, TN, United States

Background: Romantic relationships are primary sources of mental well-being, including life satisfaction. Stigma not only has adverse effects on individual mental well-being but also negatively affects relationship functioning. The purpose of this dyadic, cross-sectional study was to examine the associations between internalized, anticipated, and experienced weight stigma and mental well-being among people in romantic relationships and their partners.

Method: Prolific, an online crowdsourcing platform, was used to recruit 287 couples in long-term relationships who resided in the United States. Participants completed measures of internalized weight stigma, anticipated weight stigma, experienced weight stigma, and mental well-being. Actor-partner interdependence models estimated the associations between participants' weight stigma and their own mental well-being (actor effect) and the mental well-being of their romantic partners (partner effect).

Results: As expected, significant negative associations were observed between participants' internalized, anticipated, and experienced weight stigma and their own mental well-being; these actor effects had small to medium effect sizes. Significant negative associations were also observed between participants' internalized and anticipated weight stigma and their partners' mental well-being; these partner effects had small effect sizes. Unexpectedly, a significant partner effect was not observed for experienced weight stigma.

Conclusions: Weight stigma is negatively associated with individual mental well-being as well as the mental well-being of romantic partners. Future research is

needed to replicate and expand these findings and examine internalized and anticipated weight stigma as potential mechanisms through which experienced weight stigma may affect mental well-being among people in romantic relationships and their partners.

KEYWORDS

weight stigma, mental well-being, actor-partner interdependence model, perceived weight discrimination, internalized weight bias, weight stigma concerns, romantic relationships

1 Introduction

The quality of romantic relationships is one of the strongest predictors of mental health and well-being: People in highly satisfied relationships also report higher life satisfaction (1). Stigma and discrimination negatively affect romantic relationship quality for members of stigmatized groups, including those experiencing barriers based on race, ethnicity, and sexual identity (2–7). Weight stigma, particularly weight criticism from romantic partners, is negatively associated with relationship functioning (8, 9). Thus, not only is stigma in general, including weight stigma in particular, negatively associated with mental health broadly (10–12), it has the potential to also be negatively associated with the mental health of romantic partners. Although stigma is considered a relational stressor, the impact of weight stigma on the mental health of romantic relationship partners is less well understood. The purpose of the current study is to examine the dyadic associations between internalized, anticipated, and experienced weight stigma and mental well-being among people in romantic relationships and their partners.

1.1 Romantic relationships and mental health

Romantic relationships play a vital role in the human experience, as they influence people's sense of identity and well-being (13, 14). Relationship satisfaction is one of the greatest predictors of quality of life, such that people in more fulfilling relationships are more satisfied with their life overall (1). Evidence suggests a link between romantic relationships and mental health, such that partners in satisfying relationships experience improved mental well-being (15). Relationship satisfaction is associated with better emotional and mental health, as higher satisfaction is correlated with happiness, reduced emotional distress, and lower rates of psychotic symptoms (16–18).

Conversely, relationship distress deteriorates functioning and well-being on individual, familial, and societal levels. Couples in unsatisfying romantic relationships display more anger, criticism, and disgust than those in satisfied partnerships (19). A literature review analyzing nationally representative samples of married adults in the United States reveals that unsatisfied relationships are correlated with an increased probability of suicidality and suicide attempts, as well as anxiety, eating, substance use, and personality disorders (20). Relationship distress is a prominent presenting problem in individual therapy and its presence buffers the impact of treatment for other psychological concerns, such as depressive and anxiety disorders (21). Furthermore, several physical health ailments are also associated with unsatisfying romantic relationships, including greater risk for coronary heart disease, lower immunity, and premature mortality (22).

1.2 Stigma, relationship quality, and mental health

Stigma has adverse effects on both mental health and romantic relationship functioning (2, 3, 6, 11, 23). Stigmatization refers to social devaluation of a person or group due to the perception of characteristics as socially disadvantageous in a particular power structure (24). Encounters with discrimination represent just one component of stigma (25, 26). Internalized, anticipated, and experienced stigma constitute a multifaceted conceptualization of the experience of stigma and feeling stigmatized. Whereas experienced stigma refers to the discrimination a person has experienced or perceived, anticipated stigma involves concern over being treated unfairly. Internalized stigma involves the application of negative stereotypes to the self and self-derogation.

A meta-analysis of 49 empirical studies found a significant positive association between experiencing discrimination based on a variety of characteristics (e.g., race/ethnicity, gender, sexual identity, mental and physical illness) and mental health conditions including depression, anxiety, psychosis, psychological distress, and loneliness as well as lower self-esteem, quality of life, happiness, life satisfaction, and well-being (11). However, variation in the strength of mental health associations depending on the type of stigma was emphasized, such that associations were stronger for physical illness-related stigmas than mental illness-related stigmas, with social stigmas falling in the middle.

Regarding relationship quality, a meta-analysis of 35 empirical studies shows that experiencing discrimination on the basis of

sexual identity is negatively associated with relationship quality, including indicators of passion, relationship satisfaction, intimacy, support, commitment, and trust (3). Additional studies document the negative association between experienced stigma on the basis of race/ethnicity, gender, and age and relationship quality (2, 4–6, 23). Of particular interest, emerging research demonstrates that experienced stigma not only negatively affects individual mental health, but also the mental health of romantic partners (7, 27). Everyday experiences of discrimination, particularly on the basis of gender, race, and age, are negatively associated with depression for people in romantic relationships as well as their partners, an effect mediated by relationship strain (7). In couples consisting of transgender women and cisgender men, experienced stigma is associated with elevated psychological distress for both partners, an effect attenuated by relationship commitment for transgender women but not their cisgender male partners (27).

In a systematic review of 83 studies examining associations between internalized stigma, anticipated stigma, and depression, internalizing and anticipating stigma on the basis of gender, sexual identity, weight, and physical illness were positively associated with depression (28). Internalizing stigma on the basis of sexual identity is negatively associated with relationship functioning and demonstrates a larger effect size than that between perceived discrimination and relationship functioning (3). To date, previous research has not examined whether and how internalized and anticipated stigma are associated with the mental well-being of romantic partners.

1.3 Weight stigma and mental health: a relational perspective

Weight stigma refers to the social devaluation of people who are perceived to exceed socially-constructed weight expectations (29). Weight stigma is a pervasive, harmful, and widespread societal issue that negatively affects mental health. As theorized by Earnshaw and Chaudoir (25), experienced, anticipated, and internalized stigma are central, distinct processes through which stigmatization negatively affects psychological, behavioral, and physical health outcomes. This model is relevant to weight stigma. Experienced weight stigma refers to the discrimination a person has experienced or perceived based on their weight (30). Anticipated weight stigma involves concern over being treated unfairly because of one's weight (30). Internalized weight stigma involves the application of negative weight stereotypes to the self and self-derogation because of weight (31). Notably, internalized and anticipated weight stigma are theorized to develop through experiences of weight stigma (30, 32), although internalized weight stigma shows even stronger negative effects on health and well-being than experienced weight stigma (33).

In a meta-analysis of 105 empirical studies, Emmer et al. (10) found significant associations between experienced and internalized weight stigma and mental health outcomes, including positive associations with depression, anxiety, psychological distress, and disordered eating, and negative associations with self-esteem, well-being, quality of life, and life satisfaction. Gender did not moderate these findings. Internalized weight stigma had stronger associations with mental health than experienced weight stigma. In a systematic review and meta-analysis of 33 empirical studies, Wu and Berry (12) also found that experienced and internalized weight stigma were positively associated with disordered eating, depression, anxiety, and body dissatisfaction and negatively associated with self-esteem. Although anticipated weight stigma was not included in these analyses, research shows that anticipated weight stigma is positively associated with disordered eating, including dietary restraint, eating concerns, body shape and weight concerns, binge eating, and unhealthy weight control behaviors (34, 78).

There is growing recognition of the relational impact of weight stigma, particularly within romantic relationships (8, 9). Much of this research focuses on romantic relationships as a potent source of weight stigmatization, particularly through expressions of weight criticism between partners. Weight criticism is associated with lower relationship satisfaction and sexual intimacy and heightened relational conflict (9).

Limited research has examined the relational dynamics of internalized, anticipated, and experienced weight stigma outside of weight criticism between romantic partners. Internalized weight stigma is associated with lower relationship satisfaction and sexual intimacy among men and women in heterosexual relationships (35, 36). Experienced weight stigma is associated with lower sexual satisfaction in a sample of predominantly heterosexual Black and White men (37). As such, weight stigma not only harms the individual but also strains interpersonal relationships, potentially impacting the well-being of romantic partners. To date, no research has examined the dyadic associations between weight stigma and mental well-being among people in romantic relationships. Given the relational dynamics at play, examining the associations between weight stigma and mental well-being within the context of romantic relationships is crucial.

1.4 Present study

This study sought to examine the dyadic associations between internalized, anticipated, and experienced weight stigma and mental well-being among people in romantic relationships and their partners. In addition to internalized weight stigma, of specific interest were general weight stigma experiences and concerns from other people, rather than inquiring specifically about romantic partners as a source of weight stigma. Utilizing the actor-partner interdependence model (APIM; 38), the associations between participants' own weight stigma and their mental well-being were examined (actor effects), as well as their partners' mental well-being (partner effects). Following previous research demonstrating the adverse effects of stigma on mental health (10, 11), it was hypothesized that greater internalized, anticipated, and experienced weight stigma reported by participants would be negatively associated

with their own mental well-being. Furthermore, following previous research showing that stigma negatively affects romantic relationships among those experiencing injustice based on race, gender, age, and sexual identity (2, 3, 6, 7), it was hypothesized that greater internalized, anticipated, and experienced weight stigma reported by participants would be negatively associated with the mental well-being of their romantic partners. Potential moderation by participant gender was explored in this study. Women are often thought to be more affected by weight stigma, which has led studies to primarily focus on the consequences of weight stigma on women while leaving men overlooked and understudied (39).

2 Method

2.1 Participants and procedure

Participants were recruited through Prolific, an online crowdsourcing platform to collect high-quality data from community members (40). An eligibility screener was used to recruit couples; to participate, Prolific workers had to reside in the United States, have an approval rating of at least 95%, and have at least 100 previous submissions. To be eligible for the study, participants must have had a romantic partner who was also on Prolific, provided a unique and valid Prolific worker ID for their partner, be in a romantic relationship of at least six months, not be pregnant or have given birth in the past year or plan to become pregnant in the next year, and not be experiencing major medical weight loss (e.g., chemotherapy, bariatric surgery) due to potential changes in body size. Participants were compensated US$0.40 for completing the eligibility screener. Eligible couples were then invited to participate in the current study described as examining perceptions of body, weight, and shape in romantic relationships. Participants were compensated US$4.00 for completing the survey. Figure 1 presents the study flow chart which outlines the details of participant ineligibility and exclusion from the survey data. All decisions regarding participant eligibility and exclusion took place before any data analyses were conducted.

The final sample consisted of 287 couples (259 different-sex, 28 same-sex) comprised of 574 participants (sex: 301 female, 273 male; gender: 289 women, 269 men, 16 gender non-binary) in romantic relationships of at least six months (M = 10.77 years, SD = 8.45 years). Participants ranged in age from 19 to 76 years (M = 39.19, SD = 11.80). Most participants identified as White (n = 477, 83%); of the remaining participants, 69 (12%) identified as Asian, 57 (10%) as Hispanic or Latine, 28 (5%) as Black or African American, 15 (3%) as American Indian or Alaska Native, 3 (1%) as Native Hawaiian or other Pacific Islander, and 3 (1%) as Middle Eastern. Four participants specified a different racial/ethnic identity; participants could select more than one racial/ethnic identity. Most participants identified as heterosexual (n = 436, 76%); of the remaining participants, 58 (10%) identified as bisexual, 33 (6%) as gay/lesbian, 15 (3%) as pansexual, 14 (2%) as queer, 8 (1%) as asexual. Nine participants specified a different sexual identity; one participant did not report their sexual identity. Based on self-reported weight and height, participants' body mass index (BMI) ranged from 14.52 to 60.68 kg/m^2 (M = 29.44, SD = 7.77). On a scale from 1 (*thin, underweight, lower-weight*) to 7 (*fat, overweight, higher-weight*), 86 participants (15%) perceived themselves below the scale midpoint, 140 (24%) at the scale midpoint, and 348 (61%) above the scale midpoint (M = 4.76, SD = 1.36).

All study procedures were determined exempt from the authors' Institutional Review Board. This study is part of a larger project examining dyadic, longitudinal associations between weight stigma, relationship functioning, and health. Data and codebook are available on the Open Science Framework (https://osf.io/argzt/?view_only=8bcd35aeeb1145c3aa3454cc580db87e). No studies to date have been published from these data. For the larger project's primary longitudinal mediation analysis, at least 220 couples were sought for participation. Couples were over-sampled due to attrition concerns. The final sample size of 287 couples is ample to examine a simple APIM, where typically at least 120 dyads are recommended (41). Data were collected between November 2023 and June 2024.

2.2 Measures

2.2.1 Internalized weight stigma

To assess internalized weight stigma, participants completed the modified Weight Bias Internalization Scale (31). The scale was modified from Durso and Latner's (42) Weight Bias Internalization Scale so that it could be completed by people regardless of body size. The scale consists of 11 items (e.g., "I hate myself for my weight"). Participants responded to each item on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate more internalized weight stigma. The scale demonstrated excellent internal consistency in the sample (Cronbach's alpha = .94).

2.2.2 Anticipated weight stigma

The Weight Stigma Concerns Scale (30) was used to assess anticipated weight stigma. The Weight Stigma Concerns Scale was developed from Pinel's (43) Stigma Consciousness Questionnaires based on gender, sexual orientation, and race/ethnicity. The scale consists of four items (e.g., "I am afraid that other people will reject me because of my weight"). Participants responded to each item on a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate more anticipated weight stigma. The scale demonstrated excellent internal consistency in the sample (Cronbach's alpha = .97).

2.2.3 Experienced weight stigma

To assess experienced weight stigma, participants completed the Perceived Weight Discrimination Scale (30). The Perceived Weight Discrimination Scale was developed from Williams et al.'s (44) widely used measure of perceived racial discrimination. The scale consists of five items (e.g., "In your lifetime, how often have you been treated differently than others because of your weight?"). Participants responded to each item on a scale from 0 (*never*) to

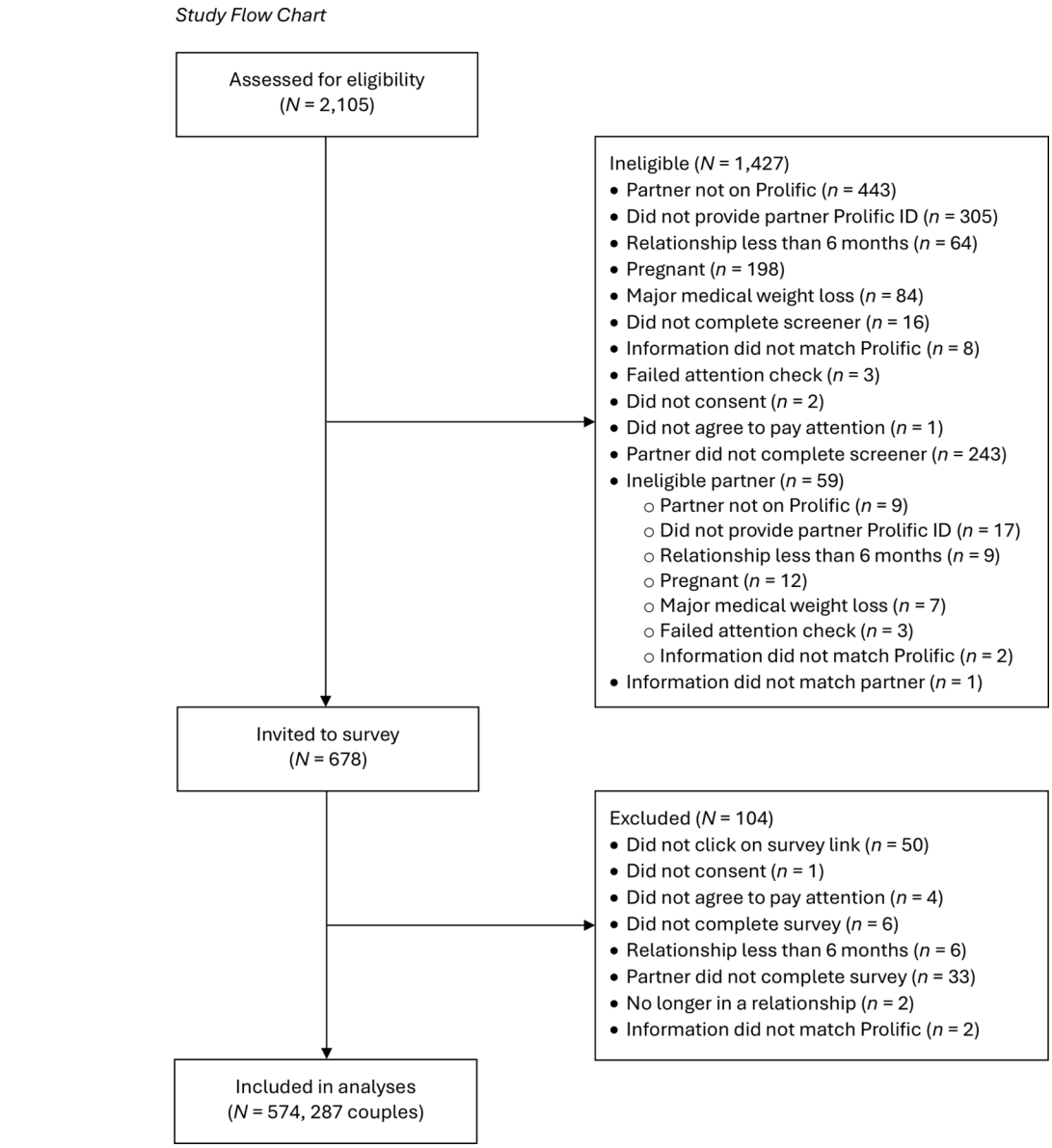


FIGURE 1
Study Flow Chart.

4 (*all the time*). Higher scores indicate more frequent experiences of weight stigma. The scale demonstrated excellent internal consistency in the sample (Cronbach's alpha = .96).

2.2.4 Mental well-being

Mental well-being was assessed using the Mental Health Continuum-Short Form (45, 81). The scale was derived from its long-form version that assesses the six dimensions of Ryff's (46) model of psychological well-being and the five dimensions of Keyes' (47) model of social well-being (48, 49). The measure consists of 14 items comprising three subscales assessing emotional well-being (three items; e.g., "During the past month, how often did you feel happy"), psychological well-being (six items; e.g., "During the past month, how often did you feel that you liked most parts of your personality"), and social well-being (five items; e.g., "During the past month, how often did you feel that you had something important to contribute to society"). Participants responded to each item on a scale from 0 (*never*) to 5 (*every day*). Higher scores indicate more frequent experiences of mental well-being. The total scale (Cronbach's alpha = .94) and each subscale (emotional: Cronbach's alpha = .91; psychological: Cronbach's alpha = .90; social: Cronbach's alpha = .88) demonstrated good to excellent internal consistency in the sample.

According to Keyes et al. (45), people can be classified as flourishing or languishing in terms of mental well-being. In order to be flourishing, participants must report that they experience seven of the 14 items from the Mental Health Continuum-Short Form 'everyday' or 'almost every day,' including one of the emotional well-being items. In order to be languishing, participants must report that they experience seven of the 14

items 'never' or 'once or twice,' including one of the emotional well-being items. Participants who do not fit these criteria are classified as having moderate mental well-being.

2.2.5 Attention checks

The eligibility screener and the survey informed participants the study required they read the questions carefully and that attention checks would be used to assess whether they are reading the questions attentively. To proceed, participants were required to affirm that they were willing to pay careful attention to the survey. If participants indicated that they were not able to pay careful attention to the survey, they were removed from the survey before completion. One attention check was included in the eligibility screener and three attention checks were included in the survey (e.g., "Please select 'Agree.' This item is for verification purposes").

2.3 Data analyses

All preliminary analyses were conducted using SPSS 29.0.1.0 (80). All values of $p < .05$ were considered statistically significant and two-tailed p values are reported. None of the scale items had missing values. After reverse-scoring the necessary items, mean scale scores were calculated. Bivariate correlations were used to examine the associations between the variables and determine covariate inclusion.

For the primary analyses, we ran three APIMs to estimate actor and partner effects of internalized, anticipated, and experienced weight stigma on mental well-being. The APIM is the default data analytic method for dyadic data because it integrates appropriate statistical techniques for measuring and testing the interdependence between the two people in the couple (38). The analysis focuses on two variables, the predictor (weight stigma; denoted as X) and the outcome (mental well-being; denoted as Y), that are measured on both members of the romantic pair. In the APIM (see Figure 2), paths from a person's X to the person's Y are called actor effects, whereas paths from a person's X to their partner's Y are called partner effects. To examine sex differences, males were coded as Partner A and females were coded as Partner B in the analyses. Following inclusive practices in relationships research to include all participants in analyses, participants in same-sex relationships were randomly assigned as Partner A or Partner B (50). A sensitivity analysis was conducted with and without participants in same-sex relationships to determine the robustness of effects.

Kenny's (51) APIM_MM program was used to conduct these analyses. The APIM_MM is based on an R program using R Studio's Shiny package. The program uses multilevel modeling to estimate the correlation of the errors of the two partners using generalized least squares. The estimates and standard errors produced by the program are identical or very similar to those from conventional multilevel modeling programs. The tests of actor, partner, and covariate effects use a Z test. The program creates a sampling distribution of 40,000 cases to obtain confidence intervals. All variables were grand mean centered.

3 Results

3.1 Preliminary analyses

Descriptive statistics and correlations are provided in Table 1. Overall, mean levels of internalized, anticipated, and experienced weight stigma were below the midpoint of the scale and mean levels of mental well-being were above the midpoint of the scale, all ts > 8.71, ps <.001. Participant scores ranged along the full scales on all measures. Based on mental well-being scores, 220 participants (38%) were classified as flourishing, 307 (54%) as moderate, and 47 (8%) as languishing.

Internalized, anticipated, and experienced weight stigma were significantly positively correlated with each other. Internalized, anticipated, and experienced weight stigma were all significantly negatively correlated with mental well-being. BMI and self-perceived weight were significantly positively correlated with internalized, anticipated, and experienced weight stigma, and significantly negatively correlated with mental well-being. A large, positive correlation was observed between BMI and self-perceived weight.

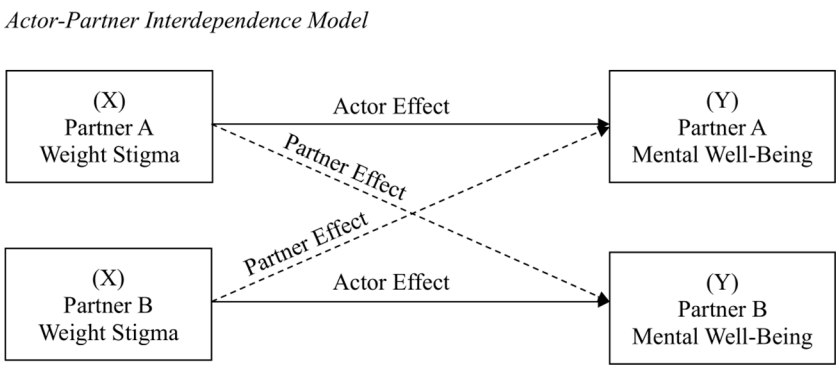


FIGURE 2
Actor-Partner Interdependence Model.

10.3389/fpsyt.2025.1576406

TABLE 1 Descriptive statistics and correlations.

Measures	*M* (*SD*)	1	2	3	4	5	6
1. Internalized Weight Stigma	3.26 (1.61)	**.15***					
2. Anticipated Weight Stigma	3.28 (1.99)	.78***	**.11**				
3. Experienced Weight Stigma	0.98 (0.94)	.55***	.59***	**.17****			
4. Mental Well-Being	2.91 (1.12)	-.46***	-.34***	-.28***	**.43*****		
5. BMI	29.44 (7.77)	.52***	.44***	.45***	-.11*	**.31*****	
6. Self-Perceived Weight	4.76 (1.36)	.65***	.50***	.40***	-.22***	.73***	**.10**

Bolded values along the diagonal represent correlation between partner reports.
*** p <.001. ** p <.01. * p <.05.

Significant sex and gender differences were observed (see Table 2). For sex, females reported more internalized, anticipated, and experienced weight stigma than males. No significant sex differences were observed for mental well-being. For gender, women and gender non-binary participants reported more internalized and anticipated weight stigma than men. Gender non-binary participants reported more experienced weight stigma than women and men, and women reported more experienced weight stigma than men. Gender non-binary participants reported lower mental well-being than men and women.

TABLE 2 Sex and gender differences on mean levels of key variables of interest.

Sex					
Measures	Females (n = 301)	Males (n = 273)	*t*	*p*	*d*
Internalized Weight Stigma	3.59 (1.62)	2.90 (1.51)	5.25	<.001	0.44
Anticipated Weight Stigma	3.79 (2.00)	2.70 (1.82)	6.82	<.001	0.57
Experienced Weight Stigma	1.13 (0.98)	0.82 (0.88)	3.93	<.001	0.33
Mental Well-Being	2.86 (1.09)	2.97 (1.15)	1.14	.254	0.10
Gender					
	Women (n = 289)	Men (n = 269)	Non-Binary (n = 16)	*F* ratio	*p*	η^2
Internalized Weight Stigma	3.58_a (1.63)	2.90_b (1.51)	3.64_a (1.66)	13.29	<.001	.08
Anticipated Weight Stigma	3.77_a (2.01)	2.71_b (1.82)	3.70_a (2.06)	21.61	<.001	.11
Experienced Weight Stigma	1.09_a (0.97)	0.83_b (0.88)	1.59_c (0.93)	9.34	<.001	.06
Mental Well-Being	2.88_a (1.09)	2.99_a (1.15)	2.23_b (0.79)	3.66	.026	.03

Standard deviations are presented below means in parentheses. For gender analyses, means with different subscripts significantly differ from each other.

3.2 Actor-partner interdependence models

Three analyses were conducted examining the dyadic associations between (1) internalized weight stigma, (2) anticipated weight stigma, and (3) experienced weight stigma and mental well-being. The test of overall distinguishability was not statistically significant in any of the models, indicating that sex did not make a statistically meaningful difference, all X^2 (4, N = 574) < 6.61, p >.157. This remained the case when participants in same-sex relationships were excluded from analyses, all X^2 (4, N = 496) < 4.41, p >.353. Thus, given that sex did not distinguish the dyadic associations between the variables, dyad members were treated as indistinguishable in the analyses reported below. For APIMs with indistinguishable dyads, models constrain actor paths and partner paths to be equal; therefore, there is one actor path and one partner path to report for each model. BMI was included as a covariate given its significant correlations with weight stigma and mental well-being. Results remained the same when self-perceived weight was included as a covariate instead of BMI. Results are reported on the total scale of the Mental Health Continuum-Short Form. With only one exception (where marginal non-significance was observed), the same pattern of results was observed across the three subscales of emotional, psychological, and social well-being. These analyses are reported in the Supplementary Material.

3.2.1 Internalized weight stigma

The APIM examining the dyadic associations between internalized weight stigma and mental well-being showed that internalized weight stigma was negatively associated with participants' own mental well-being, B = -0.37, SE = 0.03, t = -12.81, p <.001, β = -0.54, r = -.48 (medium effect size), as well as the mental well-being of their partners, B = -0.08, SE = 0.02, t = -3.23, p = .001, β = -0.12, r = -.13 (small effect size).

3.2.2 Anticipated weight stigma

The APIM examining the dyadic associations between anticipated weight stigma and mental well-being also showed that anticipated weight stigma was negatively associated with participants' own mental well-being, B = -0.20, SE = 0.02, t = -8.33, p <.001, β = -0.36, r = -.33 (medium effect size), as well as the mental well-being of their partners, B = -0.05, SE = 0.02, t = -2.35, p = .019, β = -0.09, r = .10 (small effect size).

3.2.3 Experienced weight stigma

The APIM examining the dyadic associations between experienced weight stigma and mental well-being showed that experienced weight stigma was negatively associated with participants' own mental well-being, B = -0.33, SE = 0.05, t = -6.31, p <.001, β = -0.28, r = -.25 (small effect size), but not significantly associated with the mental well-being of their partners, B = -0.05, SE = 0.05, t = 0.99, p = .324, β = -0.04, r = -.04.

4 Discussion

Although romantic relationships are identified as one of the most frequent and psychologically harmful sources of weight stigma (52, 53), previous research has not yet examined the associations between weight stigma and mental well-being of both romantic partners through a dyadic approach. The current study is the first to examine associations between internalized, anticipated, and experienced weight stigma and mental well-being in couples. The use of APIMs was intended to examine both actor effects, or the impact of weight stigma on one person's mental well-being, and partner effects, or the impact of that person's internalization, anticipation, or experience of weight stigma on their partner's mental well-being.

In alignment with hypotheses and previous research, results demonstrated negative associations between internalized, anticipated, and experienced weight stigma and participants' own mental well-being. The negative association between weight stigma internalization, or self-derogation based on body weight, and mental well-being is consistent with existing research's aggregated strong negative association between weight bias internalization and mental health more broadly (54). Pearl and Puhl's (54) systematic review shows that weight bias internalization is significantly, positively associated with depression, anxiety, disordered eating, and psychological distress, and significantly, negatively associated with self-esteem, body image, and quality of life. The negative association between anticipated weight stigma and participants' mental well-being can be understood through the social identity threat model as high awareness and expectation of discriminatory treatment based on an identity status typically excluded from power and privilege (55). For example, Hunger et al. (56) found larger-bodied women experience lowered cognitive and cardiovascular performance when anticipating rejection from an anti-fat peer. In general, vigilance toward stigma is linked to internalizing symptoms including depression (57, 58). Vigilance to weight stigma in particular results in behavioral changes like health care avoidance (34) and higher perceived stress as well as oxidative stress (59) that may contribute to mental health difficulties. Lastly, research consistently shows a connection between more frequent experiences of weight stigma and worse mental health, with overall effect sizes estimated as moderate to large (10). Experienced weight stigma negatively affects physical and mental health symptoms through internalized weight stigma and anticipated weight stigma (30, 32, 34, 78).

Results showed that the internalization and anticipation of weight stigma was also negatively associated with the mental well-being of participants' romantic partners. These results may reflect the relational spillover of weight stigma, as internalization is associated with body shame and self-doubt that may result in withdrawal and loss of intimacy in romantic relationships (8, 9), and thus may undermine partners' support of each other and further negatively affect mental well-being for both partners. Anticipating weight stigma in general contributes to increased stress and decreased self-esteem (60), which could cross over from one partner in a manner consistent with the concept of dyadic stress in intimate relationships (61). Another possibility, however, is that these results may reflect the relational spillover of partner mental well-being, as partner mental well-being may serve as a protective factor against the internalization or anticipation of weight stigma. Dyadic coping is a powerful protective factor in relationships and well-being (62). Some research suggests that social well-being and connectedness may be protective against the development of internalized weight stigma (63). Stigma by association, or the process through which companions of stigmatized people are socially devalued, offers yet another possible interpretation of the findings (64). The negative association between participants' internalized and anticipated weight stigma and partners' mental well-being might reflect, at least in part, partners' own experiences with stigma by association.

Unexpectedly, these potential relational spillover effects did not extend to experienced weight stigma, as participants' experienced weight stigma was not significantly associated with their partners' mental well-being. This finding contrasts with previous research documenting actor and partner effects of experienced stigma on mental health indicators (7, 27). Similar to our findings, in their study of social stigma with gay, lesbian, and bisexual participants, Doyle and Molix (3) found a greater impact of internalized relative to experienced stigma on romantic relationship functioning. Although experiences of weight discrimination and internalized weight stigma are associated with lower psychological well-being in general (10, 12), internalized weight bias has a stronger impact on mental health (i.e., positive affect, negative affect, and self-esteem) than perceived weight discrimination (33). This, in addition to the fact that partner effects sometimes fail to replicate due to relatively small effects (65), might explain why a significant partner effect was not observed for experienced weight stigma in this study.

Significant sex and gender differences were observed in mean levels of the key variables of interest in the current study, such that women generally reported higher levels of internalized, anticipated, and experienced weight stigma than men. Notably, however, no significant sex differences were observed in the dyadic associations between weight stigma and mental well-being. Although women generally report higher internalization of weight bias than men (66) and husbands' expressions of weight criticism toward their wives has been the focus of research thus far (9), weight stigma is clearly associated with the mental well-being of partners in romantic relationship regardless of sex.

4.1 Limitations and future directions

Although the current study recruited a large sample of couples in long-term relationships and demonstrated novel findings regarding the dyadic associations between internalized, anticipated, and experienced weight stigma and mental well-being, some limitations are present that constrain the generalizability of the results. The present study recruited a large sample of couples in long-term relationships and assessed internalized, anticipated, and experienced weight stigma; however, it was cross-sectional which limits the ability to draw conclusions about directionality, temporality, and causality. The sample included people who were diverse in terms of race/ethnicity, gender, sexual identity, age, and body size, although the vast majority of participants were in different-sex relationships and White. Participants' relationship structures are unknown (e.g., monogamous, non-monogamous, polyamorous). The measures that assessed weight stigma were validated with majority-White samples (30, 31) and thus may not accurately or comprehensively assess weight stigma in diverse racial or ethnic groups. Previous research documents significant racial and gender differences in how weight stigma is internalized and experienced (66). Consequently, the findings from this study may not generalize to people who are not White or not in heterosexual relationships. In addition, the mental well-being of the sample was relatively high, with the majority of participants classified as flourishing or moderately mentally healthy. In addition, weight stigma was not highly internalized, anticipated, or experienced in the sample. It is possible that the results of this study may not generalize to people with lower, languishing levels of mental well-being or higher levels of weight stigma. However, the consistent pattern of actor and partner effects present in a sample that was relatively mentally healthy with lower levels of weight stigma may also highlight the significance of the findings. Finally, although the findings of the present study are important in broadening the field's understanding of weight stigma and mental well-being among people in romantic relationships, they are novel and yet to be replicated.

These limitations highlight the importance of obtaining longitudinal data in future studies to examine dyadic associations between weight stigma and the mental health of romantic partners, how these constructs evolve over time, and potential relational spillover effects. Such work may seek to examine internalized and anticipated weight stigma as mediators of the association between experienced weight stigma and mental well-being of participants and their romantic partners (30, 32). Additional mechanisms, such as relationship strain (7), affiliate stigma (stigma by association; 11, 64), and relationship and sexual satisfaction (77) are also deserving of future research attention. Future research is encouraged to replicate and expand this work with couples with more diverse demographic characteristics, lower levels of mental well-being, and higher levels of weight stigma to assess the generalizability of this study's findings. Future research that applies intersectional frameworks to examine people in relationships who are experiencing barriers due to multiple social stigmas (e.g., Black women in lesbian relationships) are especially encouraged given the relatively limited focus of weight stigma research beyond White women (39, 66). Future research may also seek to examine the influence of specific sources of weight stigma (e.g., romantic partner, health care providers, coworkers), as well as potential moderation by weight status and whether couples are matched-weight versus mixed-weight. Finally, future research that examines how romantic partners provide support in coping with weight stigma are encouraged, building off of previous research examining individual strategies to cope with weight stigma (67, 68).

4.2 Implications

Despite growing awareness of the negative consequences of weight stigma, previous research on body size and romantic relationships often reinforces harmful stereotypes and assumptions about people in larger bodies. For example, studies have treated romantic relationships as a risk factor for weight gain and romantic partners as an important motivator for weight loss (69), with some researchers endorsing the use of weight stigma to increase health behaviors in couples (e.g., 70). Policy changes are needed to challenge and dismantle weight-normative assumptions. The current climate of healthcare policy rests on the erroneous assumptions that higher body weight results in poorer health, long-term weight loss is widely achievable, and weight loss results in consistent improvement of health outcomes, despite the fact that none of these assumptions are empirically supported (79). The need for policy change is further underscored by the dynamics of weight stigma in close relationships. To this end, institutional and nationwide policies that track relationship variables, partner well-being, and various forms of weight stigma would prove invaluable.

Considering the potential relational spillover of weight stigma and partner well-being in romantic relationships, couples therapists are encouraged to attend to the dyadic influence of internalized and anticipated weight stigma on both partners' mental health and well-being. This focus emphasizes the urgent need for the development of clinically-oriented strategies to mitigate the relational effects of weight stigma and enhance partner well-being to foster supportive dyadic coping strategies. For example, family and marital clinicians could incorporate weight-bias reduction strategies in their clinical practice, as these efforts show efficacy in a variety of settings (71). Applying clinical principles from acceptance and commitment therapy and cognitive behavioral therapy has also shown effectiveness in reducing weight bias internalization (54, 72). Clinical interventions show efficacy in improving dyadic coping by focusing on the enhancement of coping resources in couples counseling (73). By extending existing individual strategies to address weight stigma and well-being to relational approaches, more inclusive, compassionate, and comprehensive initiatives can be developed. Cook and colleagues (74), for example, highlight the importance of addressing the impact of stigma not only at the individual level but also encouraging meaningful, enriching communication at the interpersonal level, in an effort to challenge biases, foster awareness, and garner support.

Addressing these issues within couples counseling could enhance emotional, psychological, and social dimensions of mental well-being, as conceptualized in Keyes' (48, 49) and Ryff's (46) models of

psychological well-being. To successfully incorporate themes of bodily autonomy and size inclusivity, therapists are tasked with the challenge of assessing and confronting their own biases, emphasizing the harmfulness of weight stigma in-session, and using non-stigmatizing language in their practice (75). Furthermore, recognition of romantic partners as potential sources of weight stigma, as well as size affirmation, is essential in therapeutic contexts (35, 36, 76). By fostering an environment that prioritizes compassion and inclusion, therapists can help couples build stronger connections, improve communication, and reduce the mental health burdens associated with weight stigma. Incorporating these strategies into clinical practice represents a vital step toward more equitable and effective relationship counseling.

4.3 Conclusion

Weight stigma is pervasive, prevalent, and harmful (52). Weight stigma does not occur in a vacuum; it affects people as they live, work, play, and love. Not only is internalized, anticipated, and experienced weight stigma negatively associated with one's own mental well-being, including emotional, psychological, and social components, but weight stigma, particularly when it is anticipated and internalized, is also negatively associated with the mental well-being of romantic partners. Future research is encouraged to further examine this phenomenon and clinicians are encouraged to adopt weight-inclusive approaches to help people in romantic relationships cope with weight stigma in more psychologically meaningful ways.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: Open Science Framework https://osf.io/argzt/?view_only=8bcd35aeeb1145c3aa3454cc580db87e.

Ethics statement

This study involving humans was reviewed and exempted by the Institutional Review Board at Nova Southeastern University. The study was conducted in accordance with local legislation and institutional requirements. The requirement for signed consent forms was waived. Participants indicated their voluntary consent to participate in the study online.

Author contributions

PMB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. EJG: Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing. MJ: Investigation, Project administration, Writing – original draft, Writing – review & editing. MR: Investigation, Project administration, Writing – original draft, Writing – review & editing. KW: Investigation, Project administration, Writing – original draft, Writing – review & editing. JC: Investigation, Project administration, Writing – original draft, Writing – review & editing. AMS: Project administration, Writing – original draft, Writing – review & editing. KR: Writing – original draft, Writing – review & editing. EJ: Investigation, Writing – review & editing. MKR: Conceptualization, Formal analysis, Methodology, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This research was supported by a President's Faculty and Research Development Grant from Nova Southeastern University awarded to PB and EG. The views expressed in this article do not necessarily represent the views of the organizations with which the authors are affiliated.

Acknowledgments

The authors would like to thank Kelly Graves, Sally Ok, Chris Rivera-Jinez, and Eliana Sidlow for their research assistance on this project.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1576406/full#supplementary-material

References

1. Myers DG. The funds, friends, and faith of happy people. *Am Psychol*. (2000) 55:56–67. doi: 10.1037//0003-066x.55.1.56

2. Doyle DM, Molix L. How does stigma spoil relationships? Evidence that perceived discrimination harms romantic relationship quality through impaired self-image. *J Appl Soc Psychol*. (2014) 44:600–10. doi: 10.1111/jasp.12252

3. Doyle DM, Molix L. Social stigma and sexual minorities' romantic relationship functioning: a meta-analytic review. *Pers Soc Psychol Bull*. (2015) 41:1363–81. doi: 10.1177/0146167215594592

4. Lehmiller JJ, Agnew CR. Marginalized relationships: the impact of social disapproval on romantic relationship commitment. *Pers Soc Psychol Bull*. (2006) 32:40–51. doi: 10.1177/0146167205278710

5. Rosenthal L, Starks TJ. Relationship stigma and relationship outcomes in interracial and same-sex relationships: examination of sources and buffers. *J Fam Psychol*. (2015) 29:818–30. doi: 10.1037/fam0000116

6. Trail TE, Goff PA, Bradbury TN, Karney BR. The costs of racism for marriage: how racial discrimination hurts, and ethnic identity protects, newlywed marriages among Latinos. *Pers Soc Psychol Bull*. (2012) 38:454–65. doi: 10.1177/0146167211429450

7. Wofford N, Defever AM, Chopik WJ. The vicarious effects of discrimination: how partner experiences of discrimination affect individual health. *Soc Psychol Pers Sci*. (2019) 10:121–30. doi: 10.1177/1948550617746218

8. Côté M, Bégin C. Review of the experience of weight-based stigmatization in romantic relationships. *Curr Obes Rep*. (2020) 9:280–7. doi: 10.1007/s13679-020-00383-0

9. Schmidt AM, Jubran M, Salivar EG, Brochu PM. Couples losing kinship: a systematic review of weight stigma in romantic relationships. *J Soc Issues*. (2023) 79:196–231. doi: 10.1111/josi.12542

10. Emmer C, Bosnjak M, Mata J. The association between weight stigma and mental health: a meta-analysis. *Obes Rev*. (2020) 21:e12935. doi: 10.1111/obr.12935

11. Mak WW, Poon CY, Pun LY, Cheung SF. Meta-analysis of stigma and mental health. *Soc Sci Med*. (2007) 65:245–61. doi: 10.1016/j.socscimed.2007.03.015

12. Wu YK, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: a systematic review. *J Adv Nurs*. (2018) 74:1030–42. doi: 10.1111/jan.13511

13. Roberson PNE, Norona JC, Lenger KA, Olmstead SB. How do relationship stability and quality affect wellbeing? Romantic relationship trajectories, depressive symptoms, and life satisfaction across 30 years. *J Child Fam Stud*. (2018) 27:2171–84. doi: 10.1007/s10826-018-1052-1

14. Wängqvist M, Carlsson J, van der Lee M, Frisén A. Identity development and romantic relationships in the late twenties. *Identity*. (2016) 16:24–44. doi: 10.1080/15283488.2015.1121819

15. Proulx CM, Helms HM, Buehler C. Marital quality and personal well-being: a meta-analysis. *J Marriage Fam*. (2007) 69:576–93. doi: 10.1111/j.1741-3737.2007.00393.x

16. Downward P, Rasciute S, Kumar H. Mental health and satisfaction with partners: a longitudinal analysis in the UK. *BMC Psychol*. (2022) 10:15. doi: 10.1186/s40359-022-00723-w

17. Røsand G-MB, Slinning K, Eberhard-Gran M, Røysamb E, Tambs K. The buffering effect of relationship satisfaction on emotional distress in couples. *BMC Public Health*. (2012) 12:66. doi: 10.1186/1471-2458-12-66

18. White R, Haddock G, Haarmans M, Varese F. Being more satisfied with romantic relationship status is associated with increased mental wellbeing in people with experience of psychosis. *Front Psychiatry*. (2023) 14:1232973. doi: 10.3389/fpsyt.2023.1232973

19. Józefacka NM, Szpakiewicz E, Lech D, Guzowski K, Kania G. What matters in a relationship—age, sexual satisfaction, relationship length, and interpersonal closeness as predictors of relationship satisfaction in young adults. *Int J Environ Res Public Health*. (2023) 20:4103. doi: 10.3390/ijerph20054103

20. Braithwaite S, Holt-Lunstad J. Romantic relationships and mental health. *Curr Opin Psychol*. (2017) 13:120–5. doi: 10.1016/j.copsyc.2016.04.001

21. O'Farrell TJ, Choquette KA, Cutter HS. Couples relapse prevention sessions after behavioral marital therapy for male alcoholics: outcomes during the three years after starting treatment. *J Stud Alcohol*. (1998) 59:357–70. doi: 10.15288/jsa.1998.59.357

22. Robles TF, Slatcher RB, Trombello JM, McGinn MM. Marital quality and health: a meta-analytic review. *Psychol Bull*. (2014) 140:140–87. doi: 10.1037/a0031859

23. Sarno EL, Dyar C, Newcomb ME, Whitton SW. Relationship quality and mental health among sexual and gender minorities. *J Fam Psychol*. (2022) 36:770–9. doi: 10.1037/fam0000944

24. Major B, O'Brien LT. The social psychology of stigma. *Annu Rev Psychol*. (2005) 56:393–421. doi: 10.1146/annurev.psych.56.091103.070137

25. Earnshaw VA, Chaudoir SR. From conceptualizing to measuring HIV stigma: a review of HIV stigma mechanism measures. *AIDS Behav*. (2009) 13:1160–77. doi: 10.1007/s10461-009-9593-3

26. Major B, Tomiyama AJ, Hunger JM. The negative and bidirectional effects of weight stigma on health. In: Major B, Dovidio JF, Link BG, editors. *The Oxford Handbook of Stigma, Discrimination, and Health*. Oxford University Press, Oxford (2018). p. 499–519. doi: 10.1093/oxfordhb/9780190243470.013.27

27. Gamarel KE, Sevelius JM, Reisner SL, Coats CS, Nemoto T, Operario D. Commitment, interpersonal stigma, and mental health in romantic relationships between transgender women and cisgender male partners. *J Soc Pers Relat*. (2019) 36:2180–201. doi: 10.1177/0265407518785768

28. O'Donnell AT, Foran AM. The link between anticipated and internalized stigma and depression: a systematic review. *Soc Sci Med*. (2024) 349:116869. doi: 10.1016/j.socscimed.2024.116869

29. Brochu PM, Pearl RL, Simontacchi LA. Weight stigma and related social factors in psychological care. In: Cassin S, Hawa R, Sockalingam S, editors. *Psychological Care in Severe Obesity: A Practical and Integrated Approach*. Cambridge University Press, Cambridge (2018). p. 42–60. doi: 10.1017/9781108241687.004

30. Hunger JM, Major B. Weight stigma mediates the association between BMI and self-reported health. *Health Psychol*. (2015) 34:172–5. doi: 10.1037/hea0000106

31. Pearl RL, Puhl RM. Measuring internalized weight attitudes across body weight categories: validation of the modified weight bias internalization scale. *Body Image*. (2014) 11:89–92. doi: 10.1016/j.bodyim.2013.09.005

32. O'Brien KS, Latner JD, Puhl RM, Vartanian LR, Giles C, Griva K, et al. The relationship between weight stigma and eating behavior is explained by weight bias internalization and psychological distress. *Appetite*. (2016) 102:70–6. doi: 10.1016/j.appet.2016.02.032

33. Pearl RL, Puhl RM. The distinct effects of internalizing weight bias: an experimental study. *Body Image*. (2016) 17:38–42. doi: 10.1016/j.bodyim.2016.02.002

34. Wetzel KE, Himmelstein MS. Constant vigilance: the impact of weight stigma, vigilance, and internalization on maladaptive eating behaviors. *Health Psychol*. (2023) 42:712–22. doi: 10.1037/hea0001324

35. Carels RA, Hlavka R, Selensky JC, Solar C, Rossi J, Miller JC, et al. The associations between wives' internalized weight bias and other weight-related concerns, perceived husbands' weight-related comments, perceived mate value, and psychological and relationship outcomes. *Stigma Health*. (2020) 5:258–68. doi: 10.1037/sah0000192

36. Carels RA, Miller JC, Hlavka R, Selensky J, Shonrock AMT, Ellis JM. Associations between husbands' weight bias and related concerns and husbands' and wives' psychological and relationship outcomes. *Body Image*. (2020) 35:11–21. doi: 10.1016/j.bodyim.2020.07.008

37. Carr D, Murphy LF, Batson HD, Springer KW. Bigger is not always better: the effect of obesity on sexual satisfaction and behavior of adult men in the United States. *Men Masc*. (2013) 16:452–77. doi: 10.1177/1097184/13502651

38. Kenny DA, Ledermann T. Detecting, measuring, and testing dyadic patterns in the actor-partner interdependence model. *J Fam Psychol*. (2010) 24:359–66. doi: 10.1037/a0019651

39. Himmelstein MS, Puhl RM, Quinn DM. Overlooked and understudied: health consequences of weight stigma in men. *Obesity*. (2019) 27:1598–605. doi: 10.1002/oby.22599

40. Douglas BD, Ewell PJ, Brauer M. Data quality in online human-subjects research: comparisons between MTurk, Prolific, CloudResearch, Qualtrics, and SONA. *PloS One*. (2023) 18:e0279720. doi: 10.1371/journal.pone.0279720

41. Ledermann T, Rudaz M, Wu Q, Cui M. Determine power and sample size for the simple and mediation Actor–Partner Interdependence Model. *Fam Relat*. (2022) 71:1452–69. doi: 10.1111/fare.12644

42. Durso LE, Latner JD. Understanding self-directed stigma: development of the Weight Bias Internalization Scale. *Obesity*. (2008) 16:S80–6. doi: 10.1038/oby.2008.448

43. Pinel EC. Stigma consciousness: the psychological legacy of social stereotypes. *J Pers Soc Psychol*. (1999) 76:114–28. doi: 10.1037/0022-3514.76.1.114

44. Williams DR, Yu Y, Jackson JS, Anderson NB. Racial differences in physical and mental health: socio-economic status, stress and discrimination. *J Health Psychol*. (1997) 2:335–51. doi: 10.1177/135910539700200305

45. Keyes CL, Wissing M, Potgieter JP, Temane M, Kruger A, van Rooy S. Evaluation of the mental health continuum-short form (MHC-SF) in Setswana-speaking South Africans. *Clin Psychol Psychother*. (2008) 15:181–92. doi: 10.1002/cpp.572

46. Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well–being. *J Pers Soc Psychol*. (1989) 57:1069–81. doi: 10.1037/0022-3514.57.6.1069

47. Keyes CLM. Social well-being. *Soc Psychol Q*. (1998) 61:121–40. doi: 10.2307/2787065

48. Keyes CLM. The mental health continuum: from languishing to flourishing in life. *J Health Soc Behav*. (2002) 43:207–22. doi: 10.2307/3090197

49. Keyes CLM. Mental illness and/or mental health? Investigating axioms of the complete state model of health. *J Consult Clin Psychol*. (2005) 73:539–48. doi: 10.1037/0022-006X.73.3.539

50. Rogge RD, Macri JA, Okwudili K. Connection at your fingertips: a first look at the Agapé app's contributions to healthy relationships. *J Fam Psychol*. (2024) 38:1–16. doi: 10.1037/fam0001166

51. Kenny DA. An interactive tool for the estimation and testing the Actor-Partner Interdependence Model using multilevel modeling [Computer software(2015). Available online at: https://davidakenny.shinyapps.io/APIM_MM/ (Accessed May 29, 2025).

52. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity*. (2009) 17:941–64. doi: 10.1038/oby.2008.636

53. Vartanian LR, Pinkus RT, Smyth JM. The phenomenology of weight stigma in everyday life. *J Contextual Behav Sci*. (2014) 3:196–202. doi: 10.1016/j.jcbs.2014.01.003

54. Pearl RL, Puhl RM. Weight bias internalization and health: a systematic review. *Obes Rev*. (2018) 19:1141–63. doi: 10.1111/obr.12701

55. Hunger JM, Major B, Blodorn A, Miller CT. Weighed down by stigma: how weight-based social identity threat contributes to weight gain and poor health. *Soc Personal Psychol Compass*. (2015) 9:255–68. doi: 10.1111/spc3.12172

56. Hunger JM, Blodorn A, Miller CT, Major B. The psychological and physiological effects of interacting with an anti-fat peer. *Body Image*. (2018) 27:148–55. doi: 10.1016/j.bodyim.2018.09.002

57. Himmelstein MS, Young DM, Sanchez DT, Jackson JS. Vigilance in the discrimination-stress model for Black Americans. *Psychol Health*. (2015) 30:253–67. doi: 10.1080/08870446.2014.966104

58. Hollinsaid NL, Pachankis JE, Bränström R, Hatzenbuehler ML. Hypervigilance: an understudied mediator of the longitudinal relationship between stigma and internalizing psychopathology among sexual-minority young adults. *Clin Psychol Sci*. (2023) 11:954–73. doi: 10.1177/21677026231159050

59. Tomiyama AJ, Epel ES, McClatchey TM, Poelke G, Kemeny ME, McCoy SK, et al. Associations of weight stigma with cortisol and oxidative stress independent of adiposity. *Health Psychol*. (2014) 33:862–7. doi: 10.1037/hea0000107

60. Blodorn A, Major B, Hunger J, Miller C. Unpacking the psychological weight of weight stigma: a rejection-expectation pathway. *J Exp Soc Psychol*. (2016) 63:69–76. doi: 10.1016/j.jesp.2015.12.003

61. Randall AK, Bodenmann G. The role of stress on close relationships and marital satisfaction. *Clin Psychol Rev*. (2009) 29:105–15. doi: 10.1016/j.cpr.2008.10.004

62. Falconier MK, Jackson JB, Hilpert P, Bodenmann G. Dyadic coping and relationship satisfaction: a meta-analysis. *Clin Psychol Rev*. (2015) 42:28–46. doi: 10.1016/j.cpr.2015.07.002

63. Leget DL, LaCaille LJ, Hooker SA, LaCaille RA, Lauritsen MW. Applying self-determination theory to internalized weight stigma and mental health correlates among young and middle adult women: a structural equation model. *J Health Psychol*. (2025) 30:253–67. doi: 10.1177/13591053241248283

64. Pryor JB, Reeder GD, Monroe AE. The infection of bad company: stigma by association. *J Pers Soc Psychol*. (2012) 102:224–41. doi: 10.1037/a0026270

65. Furler K, Gomez V, Grob A. Personality perceptions and relationship satisfaction in couples. *J Res Pers*. (2014) 50:33–41. doi: 10.1016/j.jrp.2014.02.003

66. Himmelstein MS, Puhl RM, Quinn DM. Intersectionality: an understudied framework for addressing weight stigma. *Am J Prev Med*. (2017) 53:421–31. doi: 10.1016/j.amepre.2017.04.003

67. Hayward LE, Vartanian LR, Pinkus RT. Coping with weight stigma: development and validation of a Brief Coping Responses Inventory. *Obes Sci Pract*. (2017) 3:373–83. doi: 10.1002/osp4.125

68. Puhl RM, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obesity*. (2006) 14:1802–15. doi: 10.1038/oby.2006.208

69. Werneck AO, Winpenny EM, Foubister C, Guagliano JM, Monnickendam AG, van Sluijs EMF, et al. Cohabitation and marriage during the transition between adolescence and emerging adulthood: a systematic review of changes in weight-related outcomes, diet and physical activity. *Prev Med Rep*. (2020) 20:101261. doi: 10.1016/j.pmedr.2020.101261

70. Meltzer AL, McNulty JK, Karney BR. Social support and weight maintenance in marriage: the interactive effects of support seeking, support provision, and gender. *J Fam Psychol*. (2012) 26:678–87. doi: 10.1037/a0029364

71. Schmidt AM, Brochu PM. Incorporating fat pedagogy into health care training: evidence-informed recommendations. In: Brown HA, Ellis-Ordway N, editors. *Weight Bias in Health Education: Critical Perspectives for Pedagogy and Practice*. Routledge, New York (2021). p. 148–58. doi: 10.4324/9781003057000

72. Griffiths C, Williamson H, Zucchelli F, Paraskeva N, Moss T. A systematic review of the effectiveness of acceptance and commitment therapy (ACT) for body image dissatisfaction and weight self-stigma in adults. *J Contemp Psychother*. (2018) 48:189–204. doi: 10.1007/s10879-018-9384-0

73. Bodenmann G, Pihet S, Shantinath SD, Cina A, Widmer K. Improving dyadic coping in couples with a stress-oriented approach: a 2-year longitudinal study. *Behav Modif*. (2006) 30:571–97. doi: 10.1177/0145445504269902

74. Cook JE, Purdie-Vaughns V, Meyer IH, Busch JT. Intervening within and across levels: a multilevel approach to stigma and public health. *Soc Sci Med*. (2014) 103:101–9. doi: 10.1016/j.socscimed.2013.09.023

75. Calogero RM, Tylka TL, Mensinger JL, Meadows A, Daníelsdóttir S. Recognizing the fundamental right to be fat: a weight-inclusive approach to size acceptance and healing from sizeism. *Women Ther*. (2019) 42:22–44. doi: 10.1080/02703149.2018.1524067

76. Berge JM, Pratt K, Miller L. Weight conversations in romantic relationships: what do they sound like and how do partners respond? *Fam Syst Health*. (2016) 34:213–20. doi: 10.1037/fsh0000223

77. Beaulieu N, Bergeron S, Brassard A, Byers ES, Péloquin K. Toward an integrative model of intimacy, sexual satisfaction, and relationship satisfaction: a prospective study in long-term couples. *J Sex Res*. (2023) 60:1100–12. doi: 10.1080/00224499.2022.2129557

78. Hunger JM, Dodd DR, Smith AR. Weight discrimination, anticipated weight stigma, and disordered eating. *Eat Behav*. (2020) 37:101383. doi: 10.1016/j.eatbeh.2020.101383

79. Hunger JM, Smith JP, Tomiyama AJ. An evidence-based rationale for adopting weight-inclusive health policy. *Soc Issues Policy Rev*. (2020) 14:73–107. doi: 10.1111/sipr.12062

80. IBM Corporation. *IBM SPSS Statistics for Windows, Version 29.0.1.0*. Armonk, NY: IBM Corp. (2023).

81. Lamers SM, Westerhof GJ, Bohlmeijer ET, ten Klooster PM, Keyes CL. Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF). *J Clin Psychol*. (2011) 67:99–110. doi: 10.1002/jclp.20741

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 10 June 2025
DOI 10.3389/fpsyt.2025.1577063

OPEN ACCESS

EDITED BY
D. Catherine Walker,
Union College, United States

REVIEWED BY
Paula Brochu,
Nova Southeastern University, United States
Ida Rosida,
Syarif Hidayatullah State Islamic University Jakarta, Indonesia
Michelina Witte,
University of Miami, United States

*CORRESPONDENCE
Raeanna Kilby
rkilby1@asu.edu

RECEIVED 14 February 2025
ACCEPTED 20 May 2025
PUBLISHED 10 June 2025

CITATION
Kilby R and Mickelson KD (2025) Combating weight-stigmatization in online spaces: the impacts of body neutral, body positive, and weight-stigmatizing TikTok content on body image and mood.
Front. Psychiatry 16:1577063.
doi: 10.3389/fpsyt.2025.1577063

Combating weight-stigmatization in online spaces: the impacts of body neutral, body positive, and weight-stigmatizing TikTok content on body image and mood

Raeanna Kilby* and Kristin D. Mickelson

Arizona State University, New College of Interdisciplinary Arts and Sciences, Glendale, AZ, United States

Social media movements centered on body positivity and body neutrality both encourage healthy attitudes toward the physical body; however, these movements are conceptually distinct and may have unique influences on body image. This study examined how brief exposure to different types of body acceptance and weight-stigmatizing content affects body image and mood. Participants consisted of women and gender-diverse individuals (N = 326) who completed an online survey and were randomly assigned to view one of four TikTok video compilations: body neutrality, body positivity, weight-stigmatizing, or travel (control) content. Exposure to body positivity and body neutrality content was associated with improvements in functional appreciation, self-objectification, body dissatisfaction, and negative affect. Moreover, although participants across body-focused conditions reported thinking about their appearance to a similar extent, those in the body-positive and body-neutral groups reported more frequent positive appearance-related thoughts than those in the weight-stigmatizing or control conditions. Importantly, differences emerged between the two body acceptance conditions, such that body neutrality was uniquely effective in reducing self-objectification relative to weight-stigmatizing content, while body positivity significantly enhanced positive affect. Moderation analyses revealed marginal interactions, suggesting that the effect of content on body dissatisfaction varied by gender identity, while positive affect varied by perceived body silhouette. Overall, these findings indicate that body-positive and body-neutral content on TikTok may serve as beneficial alternatives to weight-stigmatizing media, though each approach may yield distinct benefits especially in consideration of individual identity characteristics.

KEYWORDS

body positivity, body neutrality, weight-stigma, TikTok, social media, self-objectification, mood, body image

1 Introduction

1.1 Social media and weight-stigma

Since its emergence in the 1990s, social media has become widespread, with upwards of 72% of all Americans using at least one social media site (1). Despite the high prevalence rate, one-third of Americans believe social media use (SMU) has overall negative impacts on mental health (2). These feelings of apprehension towards social media are not unfounded, with abundant research demonstrating potential detrimental effects of SMU on users' well-being (see 3, for an extensive review). Of these concerns, one of the most salient is social media's impact on body image. Initially, researchers assumed that overall time on social media was the sole predictor of body image; however, more recently, research suggests that the content users are exposed to and engaging with may be a much larger predictor than overall time spent on SMU (4–6). Specifically, content that centers around weight loss (7) or idealized beauty standards has been found to be the most detrimental to self-esteem and body image (8–11).

While beauty standards have evolved over time, the thin ideal remains one of the most pervasive and influential in Western societies. The thin ideal is a concept created and perpetuated by social norms and expectations, depicting an ultra-slender and toned female body as the epitome of success, desirability, and happiness (12). While society has long placed importance on thinness, the increasing integration of media into our daily lives has amplified this phenomenon by exposing individuals to a constant, and often inescapable stream of beauty ideals. Indeed, research shows that social media's influence on body ideals is greater today than traditional broadcast media (13–16). This reflects what Hepp (17) describes in his theory of deep mediatization, in which networked digital media is an active force shaping societal structures, personal identities, and cultural norms. In the context of body ideals, this means that beauty standards are not only disseminated more widely but are also deeply integrated into how individuals perceive femininity and social value within themselves and others through body type, making appearance ideals appear more pervasive and inescapable than ever before.

Idealized body expectations not only influence how individuals view themselves but also how society views and treats those who do not conform. One of the most pervasive consequences of internalized body standards is the stigmatization of individuals with larger bodies. A critical aspect of the thin ideal is that those able to achieve thinness are not only successful, desirable, and happy, but strong-willed and in control of their bodies (18). Conversely, those who fall outside of the ideal weight, especially plus-size women, are stigmatized as lazy and lacking willpower (19). Consequently, the stigmatization of those with larger bodies, also referred to as weight-stigma, has resulted in pervasive and widespread discrimination (20). Concerningly, stigmatization and discrimination against those with large bodies has continued to grow, increasing by 66% nationally from 1995 to 2006 (21), with the common perception being that discrimination is a useful tool to increase "healthier lifestyles," despite not being supported by research (20).

Stigmatization and discrimination of people with larger bodies is also extremely prevalent within online communities through body shaming comments and weight-bias content (22). The combination of anonymity and lack of repercussions from these platforms lowers individuals' adherence to social norms, resulting in much more extreme forms of weight-stigma than in non-online spaces. A study by Jeon et al. (23) found that for individuals with larger bodies, body shaming comments were found to be twice as likely than comments defending these individuals. Furthermore, the content existing on social media can be weight-biased in nature, expressing negative attitudes or stereotypes towards larger bodies and idealizing thin bodies. An analysis of posts and comments on major social media sites found that 92% of content relating to larger bodies used the word "fat" and was most often associated with negative connotations (24).

Unsurprisingly, increased consumption and internalization of weight-stigmatizing content through social media use (SMU) have consistently been shown to have a unidirectional association with worse mood and body image concerns across all body types, even during instances of acute exposure (see 4–6 for extensive literature reviews). However, this is partially heighted for individuals with larger bodies, who face immense pressure to critically examine and disparage their own bodies. Consequently, several studies have found that individuals with larger bodies report higher levels of body dissatisfaction (25, 26). More concerning is that this negative body image is a significant risk factor for the development of disordered eating behaviors and related deficits across various domains, including physical health, social relationships, emotional well-being, academic performance, and professional success (27, 28).

1.2 TikTok – personalized problematic content

However, not all social media platforms are alike, as users engage with problematic body-related content in different ways across platforms. While much of the research has traditionally centered on Instagram, growing concerns are now being raised about the impact of TikTok (29). As a highly popular, short-form video platform, TikTok has rapidly grown into a mainstream source for appearance and body ideals. With 150 million U.S. users—nearly half the population (30)—and the highest average screen time of any platform at 26 hours per month (31), TikTok wields significant influence, particularly over its predominantly young female user base (32).

Like other image-centric platforms, TikTok is riddled with a constant stream of appearance and body-focused content, contributing to unrelenting beauty trends (33–35). However, what makes TikTok uniquely troubling in comparison to other platforms is its highly algorithmically driven presentation of content. In other words, TikTok utilizes an algorithm based on data taken from user

interactions, such as accounts followed, likes, comments, and saved videos to personalize video recommendations (29, 36). This individualized approach means that users—particularly those already vulnerable to body dissatisfaction—are frequently exposed to and encouraged to engage with harmful content. A study by the Center for Countering Digital Hate (37) highlights the extent of this issue, demonstrating that TikTok's algorithm can rapidly identify and exploit body image-related insecurities. When simulated accounts mimicking 13-year-old girls engaged with body image and mental health content, the algorithm began promoting eating disorder-related videos within just eight minutes. This suggests that TikTok not only promotes body ideals and weight-stigma, but actively shapes and intensifies such beliefs, even encouraging unhealthy behaviors to achieve thinness, contributing to widespread body image concerns and subsequent eating disorder behaviors among its users (38, 39). Hence, given TikTok's power to influence attitudes and behaviors regarding the body ideal, it is crucial to critically examine its role in promoting body image concerns and to explore potential solutions.

1.3 Body positivity and body neutrality on TikTok

Just as TikTok has the power to shape beliefs and behaviors in ways that contribute to weight-stigma, body dissatisfaction, and disordered eating, it also has the potential to foster more positive relationships with the body. While much of the platform's content reinforces unrealistic body ideals and weight-stigma, an increasing number of users are engaging with content that challenges these standards. This shift is reflected in the rise of body acceptance content, including both body positivity (BoPo) and body neutrality. Although body positivity and body neutrality share the common goal of reducing body image concerns, they differ in their approaches. The central ideology of BoPo is that all individuals, regardless of shape and size, deserve to have a positive relationship with their physical body (40). BoPo promotes self-compassion and self-acceptance by loving and embracing the body including all its perceived flaws (41). For instance, someone practicing BoPo will have beliefs such as "I feel good about myself because I know I am beautiful, flaws and all" or "I love my stomach and its stretch marks."

Body neutrality, on the other hand, shifting focus away from beauty and prioritizes overall well-being and functionality. Pellizzer and Wade (42) proposed a working definition of body neutrality that is made up of three main components. First, body neutrality encourages individuals to step away from their appearance judgements entirely, in that a person's body is neither inherently good nor bad. Essentially, it takes away all appearance-based judgments, either positive or negative, from the body. Second, body neutrality encourages individuals to find self-worth in their intrinsic qualities and extrinsic passions, not in their appearance. For instance, someone practicing body neutrality may have beliefs such as "How I feel about myself has nothing to do with my appearance." Lastly, body neutrality encourages individuals to focus on valuing the functionalities of their bodies, rather than the appearance of their bodies, a practice termed functional appreciation. Importantly, functional appreciation is not limited to those with able-bodies, in that those with physical limitations still have bodies capable of functioning, though that functionality may manifest in different ways (43). Moreover, while functional appreciation includes physical capabilities, it also encompasses other functions, such as the body's experience and ability to engage with the world (e.g. expression, connection, and communication) (44).

Most research has focused on the effects of body positivity, finding support for body positivity as an alternative to harmful body content. Indeed, experimental studies have found improvements in body image concerns and mood following exposure to body positivity (40, 45–48). However, criticisms have been raised regarding BoPo's continued focus on appearance. Specially, users have criticized BoPo content, sharing sentiments like, "*I was never insecure about my stretch marks until people shoved it down my throat that they're beautiful*," and "*I was never insecure until I was told to love parts of my body that I didn't think twice about*" (49). As a result, while BoPo aims to foster body acceptance, its emphasis on appearance can inadvertently exacerbate body dissatisfaction for some.

These sentiments are reflected within recent research, showing that even brief exposure to BoPo content may lead to a boomerang effect, increasing upward appearance comparisons and self-objectification (33, 40, 50). Originally proposed by Fredrickson and Roberts (51), objectification is treating a person as an object that can be used and manipulated, as opposed to an individual with agency (52). When objectified, individuals are stripped of their personhood until they exist as just a body to be evaluated by others (53). When individuals internalize body objectification, or *self-objectify*, they become accustomed to viewing themselves as their physical body through the lens of an observer. Individuals who self-objectify may have thoughts such as "My value comes from my appearance" or "I will not be satisfied with myself until I reach the ideal societal body."

Notably, positive body image, rooted in appreciation, respect, and care for the body, is distinct from self-objectification (54–56). Positive body image, which recognizes a broad understanding of beauty, is internally motivated and self-affirming, whereas self-objectification is externally focused and performative. However, the distinction between self-objectification and positive body image can become blurred—particularly for individuals shifting away from internalized thin-ideal messaging, where their self-worth has long been conditioned to be contingent by others' evaluations. For these individuals, body-positive content, while well-intentioned, may still reinforce performative relations with the body if the sense of empowerment is contingent on others' recognizing wider definitions of beauty rather than one's own internal acceptance.

Furthermore, a core component of positive body image is appreciation of the body beyond its appearance—such as functional appreciation—a nuance that is underemphasized in much of BoPo content (40, 57). Hence, despite BoPo's central tenets focusing on creating positive relationships with the physical

body, its focus on appearance can inadvertently reinforce self-objectification by keeping physical appearance central to one's self-image and worth (40, 58). Importantly, this does not mean that body positivity is inherently harmful. In fact, for many, it serves as an empowering and affirming counter-narrative to idealized body content. However, for those with more complex or conflicted relationships with their body, including those who have deeply internalized the thin ideal, body positivity may not feel attainable or appropriate. For some, body neutrality may even serve as a steppingstone, providing a non-performative mindset that supports healing and acceptance until a positive, self-affirming relationship with the body, such as demonstrated in BoPo, can be developed. It is therefore crucial for research to explore a range of body acceptance content, such as body neutrality, to address a wider diversity of needs.

There are currently only two studies, to our knowledge, that look at exposure to digital body neutrality content in connection with body satisfaction (59, 60). Both studies involved exposing participants to a single session of body neutral content and demonstrated improvements in functional appreciation and body satisfaction. Improvements in mood as well as fewer upward appearance comparisons were also reported. Importantly, the study performed by Seekis and Lawrence (59) focused on body-neutral TikTok content, providing support for the efficacy of body-neutral content on video-central social media platforms. Notably, its impact on self-objectification, especially in relation to body positivity and traditional body idealizing content, has not been explored.

1.4 Body silhouette and gender-diverse populations

Notably, no study has directly compared the effects of body positivity and body neutrality, especially in consideration of unique user identities and needs. By examining how these approaches differ in their impact, researchers can better identify strategies that promote healthier and more inclusive relationships with the body. For instance, for those with more complicated reactions to the body, where the idea of unconditional love is not necessarily practical, body neutrality may be an easier ideology to adopt. This is especially applicable to individuals with chronic illnesses or disabilities, who often report feeling betrayed by their bodies (61), those with or recovering from an eating disorder, or populations at higher risk for body concerns. Research has identified several characteristics that elevate the risk for body image concerns, one of the most prominent being body type (26). Specifically, those with larger bodies often report higher body dissatisfaction, due to the previously mentioned promotion of a thin body ideal and pervasiveness of weight-stigma within general society and online spaces.

Hence, body positivity and body neutrality are important in that they challenge the normality of weight-stigmatization in online spaces. However, the combination of higher body dissatisfaction and experiences of stigmatization among those with larger bodies may differentially impact the effectiveness of body-neutral and body-positive content. Therefore, research is needed to see if body-neutral and body-positive content are equally effective strategies, especially in consideration of body types, before being recommended to users regardless of individual characteristics.

In addition to those with larger bodies, transgender and gender-diverse individuals (TGD) also show elevated rates of body dissatisfaction. Indeed, studies have found that upwards of 70% of transgender and gender diverse participants reported experiencing body dissatisfaction, with transgender youth exhibiting higher levels of eating disorder behaviors and diagnoses compared to their cisgender peers (62). Despite these higher prevalence rates, there is a lack of research on prevention and treatment within TGD communities. Regarding body acceptance movements for TGD communities, body positivity has been heavily critiqued by community advocates and researchers alike for being exclusionary and invalidating regarding body dissatisfaction due to gender dysphoria (63–67). Conversely, there has been preliminary support for body neutrality in relation to body dissatisfaction for TGD communities (68). Smith et al. (60) found that a single-session intervention of exposure to body-neutral content, for individuals experiencing body and mood disturbances, improves body image. Those included in the sample were diverse in their gender identity, including 32% identifying as non-binary and almost 15% identifying as transgender. Preliminary support has also been found within qualitative works, with TGD participants exposed to body neutrality having commented positively, including one non-binary individual stating "*My therapist recently introduced me to the idea of body neutrality, and I've felt a lot better about trying to reach that as a goal rather than body positivity … For me, coming to peace with my body makes more sense right now than diving head first towards love*" (66). Hence, body neutrality may offer a more manageable goal in the psychological shift away from a negative body image for those struggling with gender dysphoria.

Body neutrality is not without its critics in TGD communities, as many may view the ability to disregard the body's importance as a privilege. Indeed, TGD individuals cannot always be neutral about their bodies, as presenting as one's gender is not only helpful in stabilizing identity but is also important in feeling safe (69). Transgender individuals are over four times more likely than cisgender people to be the targets of violent crimes (70). When transgender people are perceived as cis-gendered, these crimes can be minimized. Therefore, being neutral about the body may not be as simple, especially when safety is at risk or when altering the body is a means to match identity. Therefore, while the no-judgement perspective of body neutrality may be more obtainable to TGD individuals than unconditional love of body positivity, other potential limitations may weaken body neutrality's impact in these communities. Hence, research is needed to clarify the extent to which body-neutral and body-positive content are equally effective strategies in improving body image concerns for TGD TikTok users, especially in comparison to cis-gender TikTok users.

1.5 Current study

As TikTok continues to influence users' body image perceptions, both body positivity and neutrality present distinct approaches to mitigating body dissatisfaction. Understanding these movements' impact on users—especially on platforms driven by algorithms designed to maximize engagement—will be crucial in combating weight-stigmatization and promoting healthier body image ideals. Therefore, the aims of this study are three-fold: First, this study seeks to experimentally address whether viewing body-positive, body-neutral, and weight-stigmatizing content influences body dissatisfaction, mood, functional body appreciation, self-objectification, and appearance-related thoughts —and whether these impacts significantly differ. We predict that viewing body-positive and body-neutral content will be associated with overall better scores on all measures in comparison to weight-stigmatizing content. Additionally, because body positivity encourages a continued focus on appearance and may lead users to continue upholding a negative cognitive body image, whereas body neutrality steps away from appearance evaluations, we predict body-neutral content will be associated with higher levels of positive appearance thoughts and lower levels of body dissatisfaction and self-objectification compared to body-positive content. Additionally, we predict that body neutrality will result in higher functional appreciation than body positivity.

For our second aim, we will explore whether perceived body silhouette acts as a moderator in the relationship between content and body image outcomes. We make no specific hypotheses about how these moderation effects will manifest, as prior literature is extremely limited. Similarly, for our third aim, we will explore whether gender identity acts as a moderator in the relationship between content and body image outcomes. Again, we make no specific hypotheses about how these moderation effects will manifest, as prior literature is extremely limited.

2 Method

2.1 Participants

A sample of 326 adult participants who identified as women or gender diverse (e.g., transgender, non-binary, genderqueer), used TikTok, and lived within the United States were recruited via Connect Cloud Research, a professional participant platform. Data collection took place over a 13-day period in mid-2024, with participants receiving $3.50 following completion of the survey. Oversampling of participants with larger body types was performed to allow for moderation analyses with perceived body silhouettes. Similarly, gender diverse participants were also oversampled (cisgender women, 61.3%; transgender, non-binary, other 38.7%) for increased power regarding moderation analyses. Participants' age ranged from 18–67 years (M_{age} = 35.01, SD = 14.96) with the majority identifying as white (64.1%; Black or African American, 16.9%; Hispanic or Latino, 8.6%; Asian or Asian American, 8.6%; American Indian or Alaska Native, 1.5%; Native Hawaiian or Pacific Islander 0.3%) and heterosexual (49.4%; homosexual, 10.4%; bisexual, 29.1%; other, 11.0%). Participants' most utilized social media platform was TikTok, with majority indicating daily use to be between 30 minutes to two hours (less than 30 minutes, 19.6%; 30 minutes - 1 hour, 23.0%; 1–2 hours, 23.0%; 2–3 hours, 21.8%; 3+ hours 12.6%). A comprehensive summary of the descriptive statistics is provided in Supplementary Appendix A: Table A1.

2.2 Design and procedure

The study was completed entirely online via Qualtrics with participants recruited through Connect. Because the study involved exposure to social media content that could elicit body dissatisfaction, participants were informed during the consent process that the study included scales and stimuli related to body image and social media (Supplementary Appendix B). The first part of the survey was a cross-sectional design consisting of questions regarding TikTok time usage, exposure to body-neutral and weight-stigmatizing content, self-esteem, and eating disorder (ED) behaviors and beliefs. The second part of the survey consisted of an experimental design in which participants were randomly assigned to one of four TikTok video conditions: body neutrality, body positivity, weight-stigmatizing, or travel. Participants completed measures of mood, body dissatisfaction, self-objectification, and functional appreciation pre- and post-exposure. Additionally, the frequency and positivity of thoughts about appearance as well as the likelihood to continue watching were assessed for each condition post-exposure. In case of potential distress, all participants were provided with a debriefing page at the end of the study, which included a list of resources for mental health and eating disorder support (Appendix B). The study took approximately 25 minutes to complete.

2.3 Stimulus materials

Four sets of TikTok video compilations based on body neutral, body positive, weight-stigmatizing, and travel were created by the researchers. In creating these conditions, TikTok reels for the two body acceptance conditions were initially searched by relevant hashtags (e.g. body neutral: #bodyneutrality, #bodyneutral; body positive: #bodypositivity, #bodypositive). Importantly, thematic analysis of content using body-neutral and body-positive hashtags have found some of the content to contain contradictory messages, such as promoting weight loss or praising thinness (49, 71–73). Hence, videos were selected based on how accurately they represented the ideas of body neutrality and body positivity. Additionally, to ensure there was no thematic overlap between the body-neutral and body-positive conditions, videos that featured themes or hashtags relating to both conditions, and body acceptance more generally, were not selected. Lastly, videos for both body acceptance conditions were selected to show a wide variety of creators of different ages, ethnicities, and body types.

Following this initial collection, the contents of the videos were then summarized and matched between conditions. Both conditions featured content explaining what body neutrality or body positivity is, mindfulness practices, songs, and the purpose of food, physical exercise, and/or clothes. Similarly, the selection of the weight-stigmatizing videos matched the content of the body acceptance conditions. For instance, videos on food for dieting purposes, physical exercise for weight loss, clothing for 'flattering' or 'slimming' purposes, and mantras encouraging thin idealization or promoting weight-stigma were selected, but excluded material that explicitly promoted disordered eating behaviors (e.g., binging, purging, extreme restriction). Creators in the weight-stigmatizing condition were all thin and/or lean. Lastly, videos for the travel condition were searched for using "#travel" and included content regarding travel destinations and scenic shots. Importantly, the creators' bodies were not present in these videos.

Each of the four video compilations was piloted to ensure that the featured videos accurately reflected their corresponding categories. Participants in the pilot study (N = 17) were given a brief definition of their randomly assigned condition and asked to assess how well the videos represented that condition. Any videos identified as not representative of the condition were removed. Participants were also asked about the length of the compilations and ease of the manipulation check. The manipulation checks required participants to correctly identify a screenshot from the videos watched among two other photos featuring TikTok videos not shown. Following feedback from pilot participants, the video compilations for each condition were shortened to a total of five minutes, with an attention check prompted at the 2½-minute mark. Each five-minute compilation video consisted of approximately 20 videos, with an average length of 20 seconds.

2.4 Measures

2.4.1 Demographics

Following consent, participants were asked demographic information including age, ethnicity, sexual orientation, education level, income, and relationship status (Supplementary Appendix A). Gender was assessed by asking people to indicate which gender they most identified out of the following options: Cisgender Woman, Cisgender Man, Transgender Woman, Transgender Man, Non-binary, and Other. General social media use was also assessed through the number of platforms used and the frequency of use for each platform from 1(Never) to 5 (Multiple times a day). Participants were also shown how to check their daily average TikTok time usage within the settings section of their phone and asked to report said number. Finally, to account for pre-existing engagement, participants' prior exposure to body-positive, body-neutral, and weight-stigmatizing TikTok content was assessed using a modified version of the Body Positivity Media Exposure Scale (33), which included additional items for body-neutral and weight-stigmatizing themes based on Pellizzer and Wade (42).

2.4.2 Body Silhouette

The Stunkard figure rating scale, a visual scale that depicted 18 different figures, nine feminine and nine masculine presentation, and asked participants to "Indicate which silhouette you feel looks most like yourself" (74). See Figure 1.

2.4.3 Pre and post measures

2.4.3.1 Body dissatisfaction

Body dissatisfaction was assessed by asking participants to rate their current satisfaction on four dimensions: body shape, body size, weight, and appearance/attractiveness (75). Scales consisted of digital sliders ranging from 0 (No Dissatisfaction) to 100 (Very Dissatisfied). Scores were averaged across all four measures, with higher scores indicating higher levels of dissatisfaction. The scale showed very good reliability at both pre-exposure (α = .93) and post-exposure (α = .96).

2.4.3.2 Mood

To assess mood the Positive and Negative Affect Scale (PANAS; 76), featuring 10 positive and 10 negative items, was utilized. Participants rated how much they were experiencing these feelings "right now" on a five-point scale ranging from not at all (0) to extremely (4). Means of the two subscales, positive and negative affect, were created (negative mood pre: α = .92; post: α = .91; positive mood pre: α = .92; post α = .95).

2.4.3.3 Self-objectification

Self-objectification was assessed through the 7-item Self Objectification Beliefs and Behaviors Representing Self Subscale (77). This scale measures how much participants view themselves as an object to be evaluated based on their appearance, with an example item being "My physical appearance is more important than my personality." Responses were measured along a 5-point scale from strongly disagree (-2) to strongly agree (2). Scores were averaged such that higher scores indicated higher levels of self-objectification. The scale showed very good reliability (pre: α = .92; post α = .95).

2.4.3.4 Functional appreciation

To measure functional appreciation, the 7-item Functionality Appreciation Scale (FAS; 78) was administered. Functional appreciation is a form of positive non-appearance-based body image, in which participants indicate how appreciative they are of their body's abilities. An example item read, "I respect my body for the functions that it performs." Responses were measured along a 5-point scale from strongly disagree (-2) to strongly agree (2), with higher scores indicating higher levels of functionality appreciation. The scale showed very good reliability at pre-test (α = .92) and post-test (α = .95).

2.4.4 Post measures

2.4.4.1 State appearance thoughts

Appearance-related thoughts during the video conditions were assessed using two items. The first item assessed the frequency of such thoughts by asking participants, "While watching the videos, to what extent did you think about your own appearance?" However, as appearance-related thoughts are not inherently

negative, a second item evaluated their valence: "To what extent were any thoughts about your appearance positive?" Both items were rated on a 5-point scale, ranging from none at all (0) to a great deal (4).

2.4.4.2 Likelihood to continue watching

We also wanted to assess participants' likelihood in continuing to watch body neutrality and body positivity outside of study conditions. To assess such, participants were asked "To what extent do you feel you would like to continue viewing or following the content you watched?" Responses were ranked on a 5-point scale from not at all (0) to a great deal (4).

2.5 Data analysis

Participants that were missing significant data (>50%), failed more than 2 out of 3 attention checks, or bypassed the condition criteria were removed, resulting in a final sample size of N = 326. A sensitivity analysis was conducted using G*Power (79) to determine the minimum detectable effect size for repeated measures within-between interaction with a sample size of 326. Assuming an alpha level of.05 and a power (1 – β) of.80 the analysis indicated that the minimum detectable effect size was f = 0.09, corresponding to a partial η^2 = .18 (small effect; 80). Thus, our final sample size of 326 was adequate to detect small effect sizes. An available item analysis was conducted to address any additional missing data points, leading to slight variations in the number of participants included in each analysis. To test hypothesis 1, mixed repeated-measures ANOVAs were conducted to examine condition differences over time for body dissatisfaction, functional appreciation, self-objectification, and positive affect and negative affect. An exploratory ANCOVA was also conducted with pre-exposure scores as a covariate to control for individual differences at pretest, which may increase sensitivity to detect group-level differences that were not apparent in the unadjusted comparisons. For measures assessed only after condition exposure—specifically, frequency of appearance-related thoughts, positivity of appearance-related thoughts, and likelihood of continuing to watch—the scores were entered into a separate MANOVA. All *post hoc* pairwise comparisons utilized the Bonferroni test to reduce risk of a Type 1 error.

3 Results

3.1 Preliminary analyses

Chi-square tests and a MANOVA were conducted to ensure no initial differences across the four experimental conditions. There were no significant condition differences in age, race, education, relationship status, sexuality, region, urbanicity, income, body

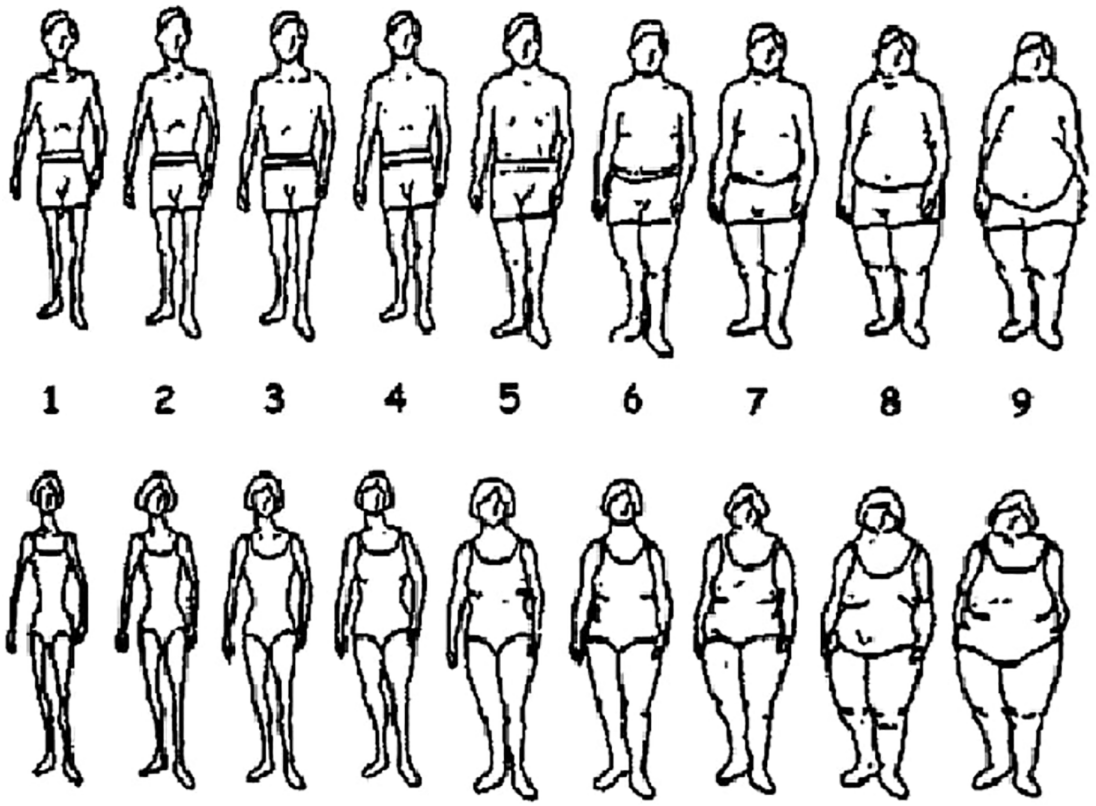


FIGURE 1
Stunkard figure rating scale (Stunkard, Sorensen, & Schulsinger, 1983).

silhouette, total social media accounts, overall frequency of social media use, time spent on TikTok, previous exposure to body acceptance content, and previous exposure to weight-stigmatizing content. There were also no significant condition differences in pre-exposure scores for body dissatisfaction, functional appreciation, self-objectification, positive affect, and negative affect. Means and standard deviation scores for participants in each condition on each of the outcome measures at each time are reported in Table 1.

3.2 Body dissatisfaction

There was a significant condition by time interaction for body dissatisfaction from pre-test to post-test, F (3, 321) = 8.75, p <.001, ηp2 = .08. See Figure 2. Bonferroni-adjusted pairwise comparisons showed that body dissatisfaction significantly decreased from pre- to post-test in the body positive condition (MD = -8.03, SD = 1.71, p <.001), the body neutral condition (MD = -7.42, SD = 1.70, p <.001), and the travel condition (MD = -4.47, SD = 1.68, p = .008). No significant change was observed in the weight stigma condition.

Between-group comparisons at post-test indicated that body dissatisfaction was significantly lower in the body positive condition compared to the weight-stigma condition (MD = 15.39, SD = 4.87, p = .01), with no other significant differences observed. The ANCOVA result showed a significant main effect of video condition, F(3, 320) = 8.14, p <.001, ηp2 = .071, with the body positive (MD = 10.86, SD = 2.38, p <.001), body neutral (MD = 9.41, SD = 2.38, p = .001), and travel (MD = 7.14, SD = 2.36, p = 0.016) condition demonstrating significantly lower body dissatisfaction than the weight-stigma condition.

3.3 Functional appreciation

There was a significant condition by time interaction for functional appreciation from pre-test to post-test, F (3, 322) = 5.02, p = .002, ηp2 = .045. See Figure 3. Bonferroni-adjusted pairwise comparisons showed that functional appreciation significantly increased from pre- to post-test in the body positive condition (MD = 0.16, SD = 0.05, p <.001), and the body neutral condition (MD = 0.14, SD = 0.05, p = .003). No significant change was observed in the weight stigma or travel condition.

Between-group comparisons at post-test indicated that functional appreciation was marginally higher in the body positive condition compared to the weight-stigma condition (MD = 0.034, SD = 0.13, p = .05), with no other significant differences observed. However, an ANCOVA with pre-exposure scores as a covariate found

TABLE 1 Mean and standard deviations for TikTok content conditions on outcome variables.

Variable	Scale Range	Body Positive (n=81)		Body Neutral (n=82)		Thin Ideal (n=79)		Travel (n=84)	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Body Dissatisfaction	1 - 100								
Pre-exposure		53.75	29.16	58.68	28.01	58.06	26.94	54.01	31.28
Post-exposure		45.72^{*}_{b}	30.71	51.26^{*}_{b}	29.40	61.10_{a}	30.83	49.54^{*}_{b}	32.14
Functional Appreciation	-2 - 2								
Pre-exposure		1.09	0.73	1.04	0.74	0.98	0.86	0.94	0.79
Post-exposure		1.25^{*}_{a}	0.80	1.18^{*}_{a}	0.69	0.91_{b}	0.98	0.99_{ab}	0.82
Self-Objectification	-2 - 2								
Pre-exposure		-0.86	0.91	-0.69	1.00	-0.76	1.02	-0.79	1.04
Post-exposure		-0.79^{*}_{ab}	1.04	-0.90^{*}_{b}	1.02	-0.72_{a}	1.14	-0.91_{ab}	1.03
Positive Affect	0 - 4								
Pre-exposure		1.68	1.02	1.58	0.88	1.54	0.87	1.54	0.94
Post-exposure		1.81^{*}_{a}	1.13	1.68_{a}	0.97	1.20^{*}_{b}	1.04	1.62_{a}	1.08
Negative Affect	0 - 4								
Pre-exposure		0.58	0.68	0.62	0.74	0.56	0.73	0.65	0.79
Post-exposure		0.38^{*}_{b}	0.53	0.42^{*}_{b}	0.63	0.70^{*}_{a}	0.80	0.40^{*}_{b}	0.60
Post-Test Only Variables	0 - 4								
View Likelihood		1.93_{a}	0.13	1.54_{a}	0.13	0.93_{b}	0.14	1.76_{a}	0.13
Appearance Frequency		2.41_{a}	0.12	2.41_{a}	0.12	2.31_{a}	0.12	0.72_{b}	0.12
Appearance Positivity		2.18_{a}	0.12	2.05_{a}	0.12	1.22_{b}	0.97	1.29_{b}	0.12

*significant difference between pre and post scores at p < .05.
Different subscripts indicate a significant difference between conditions at p < .05, based on ANCOVA results.

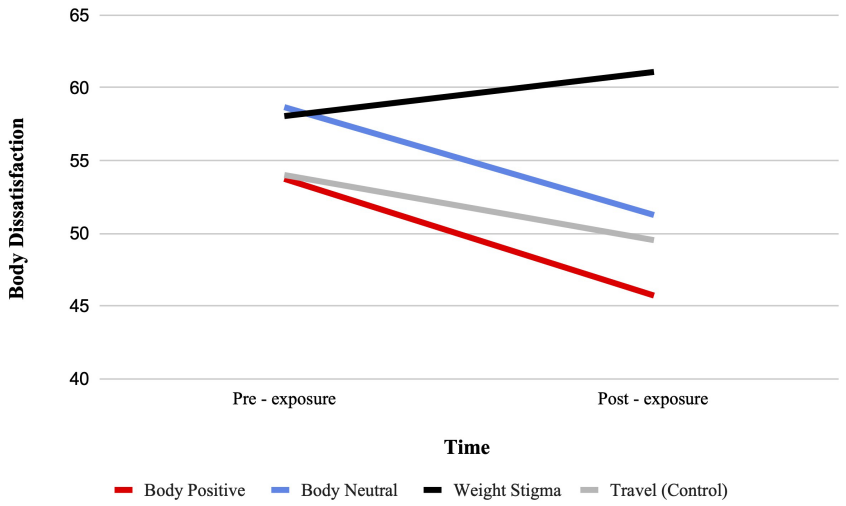


FIGURE 2
Estimated marginal means for body dissatisfaction. A representation of the interaction between condition and time for body dissatisfaction, such that higher scores indicate higher body dissatisfaction.

a significant main effect of video condition, F(3, 321) = 5.55, p = .001, ηp2 = .049, with both the body positive (MD = 0.24, SD = 0.07, p = .002) and body neutral (MD = 0.21, SD = 0.07, p = .007) condition having significantly higher functional appreciation than the weight-stigma condition.

3.4 Self-objectification

There was a significant condition by time interaction for self-objectification from pre-test to post-test, F (3, 322) = 2.82, p = .039, ηp2 = .026. See Figure 4. Bonferroni-adjusted pairwise comparisons showed that self-objectification significantly decreased from pre- to post-test in the body positive condition (MD = -0.17, SD = 0.07, p = .010), and the body neutral condition (MD = -0.22, SD = 0.07, p = .001). No significant change was observed in the weight stigma or travel condition.

Despite a significant interaction, between-group comparisons at post-test indicated no significant differences between conditions. However, an ANCOVA with pre-exposure scores as a covariate found a significant main effect of video condition, F (3, 321) = 2.94, p = .034, ηp2 = .027, with the body neutral condition (MD = 0.25, SD = 0.09, p = .045) having significantly lower self-objectification than the weight-stigma condition.

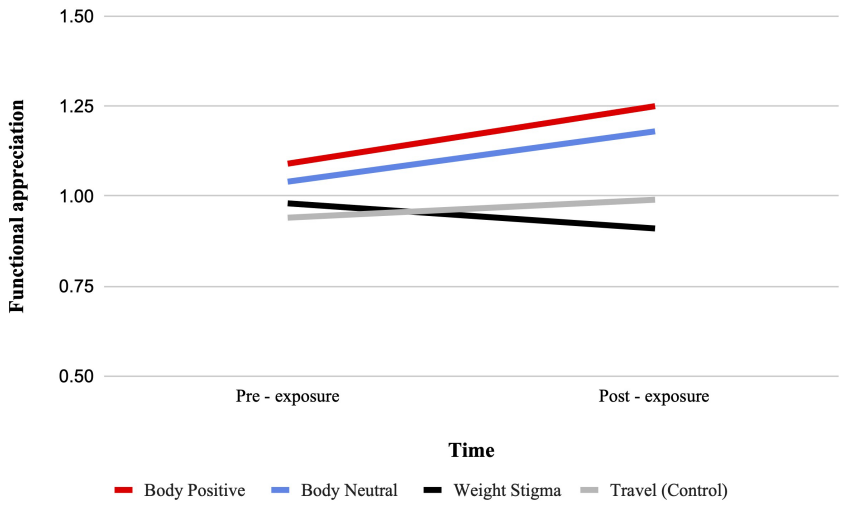


FIGURE 3
Estimated marginal means for functional appreciation. A representation of the interaction between condition and time for functional appreciation, such that higher scores indicate higher functional appreciation.

3.5 Mood

3.5.1 Positive affect

There was a significant condition by time interaction for positive affect from pre-test to post-test, F (3, 322) = 11.51, p <.001, ηp2 = .097. See Figure 5. Bonferroni-adjusted pairwise comparisons indicated that positive affect marginally increased from pre- to post-test in the body positive condition (MD = 0.13, SD = 0.07, p = .051) and a significant decrease from pre- to post-test in the weight stigma condition (MD = 0.35, SD = 0.07, p <.001). No significant change was observed in the body neutral or travel condition.

Between-group comparisons at post-test indicated that positive affect was higher in the body positive (MD = 0.61, SD = 0.17, p = .002) and body neutral (MD = 0.49, SD = 17, p = .022) condition compared to the weight-stigma condition, with no other significant differences observed. The ANCOVA with pre-exposure scores as a covariate similarly found a significant main effect of video condition, F(3, 321) = 11.77, p <.001, ηp2 = .099, but the body positive (MD = 0.49, SD = 0.09, p <.001), body neutral (MD = 0.46, SD = 0.09, p <.001), and travel (MD = 0.43, SD = 0.09, p <.001) condition all showed significantly higher positive affect than the weight-stigma condition.

3.5.2 Negative affect

There was a significant condition by time interaction for negative affect from pre-test to post-test, F (3, 322) = 9.90, p <.001, ηp2 = .084. See Figure 6. Bonferroni-adjusted pairwise comparisons indicated significant changes in negative affect from pre- to post-test for all conditions. Specifically, negative affect decreased in the body positive (MD = -0.20, SD = 0.06, p <.001), body neutral (MD = -0.20, SD = 0.06, p <.001), and travel condition (MD = -0.25, SD = 0.06, p <.001) while increased in the weight-stigma condition (MD = 0.14, SD = 0.06, p = 0.16).

Between-group comparisons at post-test indicated that negative affect was lower in the body positive (MD = 0.32, SD = 0.10, p = .013), body neutral (MD = 0.28, SD = 10, p = .038), and travel condition (MD = 0.30, SD = 0.10, p = .019) compared to the weight-stigma condition, with no other significant differences observed. The ANCOVA with pre-exposure scores confirmed these results with a significant main effect of video condition, F(3, 321) = 11.82, p <.001, ηp2 = .099, with body positive (MD = 0.33, SD = 0.07, p <.001), body neutral (MD = 0.32, SD = 0.07, p <.001), and travel (MD = 0.36, SD = 0.07, p <.001) condition having significantly lower negative affect than the weight-stigma condition.

3.6 Frequency and positivity of appearance thoughts

There was no difference in frequency of appearance thoughts between body positive, body neutral, or weight-stigmatizing condition. Critically, however, participants reported that these appearance thoughts were more positive in the body positive (p <.001) and body neutral (p <.001) conditions than in the weight-stigma condition. Furthermore, participants indicated they were more likely to continue watching body positivity (p = .009) and body neutrality (p <.001) in comparison to the weight-stigmatizing condition. Participants in the travel condition did significantly think about their appearance less often than in the other three conditions (p<.001); however, frequency of positive thoughts were significantly lower than both the body neutral (p <.001) and body positive condition (p <.001).

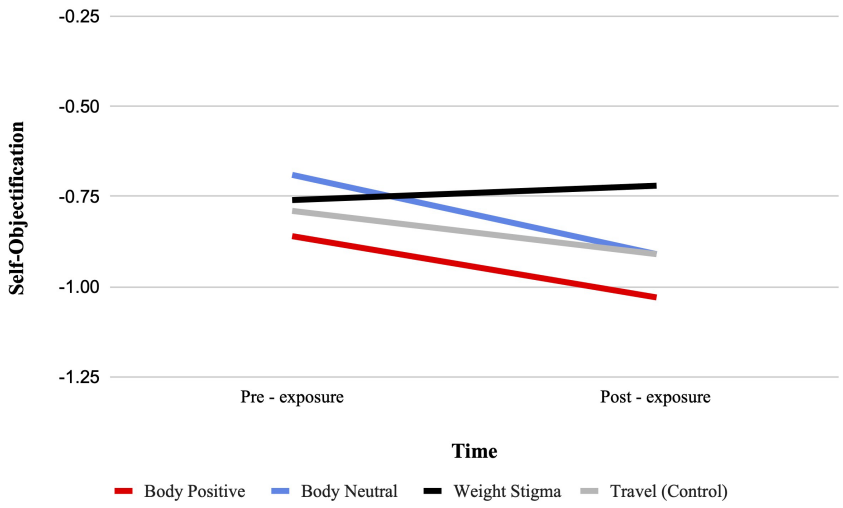


FIGURE 4
Estimated marginal means for self-objectification. A representation of the interaction between condition and time for self-objectification, such that higher scores indicate higher self-objectification.

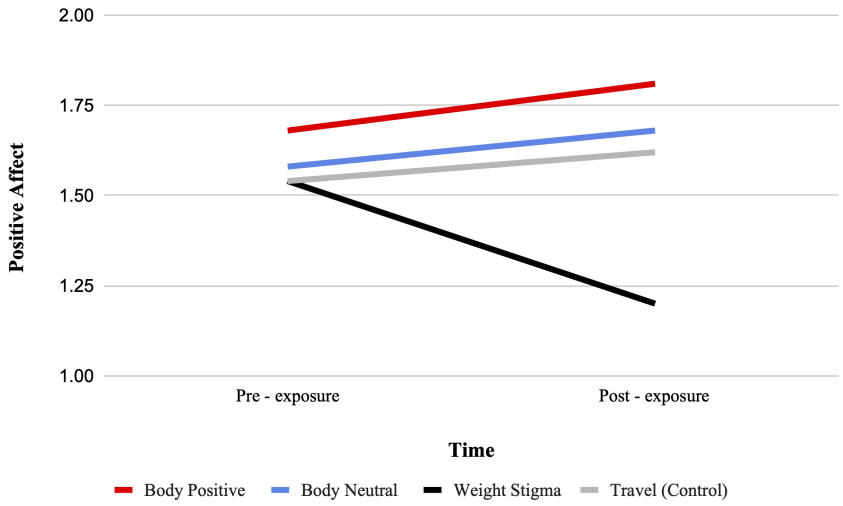


FIGURE 5
Estimated marginal means for positive affect. A representation of the interaction between condition and time for positive affect, such that higher scores indicate higher positive affect.

3.7 Gender identity and body silhouette

To examine whether gender identity moderated the effects of video condition on body image and mood outcomes, we conducted 2 (time: pre, post) x 4 (condition: body neutral, body positive, weight-stigma, travel) x 2 (gender: cisgender, transgender/gender diverse) mixed repeated-measure ANOVAs. There was a significant main effect of gender on body dissatisfaction, F(1, 313) = 4.56, p = .034, ηp2 = .01, self-objectification, $F(1, 313) = 8.34$, $p = .004$, $\eta p^2 = .03$, and positive affect, $F(1, 313) = 12.66$, $p < .001$, $\eta p^2 = .04$, indicating that transgender and gender diverse participants reported lower body dissatisfaction, greater self-objectification, and lower positive affect overall than cisgender participants. There was also a significant main effect of gender identity on likelihood to continue watching, with TGD participants indicating they were less likely to continue watching any of the featured content than cisgender participant, F (1, 313) = 25.53, p <.001, $\eta p^2 = 08$.

Gender identity was not involved in any significant two-way or three-way interactions with time or video condition for any outcomes within the repeated measure ANOVAs. However, a marginally significant three-way interaction emerged for body dissatisfaction within the ANCOVA analyses, F (3, 312) = 2.52, p = .058, $\eta p^2 = .02$. Exploratory follow-up analyses revealed that while body positivity was equally effective across gender identities, body neutrality was associated with significantly lower body dissatisfaction for transgender and gender-diverse individuals compared to cisgender participants (p = .029).

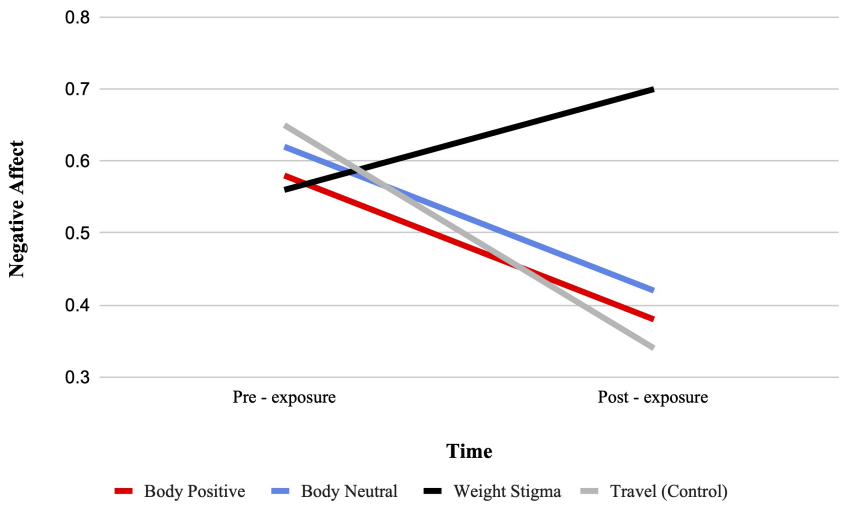


FIGURE 6
Estimated marginal means for negative affect. A representation of the interaction between condition and time for negative affect, such that higher scores indicate higher negative affect.

To examine whether body silhouette moderated the effects of video condition on body image and mood outcomes, we similarly conducted a series of 2 (time: pre, post) × 4 (condition: body neutral, body positive, weight-stigma, travel) × 3 (body silhouette: smaller bodied [1–3], mid bodied [4–6], larger bodied [7–9]) mixed repeated-measures ANOVAs. We grouped body silhouettes into three categories to capture meaningful differences in body size while maintaining statistical power. In other words, this categorization balances nuance and power, as larger groupings would compromise statistical validity while broad groupings (e.g., 1–4 vs. 5-9) would obscure important nuances. There was a significant main effect of body silhouette on body dissatisfaction, $F(2, 314) = 21.66$, $p < .001$, $\eta p^2 = .12$, such that participants with smaller body silhouettes reported significantly lower body dissatisfaction than those with mid-sized ($p < .001$) and larger silhouettes ($p < .001$), and mid-sized participants reported lower dissatisfaction than larger-bodied participants ($p = .02$). There was also a significant main effect of body silhouette on positive affect, $F (2, 314) = 3.17$, $p = .043$, $\eta p^2 = .02$. *Post hoc* comparisons revealed that mid-sized participants reported significantly higher positive affect than larger-bodied participants ($p = .035$), while no significant differences were found between the smaller and mid-sized or smaller and larger silhouette groups.

Body silhouette was not involved in any significant two-way or three-way interactions with time or video condition for body image or negative affect. However, a marginally significant three-way interaction emerged for positive affect, $F (6, 314) = 2.06$, $p = .058$, $\eta p^2 = .04$. Exploratory follow-up analyses revealed that, within the body positive condition, only participants with mid-sized bodies showed a significant increase in positive affect from pre- to post-exposure ($p < .05$). In the body neutral condition, participants with larger bodies demonstrated a marginal increase in positive affect ($p = .058$). In contrast, in the weight-stigma condition, mid- and larger-bodied participants experienced a significant decrease in positive affect ($p < .05$), whereas no significant changes were observed for participants with smaller bodies in any condition. Notably, the ANCOVA analyses did not replicate these findings, as no significant interactions were observed.

4 Discussion

Our study was one of the first to our knowledge to compare the differential impacts of body positivity and body neutrality on body image and mood. Furthermore, it is the first to our knowledge to compare body positivity and body neutrality across different gender identities and body silhouettes. Accordingly, the aim of our study was three-fold: (i) investigate the effect of brief exposure to TikTok body neutral, body positive, and weight-stigmatizing content on functionality appreciation, body dissatisfaction, self-objectification, and mood in women and gender diverse users; (ii) to explore whether perceived body silhouette acts as a moderator in the relationship between content and its impacts; and (iii) to explore whether gender identity acts as a moderator in the relationship between content and its impacts. Below we discuss the main findings, implications, and future directions.

The results provided partial support for our hypothesis that body-acceptance content on TikTok leads to improved body image and mental health, with significant improvements to functional appreciation, self-objectification, body dissatisfaction, and negative affect. In addition, although participants in all experimental conditions reported thinking about their appearance to a similar extent during exposure, those in the body-positive and body-neutral conditions reported more positive thoughts compared to those in the weight-stigmatizing and travel conditions. Interestingly, analysis of significant differences between conditions at time 2, following exposure, differed between the repeated-measures ANOVAs and ANCOVAs. While similar results for body positivity and body neutrality were obtained regarding positive and negative affect, the ANCOVAs showed a broader set of significant differences. Specifically, the ANCOVAs found that both body positivity and body neutrality significantly differed from weight stigma on body dissatisfaction and functional body appreciation. Additionally, body neutrality was the only condition to significantly differ from weight stigma on self-objectification. This may suggest that controlling for individual baseline differences may have clarified effects that were masked by within-subject variability in the rmANOVA. As such, the ANCOVA results may more accurately reflect the unique contribution of each condition after accounting for individual differences. Finally, resulted indicated marginal three-way interactions suggested that the effects of condition on body dissatisfaction varied by gender identity, and effects on positive affect varied by body silhouette.

Hence, the present study contributes to the limited existing body-neutral and body-positive literature through multiple novel findings. Our findings suggest that brief exposure to either body-positive or body-neutral TikTok content can lead to similar improvements overall in functional appreciation, body dissatisfaction, and negative mood. These findings align with the existing literature exploring body-neutral (59, 60) and body-positive content on social media (40, 48, 81), suggesting the potential for TikTok to foster growth in body image and mood depending on content viewed. That being said, while our study confirmed our hypothesis and aligned with previous literature by showing that weight-stigmatizing content significantly worsened positive mood and body positivity marginally improved positive mood, body neutrality had no effect, which was unexpected. This may suggest that body positivity content is more effective at improving positive affect compared to body neutrality. Alternatively, this discrepancy may be due to the proportion of high versus low arousal positive emotions featured within the PANAS. The positive emotions assessed are primarily high arousal emotions, or feelings that are more intense and energetic, including excited, enthusiastic, alert, and attentive. Low arousal emotions, or emotions relating to feelings of being subdued and relaxed (e.g. confident, content) are underrepresented, with only one positive low arousal emotion in the scale (i.e. 'interested'). Previous studies that found body acceptance content to enhance

positive mood tended to have a higher ratio of low- to high-arousal emotions (40, 48, 81). In contrast, studies that did not observe improvements, or found improvements comparable to the control condition, reported a lower low- to high-arousal ratio (45, 59). Hence, body acceptance content, partially body neutrality, may be improving low arousal positive mood rather than high arousal positive mood. Given the marginal significance of the current findings, replication with larger samples and more nuanced measures of arousal is needed to clarify the role of positive affect. Future research should further explore this by directly comparing body positivity and neutrality conditions on measures of both high- and low-arousal positive emotions.

Alternately, our exploratory moderation analysis found that improvements in positive mood following body positivity exposure were limited to participants with mid-sized silhouettes, while improvements were only marginally present in those with larger bodies post body neutral exposure. Alongside suggesting that body positivity and body neutrality content may not universally benefit all body sizes, this may also partially explain the overall null effects on positive mood: improvements for some subgroups (e.g., mid-sized individuals) may have been obscured by the lack of change among others. Future research should explore how body size moderates the mood impact of body acceptance content, and whether high vs low arousal emotions are differentially influenced by body size and exposure to body acceptance content. Despite these exploratory findings, it is important to note that our hypothesized moderation effects were not supported across the full model. Specifically, body silhouette did not significantly moderate the relationship between video condition and time for most outcomes, and no moderation effects were observed in the exploratory ANCOVA analyses. As such, these subgroup trends should be interpreted with caution, as they were not consistently replicated across analytic approaches or the model. Future research should aim to replicate these preliminary patterns and test more targeted models to better understand for whom and under what conditions body acceptance content is most effective.

Building on the improvements observed across conditions, we next explored significant differences between conditions at time 2, following exposure. Contrary to our hypothesis, the results revealed limited differences between the body acceptance conditions, with the only significant distinction between body positivity and body neutrality occurring in relation to self-objectification. Specifically, while participants in the body neutral condition significantly differed from the weight-stigmatizing condition on improvements in self-objectification, the body positivity condition did not differ from the weight-stigmatizing condition on self-objectification changes. This finding supports prior research showing that while both movements may be beneficial in improving body image, body positivity's reliance on appearance potentially limits one's ability to decrease self-objectification beliefs (49, 58).

Despite these limited differences between conditions overall, ANCOVA moderation analyses did reveal marginally significant differences in body dissatisfaction based on gender identity. Specifically, while body positivity was equally effective across gender identities, body neutrality was associated with significantly lower body dissatisfaction for transgender and gender-diverse individuals compared to cisgender participants. This suggests that body neutrality may be more effective for transgender individuals than for cisgender individuals. Although not directly comparable, this is supported by previous literature that suggested body neutrality is not only effective within TGD community (60), but may be a more manageable goal than body positivity for those struggling with gender dysphoria (68). However, given the marginal significance of these findings, and no significant difference between body positivity and body neutrality for either cisgender or TGD participants, results should be interpreted with caution.

Finally, participants in both the body-positive and body-neutral conditions did not significantly differ from the travel condition. Participants in the travel condition showed significant improvements to body dissatisfaction and negative affect, but not positive affect, self-objectification, or functional appreciation. These results may suggest that appearance-neutral (aka non-body) content could give participants a respite from intrusive thoughts and comparisons about their body, thus leading to improved body satisfaction and mood. Our findings align with previous research demonstrating that appearance-neutral content not only reduces body dissatisfaction and negative mood but also elicits fewer upward appearance comparisons than both weight-stigmatizing and body acceptance content (75, 82, 83). While we did not specifically assess upward comparisons, participants in the travel condition reported fewer appearance-related thoughts than those exposed to weight-stigmatizing and body acceptance content. This suggests even positively framed body acceptance content may inadvertently trigger appearance comparisons in some users (33, 40, 50, 59), although to a lesser extent than weight-stigmatizing content. In other words, appearance-neutral content may serve as a beneficial alternative to body centered content for those most vulnerable to appearance comparisons with future studies needing to explore these effects further. However, avoiding body-centered content may not be practical or desirable for many users who report enjoying videos relating to body-centered themes (e.g. fashion, physical exercise, food). In these instances, recommending body-positive or body-neutral alternatives to typical weight-stigmatizing content would be a better solution than suggesting users avoid body topics altogether.

4.1 Practical and clinical implications

The present findings hold important theoretical and practical implications. Our findings, taken together with previous research, suggest that body positivity and body neutrality may allow TikTok users to foster positive relationships with their body and improve negative mood, potentially counteracting the effects of internalized weight stigma. With users beginning to call for alternative content to harmful body content, our findings suggest that body-neutral and

body-positive content may serve as accessible and appealing public health strategies to reduce weight stigma in online settings. Indeed, recommendations for individuals to seek out body positivity instead of weight-stigmatizing content to protect their body image and mood have already been made by researchers (e.g., 47, 81). Expansion of these recommendations to include body neutrality is also needed. These findings partially underscore the importance of comprehensive social media literacy programs for youth, given increased impressionability and risk for development of body dissatisfaction, weight stigma beliefs, and disordered eating. Beyond teaching users how to identify harmful and stigmatizing content, these programs should include extensive education on body positivity, body neutrality, and fostering a positive relationship with the body. Equipping young users with these skills can empower them to critically assess the media they consume and mitigate the adverse effects of exposure to harmful thin idealizing and weight stigmatizing content (40, 71, 84, 85).

However, it is difficult for an individual to overcome the TikTok algorithms; thus, it is incumbent upon TikTok to alter their business practices to combat weight-stigmatizing content for the benefit of their users. This solution could be as simple as making users more aware of features that already exist within the platform, such as the ability to block or follow certain hashtags, set screen time limits, and prompted breaks, as well as more extensive initiatives that restructure the content in which users are exposed to. With participants indicating they were more interested in continuing to watch body-positive and body-neutral content than weight-stigmatizing content, it would be recommended for TikTok to alter their algorithms to push more body-positive and body-neutral content to users. In addition, TikTok could leverage artificial intelligence to flag, label, and filter out harmful content —particularly content related to diet and weight loss that may contribute to negative body image and weight stigma. Other measures include labeling videos as edited, allowing users the option to opt out of advertisements related to diet and weight loss-related products, or incorporate proactive prompts that encourage users to take a break from body-focused content, check in with themselves, and introduce healthier content alternatives.

4.2 Limitations

The current study should be interpreted within the context of several limitations. First, exposure to video conditions was 5 minutes; hence, the effects are short-term, and duration is unknown. Future studies should not only examine the persistence of these short-term effects but also investigate the potential cumulative impact of long-term exposure to body-positive and body-neutral content. Furthermore, given that our findings did not support the hypothesis that body positive and body neutral content significantly improves positive mood following brief exospore, a longitudinal study could help determine whether repeated exposure over several weeks or months is required for significant improvements. Second, while our sample was diverse regarding body type, sexuality, gender identity, and age, future studies should explore more diverse samples regarding race and disability status. Third, the videos utilized within the body-acceptance conditions were selected to portray the themes of body positivity and body neutrality while also featuring a wide variety of identities. However, it is well known that even with body acceptance spaces, weight-stigma and exclusionary practices occur (49). Further studies exploring the impacts of body acceptance content as it naturally exists within social media spaces are needed.

Additionally, while the lack of significant moderation effects could suggest that body acceptance content is broadly effective across gender and body silhouette—except for body dissatisfaction and positive affect respectively—there are several important limitations to consider regarding the moderation analyses. First, the body silhouette scales used in this study have received criticism for lacking diversity in body types and reinforcing binary gender representations. Although we attempted to reduce binary limitation by presenting all participants with both male and female silhouettes, the binary framing and limitation of only nine body types may still have influenced how participants engaged with the measure. Second, the body-positive, body-neutral, and the weight stigmatizing conditions exclusively featured feminine presenting creators who identified as women, though their gender identities were not explicitly stated to viewers. Although transgender individuals may have been included, their identities were not explicitly indicated, potentially limiting relevancy for gender-diverse participants. This limitation may have been reflected in our findings, given gender-diverse participants were significantly less likely than cisgender participants to indicate they would continue watching any of the content. Lastly, statistical power was limited. Although we had 126 gender-diverse participants and 71 participants with larger body sizes, distributing these participants across four video conditions resulted in relatively small subgroups, potentially limiting our ability to detect moderation effects. Future studies should aim to use more inclusive and representative measures and content, while ensuring sufficient power to test for nuanced identity effects.

5 Conclusion

Taken together, this study provides preliminary evidence that viewing body-positive and body-neutral TikTok content can lead to an improvement in body image and negative affect after only a brief 5-minute exposure. Given the high number of participants expressing interest in continuing to watch body acceptance content, both body neutrality and body positivity appear to be promising and feasible initiative in response to the growing demand for content that promotes body acceptance and challenges weight stigma.

Data availability statement

The datasets for this study can be found at https://osf.io/8q2xj/.

Ethics statement

The studies involving humans were approved by ASU IRB; IRB coordinator: Tasha Mohseni; ID: STUDY00019234. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

RK: Conceptualization, Project administration, Writing – original draft, Writing – review & editing. KM: Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This work was conducted with support from ASU, New College of Interdisciplinary Arts and Sciences (Resiliency in Social Environments Initiative Seed Grant).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1577063/full#supplementary-material

References

1. Pew Research Center. *Social media fact sheet* (2024). Available online at: https://www.pewresearch.org/internet/fact-sheet/social-media/ (Accessed November, 2024).

2. American Psychiatric Association. *One in Three Americans Worry About Social Media's Impact on Mental Health Nearly Half Say It Has Hurt Society at Large* (2022). Available online at: https://www.psychiatry.org/news-room/news-releases/one-in-three-americans-worry-abouT-social-medias (Accessed January 15, 2025).

3. Valkenburg PM. Social media use and well-being: What we know and what we need to know. *Curr Opin Psychol.* (2022) 45:101294. doi: 10.1016/j.copsyc.2021.12.006

4. Fardouly J, Vartanian LR. Social media and body image concerns: Current research and future directions. *Curr Opin Psychol.* (2016) 9:1–5. doi: 10.1016/j.copsyc.2015.09.005

5. Holland G, Tiggemann M. A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image.* (2016) 17:100–10. doi: 10.1016/j.bodyim.2016.02.008

6. Rounsefell K, Gibson S, McLean S, Blair M, Molenaar A, Brennan L, et al. Social media, body image and food choices in healthy young adults: A mixed methods systematic review. *Nutr dietetics: J Dietitians Assoc Aust.* (2020) 77:19–40. doi: 10.1111/1747-0080.12581

7. Sanzari CM, Gorrell S, Anderson LM, Reilly EE, Niemiec MA, Orloff NC, et al. The impact of social media use on body image and disordered eating behaviors: Content matters more than duration of exposure. *Eating Behav.* (2023) 49:101722. doi: 10.1016/j.eatbeh.2023.101722

8. Appel M, Marker C, Gnambs T. Are social media ruining our lives? A review of meta-analytic evidence. *Rev Gen Psychol.* (2020) 24:60–74. doi: 10.1177/1089268019880891

9. Anixiadis F, Wertheim EH, Rodgers R, Caruana B. Effects of thin-ideal instagram images: The roles of appearance comparisons, internalization of the thin ideal and critical media processing. *Body image.* (2019) 31:181–90. doi: 10.1016/j.bodyim.2019.10.005

10. Knobloch-Westerwick S, Crane J. A losing battle: effects of prolonged exposure to thin-ideal images on dieting and body satisfaction. *Communication Res.* (2012) 39:79–102. doi: 10.1177/0093650211400596

11. McComb SE, Mills JS. The effect of physical appearance perfectionism and social comparison to thin-, slim-thick-, and fit-ideal Instagram imagery on young women's body image. *Body Image.* (2022) 40:165–75. doi: 10.1016/j.bodyim.2021.12.003

12. Hawkins N, Richards SP, Granley HM, Stein DM. The impact of exposure to the thin-ideal media image on women. *Eating Disord.* (2004) 12:35–50. doi: 10.1080/10640260490267751

13. Cohen R, Blaszczynski A. Comparative effects of Facebook and conventional media on body image dissatisfaction. *J Eating Disord.* (2015) 3:1–11. doi: 10.1186/s40337-015-0061-3

14. Lev-Ari L, Baumgarten-Katz I, Zohar AH. Show me your friends, and I shall show you who you are. The way attachment and social comparisons influence body dissatisfaction. *Eur Eating Disord Review: J Eating Disord Assoc.* (2014) 22:463–9. doi: 10.1002/erv.2325

15. Aparicio-Martinez P, Perea-Moreno AJ, Martinez-Jimenez MP, Redel-Macías MD, Pagliari C, Vaquero-Abellan M. Social media, thin-ideal, body dissatisfaction and disordered eating attitudes: an exploratory analysis. *Int J Environ Res Public Health.* (2019) 16:4177. doi: 10.3390/ijerph16214177

16. Mingoia J, Hutchinson AD, Wilson C, Gleaves DH. The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review. *Front Psychol.* (2017) 8:1351. doi: 10.3389/fpsyg.2017.01351

17. Hepp A. *Deep mediatization.* Routledge (2020).

18. Weinberger NA, Kersting A, Riedel-Heller SG, Luck-Sikorski C. Body dissatisfaction in individuals with obesity compared to normal-weight individuals: A systematic review and meta-analysis. *Obes facts.* (2016) 9:424–41. doi: 10.1159/000454837

19. Grogan S. *Body image: understanding body dissatisfaction in men, women and children. 3rd.* New York, NY: Routledge (2016). doi: 10.4324/9781315681528

20. Puhl RM, Heuer CA. Obesity stigma: important considerations for public health. *Am J Public health.* (2010) 100(6)1019–28. doi: 10.2105/AJPH.2009.159491

21. Andreyeva T, Puhl RM, Brownell KD. Changes in perceived weight discrimination among Americans 1995–1996 through 2004-2006. *Obes (Silver Spring Md.).* (2008) 16:1129–34. doi: 10.1038/oby.2008.35

22. Wanniarachchi VU, Mathrani A, Susnjak T, Scogings C. A systematic literature review: what is the current stance towards weight-stigmatization in social media platforms? *Int J Hum Comput Stud.* (2020) 135. doi: 10.1016/j.ijhcs.2019.102371

23. Jeon YA, Hale B, Knackmuhs E, Mackert M. Weight-stigma goes viral on the internet: systematic assessment of youTube comments attacking overweight men and women. *Interactive J Med Res*. (2018) 7:e6. doi: 10.2196/ijmr.9182

24. Chou W-YS, Prestin A, Kunath S. Obesity in social media: a mixed method analysis. *Transl Behav Med*. (2014) 4:314–23. doi: 10.1007/s13142-014-0256-1

25. Austin SB, Haines J, Veugelers PJ. Body satisfaction and body weight: gender differences and sociodemographic determinants. *BMC Public Health*. (2009) 9:313. doi: 10.1186/1471-2458-9-313

26. Frederick DA, Crerand CE, Brown TA, Perez M, Best CR, Cook-Cottone, et al. Demographic predictors of body image satisfaction: The U.S. Body Project I. *Body image*. (2022) 41:17–31. doi: 10.1016/j.bodyim.2022.01.011

27. Klump KL, Suisman JL, Burt SA, McGue M, Iacono WG. Genetic and environmental influences on disordered eating: An adoption study. *J Abnormal Psychol*. (2009) 118:797–805. doi: 10.1037/a0017204

28. Stice E, Shaw HE. Role of body dissatisfaction in the onset and maintenance of eating pathology: a synthesis of research findings. *J psychosomatic Res*. (2002) 53:985–93. doi: 10.1016/s0022-3999(02)00488-9

29. Bhandari A, Bimo S. Why's everyone on tikTok now? The algorithmized self and the future of self-making on social media. *Soc Media + Soc*. (2022) 8. doi: 10.1177/20563051221086241

30. TikTok. *Celebrating our thriving community of 150 million Americans* (2023). Available online at: https://newsroom.tiktok.com/en-us/150-m-us-users (Accessed November, 2024).

31. eMarketer. *TikTok screen time will approach 60 minutes a day for US adult users* (2024). Available online at: https://www.emarketer.com/content/tiktok-screen-time-will-approach-60-minutes-day-us-adult-users (Accessed January 15, 2025).

32. Statista. *Distribution of TikTok users worldwide as of April 2023, by age and gender* (2023). Available online at: https://www.statista.com/statistics/1299771/tiktok-global-user-age-distribution (Accessed March 20, 2025).

33. Mink DB, Szymanski DM. TikTok use and body dissatisfaction: Examining direct, indirect, and moderated relations. *Body Image*. (2022) 43:205–16. doi: 10.1016/j.bodyim.2022.09.006

34. Tylka TL, Rodgers RF, Calogero RM, Thompson JK, Harriger JA. Integrating social media variables as predictors, mediators, and moderators within body image frameworks: Potential mechanisms of action to consider in future research. *Body image*. (2023) 44:197–221. doi: 10.1016/j.bodyim.2023.01.004

35. Joiner R, Mizen E, Pinnell B, Siddique L, Bradley A, Trevalyen S. The effect of different types of TikTok dance challenge videos on young women's body satisfaction. *Comput Hum Behav*. (2023) 147. doi: 10.1016/j.chb.2023.107856

36. Qin Y, Omar B, Musetti A. The addiction behavior of short-form video app TikTok: The information quality and system quality perspective. *Front Psychol*. (2022) 13:932805. doi: 10.3389/fpsyg.2022.932805

37. Center for Countering Digital Hate. *Deadly by design* (2022). Available online at: https://counterhate.com/research/deadly-by-design/about (Accessed November, 2024).

38. Griffiths S, Harris EA, Whitehead G, Angelopoulos F, Stone B, Grey W, et al. Does TikTok contribute to eating disorders? A comparison of the TikTok algorithms belonging to individuals with eating disorders versus healthy controls. *Body image*. (2024) 51:101807. doi: 10.1016/j.bodyim.2024.101807

39. Dondzilo L, Rodgers RF, Dietel FA. Association between engagement with appearance and eating related TikTok content and eating disorder symptoms via recommended content and appearance comparisons. *Int J eating Disord*. (2024) 57:458–62. doi: 10.1002/eat.24117

40. Cohen R, Irwin L, Newton-John T, Slater A. bodypositivity: A content analysis of body positive accounts on Instagram. *Body image*. (2019) 29:47–57. doi: 10.1016/j.bodyim.2019.02.007

41. Simon K, Hurst M. Body Positivity, but not for everyone: The role of model size in exposure effects on women's mood, body satisfaction, and food choice. *Body image*. (2021) 39:125–30. doi: 10.1016/j.bodyim.2021.07.001

42. Pellizzer ML, Wade TD. Developing a definition of body neutrality and strategies for an intervention. *Body image*. (2023) 46:434–42. doi: 10.1016/j.bodyim.2023.07.006

43. Alleva JM, Tylka TL. Body functionality: A review of the literature. *Body Image*. (2021) 36:149–71. doi: 10.1016/j.bodyim.2020.11.006

44. Piran N. New possibilities in the prevention of eating disorders: The introduction of positive body image measures. *Body image*. (2015) 14:146–57. doi: 10.1016/j.bodyim.2015.03.008

45. Dhadly PK, Kinnear A, Bodell LP. BoPo: Does viewing body positive TikTok content improve body satisfaction and mood? *Eating Behav*. (2023) 50:101747. doi: 10.1016/j.eatbeh.2023.101747

46. Fardouly J, Slater A, Parnell J, Diedrichs PC. Can following body positive or appearance neutral Facebook pages improve young women's body image and mood. Testing novel social media micro-interventions. *Body Image*. (2023) 44:136–47. doi: 10.1016/j.bodyim.2022.12.008

47. Coyne SM, Davis EJ, Warburton W, Stockdale L, Abba I, Busby DM. Mirror, mirror on the wall: The effect of listening to body positive music on implicit and explicit body esteem. *Psychol Popular Media*. (2021) 10:2–13. doi: 10.1037/ppm0000273

48. Fioravanti G, Svicher A, Ceragioli G, Bruni V, Casale S. Examining the impact of daily exposure to body-positive and fitspiration Instagram content on young women's mood and body image: An intensive longitudinal study. *New Media Soc*. (2023) 25:3266–88. doi: 10.1177/14614448211038904

49. Hallward L, Feng O, Duncan LR. An exploration and comparison of BodyPositivity and BodyNeutrality content on TikTok. *Eating behaviors*. *50*. (2023) 101760. doi: 10.1016/j.eatbeh.2023.101760

50. Schaefer LM, Thompson JK. Self-objectification and disordered eating: A meta-analysis. *Int J eating Disord*. (2018) 51:483–502. doi: 10.1002/eat.22854

51. Fredrickson BL, Roberts T-A. Objectification theory: toward understanding women's lived experiences and mental health risks. *Psychol Women Quarterly*. (1997) 21(2):173–206. doi: 10.1111/j.1471-6402.1997.tb00108.x

52. Gruenfeld DH, Inesi ME, Magee JC, Galinsky AD. Power and the objectification of social targets. *J Pers Soc Psychol*. (2008) 95:111–27. doi: 10.1037/0022-3514.95.1.111

53. Calogero RM. Objectification theory, self-objectification, and body image. In: Thomas C, editor. *Encyclopedia of body image and human appearance*. San Diego: Academic Press (2012). p. 574–80. doi: 10.1016/B978-0-12-384925-0.00091-2

54. Tylka TL. Positive psychology perspectives on body image. In: Cash TF, editor. *Encyclopedia of body image and human appearance*, vol. 2 . San Diego: Academic Press (2012). p. 657–663). doi: 10.1016/B978-0-12-384925-0.00104-8

55. Wood-Barcalow NL, Tylka TL, Augustus-Horvath CL. But I Like My Body": Positive body image characteristics and a holistic model for young-adult women. *Body image*. (2010) 7:106–16. doi: 10.1016/j.bodyim.2010.01.001

56. Tylka TL, Wood-Barcalow NL. What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image*. (2015) 14:118–29. doi: 10.1016/j.bodyim.2015.04.001

57. Alleva JM, Martijn C, Van Breukelen GJP, Jansen A, Karos K. Expand Your Horizon: A programme that improves body image and reduces self-objectification by training women to focus on body functionality. *Body Image*. (2015) 15:81–9. doi: 10.1016/j.bodyim.2015.07.001

58. Cohen R, Newton-John T, Slater A. The case for body positivity on social media: Perspectives on current advances and future directions. *J Health Psychol*. (2021) 26:2365–73. doi: 10.1177/1359105320912450

59. Seekis V, Lawrence RK. How exposure to body neutrality content on TikTok affects young women's body image and mood. *Body image*. (2023) 47:101629. doi: 10.1016/j.bodyim.2023.101629

60. Smith AC, Ahuvia I, Ito S, Schleider JL. Project Body Neutrality: Piloting a digital single-session intervention for adolescent body image and depression. *Int J eating Disord*. (2023) 56:1554–69. doi: 10.1002/eat.23976

61. Garrett C, Weisman MGA. Self-psychological perspective on chronic illness. *Clin Soc Work J*. (2001) 29:119–32. doi: 10.1023/A:1010321918435

62. Parker LL, Harriger JA. Eating disorders and disordered eating behaviors in the LGBT population: a review of the literature. *J Eat Disord*. (2020) 8:51. doi: 10.1186/s40337-020-00327-y

63. Avila JT, Golden NH, Aye T. Eating disorder screening in transgender youth. *J Adolesc health: Off Publ Soc Adolesc Med*. (2019) 65:815–7. doi: 10.1016/j.jadohealth.2019.06.011

64. Balend GL. *When body positivity is transphobic* (2019). Available online at: https://medium.com/@GLBalend/when-body-positivity-is-transphobic-f4093a59d35a (Accessed February 1, 2025).

65. Bushell J. *What a current eating disorder discourse fails the LGBTQ community and how we can change that* (2017). Available online at: https://www.huffpost.com/entry/how-current-eating-disorder-discourse-fails-the-lgbtq_b_5975e0fce4b0f1feb89b44e7 (Accessed February 1, 2025).

66. Hartman-Munick SM, Silverstein S, Guss CE, Lopez E, Calzo JP, Gordon AR. Eating disorder screening and treatment experiences in transgender and gender diverse young adults. *Eating Behav*. (2021) 41:101517. doi: 10.1016/j.eatbeh.2021.101517

67. McGuire JK, Doty JL, Catalpa JM, Ola C. Body image in transgender young people: Findings from a qualitative, community-based study. *Body image*. (2016) 18:96–107. doi: 10.1016/j.bodyim.2016.06.004

68. Perry M, Watson L, Hayden L, Inwards-Breland D. Using body neutrality to inform eating disorder management in a gender diverse world. *Lancet Child Adolesc Health*. (2019) 3:597–8. doi: 10.1016/S2352-4642(19)30237-8

69. Delozier A, Kamody R, Rodgers S, Chen D. Health disparities in transgender and gender expansive adolescents: A topical review from a minority stress framework. *J Pediatr Psychol*. (2022) 45:842–7. doi: 10.1093/jpepsy/jsaa040

70. Flores AR, Meyer IH, Langton L, Herman JL. Gender identity disparities in criminal victimization: national crime victimization survey 2017-2018. *Am J Public Health*. (2021) 111:726–9. doi: 10.2105/AJPH.2020.306099

71. Cohen R, Fardouly J, Newton-John T, Slater A. BoPo on Instagram: An experimental investigation of the effects of viewing body positive content on young women's mood and body image. *New Media Soc*. (2019) 21:1546–64. doi: 10.1177/1461444819826530

72. Lazuka RF, Wick MR, Keel PK, Harriger JA. Are we there yet? Progress in depicting diverse images of beauty in instagram's body positivity movement. *Body image*. (2020) 34:85–93. doi: 10.1016/j.bodyim.2020.05.001

73. Harriger JA, Wick MR, Sherline CM, Kunz AL. The body positivity movement is not all that positive on TikTok: A content analysis of body positive TikTok videos. *Body image*. (2023) 46:256–64. doi: 10.1016/j.bodyim.2023.06.003

74. Stunkard AJ, Sørensen T, Schulsinger F. Use of the Danish Adoption Register for the study of obesity and thinness. *Res publications - Assoc Res Nervous Ment Dis*. (1983) 60:115–20.

75. Pryde S, Prichard I. TikTok on the clock but the fitspo don't stop: The impact of TikTok fitspiration videos on women's body image concerns. *Body image*. (2022) 43:244–52. doi: 10.1016/j.bodyim.2022.09.004

76. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol*. (1988) 54:1063–70. doi: 10.1037/0022-3514.54.6.1063

77. Lindner D, Tantleff-Dunn S. The development and psychometric evaluation of the self-objectification beliefs and behaviors scale. *Psychol Women Q*. (2017) 41:254–72. doi: 10.1177/0361684317692109

78. Alleva JM, Tylka TL, Kroon Van Diest AM. The Functionality Appreciation Scale (FAS): Development and psychometric evaluation in U.S. *Community Women men. Body image*. (2017) 23:28–44. doi: 10.1016/j.bodyim.2017.07.008

79. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. (2007) 39:175–91. doi: 10.3758/bf03193146

80. Cohen J. *Statistical power analysis for the behavioral sciences (2nd ed.)* Hillsdale, NJ: Erlbaum (1998).

81. Stevens A, Griffiths S. Body Positivity (BoPo) in everyday life: An ecological momentary assessment study showing potential benefits to individuals' body image and emotional wellbeing. *Body image*. (2020) 35:181–91. doi: 10.1016/j.bodyim.2020.09.003

82. Seekis V, Kennedy R. The impact of beauty and self-compassion tiktok videos on young women's appearance shame and anxiety, self-compassion, mood, and comparison processes. *Body Image*. (2023) 45:117–25. doi: 10.1016/j.bodyim.2023.02.006

83. Tiggemann M, Zaccardo M. Exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body image*. (2015) 15:61–7. doi: 10.1016/j.bodyim.2015.06.003

84. Slater A, Varsani N, Diedrichs PC. fitspo or loveyourself? The impact of fitspiration and self-compassion Instagram images on women's body image, self-compassion, and mood. *Body image*. (2017) 22:87–96. doi: 10.1016/j.bodyim.2017.06.004

85. Williamson G, Karazsia BT. The effect of functionality-focused and appearance-focused images of models of mixed body sizes on women's state-oriented body appreciation. *Body image*. (2018) 24:95–101. doi: 10.1016/j.bodyim.2017.12.008

frontiers | Frontiers in Psychiatry

TYPE Brief Research Report
PUBLISHED 02 July 2025
DOI 10.3389/fpsyt.2025.1587105

OPEN ACCESS

EDITED BY
Lily O'Hara,
Griffith University, Australia

REVIEWED BY
Pasquale Scognamiglio,
ASL Napoli 3 Sud, Italy
Yuko Nakamura,
The Center for Evolutionary Cognitive Sciences at the University of Tokyo, Japan

*CORRESPONDENCE
A. Janet Tomiyama
tomiyama@psych.ucla.edu

RECEIVED 03 March 2025
ACCEPTED 19 June 2025
PUBLISHED 02 July 2025

CITATION
Figueroa DG, Murley WD, Parker JE, Hunger JM and Tomiyama AJ (2025) Weight stigma and mental health symptoms: mediation by perceived stress.
Front. Psychiatry 16:1587105.
doi: 10.3389/fpsyt.2025.1587105

Weight stigma and mental health symptoms: mediation by perceived stress

David G. Figueroa[1], William D. Murley[1], Jordan E. Parker[1], Jeffrey M. Hunger[2] and A. Janet Tomiyama[1]*

[1]Department of Psychology, University of California, Los Angeles, Los Angeles, CA, United States, [2]Department of Psychology, Miami University, Oxford, OH, United States

Prior research has established that weight stigma, or social devaluation based on an individual's body size or weight, is directly related to greater depressive and anxiety symptoms. In this investigation, we apply the Cyclic Obesity/Weight-Based Stigma model to investigate if the association between weight stigma and poor mental health is mediated by greater perceived stress. We analyzed data from a census-matched sample (N=1,993) of the U.S. on age, race/ethnicity, gender, income, and census-region. Issues with missing data and mediation models were addressed using a Bayesian multiple imputation approach. Analyses controlled for Body Mass Index and sociodemographic variables as covariates. Weight stigma was directly associated with greater depressive and anxiety symptoms. Moreover, the relationship between weight stigma and greater depressive and anxiety symptoms was mediated by greater perceived stress. Perceived stress explained 37% of the relationship between weight stigma and mental health outcomes, even after accounting for Body Mass Index. These results provide evidence for weight stigma as an important psychosocial stressor that contributes to poor mental health outcomes.

KEYWORDS

weight stigma, perceived stress, mental health psychological symptoms, depressive symptoms, anxiety symptoms

1 Introduction

Weight stigma is defined as the social devaluation of individuals based on their body size or weight, often displayed as prejudice, stereotyping, and discrimination (1). Some work has reported that more than 50% of larger-bodied U.S. adults experience weight stigma (2), but others have observed even higher prevalence estimates much closer to 100% (3, 4). Experiencing weight stigma can incur negative consequences, including poor mental health. Indeed, multiple systematic reviews and meta-analyses document the negative impact weight stigma can have on psychological health including depressive and anxiety symptoms. Crucially, these associations remain even while accounting for Body Mass Index (BMI), suggesting that weight stigma explains a significant amount of variance in mental

health symptoms and is not confounded by higher BMI individuals merely experiencing more weight stigma and poorer outcomes (5–7). However, research examining factors that mediate or explain these relationships is relatively limited.

Thus far, constructs like eating disturbances (8), internalized weight stigma (9), and social identification with higher-weight groups (10) have been shown to significantly mediate the relationship between weight stigma and mental health symptomatology. In this investigation, we hypothesize that a key overlooked mediator is perceived stress (Figure 1).

Weight stigma has been characterized as a psychosocial stressor under the Cyclic OBesity/WEight-Based Stigma (COBWEBS) model (1). The COBWEBs model posits that stress arising from weight stigma trigger changes in eating behaviors and increases in cortisol that contribute to weight gain. The model is characterized as a positive feedback loop, as subsequent weight gain may place an individual at greater risk for future weight stigma (1). Similar theoretical work suggests that both direct experiences of weight stigma and the anticipation of future stigma can trigger social identity threat that is linked to greater psychological stress (11). The relationship between weight stigma and negative psychological outcomes, including greater perceived stress and greater distress, is well established. For instance, one investigation reported that higher weight women, compared to average weight women, reported greater stress-related emotions when their weight was visible to others (12). A systematic review of 23 studies assessing the psychological correlates of weight stigma among adults with obesity or overweight reported that weight stigma was significantly correlated with greater perceived stress (13). A recent meta-analysis of 30 studies reported similar findings, with weight stigma being moderately associated with greater psychological distress (5). These findings substantiate the hypothesized *a* path wherein experiences with weight stigma are positively associated with perceived stress.

Prior work has also provided evidence for the hypothesized *b* path where greater perceived stress exacerbates mental health symptomology. For instance, a meta-analysis of data from the World Health Survey, which included 232,243 individuals from middle- and low-income countries, found that each one-unit increase on the perceived stress scale was associated with 1.4 greater odds of depression (14). Similar patterns have been observed for anxiety symptoms. One investigation that included mentally healthy individuals and patients with major depressive disorder reported a positive linear relationship between stress levels and anxiety, regardless of the severity of the stress levels reported (15).

To our knowledge, no study has yet examined the mediating role of perceived stress in the relationship between weight stigma and mental health symptomatology within a single investigation. Therefore, the current study leveraged data from a census-matched U.S. sample to test two hypotheses (see Figure 1). First, we hypothesized that weight stigma would be directly and positively associated with greater depressive and anxiety symptoms, respectively. Second, we hypothesized that greater perceived stress would mediate the relationship between weight stigma and depressive and anxiety symptoms. This study was preregistered on the Open Science Framework: https://osf.io/xve7j/?view_only=d58c8d92ebca400e859276634c127cf8.

2 Materials and methods

2.1 Participants and procedure

The sample (N=2,022) was census-matched using quotas based on U.S. Census benchmarks for age, gender, race/ethnicity, income, and census region. Participants provided informed consent and completed self-report measures administered on Qualtrics between December 2019 and January 2020. All study materials and procedures were approved by the university's Institutional Review Board. Responses were excluded from the analytic sample if participants (a) failed attention checks; (b) reported implausible height (≤44 inches or ≥90 inches) or weight (≤55 pounds or ≥1000 pounds); or (c) displayed BMIs less than 12 or greater than 70. The

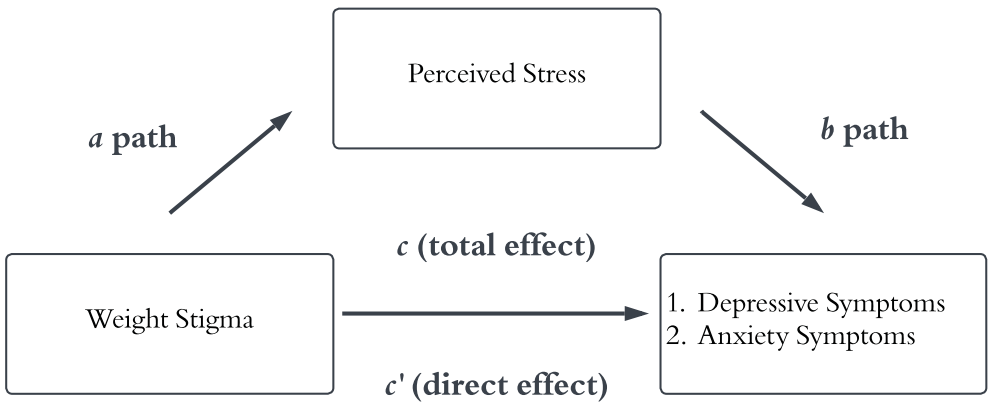


FIGURE 1
Conceptual model depicting the direct and indirect pathways for two respective mediation analyses. The *a* path depicts the relationship between weight stigma and greater perceived stress. The *b* path depicts the relationship between greater perceived stress and depressive and anxiety symptoms, respectively. The *c'* path depicts the direct relationship between weight stigma and depressive and anxiety symptoms.

final analytic sample for this study consisted of 1,993 respondents (M_{age}=47.22, *SD*=17.29). Sample demographics are displayed in Table 1.

2.2 Measures

2.2.1 Weight stigma

Experienced weight stigma was assessed using a single item adapted from Williams et al. (1997; "How often are you treated with less respect, harassed, or discriminated against because of your weight?") (16). Anticipated weight stigma was assessed using a single item from Hunger and Major (2015; "How often are you concerned about or worried that you will be negatively stereotyped or mistreated because of your weight?") (17). Participants responded on a 4-point scale (Not at all - Often), with higher scores indicating higher levels of weight stigma. Scores from the experienced and anticipated weight stigma items were averaged to create a single composite weight stigma score. The weight stigma composite had good internal consistency (α=.85) and the two items were highly correlated (*r*=.75). Previous research with this sample demonstrated that the composite weight stigma measure was strongly correlated with other validated weight stigma questionnaires (18).

2.2.2 Perceived stress

Perceived stress was assessed using a 4-item Perceived Stress Scale (e.g., "How often have you felt nervous and stressed?") (19). Participants reported perceived stress over the past month on a 5-point scale (Never-Very Often). Responses were averaged with larger scores indicating higher levels of perceived stress (*α*=.71).

2.2.4 Depressive symptoms

Depressive symptoms in the last seven days was assessed using the 4-item PROMIS depressive symptoms short form (e.g., "Little interest or pleasure in doing things.") (20). Items were presented on a 4-point scale (Not at all - Nearly Every Day). Responses were averaged with greater scores representing higher levels of depressive symptoms (*α*=.94).

2.2.3 Anxiety symptoms

Anxiety symptoms in the last seven days were assessed with the Patient-Reported Outcomes Measurement Information System (PROMIS) anxiety 4-item measure (e.g., "I found it hard to focus on anything other than my anxiety.") (21). Items were presented with a 5-point scale (Never - Always). Items were averaged such that higher scores reflected higher levels of anxiety symptoms (*α*=.93).

2.3 Analytic approach

A G*Power analysis (22) indicated that a sample size of *N* = 1,043 would be sufficient to detect a small effect size (f^2 =.02, α=.05, =.80) with 19 predictors. Missing data (range 0–11.79%) was

TABLE 1 Sample characteristics.

Characteristic	*n*	%
Gender		
Woman	1,023	51.33%
Man	965	48.42%
Non-binary/Other term	5	0.25%
Race/Ethnicity		
Asian/Asian-American	103	5.17%
Black/African-American	263	13.20%
Hispanic/Latino(a)	309	15.50%
Indigenous, Alaskan Native, or Aleut	25	1.25%
Native Hawaiian/Pacific Islander	2	0.10%
White	1255	62.97%
Biracial/Multiracial	28	1.40%
Other	8	0.40%
Education level		
Less than High School	37	1.86%
High School Diploma or equivalent (e.g., GED)	353	17.71%
Some college, but not degree	442	22.18%
Associate Degree	238	11.94%
Bachelor's Degree	430	21.58%
Master's Degree	201	10.09%
Doctorate or Professional Degree (e.g., JD, MD)	65	3.26%
Income		
< $25,000	362	18.16%
$25,000 - $49,999	448	22.48%
$50,000 - $74,999	384	19.27%
$75,000 - $99,999	288	14.45%
$100,000 - $149,999	289	14.50%
$150 - $199,999	112	5.62%
> $200,000	110	5.52%
Region		
Northeast	357	17.91%
South	732	36.73%
Midwest	453	22.73%
West	451	22.63%

Frequencies and percentages were calculated using non-imputed data. Missing data for education level (*n*=227).
Income is presented as a categorical variable in the table but is included as a continuous variable in mediation models.

addressed using a Bayesian model-based imputation procedure (23). This robust strategy imputes missing data by relying on auxiliary variables that are correlated with missingness, model residuals, or both. Statistical analyses were conducted using the *rblimp* package within R 4.1.0. Two separate mediation models tested our hypotheses by assessing the significance of the conditional direct and indirect effects of weight stigma on depressive and anxiety symptoms, indirectly via perceived stress. Results were deemed significant if the 95% credible interval did not contain a null value of zero. Factors including age, BMI, census region, gender, income, education, and race/ethnicity were included as covariates. Census region, gender, education, and race/ethnicity were dummy-coded. Covariates were selected based on previous research with the same dataset (18, 24).

Exploratory multiple linear regression was used to examine the associations of sociodemographic factors (age, BMI, census region, gender, income, education, race/ethnicity) with weight stigma as an outcome. Results are presented in Supplementary Table 1.

3 Results

3.1 Partial correlations

Partial correlations were calculated between the focal variables (weight stigma, perceived stress, anxiety symptoms, and depressive symptoms) with age, BMI, and income included as covariates (Table 2). Weight stigma was positively related to perceived stress, anxiety symptoms, and depressive symptoms. Perceived stress was positively associated with anxiety and depressive symptoms. Anxiety symptomatology was positively correlated with depressive symptoms.

3.2 Anxiety symptoms

Weight stigma was significantly directly associated with anxiety symptoms (Table 3). Furthermore, a significant indirect effect was reported, indicating that perceived stress significantly mediated the relationship between weight stigma and anxiety, even after controlling for BMI and other covariates. Perceived stress explained roughly 37% of the relationship between weight stigma and anxiety symptoms.

3.3 Depressive symptoms

Weight stigma was significantly directly associated with depressive symptoms (Table 3). Furthermore, a significant indirect effect was observed, suggesting that perceived stress significantly mediated the relationship between weight stigma and depressive symptoms while holding BMI and other covariates constant. Perceived stress explained roughly 38% of the relationship between weight stigma and depressive symptoms.

3.4 Exploratory analyses

Multiple linear regression models indicated that age was negatively associated with weight stigma. Models suggested that BMI was positively associated with weight stigma. Additionally, Hispanic/Latino and Asian/Asian American participants reported significantly less weight stigma than Black/African American participants (reference group).

4 Discussion

This study aimed to investigate relationships between weight stigma and depressive and anxiety symptoms using a census-matched U.S. sample. The chief contribution of the current study is that it tested whether perceived stress functioned as a mediator of these relationships. As hypothesized, weight stigma was directly positively associated with both mental health outcomes. This finding is consistent with existing literature, providing additional evidence of the negative mental health impacts weight stigma may elicit (5–7). Furthermore, the significant indirect effects of perceived stress in both models aligned with and complemented the COBWEBS model, suggesting that stress is a crucial mechanism through which weight stigma influences psychological health. We observed that perceived stress explained 37% of the relationship between weight stigma and mental health symptoms, highlighting the potential utility of addressing stress when considering interventions aimed at mitigating the consequences of weight stigma.

We note several strengths of the current study. Our hypotheses were tested using a large, census-matched sample of the U.S. and

TABLE 2 Partial correlations table for focal variables.

Measure	1	2	3	4
1. Weight Stigma	–			
2. Perceived Stress	**.25*****	–		
3. Depressive Symptoms	**.38*****	**.66*****	–	
4. Anxiety Symptoms	**.37*****	**.62*****	**.77*****	–
Descriptives *M*(*SD*)	1.77 (0.86)	2.66 (0.83)	1.17 (1.12)	2.13 (1.05)

Partial correlations were computed using non-imputed data. Age, BMI, and income were included as covariates.
Missing data for weight stigma (n=149), perceived stress (n=148), depressive symptoms (n=161), and anxiety symptoms (n=169).
Bold indicates statistical significance, *** p<.001.

TABLE 3 Results from mediation models testing perceived stress as a mediator between weight stigma and mental health symptoms.

Outcome	*a*(*SD*)	95% CI	*b*(*SD*)	95% CI	Indirect Effect (*SD*)	95% CI	*c* (*SD*)	95% CI	*c*(*SD*)	95% CI	% Mediated
Depression Symptoms	**0.24 (0.02)**	**0.20,0.29**	**0.79 (0.02)**	**0.75,0.84**	**0.19(0.02)**	**0.16,0.23**	**0.31 (0.02)**	**0.26,0.35**	**0.50 (0.03)**	**0.44,0.56**	**38%**
Anxiety Symptoms	**0.24 (0.02)**	**0.20,0.29**	**0.70 (0.02)**	**0.65,0.74**	**0.17(0.02)**	**0.14,0.20**	**0.29 (0.02)**	**0.25,0.34**	**0.46 (0.03)**	**0.41,0.52**	**37%**

a=*a* path, *b*=*b* path, *c*'= direct effect, *c*=total effect, 95% CI=95% credible interval, *SD*=standard deviation.
Bold indicates significant effect; 95% CI does not contain zero.

thus results from this study have high generalizability to the U.S. population. Potential bias introduced with missing data issues was mitigated using a rigorous Bayesian statistical approach. Associations between weight stigma, mental health symptoms, and perceived stress remained significant even after accounting for BMI. These results suggest that the observed relationship was not explained by body size alone, highlighting that weight stigma is a unique psychosocial stressor that may contribute to poor mental health symptoms.

4.1 Limitations and future directions

The cross-sectional nature of the data did not allow for causal inferences. While significant relationships between the focal variables controlled for likely confounds, no causal conclusions can be made about weight stigma causing greater perceived stress, anxiety, or depressive symptoms. When testing mediation cross-sectionally, researchers must provide compelling evidence for the temporal ordering tested (25). The mediation model we propose is well-justified given the existing experimental work has established that weight stigma causes increases in stress (e.g (26, 27)) and stress causes increases in depressive and anxiety symptoms (e.g (28, 29)). While the results do not establish causal relationships among the focal variables, they offer preliminary evidence suggesting that perceived stress may function as an exploratory mechanism. Experimental work will be useful for establishing that instances of weight stigma cause changes in mental health in participants. Longitudinal designs will also be helpful to substantiate the mediation models and confirm the temporal order of these variables.

Another limitation is that brief measures were used to assess mental health symptomology due to time constraints and participant burden. Future work may consider replicating these findings with comprehensive mental health assessments, including diagnostic interviews. Moreover, self-reported measures, particularly those related to sensitive topics such as weight stigma, anxiety, and depressive symptoms, may be susceptible to social desirability bias (30). It is possible that some participants may have underreported these behaviors to conform to perceived social norms. Future research may consider incorporating objective biomarkers of stress, such as cortisol, to complement self-reported data and provide a more comprehensive understanding of the relationship between weight stigma and mental health. Stressors like weight stigma can influence the hypothalamic-pituitary-adrenal axis to release cortisol—originally serving to help the body cope with acute stress, but with chronic or repeated exposure to stressors, cortisol levels and response functioning may become dysregulated. Studies suggest cortisol dysregulation can increase inflammation (31), interfere with sleep (32), and impact regions of the brain such as the prefrontal cortex and hippocampus (33). Although confirmation is needed in future studies, these factors, among many others, could collectively elevate the risk for anxiety and depressive symptoms via psychological stress. Lastly, there are additional factors that are likely to influence levels of perceived stress and mental health symptoms in addition to weight stigma that were not accounted for in this study. Comorbid health conditions, previous experiences with other forms of discrimination, and internalized weight stigma may all be associated with greater stress and contribute to worse mental health outcomes. Similarly, although race, income, and education were statistically controlled for, these structural and socioeconomic factors are important independent determinants of perceived stress and mental health.

4.2 Conclusion

The current study contributes to the growing body of evidence linking weight stigma to adverse mental health outcomes, namely anxiety and depressive symptoms. Our findings support the COBWEBS model by demonstrating that perceived stress accounts for up to 38% of the relationship between weight stigma and mental health symptomatology. The indirect effect of perceived stress on depressive and anxiety symptoms was a relatively small effect (υ=.02) per Cohen's benchmarks for proportion of variance explained (34). Although the effect size is small, such effects can accumulate over time or across larger populations, potentially leading to significant changes in mental health symptoms. If replicated in future experimental and longitudinal studies, these findings indicate the need for stress-reduction strategies in interventions aimed at individuals experiencing weight stigma. Existing work on mindfulness-based interventions show promise for mitigating weight stigma related stressors and improving mental health and affect (35, 36). Additionally, the implications of this study extend beyond clinical practice, suggesting the need for public health policies that address the broader societal contributors to weight stigma, reducing its potential harmful psychological impact at a population level.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material. Further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by University of California, Los Angeles Institutional Review Board North General Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

DF: Conceptualization, Formal Analysis, Writing – review & editing. WM: Conceptualization, Writing – original draft. JP: Formal Analysis, Writing – review & editing. JH: Funding acquisition, Writing – review & editing. AT: Conceptualization, Funding acquisition, Supervision, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This work was supported by NSF BCS2220295, NIH R01DK128575, and NIH R01HL158555. This material is based upon work supported by the National Science Foundation Graduate Research Fellowship Program under Grant No. DGE-2034835. Any opinions, findings, and conclusions or recommendations expressed in these materials are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1587105/full#supplementary-material

References

1. Tomiyama AJ. Weight stigma is stressful. A review of evidence for the Cyclic Obesity/Weight-Based Stigma model. *Appetite*. (2014) 82:8–15. doi: 10.1016/j.appet.2014.06.108

2. Spahlholz J, Baer N, König HH, Riedel-Heller SG, Luck-Sikorski C. Obesity and discrimination – a systematic review and meta-analysis of observational studies. *Obes Rev*. (2016) 17:43–55. doi: 10.1111/obr.12343

3. Seacat JD, Dougal SC, Roy D. A daily diary assessment of female weight stigmatization. *J Health Psychol*. (2016) 21:228–40. doi: 10.1177/1359105314525067

4. Vartanian LR, Pinkus RT, Smyth JM. Experiences of weight stigma in everyday life: Implications for health motivation. *Stigma Health*. (2018) 3:85–92. doi: 10.1037/sah0000077

5. Alimoradi Z, Golboni F, Griffiths MD, Broström A, Lin CY, Pakpour AH. Weight-related stigma and psychological distress: A systematic review and meta-analysis. *Clin Nutr*. (2020) 39:2001–13. doi: 10.1016/j.clnu.2019.10.016

6. Warnick JL, Darling KE, West CE, Jones L, Jelalian E. Weight stigma and mental health in youth: A systematic review and meta-analysis. *J Pediatr Psychol*. (2022) 47:237–55. doi: 10.1093/jpepsy/jsab110

7. Wu YK, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *J Adv Nurs*. (2018) 74:1030–42. doi: 10.1111/jan.13511

8. Lin CY, Strong C, Latner JD, Lin YC, Tsai MC, Cheung P. Mediated effects of eating disturbances in the association of perceived weight stigma and emotional distress. *Eat Weight Disord - Stud Anorex Bulim Obes*. (2020) 25:509–18. doi: 10.1007/s40519-019-00641-8

9. Hayward LE, Vartanian LR, Pinkus RT. Weight stigma predicts poorer psychological well-being through internalized weight bias and maladaptive coping responses. *Obesity*. (2018) 26:755–61. doi: 10.1002/oby.22126

10. Curll SL, Brown PM. Weight stigma and psychological distress: A moderated mediation model of social identification and internalised bias. *Body Image*. (2020) 35:207–16. doi: 10.1016/j.bodyim.2020.09.006

11. Hunger JM, Major B, Blodorn A, Miller CT. Weighed down by stigma: how weight-based social identity threat contributes to weight gain and poor health. *Soc Pers Psychol Compass*. (2015) 9:255–68. doi: 10.1111/spc3.12172

12. Major B, Eliezer D, Rieck H. The psychological weight of weight stigma. *Soc Psychol Pers Sci*. (2012) 3:651–8. doi: 10.1177/1948550611434400

13. Papadopoulos S, Brennan L. Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity*. (2015) 23:1743–60. doi: 10.1002/oby.21187

14. Cristóbal-Narváez P, Haro JM, Koyanagi A. Perceived stress and depression in 45 low- and middle-income countries. *J Affect Disord*. (2020) 274:799–805. doi: 10.1016/j.jad.2020.04.020

15. Konstantopoulou G, Iliou T, Karaivazoglou K, Iconomou G, Assimakopoulos K, Alexopoulos P. Associations between (sub) clinical stress- and anxiety symptoms in mentally healthy individuals and in major depression: a cross-sectional clinical study. *BMC Psychiatry*. (2020) 20:428. doi: 10.1186/s12888-020-02836-1

16. Williams DR, Yu Y, Jackson JS, Anderson NB. Racial differences in physical and mental health: socio-economic status, stress and discrimination. *J Health Psychol*. (1997) 2:335–51. doi: 10.1177/135910539700200305

17. Hunger JM, Major B. Weight stigma mediates the association between BMI and self-reported health. *Health Psychol*. (2015) 34:172–5. doi: 10.1037/hea0000106

18. Lee KM, Hunger JM, Tomiyama AJ. Weight stigma and health behaviors: evidence from the Eating in America Study. *Int J Obes*. (2021) 45:1499–509. doi: 10.1038/s41366-021-00814-5

19. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. (1983) 24:385–96. doi: 10.2307/2136404

20. Choi SW, Reise SP, Pilkonis PA, Hays RD, Cella D. Efficiency of static and computer adaptive short forms compared to full-length measures of depressive symptoms. *Qual Life Res*. (2010) 19:125–36. doi: 10.1007/s11136-009-9560-5

21. Kroenke K, Yu Z, Wu J, Kean J, Monahan PO. Operating characteristics of PROMIS four-item depression and anxiety scales in primary care patients with chronic pain. *Pain Med*. (2014) 15:1892–901. doi: 10.1111/pme.12537

22. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. (2007) 39:175–91. doi: 10.3758/BF03193146

23. Enders CK, Du H, Keller BT. A model-based imputation procedure for multilevel regression models with random coefficients, interaction effects, and nonlinear terms. *Psychol Methods*. (2020) 25:88–112. doi: 10.1037/met0000228

24. Figueroa DG, Parker JE, Hunger JM, Kraus MW, Muscatell KA, Tomiyama AJ. Social class stigma and poorer health behaviors: Evidence from the eating in America study. *Soc Sci Med*. (2024) 347:116765. doi: 10.1016/j.socscimed.2024.116765

25. Fairchild AJ, McDaniel HL. Best (but oft-forgotten) practices: mediation analysis. *Am J Clin Nutr*. (2017) 105:p.ajcn152546. doi: 10.3945/ajcn.117.152546

26. Himmelstein MS, Incollingo Belsky AC, Tomiyama AJ. The weight of stigma: Cortisol reactivity to manipulated weight stigma. *Obesity*. (2014) 23:368–74. doi: 10.1002/oby.20959

27. Schvey NA, Puhl RM, Brownell KD. The stress of stigma: Exploring the effect of weight stigma on cortisol reactivity. *Psychosomatic Med*. (2014) 76:156–62. doi: 10.1097/psy.0000000000000031

28. Maydych V. The interplay between stress, inflammation, and emotional attention: Relevance for depression. *Front Neurosci*. (2019) 13:384. doi: 10.3389/fnins.2019.00384

29. Grillon C, Duncko R, Covington MF, Kopperman L, Kling MA. Acute stress potentiates anxiety in humans. *Biol Psychiatry*. (2007) 62:1183–6. doi: 10.1016/j.biopsych.2007.06.007

30. Larson RB. Controlling social desirability bias. *Int J Mark Res*. (2019) 61:534–47. doi: 10.1177/1470785318805305

31. Jones C, Gwenin C. Cortisol level dysregulation and its prevalence—Is it nature's alarm clock? *Physiol Rep*. (2021) 8:e14644. doi: 10.14814/phy2.14644

32. Roth T, Roehrs T, Pies R. Insomnia: Pathophysiology and implications for treatment. *Sleep Med Rev*. (2007) 11:71–9. doi: 10.1016/j.smrv.2006.06.002

33. Dedovic K, Duchesne A, Andrews J, Engert V, Pruessner JC. The brain and the stress axis: The neural correlates of cortisol regulation in response to stress. *NeuroImage*. (2009) 47:864–71. doi: 10.1016/j.neuroimage.2009.05.074

34. Lachowicz MJ, Preacher KJ, Kelley K. A novel measure of effect size for mediation analysis. *psychol Methods*. (2018) 23:244–61. doi: 10.1037/met0000165

35. Daubenmier J, Epel ES, Moran PJ, Thompson J, Mason AE, Acree M, et al. A randomized controlled trial of a mindfulness-based weight loss intervention on cardiovascular reactivity to social-evaluative threat among adults with obesity. *Mindfulness*. (2019) 10:2583–95. doi: 10.1007/s12671-019-01232-5

36. Raja-Khan N, Agito K, Shah J, Stetter CM, Gustafson TS, Socolow H, et al. Mindfulness-based stress reduction in women with overweight or obesity: A randomized clinical trial. *Obesity*. (2017) 25:1349–59. doi: 10.1002/oby.21910

frontiers | Frontiers in Psychiatry

TYPE Systematic Review
PUBLISHED 15 July 2025
DOI 10.3389/fpsyt.2025.1596625

OPEN ACCESS

EDITED BY
Lily O'Hara,
Griffith University, Australia

REVIEWED BY
Mussie Msghina,
Örebro University, Sweden
Mohsen Khosravi,
Zahedan University of Medical Sciences, Iran

*CORRESPONDENCE
Samantha R. Philip
srphilip@tamu.edu

RECEIVED 19 March 2025
ACCEPTED 19 June 2025
PUBLISHED 15 July 2025

CITATION
Philip SR, Standen EC, Schueler J, Fields SA and Phelan SM (2025) Weight bias in mental health settings: a scoping review.
Front. Psychiatry 16:1596625.
doi: 10.3389/fpsyt.2025.1596625

Weight bias in mental health settings: a scoping review

Samantha R. Philip[1]*, Erin C. Standen[2], Jordan Schueler[3], Sherecce A. Fields[1] and Sean M. Phelan[2,4]

[1]Department of Psychological and Brain Sciences, Texas A&M University, College Station, TX, United States, [2]Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, Mayo Clinic, Rochester, MN, United States, [3]Department of Pediatrics, Baylor College of Medicine, Houston, TX, United States, [4]Division of Health Care Delivery Research, Mayo Clinic, Rochester, MN, United States

Introduction: Weight bias is a pervasive form of prejudice, most deeply and directly harming individuals in larger bodies. Although the mental health field strives to promote the delivery of equitable, culturally sensitive care, the prevalence and nature of weight bias in therapeutic contexts are not well understood. This scoping review examines how weight bias manifests within mental health settings and its impacts on client care and outcomes, exploring the issue from both client and provider lenses.

Methods: A total of 43 studies meeting search criteria were identified from a systematic search process.

Results: Findings indicate that mental health professionals (MHPs) hold negative stereotypes toward larger-bodied individuals. Although MHPs were less likely to report having negative attitudes, they reported a high prevalence of weight bias in their colleagues. Studies using experimental designs demonstrated that providers' clinical judgment and decision-making were impacted by client body size, generally showing that higher-weight clients were perceived to have lower global functioning, greater pathology, and more negative attributes than lower-weight clients. When the client was described with restrictive eating disorder symptomatology, however, MHPs rated higher-weight clients as less severe and recommended less intensive treatment compared to lower-weight clients. Qualitative studies from client samples revealed experiences of weight stigma during treatment, including MHPs' expressions of implicit and explicit weight bias, assumptions and misattributions based on the clients' weight, unsolicited (direct or subtle) weight loss advice, and differential treatment based on size. Experiences of weight bias were harmful to the client's therapeutic progress and undermined their trust in their provider and the mental health system at large.

Discussion: The body of evidence suggests that weight bias is a serious and significant barrier to the provision of equitable mental health treatment and mental health equity.

KEYWORDS

weight bias, weight stigma, weight inclusive care, mental health professional, mental health care, cultural competence, mental health equity, scoping review

1 Introduction

Weight bias, defined as negative, prejudicial, or stereotypical beliefs and attitudes directed toward individuals in larger bodies is a well-documented phenomenon impacting the health and well-being of people in larger bodies (1). Prior studies demonstrate that weight bias manifests at structural, institutional, interpersonal, and intrapersonal levels, presenting across life domains (e.g., employment, education, and healthcare) and relationships (e.g., social, familial, and romantic) (2, 3). Experiences of weight stigma are associated with poor mental and physical health outcomes, including increased risk for psychological disorders (e.g., anxiety, depression, substance use disorder, suicidality) (4–6), healthcare avoidance (7), cardiovascular disease markers (4, 5), and a 60% increased risk of death (8). Weight stigma is conjectured to drive health inequities through direct and indirect pathways. The experience of weight stigma has been found to trigger the body's physiological stress response (9); over time, this chronic stress reaction can increase the allostatic load (10), which is associated with worse health outcomes (11). In medical settings, weight bias is theorized to drive adverse health outcomes through healthcare providers' biased decision-making and the corrosive effects of provider bias on the patient-provider relationship, leading patients to seek new providers, delay care, or avoid healthcare altogether (12).

When individuals who have experienced stigmatization present to therapy, mental health professionals (MHPs) must understand that clients' mental health challenges may have been caused or exacerbated by experiences of discrimination (see Meyer and Frost; 13). This recognition represents a facet of cultural competence, which is a core aspect of mental health training programs that is acknowledged in the ethics codes across disciplines (e.g., APA, ACA, NASW, AAMFT). Cultural competence emphasizes self-awareness, knowledge, and skills as a foundation for the provision of high-quality mental health services to individuals of diverse backgrounds (14). Indicators of cultural competence are associated with positive therapeutic outcomes (15). In contrast, perceived microaggressions—defined as "commonplace daily verbal, behavioral, or environmental indignities, whether intentional or unintentional that communicate hostile, derogatory, or negative insults to a target person or group" (16), are negatively associated with therapeutic processes (e.g., therapeutic alliance, perceived cultural humility) and therapeutic outcomes (e.g., improvement in mental health outcomes, satisfaction, and psychological well-being) (17).

Concerningly, the literature indicates that mental health training programs rarely address issues related to weight, including education on weight bias, the complex interaction of factors that influence weight, and how to work with higher-weight clients who struggle with body image or desire to lose weight (18–21). For example, marriage and family therapy trainees, faculty, and clinicians reported that they had not received training on how to effectively work with higher-weight clients, despite treating them in practice (21, 22). Furthermore, a textbook analysis of graduate-level multicultural textbooks revealed that topics of weight stigma and body size as a diversity issue were only addressed in a minority of textbooks, and when addressed, were done so minimally (23). A qualitative study among mental health trainees found that they desire weight bias training to be folded into diversity courses, or to be integrated more broadly throughout training, similar to how identities like race, gender, and sexual orientation are consistently considered (21).

The apparent lack of training on weight bias and weight-related considerations in mental health training programs increases the likelihood that MHPs' existing biases—shaped by prevailing cultural messages equating weight with health and morality—are left unexamined and unchecked. Indeed, studies indicate that mental health professionals hold weight bias (24–26) and that this bias is perceived by higher-weight individuals (27–29). Drawing from the sizable body of literature in the medical field documenting the detrimental effect of healthcare provider bias on the patient-provider relationship and patient outcomes (7, 30, 31)— and extrapolating from the documented impact of race-based microaggressions on the therapeutic relationship and outcomes (17)— we conjecture that MHPs' biases may interfere with the therapeutic alliance and treatment progress, potentially reducing individuals' engagement with mental health services altogether.

The purpose of this scoping review was to examine how weight bias manifests within mental health settings and its impacts on client care, experiences, and outcomes. Specifically, our research questions are: (1) To what extent do MHPs hold bias against higher-weight people? (2) How does provider weight bias influence clinical judgments and decisions? (3) What are the common manifestations of provider weight bias from the client perspective? And (4) What is the impact of perceived provider bias on client experiences? As an emerging body of literature, this scoping review provides a broad overview of the state of the evidence from both client and MHP perspectives. Unless otherwise specified, the terms "mental health professional" and "provider" are used interchangeably to describe psychologists, psychiatrists, therapists, mental health social workers, counselors, and trainees within these fields, and the term "client" is used to describe individuals who received mental health services.

2 Methods

To conduct our scoping review, we utilized the methodological framework put forth by Arksey and O'Malley (32). The four stages after identification of our research questions include: identifying potentially relevant studies, study selection, charting the data, and collating, summarizing, and reporting the results.

2.1 Literature Search

Key terms were identified to locate studies relevant to the research questions. The following search terms were used: ["weight stigma" OR "weight bias" OR "weight-based microaggression" OR "body size" OR "anti-fat" OR "fat-phobia"

OR "fat phobia"] for weight bias, ["therapeutic setting" OR "therapy" OR "mental health treatment" OR "mental health provider" OR "psychologist" OR "psycholog*" OR "social worker" OR "counselor" OR "marriage and family therapist" OR "treatment" OR "milieu" OR "residential" OR "higher levels of care" OR "intensive outpatient" OR "day program" OR "psychological intervention" OR "rapport" OR "clinic"] for mental health settings. The search terms were entered into the databases, combined with the term "and." To be included, the article needed to be empirical, in English language, and published before December 2024. Review articles and other secondary sources were excluded to ensure the analysis of primary data.

2.2 Databases

Five databases were utilized to identify relevant articles: PubMed, APA PsycInfo, ERIC, MEDLINE, and ProQuest eBook Central. PubMed and MEDLINE—both premier resources for biomedical literature—offered access to peer-reviewed research with strong medical relevance (e.g., from medical, psychiatric, and public health journals), providing studies focused on weight stigma in psychological or psychiatric treatment. We utilized APA PsycInfo as a comprehensive resource for peer-reviewed scholarly literature in psychology, providing access to literature focused on behavioral science and mental health, which were of high relevance to our search. ERIC, a database for educational literature, provided empirical literature related to weight bias in educational and training contexts, ensuring that our review included trainee samples. Finally, ProQuest eBook Central provided access to scholarly books, dissertations, and theses, allowing access to essential grey literature rounding out the body of empirical research.

A total of 11,035 articles were found using the above search terms and databases and were imported into Covidence, a tool for conducting reviews and meta-analyses of the literature.

2.3 Study selection

Five independent reviewers screened titles and abstracts. Each title and abstract were reviewed independently by two reviewers, and conflicts were discussed and resolved by consensus between reviewers with reference to pre-defined criteria. If conflicts persisted, the first author was prearranged to make the final determination, but consensus was reached on all cases. The remaining articles were then subject to a full-text review, by which two independent coders read the full text and determined eligibility. Again, conflicts were resolved through discussion and consensus. Articles were included if they were original studies that examined the presence or impact of weight bias in MHPs, or the experience or impact of weight bias experienced by individuals in mental health settings. Articles were excluded if they did not explicitly measure weight bias in mental health settings or MHPs, or if they were not original research papers (e.g., reviews, perspective papers). Quantitative and qualitative studies were included. This process identified 37 suitable articles. Six additional articles were found as part of the researchers' library or located in the reference lists of relevant articles. A PRISMA flow diagram (see Figure 1) depicts the process and reasons for which studies were included and excluded.

2.4 Data charting, collation, and summarization

Data was extracted from each of the identified studies using a Covidence data extraction form modified by the study authors. As our scoping review did not examine intervention studies, we removed all intervention-related details from the template extraction form (e.g., interventions, comparators, exposures, etc.). To capture experimental studies that used a manipulation (e.g., manipulating vignettes by client body size), we inserted a textbox question about manipulation details. Additionally, as our scoping review included studies of qualitative, quantitative, and mixed methodologies—and therefore varied outcomes (e.g., qualitative themes, self-reported measures)—the "Results data" section of the original template was modified to create 15 textbox responses by which study authors could input up to 15 key results from the manuscript.

The charted data included authors, year of publication, study location, study aims, manipulation details (if applicable), study design, study population, sample size, demographic information, outcome measures, and key results. Each step was extracted by two independent study authors to ensure reliability. The data were then thematically organized using deductive followed by inductive qualitative coding scheme. First, a top-down, or deductive, approach was used to create higher-order codes (i.e., by perspective, study design, and context). Next, a bottom-up, or inductive, approach was used, in which all themes and findings were extracted from each study. From there, categories were created by grouping studies with like-themes/findings together.

3 Results

3.1 Characteristics of Included Studies

The majority of included studies were based in the United States [n= 37 (86.0%)], with the remaining studies based in other nations (i.e., Canada, Netherlands, France, Mexico; [n= 4 (9.3%)] or international samples [n= 2 (4.6%)]. Most studies used observational methodologies [n= 18 (31.9%)], followed by experimental [n= 11 (25.6%)], qualitative [n= 10 (23.3%)], mixed methods [n= 3 (7.0%)], and quasi-experimental designs [n= 1 (2.3%)]. Of the three mixed methods papers, we only extracted data from the qualitative portion for two (33, 34) as the quantitative data in these studies were not relevant to our research question.

Most studies included mixed-gender samples [n= 34 (79.1%)], and the remaining studies included female-identifying participants

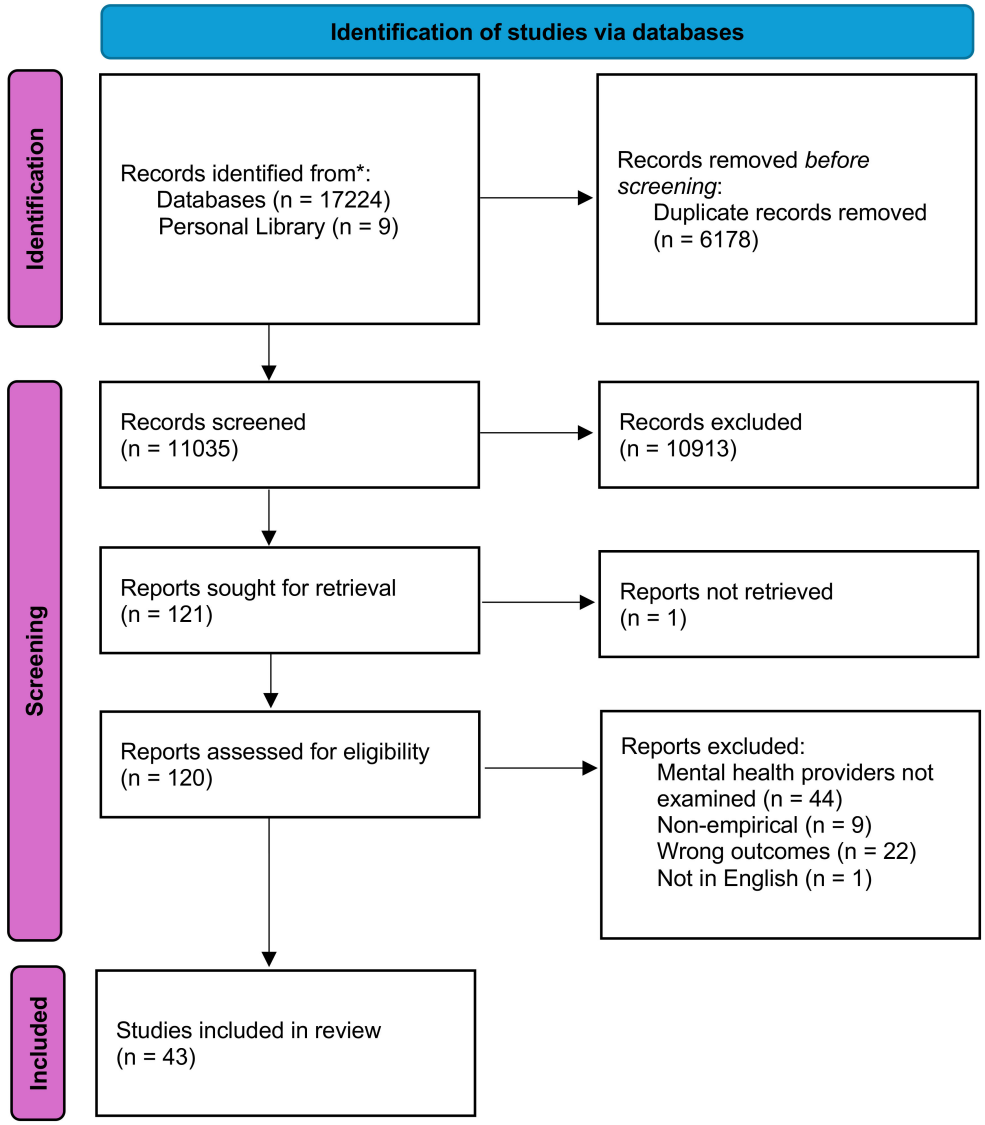


FIGURE 1
PRISMA flow diagram of identification of articles. Three studies were published as both dissertations and journal articles; each was only counted once.

only [*n*= 2 (4.7%)]. One study (2.3%) used two samples, one with only female participants, and one mixed sample, and six studies (14%) did not report participants' gender. Approximately two-thirds of studies examined weight bias in samples of mental health professionals [*n*= 29 (67.4%)] and one-third sampled from mental health clients [*n*= 14 (32.5%)]. For study characteristics and key results for MHP and client samples, see Tables 1 and 2, respectively.

3.2 Findings from MHP Samples

3.2.1 Experimental studies

A total of eleven experimental (35–46) and one quasi-experimental (40) studies evaluated the impact of client body size on clinical decision-making in MHPs. Of the 12 total studies, nine described a client with general mental health challenges, and three described a client presenting with eating pathology. These categories are summarized separately due to the unique manifestations of weight bias in an eating disorder context.

3.2.1.1 Impact of body size on perceptions of general psychopathology

Seven of nine studies (35, 36, 38–41, 45) measured the MHP's perception of the client's psychological severity and examined differences by weight condition. Four studies found that higher-weight clients were assigned greater psychological severity than lower-weight clients (35, 36, 38, 39). One study found the opposite trend, with the lower-weight condition being assigned greater dysfunction than the higher-weight condition (40). Two studies found no difference in perceived symptom severity across weight condition (41, 45).

TABLE 1 Characteristics and key findings of 29 studies examining provider weight bias in MHP samples.

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
Young & Powell (1985) (35). The Effects of Obesity on the Clinical Judgments of Mental Health Professionals	United States	To determine whether a client's body size affects therapeutic judgments of MHPs	Experimental	Participants received a case description and a photograph of the client that was experimentally manipulated by client body size ("best-weight," "overweight," or "obese"), with all other details identical	Interdisciplinary MHPs	120	•**Willingness to Work with Client** (Therapist willingness to work with client) • **Diagnosis, Prognosis, or Treatment Recommendations** (Belief that therapeutic intervention would be useful; belief in a favorable prognosis) • **Perceived Client Attributes** (Perceptions of client level of dysfunction)	•The obese client was assigned more severe symptoms than the non-obese client, and were rated higher on 13/20 symptoms (e.g., impaired judgment, inadequate hygiene, suspiciousness) •Female professionals and younger professionals showed greater evidence of weight bias
Agell & Rothblum (1991) (36). Effects of Clients' Obesity and Gender on the Therapy Judgments of Psychologists	United States	To investigate whether practicing psychologists who practice therapy assign stereotypical attributions to higher-weight clients	Experimental	Participants received one of two case histories that were experimentally manipulated by client gender (male or female), and body size ("obese" or "non-obese") with all other details identical	Psychologists who were members of APA Division 29	282	• **Perceived Client Attributes** (Person Perception Inventory, including Social Attributes, Appearance, Embarrassment, Softness, and Kindness) • **Diagnosis, Prognosis, or Treatment Recommendations** (Case History Questionnaire, including Problem, Motivation, Self-Concept, Prognosis, Diagnosis)	•The obese client was rated as having more severe problems, being less physically attractive, and being more embarrassed and softer/kinder than the non-obese client
Davis-Coelho et al. (2000) (37). Awareness and Prevention of Bias Against Fat Clients in Psychotherapy	United States	To examine the impact of weight bias on psychologists' clinical impressions	Experimental	Participants received a case description along with a photograph of the client that was experimentally manipulated by client body size ("average" or "overweight"), with all other details identical	Members and fellows of APA's Divisions of Clinical Psychology, Counseling Psychology, Psychotherapy, and Psychologists in Independent Practice	200	• **Diagnosis, Prognosis, or Treatment Recommendations** (Psychologists' recommended treatment modality provision diagnosis; prognosis) • **Perceived Client Attributes** (effort, motivation, overall functioning)	•Fat clients were assigned marginally lower functioning, longer treatment duration, and more severe provisional diagnoses (e.g., eating disorder) than non-fat client •Younger, less experienced, and female providers showed greater evidence of weight bias
Hassel (2001) (38). Client weight as a barrier to non-	United States	To explore the impact of client body size on mental	Experimental	Participants received a case description that was experimentally	MHPs currently or recently engaged in clinical work	163	• **Diagnosis, Prognosis, or Treatment Recommendations** (Diagnosis, Global Assessment of Functioning) • **Perceived Client Attributes** (Attitude	•The obese client was assigned with more pathology (e.g., lower level of functioning), more negative attributes, and more severe diagnoses than the average weight client

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
biased clinical judgment		health professional's clinical impressions		manipulated by client body size ("obese" vs. "average") and gender (male or female), with all other details identical			Scale) • **Explicit Weight Bias** (Attitudes Toward Adult Obese Patients)	•Female MHPs showed greater evidence of weight bias in their assignments of global functioning
Adams (2008) (39). Weight Bias Among Counselors-In-Training: A Qualitative Inquiry	United States	To identify and describe the levels of bias that counselors-in-training may have toward higher-weight clients	Experimental	Participants received a case vignette of a client that was experimentally manipulated by client body size ("average" or "overweight") with all other details identical	Students currently enrolled in graduate-level counseling programs from two universities	56	• Qualitative survey with open-text questions	•Compared to "normal" weight clients, participants used more qualifiers when describing the prognosis, assigned more psychological symptoms, and identified more barriers to effective counseling for the overweight client
Hightower (2014) (40). A Mixed Methods Survey of Fat Bias in Marriage and Family Therapists	United States	To understand the extent that body size and skin color impacted Marriage and Family Therapist's clinical assessment of a client	Quasi-Experimental	Participants received a case history along with a photograph of the client that was experimentally manipulated by client body size ("average weight" or "overweight") and skin color (white or dark-skinned) with all other details identical	Licensed Marriage and Family Therapists and Licensed Marriage and Family Therapist-Associates	75	• **Willingness to Work with Client (Therapist willingness to work with client)** • **Diagnosis, Prognosis, or Treatment Recommendations** (General prognosis of client, beliefs about usefulness of therapy) • **Perceived Client Attributes** (Overall assessment of severity) • **Explicit Weight Bias** (Anti-fat Attitude Questionnaire) • Qualitative question probing additional concerns about the client	•Overweight clients were described with unique negative themes (i.e., that were not described for the thin clients), including concerns that the client was suffering from a personality disorder, possible emotional, physical, and/or sexual abuse, and concerns about the client's weight or potential for having an eating disorder •When controlling for covariates (demographic data), participants rated the average white female client as having greater symptoms of dysfunction than the overweight white female client
Kasardo (2015) (41). Fat Bias in the Field of Psychology: Examining Diversity Counseling Texts and Clinical Judgment Across	United States	To examine the impact of client weight labels on clinical impressions of MHPs	Experimental	Participants received an intake report that was experimentally manipulated by client body size ("obese,"	Interdisciplinary MHPs who worked in college counseling centers	111	• **Willingness to Work with Client** (Interest in working with the client) • **Perceptions of Client Attributes** (Clinical Judgement Questionnaire, Personality Variables) • **Diagnosis, Prognosis, or Treatment**	•The obese client was more likely to be recommended weight loss strategies compared to the overweight, full-figured, or control conditions •The obese client was rated as more likely to have eating concerns compared to the full-

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
College Counseling Centers				"overweight," "full-figured," and control)			**Recommendations** (Prognosis, Belief in treatment, Symptoms)	figured condition, but not compared to the overweight or control clients
Forristal (2018) (42). Fatphobia and Clinical Counseling Decision Making in Counselor Education Students	United States	To examine fatphobia within the context of professional counseling	Experimental	Participants received a case vignette along with a photograph of the client that was experimentally manipulated by client body size ("thin", "overweight", or "obese") with all other details identical	Masters-level counselor education graduate students who had completed their practicum experience	113	• **Diagnosis, Prognosis, or Treatment Recommendations** (Diagnostic Questionnaire) • **Explicit Weight Bias** (Fat Phobia Scale - Short Form) • Weight Bias Internalization Scale	•Participants responses were indicative of explicit weight bias, with especially elevated scores on items describing higher-weight people as: "Slow," "Weak," "Insecure," and having "No willpower" •Compared to the thin or overweight clients, obese clients were more likely to be diagnosed with moderate or severe MDD •Participants reported internalized weight bias on par with those of similar samples
Veillette et al. (2018) (43). What's Weight Got to Do With It? Mental Health Trainees' Perceptions of a Client With Anorexia Nervosa Symptoms	United States	To examine the effect of client body mass index (BMI) on diagnostic impressions and perceptions of mental health trainees	Experimental	Participants received a case vignette of a female client presenting for treatment with symptoms of anorexia nervosa; condition was experimentally manipulated by client body size ("underweight," "normal weight," or "overweight") with all other details identical	Graduate-level mental health students	90	• **Willingness to Work with Client** (Treatment Attitudes) • **Diagnosis, Prognosis, or Treatment Recommendation**s (Diagnosis, Number of Treatment Sessions) • **Perceived Client Attribute**s (Endorsement of Weight Stereotypes)	• The overweight client was less likely to be assigned a diagnosis of anorexia nervosa or atypical anorexia nervosa and was recommended fewer treatment sessions than the underweight client
McAshan (2018) (44). The Impact of Client Weight and Ethnicity on Counselor's Evaluation of Eating Disorder Symptoms: A Vignette Study	United States	To examine how body size and ethnicity influences a counselor's ability to recognize the presence of, and accurately rate, the severity of eating disorder symptoms	Experimental	Participants received a case vignette of a client describing a young woman with symptoms of anorexia nervosa; condition was experimentally	Licensed professional counselors in Texas, California, New Hampshire, New Jersey, and Idaho	306	• **Perceived Client Attributes** (Severity of presenting problem; frequency and severity of client's symptoms)	•Lower weight clients were more likely to be recommended a medical follow-up, received higher severity ratings, and scored higher on the anorexia subscale than higher weight clients •Participants were more likely to diagnose the lower weight patient with anxiety, and were marginally more likely to diagnose the lower weight client with an eating disorder

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
				manipulated by client weight ("low" or "high") and ethnicity (White, Black, Hispanic) with all other details identical				
Ryland (2020) (45). The Effect Of Anti-Fat Bias On Therapists' Perceptions Of Client Motivation, Prognosis, Severity Of Mental Illness, And Working Alliance	United States	To evaluate whether MHPs hold anti-fat biases and make different assumptions based on clients' body size	Experimental	Participants received a case vignette that was experimentally manipulated by client gender (female or male) and body size (normal or obese), with all other details identical	MHPs who were actively seeing clients or had seen clients in the field	213	• **Diagnosis, Prognosis, or Treatment Recommendations** (Perception of potential for a future working alliance; Prognosis Questionnaire) • **Perceived Client Attributes** (Overall assessment of severity; perception of client readiness to change)	•The obese client was rated as less able to develop and achieve therapy goals compared to the average weight client
Silbiger (2024) (46). Mental Health Providers' Perceptions of Restrictive Eating disorders: Relationship with client body weight	not specified, but researchers are US-based	To investigate how MHPs are influenced by patients' body weight when evaluating them for symptoms of a restrictive eating disorder	Experimental	Participants received a case vignette for a client that met DSM-5 criteria for either AN or atypical AN; condition was experimentally manipulated by body size (below, within, or above the normal range for her age and height) with all other details identical	Licensed masters' or doctoral-level MHPs who had been conducting therapy for at least 10 hours per week over the past year	245	• **Diagnosis, Prognosis, or Treatment Recommendations** (Diagnosis free responses, which were then coded; treatment recommendations) • **Perceived Client Attributes** (Assessment of symptoms)	•Low weight clients were more likely to: be labeled with an "eating disorder" or "possible eating disorder" (the two most severe options); be charactered as experiencing "dietary restriction and weight loss;" be recommended "specialized eating disorder treatment;" and be recommended medical follow-up compared to average and high weight clients •Approximately half of participants in the high weight group missed eating disorder symptoms and diagnosis altogether
O'Loughlin (1994) (47). Therapists' Preferences to Provide Treatment Based on Clients' Body Size and Gender	United States	To determine whether therapists discriminate against higher weight clients, and more specifically, higher-weight female clients	Observational	N/A	Therapists who either completed a doctoral degree in psychology or were enrolled in advanced levels	128	• **Willingness to Work with Client** (Ranked preference in working with client (obese female, obese male, nonobese female, nonobese male); ranked interest in treating client)	•Female nonobese clients were the most preferred client, while male nonobese clients were the least preferred. The only significant difference emerged between female obese clients and male nonobese clients, with female obese clients preferred to male nonobese clients

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
					as a doctoral candidate in a clinical psychology program			
McCardle (2008) (48). Weight Bias and Social Work Practice: An Empirical Exploration	United States	To assess weight bias among social work clinicians to determine its potential impact on social work practice	Observational	N/A	Social workers who are members of the National Association of Social Workers and who identified their primary work focus as direct practice	564	• **Explicit Weight Bias** (Attitudes toward obese people, beliefs about weight controllability) • **Diagnosis, Prognosis, or Treatment Behaviors** (Social work practice behaviors with obese clients) • Perceived importance of weight bias in social work practice	•Negative attitudes toward obese people were associated with: believing that obesity is under an individual's control; lower body mass index; lack of family history of obesity; lack of friends who are obese; lower percentages of obese clients in practice; and older age •Negative attitudes and beliefs were associated with more negative practice behaviors with higher-weight clients •Participants reported fairly high levels of controllability beliefs, especially in their perception of overeating as a primary cause for obesity
Puhl et al. (2014) (49). Obesity Bias in Training: Attitudes, Beliefs, and Observations Among Advanced Trainees in Professional Health Disciplines	United States	To examine weight bias among students training in health disciplines, and to assess the relationship between their weight biases and provision of treatment to patients with obesity, beliefs about the causes of obesity, observations of weight bias in the clinical care setting, and personal characteristics	Observational	N/A	Students enrolled in a post-graduate health discipline (Physician Assistant students, Clinical Psych Interns, or Psychiatric Residents)	107	• **Diagnosis, Prognosis, or Treatment Behaviors** (Expectations of patient treatment compliance/success) • **Explicit Weight Bias** (UMB-FAT; Attitudes toward obese patients; perceived weight bias in health care)	•Students reported high rates of witnessing negative comments/jokes about patients with obesity made by health care providers (65%), by professors or instructors (40%), and by peers (63%), but only 3% of students reported that they themselves believe it is acceptable to make jokes about patients with obesity •Students reported often feeling frustrated with patients with obesity (36%), that patients with obesity lack motivation to make lifestyle changes (33%) and are difficult to deal with (33%). Only 27% of students agreed that treating patients with obesity is professionally rewarding, and 13% indicated that they dislike treating patients with obesity •Participants generally assumed that higher-weight patients would be non-compliant with weight loss recommendations •Participants with more severe personal body shape/weight concerns perceived there to be more weight bias by others in the medical setting

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
Puhl et al. (2014) (50). Weight Bias among Professionals Treating Eating Disorders: Attitudes about Treatment and Perceived Patient Outcomes	United States	To assess weight bias among professionals who specialize in treating eating disorders and identify to what extent their weight biases are associated with attitudes about treating obese patients.	Observational	N/A	Professionals treating eating disorders, including psychologists, therapists, registered dietitians, social workers, and other	329	• **Explicit Weight Bias** (UMB-Fat, Fat Phobia Scale, Attitudes about Treating Obese Patients) • Perceived Causes of Obesity • Perceptions of Treatment Compliance and Success of Obese Patients	•Providers endorsed negative stereotypes toward higher-weight people, with a sizeable proportion agreeing that: obese individuals have poor self-control (33%), have no willpower (16%), are self-indulgent (15%), are unattractive (24%), are inactive (38%), are insecure (50%), and overeat (55%) •The majority of participants (56%) indicated that they witnessed other professionals in their field making negative comments about obese patients, 42% agreed that other practitioners who treat eating disorders often have negative stereotypes about obese patients, 35% agreed that practitioners feel uncomfortable caring for obese patients, and 29% agreed that their colleagues tend to have negative attitudes toward obese patients •Relatively low percentages of participants (1–17%) expressed negative attitudes about treating obese patients, and high percentages of participants agreed that it is important to treat obese patients with compassion and respect (94%), that treating obese patients is professionally rewarding (72%), and that they feel confident (88%) and professionally prepared (84%) to provide quality care to these patients •Weight bias was inversely associated with BMI and years of professional experience, and positive associated with currently attempting to lose weight
Stokes (2015) (51). Stigma in Clinical Psychology Trainees: Bias Towards Eating Disorders on the Basis of Weight Variance and the Mediating Influence of Personal Psychological Traits	United States	To explore the presence and impact of weight stigma and eating disorder stigma in graduate-level psychology trainees	Observational	N/A	Clinical PsyD students	117	• **Explicit Weight Bias** (UMB-FAT)	•A small proportion (i.e., 3 to 21%) of trainees endorsed explicit weight bias •Participants with BMIs in the "normal weight" category reported higher levels of general weight stigma than those in the "obese" category

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
Soto et al. (2014) (52). Beliefs, Attitudes and Phobias Among Mexican Medical and Psychology Students Towards People with Obesity	Mexico	To evaluate the beliefs and attitudes that Mexican medical and psychology students have towards obese people	Observational	N/A	Students from the first and last year of the School of Medical and Psychology at the Autonomous University of Baja California (UABC)	528 (278 psychology students & 250 medical students)	• **Explicit Weight Bias** (Beliefs about Obese Persons Scale, Attitudes Toward Obese Persons Scale, Fat Phobia Scale)	•Compared with medical students, psychology students had better knowledge about the causes of obesity, and less negative attitudes and beliefs towards people with obesity •Psychology students' weight bias was on par with that of the general population •Over 40% of the sample of psychology students endorsed negative adjectives of obese people, including "Likes food," "Overeats," "Slow," "Poor self-control," "Inactive," "Shapeless," and "Low self-esteem"
Pratt et al. (2016) (26). Marriage and Family Therapy Trainees' Reports of Explicit Weight Bias	United States	To explore levels of explicit weight bias and identifying demographic factors associated with bias among MFT students	Observational	N/A	MFT students currently enrolled in COAMFTE programs	162	• **Explicit Weight Bias** (Beliefs about Obese Persons Scale, Attitudes Toward Obese Persons Scale, Anti-fat Attitudes Questionnaire)	•Evidence of explicit weight bias was found •Explicit weight bias was higher among students who were white, masters (vs. doctoral) students, and who identified as overweight
Darling & Atav (2019) (53). Attitudes Toward Obese People: A Comparative Study of Nursing, Education, and Social Work Students	United States	To assess the attitudes of graduate and understand students toward obese population, and compare the attitudes of nursing students to those in other professional fields	Observational	N/A	Undergraduate and graduate nursing students and graduate education and social work students at a northeastern university	440 (56 social work students)	• **Explicit Weight Bias** (Attitudes Toward Obese Persons Scale, Beliefs about Obese Persons Scale)	•Social work students had significantly more positive attitudes toward obese people than nursing students, and significantly lower controllability beliefs than nursing and education students
Lee (2019) (54). Graduate Training in Body Image Complexity: Evolving Competence to Meet Emerging Research	United States, Canada	To explore students' potential biases and confidence in addressing body image in practice	Observational	N/A	Training directors: Current training director with minimum of 1 year in current program Doctoral students: Current student with minimum of 1 year in	21 training directors; 114 doctoral students	• **Explicit Weight Bias** (Modified Attitudes about Treating Obese Patients Scale) • Experiences of Body Image Training and Education	• Most students reported that their programs did not effectively encourage their self-reflection of personal size as a cultural identity (59%) or their exploration of their personal biases and assumptions of larger individuals (62%) • Students and training directors reported that other health providers in their field have stereotypes toward larger-bodied clients/patients (student endorsement 49%; director endorsement 65%) and that they have heard/witnessed other professionals make negative

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
					current program and minimum of 1 completed semester of clinical experience at the doctoral level in an APA- or CPA-accredited program			comments about larger-bodied clients/patients (student endorsement 42%; director endorsement 47%). Overall, students and training directors reported low explicit weight bias • Most participants (76%) noted that bodies are either discussed "rarely" or not discussed at all within their programs, and approximately half of student participants (49%) reported feeling incompetent working with body image in session
Christensen (2021) (55). Factors Related to Weight-Bias Among Counselors	United States	To examine factors that contribute to weight-bias among licensed counselors	Observational	N/A	Counselors who earned a master's degree in counseling	587	• **Explicit Weight Bias** (Fat Phobia Scale - Short Form)	• Explicit weight bias was positive associated with male identity, and inversely associated with weight bias education and multicultural competence
Brochu (2023) (56). Testing the Effectiveness of a Weight Bias Educational Intervention Among Clinical Psychology Trainees	United States	To test the efficacy of a weight bias seminar on reducing weight controllability beliefs, anti-fat attitudes, and attitudes toward fat clients	Experimental*	N/A	Clinical psychology trainees (i.e., clinical psychology graduate students, predoctoral interns, and postdoctoral fellows)	56 baseline observations	• **Explicit Weight Bias** (Attitudes Toward Fat Clients Scale, Anti-fat Attitudes Questionnaire- Dislike and Willpower subscales)	• Evidence of moderate levels of weight-controllability beliefs, anti-fat dislike, and negative attitudes toward fat clients
Franko (2023) (57). The Correlates of Explicit Weight Bias among Mental Health Providers in Training	United States	Examine the prevalence and correlates of explicit weight bias among MHPs who are in training	Observational	N/A	Trainees currently enrolled in master's and doctoral programs in mental healthcare fields	287	• **Explicit Weight Bias** (Beliefs about Obese Persons Scale, Attitudes Toward Obese Persons Scale, Anti-fat Attitudes Questionnaire)	• Trainees reported greater negative attitudes and beliefs toward higher-weight people than a community sample of UK adults • White racial identity was associated with higher levels of explicit weight bias, while non-binary/other gender identity and more years in graduate school were associated with lower levels of explicit weight bias
van der Voorn et al. (2023) (58). Weight-Biased Attitudes about Pediatric Patients with Obesity in Dutch Healthcare	Netherlands	To study the prevalence and interdisciplinary differences of weight-biased attitudes of Dutch HCPs who treat	Observational	N/A	Dutch healthcare professionals who treat children/adolescents with obesity	555 (40 MHPs)	• **Explicit Weight Bias** (Attitudes toward treating patients with obesity, including negative attitudes towards patients w obesity; perceived frustrations in treating these patients; perceived confidence and preparedness to treat patients w obesity; perceived weight bias by colleagues)	• Compared to other disciplines (e.g., pediatricians, GPs), dieticians and mental health professionals reported some of the lowest negative weight-based attitudes and lowest frustrations with higher-weight patients • MHPs reported similar levels of perceived

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
Professionals from Seven Different Professions		children and adolescents with obesity, including MHPs (only 7% of sample, but separated out for subgroup analyses)						bias from colleagues in their field as other disciplines
Philip et al. (2024) (25). Comparisons of Explicit Weight Bias Across Common Clinical Specialties of US Resident Physicians	United States	To examine how explicit weight bias varies across individuals in common residency specialties	Observational	N/A	Second year residents from 49 allopathic medical schools	3267	• **Explicit Weight Bias** (Anti-Fat Dislike, Anti-Fat Blame, Attitudes Toward Obese Patients)	• Psychiatry residents were grouped with residency specialties (e.g., family medicine, pediatrics) reporting the lowest levels of explicit weight bias compared to other medical residency specialties (e.g., anesthesiology, orthopedic surgery)
Sohier et al. (2024) (59). Bias Related to Overweight and Obesity among French Psychiatrists: Results of a National Survey	France	To assess factors that may influence weight-related bias among psychiatrists, to explore the relevance of visual assessment of body mass index, and to determine how they this feature is integrated into their practice	Observational	N/A	Senior psychiatrists and residents in psychiatry	271	• **Explicit Weight Bias** (Beliefs about Obese Persons Scale, Fat Phobia Scale)	• Psychiatrists exhibited anti-fat bias, with higher levels found in residents (vs. senior physicians) • 76% of the psychiatrists reported that they inquired about their patient's weight more than never, while 66.4% reported that they do not systematically assess for the presence of overweight or obesity in their patients. 31.7% of the participants reported that it was somewhat challenging to inquire about their patients' weight •87.5% of respondents indicated a concern for prescription adjustments based on the patient's weight
Aza (2009) (60). What's the Skinny on Fat Women in Psychotherapy: Mental Health Clinicians' Countertransference with Women of Size	United States	The researcher sought to explore MHPs' experiences of countertransference with women of size	Qualitative	N/A	MHPs' from various mental health backgrounds in Georgia who have worked with at least one fat female client	12	• Interviews (45–60 minutes) conducted face-to-face	• Most participants indicated some form of weight bias toward higher-weight women • MHPs commonly reported affective responses such as devaluation, fear, shame, and confusion when working with higher-weight women, which could manifest as microaggressions • Many MHPs described questions about how to "help" their clients with their weight, citing health concerns
Hedden (2023) (61). Novice Counselors' Weight and Body	United States	To understand novice counselors' attitudes and beliefs	Mixed Methods	N/A	Novice practicing counselors who	24	•**Explicit Weight Bias** (Assortment of Q set statements) •Qualitative survey with open-text responses	• Participants were sorted into four factors: Body Positivists (n=7), Body Liberators (n=4), Body Choosers (n=5), and Body

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 1 Continued

Author, year, and title	Country	Relevant aims	Design	Manipulation details	Population	*N*	Key outcomes measured	Key findings
Mental Health Professional Samples								
Image Beliefs: An Exploratory Study		about weight and body image			graduated from CACREP-accredited clinical mental health programs within the last three years and are practicing in southern US			Changers (n=2) • Body Positivists aligned with opinions that promote body acceptance and celebrating all bodies, simultaneously endorsed beliefs that higher body weight is associated with worse health; Body Liberators aligned with a social positive of fat activism, taking a firm position against diets and diet culture, and supporting counselors' roles in providing fat-affirming care. None of these participants were trying to lose weight.; Body Choosers expressed opinions that assigned individual responsibility for higher weight, and framed obesity as a chronic disease that must be addressed by healthcare providers, overtly rejecting the idea of fat liberation and fat-affirming care. All participants on this factor were either trying to lose or maintain weight; Body Changers (n=2) endorsed beliefs that obesity is a chronic disease and that healthcare providers should address weight, but did not endorse stereotypes about fat people are assign morality to overeating. This group also highlighted racial differences in body standards between Black and White women. All participants on this factor were Black women trying to lose weight.

*Only observational data extracted.

10.3389/fpsyt.2025.1596625

TABLE 2 Characteristics of 14 studies examining provider weight bias in client samples.

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
Downes (2001) (64). What Do Fat Women Want? An Exploratory Investigation of the Influences of Psychotherapy on the Process by Which Fat Women Work Toward Acceptance of Their Size and Weight	United States	To present and describe fat women's experiences in therapy and current reflections upon those experiences	Qualitative	Fat women (BMI at least 34) at least 30 years of age who are engaged in the process of working toward accepting rather than changing her size and weight, and who have been or currently are clients in psychotherapy	10	• Two interviews (1.5–2 hours) conducted (interview setting not reported)	•Participants reported that they had difficulty raising weight-related struggles in therapy, expressing fear that they would lose the trust they had built with the therapist, or that they would be made to feel further shame about their bodies/ their attempts to accept their size •Although none of the participants went to therapy with weight loss as a goal, some participants reported that their therapists suggested that they lose weight. Those who experienced a therapist's suggestion that they lose weight– or the suggestion they were "in denial" if they spoke in terms of accepting their bodies– reported that these suggestions adversely impacted the therapeutic relationship •Participants uniformly expressed a preference for a therapist who is aware of how genetics influence body size, understand the about issues facing fat women, and is comfortable with their body
Ciepcielinski (2016) (65). Client Perceptions of Weight Stigma among Eating Disorder Professionals	United States	To explore client perceptions of weight stigma among eating disorder professionals and assess clients' perception of its impact on treatment and quality of care	Qualitative	Individuals who perceived weight stigma among eating disorder professionals who they either received or were currently receiving eating disorder treatment for BED or related symptoms	10	• 1–2 interviews (45–50 minutes) conducted via phone or videoconference	•Participants perceived that the needs of clients with binge eating disorder were less highly prioritized compared to those with anorexia or bulimia, and that ED professionals lacked adequate knowledge regarding weight stigma and binge eating •Experiences of weight stigma in ED treatment were harmful to the client (e.g., triggering emotional distress and ED symptoms), the patient-provider relationship, and the client's eating disorder recovery
Raves et al. (2016) (33). Bariatric Surgery Patients' Perceptions of Weight-Related Stigma in Healthcare Settings Impair Post-Surgery Dietary Adherence	United States	To explore provider and patient perspectives on adherence and stigma in healthcare settings	Mixed Methods*	Eligible participants had enrolled in a pre-surgical preparatory program prior to bariatric surgery or in the 24-month post-surgery	35	• Three interviews (45–120 minutes; initial, 4–8 months later, then 4–8 months after that) conducted (interview setting not reported) • Observations of participants conducted over multiple years in bariatric clinic practice from which they were recruited	•Participants described MHPs' rigidity around diets and food rules following surgery, and lack of understanding for participants' lived experiences and responsibilities that could make adherence difficult •Participants desired mental health

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 2 Continued

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
							treatment following their surgeries, but felt that MHPs were often ill-equipped for their case
Akoury et al. (2019) (27). Fat Women's Experiences in Therapy: "You Can't See Beyond … Unless I Share It with You	United States	To examine patient accounts of weight-based stigma and discrimination in therapy and their advice for therapists who work with fat women	Qualitative	Women with BMI in the "obese" range who had at least one therapy session within the last 6 months	15	• Semi-structured, face-to-face interviews (45–60 minutes)	•Participants reported that providers made assumptions about their mental health based on their body size, and appeared less interested in and engaged with them based on their size •Negative feelings associated with weight made participants less forthcoming, more evasive, and more avoidant in session or of sessions (e.g., missed sessions due to weight-related concerns) Participants reported instances of furniture and spaces in the therapy office that were not size-inclusive •Participants advised therapists to recognize fat women as a whole person, and to allow the client to bring in their concerns about weight
Abel (2020) (66). "Let's Talk About Your Weight": How Fatphobia Manifests in Therapy	Canada	To explore the experiences of people who have discussed their weight and body size in therapy	Qualitative	Participants either had been or were currently in therapy, and were members of Facebook Groups: Fat Awesome and Queer (FAQ), Fat Babes Society, Fat Friends, Fat Activists, Fat Fitness and Well-Being, and Curvy Palz	16	• Semi-structured, face-to-face narrative interviews (1.5–2 hours)	•Participants reported that their therapists believed or insisted that their weight was central to their psychological challenges, while ignoring the impact of other key factors •Participants described therapists' expressions of overt and implicit weight bias •Participants avoided body-related discussions, believing that therapists lacked the skills to explore fatphobia in ways that would benefit them and fearing their judgment •Participants reported experiences with therapy spaces that were not set up to accommodate all body sizes, including tight spaces and furniture that was too small or not sturdy •Participants reported that their therapists' disclosure of their own weight-related struggles were inappropriate, uncomfortable, and detrimental to the

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 2 Continued

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
							participant's therapeutic progress •Participants recommended that therapists: navigate conversations around size by challenging fatphobia and avoiding linking mental health with body size; become educated on anti-fatness as a form of oppression; allow the client to first raise weight-related topics; include neutral body-related intake questions or body positive signifiers in the office; and avoid making diet and exercise recommendations/bringing up weight as a problem
Moore (2022) (67). Exploring Higher Weight Women's Experiences of Provider Weight Stigma	United States	To explore the phenomena of weight stigma among higher weight women in mental health treatment who also engage in restrictive eating behaviors	Qualitative	Adult women who wear a pant/dress size 14 or above, who struggled with emotional and behavioral restrictive eating behaviors, and who have sought mental health treatment in the past 5 years. Participants who were formally diagnosed with binge eating disorder were excluded	8	• Semi-structured interviews (60–90 minutes) conducted via videoconference	•Participants described experiences of weight-based microaggressions, including providers suggesting or pushing dietary restriction/weight loss •Participants experienced MHPs pathologizing fatness and suggesting personality responsibility for their body size •Participants experienced harm to their self-image and relationship with self and body as a result of provider bias, damaging their journey to body acceptance •Provider bias harmed the therapeutic relationship, making it feel unsafe, and increased reluctance and fear of seeking future help
Goehner (2023) (68). Finding Body Appreciation Through the Weight-Neutral Framework	United States	To understand how weight-neutral treatments promote body appreciation among higher-weight women	Qualitative	Weight neutral sample: women between 25–45 years old who wear a pant size of 16 or higher, and who had at least six sessions with a weight-neutral provider. Weight-focused sample: Women who underwent bariatric surgery.	9 (6 in weight-neutral group, 3 in weight-focused group)	• Interviews (40–90 minutes) conducted via videoconference	•Participants reported that MHPs did not adequately address body image or lacked knowledge about weight-neutral approaches or people in larger bodies generally •Participants described weight bias statements or assumptions by MHPs that made them feel shame and anxiety about their health care •Some participants in the weight-focused group reported that their psychological treatment following bariatric surgery was

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 2 Continued

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
							not holistic, either ignoring important details about the participant's food intake (e.g., that the participant was not eating enough) or focusing too much on food-related teaching
Harrop et al. (2023) (28). "You Don't Look Anorexic": Atypical Anorexia Patient Experiences of Weight Stigma in Medical Care	United States	To investigate the lived experiences of individuals with atypical anorexia nervosa	Qualitative	Adult women and non-binary persons assigned female at birth who experienced atypical anorexia nervosa.	38	• Semi-structured interviews (1.5–4 hours) conducted (interview setting not reported)	•Participants faced weight stigma in higher levels of ED care (i.e., intensive outpatient, partial hospitalization, and residential treatment) including differential treatment on the basis of size, witnessing providers ignore fatphobic comments made by patients, and receiving encouragement from MHPs to continue disorder behaviors while they were in recovery (e.g., recommending diets and weight loss) •Participants reported that providers minimized their EDs and cited examples of misdiagnoses and missed symptoms, often due to assumptions that participants were "overeating" or binge eating due to their size •Participants believed that chronic undertreatment lengthened their illness trajectories
Gilbert (2024) (34). Atypical Anorexia Nervosa: Examining the Impact of Weight Stigma on Weight Bias Internalization and Eating Disorder Symptoms	United States	To understand how weight stigmatizing experiences influenced current eating disorder symptoms and experiences of eating disorder treatment for adults with atypical anorexia nervosa	Mixed Methods*	Adults who have received treatment for atypical AN and encountered weight stigma.	30	• Qualitative survey	•90% of participants identified weight stigmatizing encounters with at least one of their ED providers, including providers making inaccurate size-based assumptions that led to patient neglect; dismissing their health concerns; failing to conduct appropriate assessments and diagnose; failing to provide appropriate treatment; describing high body weight as a negative quality; prescribing more restrictive meal plans; and praising weight loss •All but one participant reported these encounters negatively impacted their treatment and recovery, including reduced trust in providers, heightened ED symptoms, and future mistrust in ED

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 2 Continued

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
							healthcare and ambivalence/hopelessness about recovery
Sonnenblick et al. (2024) (69). Behavioral Weight Loss Treatment for Adults with Binge-Eating Disorder: A Qualitative Analysis of Patients' Perspectives and Experiences	United States	To inform clinical practice for adults with BED and overweight/obesity by collecting and synthesizing patients' perspectives on whether, how, and for whom BWL should be offered	Qualitative	Briefly: Adults with BED with a BMI between 27 and 45	45	• Client Eating Disorder Pathology (Eating Disorder Examination Questionnaire) • Qualitative interviews (duration not reported) conducted via videoconference	•All participants reported that they did not feel stigmatized for their weight by the behavioral weight loss treatment they received or by their therapists •Many participants believed that behavioral weigh loss was possible without stigma, especially if the treatment had a non-judgmental group environment, focused on health aspects of weight loss, and is voluntary •Some participants thought that behavioral weight loss is inherently stigmatizing, but that the societal emphasis on thinness (rather than the treatment itself) is at fault
Talbert (2024) (70). An Examination of the Lived Experiences of those who have Received or Attempted to Receive Treatment and/or Recovery from Atypical Anorexia in a Higher Weight Body	Not specified, but researchers are US-based	To explore the lived experiences of individuals who received or attempted to receive treatment and/or recovery from atypical anorexia nervosa at a higher body weight	Qualitative	Assigned female at birth, 18+, BMI 25+, received or attempted to receive treatment for AAN	8	• Semi-structured interviews (60 minutes) conducted via videoconference	•Participants unanimously described treatment as harmful and/or inadequate, with a detrimental focus on weight restoration, restrictive meal plans, and even weight loss •Most participants reported experiences of their BMI/size impacting their treatment quality and progress, including feeling doubted in their ED, receiving differential treatment from thinner counterparts, and being prescribed medication to lose weight •Many participants described a fear of seeking treatment for eating disorders due to past experiences of weight discrimination or bias during treatment and from medical providers, interfering with their recovery •Participants reported that their care was harmed by providers' lack of education on atypical anorexia
Puhl & Brownell (2006) (29). Confronting and Coping with Weight	United States	To examine experiences of weight stigmatization, sources of stigma, coping	Observational	Adults with membership in a national non-profit, non-commercial weight loss support group	Sample 1 = 2449 (female	• **Client Experiences or Sources of Weight Stigma** (Interpersonal sources of	•In the first sample, 21% of participants reported experiences of weight stigma from MHPs on at least one occasion, and

(Continued)

10.3389/fpsyt.2025.1596625

TABLE 2 Continued

Author and year	Country	Relevant aims	Design	Population	*N*	Key outcomes measured	Key findings
Patient Samples							
Stigma: An Investigation of Overweight and Obese Adults		strategies, psychological functioning, and eating behaviors in higher-weight adults		organization with active chapters across the country	only); Sample 2 = 222 (matched sample)	stigma) • Coping Responses to Weight Stigma	13% reported multiple occasions •In the second sample, 13% of women and 12% of men reported experiences of stigma from MHPs more than once and multiple times
Puhl et al. (2021) (63). International Comparisons of Weight Stigma: Addressing a Void in the Field	Australia, Canada, France, Germany, United Kingdom, United States	To assess experiences and interpersonal sources of weight stigma in adults	Observational	Members of weight watchers international in Australia, Canada, France, Germany, the UK, and the US	13,996	• **Client Experiences or Sources of Weight Stigma** (History of experienced weight stigma, Interpersonal sources of weight stigma, Weight Stigma Time of Life Questionnaire)	•Mental health professionals were identified as source of stigma by 11.8% of participants
Chen & Gonzales (2022) (62). Understanding Weight Stigma in Eating Disorder Treatment: Development and Initial Validation of a Treatment-Based Stigma Scale	Not specified, but researchers are US-based	To psychometrically validate the Scale for Treatment-based Experiences of Weight Stigma (STEWS) for patient-centered assessment of weight-stigmatizing experiences in eating disorder treatment	Observational	Former eating disorder patients with a body mass index greater than 25	142	• **Client Experiences or Sources of Weight Stigma** (Scale of Treatment-Based Experiences of Weight Stigma) • **Client Eating Disorder Pathology** (Eating Disorder Examination Questionnaire- Short)	•Treatment-based experiences of weight stigma (measured by STEWS) was significantly and positively associated with eating disorder symptomatology •The STEWS score was found to contribute to variance in eating disorder symptomatology above and beyond the variance explained by BMI, weight stigma in everyday life, and weight bias •46.4% of the sample agreed that their providers recommended dieting even when they did not come in to discuss weight loss, and 40.0% agreed that their providers supported disordered eating behaviors or attitudes in service of weight loss •28.2% those who struggled with restrictive behavior agreed that their providers overlooked or disregarded treating these symptoms, and 26.0% of those who struggled with compensatory or purging behaviors agreed that their providers overlooked these symptoms

*Only qualitative data extracted.

10.3389/fpsyt.2025.1596625

Six of nine studies (36–38, 40–42) assessed MHP's provisional diagnosis and/or treatment goals for the client. Four studies found differences by clients' described body size, including higher-weight clients being more likely to be diagnosed with an adjustment disorder when lower-weight clients were more likely to be diagnosed with relational problems (38); an eating disorder when average-weight clients were more likely to be diagnosed with an adjustment disorder (37); and moderate or severe MDD (42). Further, respondents were more likely to indicate "increasing sexual satisfaction" and weight loss as treatment goals for clients described as "fat" or "obese" (37, 41). Two studies did not find differences by client body size (36, 40).

Five of nine studies (35, 36, 38, 40, 41) measured symptom attributions that MHPs made about the described client. Four of the studies demonstrated that higher-weight clients were rated more negatively than lower-weight clients (38), such as being rated higher on symptoms including agitation, emotional behavior, impaired judgment, and inadequate hygiene (35), being rated less attractive and more embarrassed (36), or being described as suffering from a personality disorder or possible emotional, physical, and/or sexual abuse (40).

Four of nine studies (35, 40, 41, 45) measured the MHP's interest in working with the client. Across studies, no significant differences were found based on client body size. One observational study also found no differences in provider preference or interest in working with clients based on body size (47). One study found significant differences on a subscale measuring the MHP's belief in the client's ability to achieve their therapy goals, with lower-weight clients being ranked more favorably than higher-weight clients (45). Finally, seven of nine (35–37, 39–41, 45) studies measured the predicted prognosis for the client. Six studies found no difference by body size (35, 36, 39–41, 45). One study found that the higher-weight client was expected to have a longer course of treatment (37).

3.2.1.1.1 Interactions with provider attributes

Four studies examined interaction effects by MHP attributes (35, 37, 38, 41). Female providers demonstrated a higher degree of weight bias than male providers (35, 37, 38) in three of four studies. Age also emerged as a significant moderator, with younger MHPs tending to demonstrate more biased responses (35, 37) in two studies, with the opposite pattern found in one study (41).

3.2.1.2 Impact of body size on perceptions of eating pathology

All three studies (43, 44, 46) described a client with symptoms consistent with a restrictive eating disorder. Each of the studies examined how MHPs assigned diagnoses and symptoms to the client based on the client's body size. The studies consistently reflected that MHPs were less likely to consider restrictive eating disorder pathology for higher-weight clients. For example, one study found that clients described as "overweight" were less likely to receive a diagnosis of anorexia nervosa or atypical anorexia nervosa than those described as "underweight," (43), and another found that MHPs were more likely to label the lower-weight client with an eating disorder or possible eating disorder (46). Silbiger's (2024) study also demonstrated that 53.2% of MHPs completely missed the presence of eating disorder symptoms in the client. Across studies, providers assigned higher symptoms of anorexia to the lower-weight client compared to the higher-weight client conditions (43, 44, 46).

All three studies assessed providers' judgments surrounding treatment planning and/or referrals. Across studies, higher-weight clients were perceived as needing less care, with providers recommending fewer treatment sessions (43), being less likely to schedule a medical follow-up (44, 46), and being less likely to be recommended specialized eating disorder treatment. Relatedly, McAshan's (2018) study found that the lower-weight client's eating disorder was perceived as significantly more severe than the higher-weight client's (44).

3.2.2 Observational studies

Sixteen studies used observational methodologies to examine the presence of provider weight bias (25, 26, 42, 47–59), 13 of which measured explicit weight bias in MHPs (25, 26, 42, 48–54, 56–59). Two of the aforementioned studies also examined MHPs' feelings of competence for working with larger-bodied clients (49, 54). One observational study (47) examined MHPs' ranked preference for working with clients based on body size; these findings were described above given the stronger conceptual fit.

3.2.2.1 Prevalence of explicit weight bias

Evidence of weight-stigmatizing beliefs and attitudes in MHPs emerged across the 13 studies (25, 26, 42, 48–54, 56–59) measuring anti-fat attitudes. Multiple studies found evidence of MHPs endorsing negative stereotypes about higher-weight people (42, 49, 50, 52, 56, 59), and some found evidence of MHPs' endorsement of negative attitudes toward higher-weight people or clients (56, 57, 59), though providers endorsed negative attitudes at low rates relative to their endorsement of negative stereotypes (51, 54, 58). In studies that compared MHPs to other medical professionals (e.g., pediatricians, GPs, nursing students), MHPs consistently reported lower levels of weight bias (25, 53, 58). Interestingly, one study found that—despite lower self-reported weight bias—MHPs reported similar levels of perceived weight bias among colleagues as in other disciplines (58). Two other studies reflected similar patterns; although MHPs endorsed relatively low levels of weight bias in themselves, they indicated a high degree of weight bias exhibited among colleagues in their field (49, 54).

3.2.2.1.1 Demographic diLerences in weight bias

Nine of the 13 above studies (26, 48–50, 52, 55–57, 59) examined differences in provider bias by gender, age, weight and related experiences, race/ethnicity, and training or experience level. Of the five studies (52, 55–57, 59) that examined how gender influenced weight bias, four studies found no differences in anti-fat attitudes or beliefs between men and women (52, 56, 57, 59), but one study found that MHPs who identified as nonbinary had lower controllability beliefs than those who identified as men or women (57). One study found that being male was associated with higher levels of weight bias (55). Two studies examined the impact of age,

with one study finding that younger providers reported more tolerance for higher-weight clients (48), while another study found no differences by age (52). Three studies examined the role of racial and ethnic differences (26, 56, 57), with two studies finding that white MHPs held higher levels of weight bias than non-white MHPs (26, 57) and one study finding no differences by race (56).

Five studies examined the role of training and years of experience on provider biases, with consistent evidence that more years of experience was associated with less weight bias (26, 49, 50, 57, 59). Furthermore, one study reflected that receiving training on weight bias was negatively associated with weight bias (55). Five studies (48, 50, 52, 56, 57) examined the role of the MHPs' weight and weight-related experiences; three studies found that weight bias was not influenced by MHPs' BMI/perceived weight (52, 56, 57) or body concerns (57). In contrast, two studies found that weight bias was inversely related to higher BMI (48, 50), as well as a family history of "obesity", having more higher-weight friends, and having a higher percentage of clients in larger bodies (48). One study found that MHPs with higher eating disorder symptoms observed more weight bias among their peers and providers in healthcare settings (50). One study found that MHPs who were actively attempting to lose weight endorsed more negative attitudes about treating higher-weight clients (50).

3.2.2.2 MHP preparedness to work with higher-weight clients

Two studies (49, 54) examined MHPs' comfort working with higher-weight clients. In Lee et al.'s (2020) study that sampled clinical and counseling psychology doctoral students of APA-accredited programs, 58.2% of trainees indicated that they would feel comfortable broaching body image in a session, but 49.1% indicated that they would feel incompetent working with body image in a session. In contrast, a study sampling from eating disorder providers found that they largely felt confident (88%) and professionally prepared (84%) to provide quality care to higher-weight clients (49).

3.2.3 Qualitative and mixed-methods studies

Two studies that shed light on providers' weight bias utilized qualitative methods (60, 61). Hedden's (2024) study used a Q methodology to understand early counselors' attitudes and beliefs about weight and size, while Aza's (2009) study involved interviews with MHPs to understand their internal reactions to higher-weight clients. Both studies suggested that most providers feel compelled to help their higher-weight clients lose weight, citing concerns about health at higher body weights. Hedden's (2024) study also revealed that a subgroup of MHPs overtly rejected the notion of fat liberation and fat-affirming care, while another subgroup disagreed with the idea of providers not assisting with weight loss and simply holding space for clients (61).

Aza's (2009) study—focused on MHPs reactions to female clients in larger bodies—found that most providers endorsed weight bias toward higher-weight women, and experienced intense affective responses in their presence, including devaluation, fear, shame, and confusion. Some providers in the study described microaggressions they committed toward higher-weight clients, including providing higher-weight female clients with unsolicited weight loss advice (microinsult) and subtly dismissing a client's feelings when she described a recent experience of weight discrimination (microinvalidation) (60).

Both studies also found evidence of a small subgroup of providers with weight-inclusive mindsets and practices. In Hedden's (2024) study, the authors found that a small subgroup of providers (4 of 24) took a firm position in opposition to diets and diet culture and believed in fat-affirming care. In Aza's (2009) study, 3 of 12 providers used size-inclusive language and described the value of normalizing and celebrating diverse body shapes and sizes.

3.3 Findings from client samples

3.3.1 Observational studies

Three observational studies examined clients' reports of weight stigma from MHPs (29, 62, 63). Puhl and Brownell's (2006) study included two samples. In the larger female-only sample (N=2,440), 21% of participants reported that they had experienced weight stigma from MHPs on at least one occasion, and 13% reported that they had multiple experiences of weight stigma from MHPs. In the second, mixed-gender sample where men and women were matched for age and BMI (N=222), 13% of women and 12% of men reported weight stigma from mental health providers on multiple occasions (29). In a subsequent study using an international sample (i.e., Australia, Canada, France, Germany, United Kingdom, United States) of adults enrolled in Weight Watchers International, 11.8% of participants reported experiencing weight stigma from a MHP at least once. No national differences were found (63).

The third study sampled participants with a history of an eating disorder and with a body mass index greater than 25 (62). Nearly half of the sample (46.4%) endorsed that their MHPs recommended dieting even when they did not come in to discuss weight loss, and 40% of participants agreed that their providers were in support of disordered eating behaviors and attitudes in service of weight loss. Of those who struggled with restrictive behaviors and compensatory/purging behaviors, 28.2% and 26.0%, respectively, reported that their providers overlooked or disregarded those symptoms (68).

3.3.2 Qualitative Studies

A total of 11 qualitative studies (27, 28, 33, 34, 64–70) examined experiences of weight stigma in mental health settings from the client perspective. Of the 11, six were from participants in general mental health settings (27, 33, 64, 66–68), and five (28, 34, 65, 69,

70) were from participants in eating disorder settings. Due to the unique manifestations of weight bias in eating disorder settings, these subgroups are reported separately.

3.3.2.1 Common manifestations and impacts of weight stigma in general outpatient treatment settings

Provider weight bias was described by participants as most commonly manifesting through MHPs' subtle and overt communication around exercise, body size, and weight loss (66, 67), suggestions of personal responsibility for body size (67), nonverbal cues (e.g., appearing less interested and engaged with them; 27), and MHPs' overemphasis on clients' weight, leading them to mis-conceptualize clients' challenges (27, 66–68). Four studies found that participants reported that providers made unsolicited weight loss recommendations (27, 64, 66, 67) and further doubled down on their weight loss agenda despite participants' desire to work on accepting their bodies (66, 67). Three studies found that MHPs engaged in self-disclosure around their weight and weight-related behaviors (27, 66, 67), with one study demonstrating that almost half of the participants reported their providers self-disclosing along these lines (27). Participants from two studies reported that these self-disclosures were inappropriate and detrimental (66), making the space feel less safe for clients healing from disordered eating (67). In the two identified studies involving individuals that underwent bariatric surgery, participants reported MHPs' over-focus on food-related teaching and rules that were not aligned with clients' holistic needs for therapy (33, 68).

Three qualitative studies (64, 65, 68) documented the impact of perceived provider weight bias on the client and/or the therapeutic relationship. Each study demonstrated serious consequences of experiences of mental health professionals' weight bias. Participants described how provider weight bias undermined the therapeutic relationship, making the therapeutic relationship feel unsafe, reducing trust, and increasing participants' reluctance to seek help from future MHPs (64, 67). Additionally, provider weight bias stunted clients' therapeutic progress, with participants describing how provider bias damaged their self-image and relationships with themselves, heightened shame and anxiety, and compelled them to question their journey of self- and body-acceptance (67, 68). In turn, participants reported feeling more disconnected from their bodies and poorer relationships with food and exercise (67).

Four studies (27, 64, 69, 70) uncovered themes related to clients' willingness to discuss their weight with their MHPs. All four studies found that participants were reluctant to bring up their weight in therapy and/or that their weight (and associated shame or self-consciousness) made them more evasive and avoidant in therapy sessions (27, 64, 66, 68). Two studies found that participants reported explicitly avoiding or fearing having discussions about their bodies with their provider for fear of judgment or a poor reaction from the provider that could undermine trust and safety (64, 66). One study found that participants believed that MHPs lacked the necessary skills to help them in this realm (66).

Four studies demonstrated participants' sentiments that MHPs lack sufficient training in body image and weight-neutral approaches (33, 66–68). In turn, participants felt that their body image struggles were not adequately addressed, or that they were made to feel that they were at fault for not meeting beauty standards, as opposed to being encouraged to reflect on body-based systems of oppression. In two studies, participants described frustration about their need to educate their providers on weight stigma (66, 67). Three studies found that some participants preferred working with MHPs who were also fat, as this shared identity could promote a sense of trust through joint lived experiences and understanding (64, 66, 68).

Four studies (27, 65, 67, 70) inquired into participants' recommendations for MHPs to better service higher-weight clients in therapy. Three studies included a theme that highlighted participants' wish for providers to be aligned with fat-positive or Health at Every Size® principles, including rejecting mainstream narratives around body size and taking a holistic, person-centered approach that recognizes the person as more than their weight (27, 64, 66). Relatedly, participants in all studies described a need for providers to become educated on weight-related matters, including the common issues faced by higher-weight people (27, 64, 65), the biological determinants of size (64), and anti-fatness as a form of oppression (66).

In terms of concrete ideas for creating more inclusive practices, participants suggested providers include body-related questions in their intakes (66)—but ask about eating in the same way that they might ask a smaller-bodied client (64)—, include body-positive and inclusive signifiers in their office space (64, 66), and ensure that their office furniture accommodates larger bodies (64, 67). Participants in one study strongly recommended against MHPs making diet and exercise recommendations (66), while some participants in another study expressed a desire for therapists to help them with their weight-loss goals (27). Generally, participants agreed that MHPs should allow clients to bring up the topic of their weight and that they should not bring up weight as a problem (27, 66). Participants in three studies emphasized the importance of providers not making assumptions about a client based on their body size–especially assuming causal links between their size and their mental health issues (27, 64, 66).

3.3.2.2 Common manifestations and impacts of weight stigma in eating disorder treatment settings

Of the five studies (28, 34, 65, 69, 70) examining client experiences of weight stigma in eating disorder treatment, three studies utilized samples who had sought or received treatment for atypical anorexia nervosa (28, 34, 70), and two studies utilized samples who had received treatment for binge eating disorder (65, 69).

The three studies focused on individuals in larger bodies with atypical anorexia found evidence of widespread encounters of provider weight bias in this setting (28, 34, 70), with 90% of participants in one study (N=30) reporting that they had encountered weight stigma from an eating disorder provider (34).

While one study documented participants' direct observation of providers describing high body weight as a negative quality (34), another study found that treatment providers did not address fatphobic comments made by other clients (28). In contrast, one study among recipients of a behavioral weight loss treatment for binge eating disorder found that participants largely denied feeling stigmatized by the behavioral weight loss treatment that they received, or by their providers (69).

One of the most common manifestations in eating disorder settings—emerging across four of the five studies—was the experience of differential treatment from treatment providers because of their size (28, 34, 70) or diagnosis (e.g., binge eating disorder vs. anorexia nervosa/bulimia nervosa) (65). Participants described a sense that their illnesses were taken less seriously, and their needs were prioritized below, their peers in smaller bodies (28, 34, 65, 70). For example, participants in one study reported that their providers viewed high weight as indicating that one is not "actually sick" with an eating disorder (34). This experience was apparent even in higher levels of eating disorder care (i.e., intensive outpatient, partial hospitalization, and residential treatment), where participants reported that providers were less likely to believe the symptoms of higher-weight clients compared to lower-weight clients (28, 34). The experiences of dismissal and disbelief were even more pronounced for individuals with multiple oppressed identities (28).

Providers' weight bias reduced the quality of care provided to higher-weight clients, skewing their clinical judgments and the treatment offered to them. Two studies focusing on participants with a history of restrictive eating disorders found that MHPs misdiagnosed their illness or missed restrictive symptoms, instead assuming that the participant was binge eating or "overeating" due to their body size (28, 34). Both studies found evidence of provider negligence, by which they failed to conduct thorough assessments for accurate diagnosis and appropriate treatment (28, 34). These biased assumptions led to suboptimal, and even harmful, treatment decisions. Despite sharing the same symptoms as their smaller-bodied peers, participants reported receiving different interventions and care recommendations (e.g., more restrictive meal plans), and not receiving the necessary care for their eating disorder (e.g., group therapy for food restriction) (28, 34, 70). Participants commonly reported providers *actively encouraging eating disorder behaviors* while they were in recovery from a restrictive eating disorder, including recommending or praising weight loss and restrictive eating (28, 34, 70).

Participants from four of the five studies (28, 34, 65, 70) uniformly reported negative impacts of MHP weight bias on the therapeutic relationship and on the participant's recovery. Provider weight bias diminished participants' trust in treatment providers, harming relationships within and outside of the treatment team-including undermining general trust in eating disorder healthcare (34, 65, 70). These experiences interfered with client recovery in several ways, including heightened self-doubt, negative self-stigma, internal anguish (65), and greater difficulty developing a healthy relationship with food, eating, and their bodies and accepting their bodies' dietary needs (34). Ultimately, provider stigma resulted in increased eating disorder symptoms and restriction (34, 65), which participants reported using as a means of self-protection from provider weight stigma (34). Participants in three studies described how provider stigma lengthened their illness trajectories and/or posed additional barriers to recovery, such as fear of seeking future treatment (28, 34, 70).

4 Discussion

Weight stigma is a known risk factor for reduced mental health and wellbeing of higher-weight individuals. The extent to which weight bias may appear in the therapeutic context—potentially posing further harm to client and therapeutic processes—was previously not well-defined. Synthesizing insights on this topic from both client and MHP perspectives, qualitative and quantitative investigations, and published journal articles and dissertations, this scoping review sought to comprehensively map this phenomenon and to answer the following questions: (1) To what extent do MHPs hold bias against higher-weight people? (2) How does provider weight bias influence clinical judgments and decisions? (3) What are the common manifestations of provider weight bias from the client perspective? And (4) What is the impact of perceived provider bias on client experiences? The findings of this scoping review highlight the exacerbating process by which higher-weight individuals may face further psychological harm when seeking mental health services due to provider weight bias.

We found conclusive evidence that MHPs hold weight bias toward larger-bodied individuals and clients, converging across observational, qualitative, experimental, and mixed methodologies. The findings suggested that MHPs may be reticent to disclose their negative attitudes toward higher-weight individuals, but they openly endorse stereotypical beliefs about higher-weight people (e.g., that they are insecure, unattractive, or have poor self-control) (42, 48, 54, 56, 57), and report high perceptions of bias among their professional colleagues (49, 54). MHPs reported having strong affective reactions to women of size, described examples of weight-based microaggressions toward clients, and demonstrated weight-centric beliefs (e.g., that weight is under one's control) (60, 61).

Numerous experimental studies sought to examine how weight bias influences MHPs' clinical judgments and decisions. Though findings varied across studies, general trends indicated that, compared to smaller-bodied clients with otherwise identical presentation, providers perceived higher-weight clients in general mental health settings as having greater dysfunction, more severe diagnoses, and more psychological challenges and symptoms (35–39). Most studies did not find differences in MHPs' self-reported interest in working with the client or the clients' predicted prognosis by clients' body size. When examining this question in the context of eating disorders, MHPs consistently perceived larger-bodied clients' restrictive symptomatology as less severe, less diagnosable, and in need of less medical attention compared to smaller-bodied clients (43, 44, 46).

Qualitative studies from client samples illustrate the manifestation and consistently negative impact of perceived MHP weight bias and weight-related discussions on client experiences and outcomes. The results suggested that many clients suffered

from their MHPs' reinforcement of the thin ideal, by which MHPs encouraged clients to lose weight without their asking, self-disclosed about their personal pursuits of thinness via diets and exercise, and made clients feel as though their bodies were "wrong" and not worthy of acceptance (64, 67). Clients described providers dismissing their key mental health concerns to focus instead on their weight, with some MHPs insisting that their weight was central to their psychological challenges or that their body was to blame for their mental health concerns or the trauma they had suffered (27, 66, 67). Other clients described experiences of providers' equally hurtful subtle weight bias, by which they observed MHPs appearing less interested and engaged with higher-weight clients within a group therapy context (27). Experiences of MHP weight stigma induced shame, anxiety, and self-doubt, increased internalized weight stigma, reduced body trust among clients, and caused clients to question their journey of body/fat acceptance (67, 68). Furthermore, experiences of provider stigma made the therapeutic relationship feel unsafe, undermining trust in the provider and the mental health field at large (64, 67), and making it more difficult to bring up their body-related challenges in therapy.

The negative impacts of provider bias were equally, if not more, destructive in eating disorder treatment settings. As in general outpatient settings, clients reported that providers encouraged them to lose weight and engage in restrictive eating behaviors while they were actively in recovery from restrictive eating disorders (28, 34, 62, 70). Presumably based on assumptions that higher-weight clients must "overeat," provider bias commonly led providers to overlook or doubt restrictive symptoms in higher-weight clients, fail to conduct appropriate assessments, and misdiagnose clients (28, 34, 70). In turn, clients reported that they did not receive the level or type of care that they needed. Participants consistently reported sentiments of differential treatment on the basis of body size, in which they observed their lower-weight peers being prioritized and taken more seriously (28, 34, 65). Experiences of weight stigma in eating disorder treatment settings resulted in a breach of trust between the client and their treatment providers, diminished quality of care, heightened eating disorder symptoms and psychological distress, and a lasting negative impact on eating disorder recovery by undermining clients' trust in eating disorder healthcare generally (28, 34, 70).

The results from the scoping review also illuminated how weight bias manifests on structural levels within the therapeutic context and confers harm on the client. One example of this structural stigma emerged in clients' reports of the therapeutic space being unaccommodating to bodies on the higher end of the weight spectrum, including tight spaces and small or insubstantial furniture (27, 66). When therapeutic settings are not set up to comfortably service all clients, it can signal to clients that they are unwelcome and pose an immediate barrier to the therapeutic work. Another example includes findings from MHP samples that reveal a lack of graduate training and sense of discomfort supporting clients with body image issues. One study demonstrated that over 75% of participants reported that bodies (e.g., weight, size, ability state) are "rarely" or "not at all" discussed within their programs (54). The lack of training on weight- and size-related issues is likely reflective of an implicit, structural-level bias, impacting the content that graduate programs deem important or unimportant. Studies from the client perspective make clear how the omission of training harms clients' experiences in therapy; providers' lack of knowledge and education on pertinent topics (e.g., body-based oppression, lived experiences of higher weight people) and therapeutic techniques (e.g., weight-neutral approaches) can force clients into the educator role with their therapists (66–68). This need to educate was described as frustrating and burdensome by clients (67), and often led to clients evading discussions of weight with their MHP (27, 64, 66, 68).

Through not a primary aim, several manuscripts in this scoping review sought feedback from clients about how MHPs could cultivate more inclusive and effective practices for higher-weight individuals. Participants consistently described a need for providers to become more knowledgeable about lived experiences of higher-weight individuals, including anti-fatness as form of oppression, the politics of fatness, the biological determinants of size, and how size impacts one's experience (27, 64, 66). Frequently, participants described a desire to work with fat-affirming providers who were aligned with weight-inclusive approaches, rejecting the mainstream narratives around body size and pressures for thinness (64, 66). Participants emphasized the need for providers to avoid making assumptions pertaining to how their body size relates to their history or presenting problems (27, 64, 66) and to focus on the client as a whole person rather than assuming that weight is a central issue (27). To create an environment in which clients feel more safe to talk about their experiences in their bodies, some clients recommended that therapists include size inclusive signifiers in their office, inquire about eating behaviors in the same way they might ask a smaller-bodied person, provide size-friendly spaces and seating, and avoid bringing up weight as a problem, recommending diets or exercise, or disclosing about their personal pursuit of weight loss (64, 66, 67).

5 Limitations and future directions

The findings of this scoping review should be considered within the context of their limitations. First, we acknowledge methodological limitations inherent in the study design and execution. While our use of search tools was deliberate and broad, it is possible that some manuscripts were not indexed by any of the search tools used, and therefore not included in this review. Additionally, the use of only published literature may skew our findings toward more significant results (i.e., reflecting publication bias (71)), though our inclusion of theses and dissertations attenuates this concern.

Another methodological limitation was the omission of search terms related to psychiatrists and psychiatric behaviors. Despite not including such terms, several studies including psychiatrist samples were returned in our search and included in this review. Still, this omission limits our ability to draw conclusions about this subgroup, and particularly the impact of clients' weight status on physicians' prescription decisions. A review of available experimental research

in this population would provide important insights into this clinical decision-making process that is highly susceptible to weight bias.

Some limitations of this review result from limitations of the available evidence. Compared to studies examining provider bias by sampling MHPs, far fewer studies examined provider weight bias and its impacts from the client perspective, and most of these studies used qualitative methodologies. The qualitative findings provided nuanced, in-depth insights into their experiences, but have some limitations to their generalizability due to the smaller sample sizes, and they do not allow us to quantify or draw causal conclusions regarding the impact of provider bias on client outcomes and treatment decisions. Additional observational studies are needed to quantify the effect of MHPs' perceived weight bias on the therapeutic relationship and client outcomes (e.g., psychological well-being, future mental healthcare utilization). Future research should also employ experimental methodology to examine the effect of provider weight bias on relevant client outcomes.

Additionally, our search returned few studies examining MHP bias in settings other than general outpatient and eating disorder treatment settings. The field's understanding of this issue will be advanced by expanding the examination of weight bias to encompass a broad range of clinical settings (e.g., intensive outpatient/partial hospitalization, inpatient) and modalities (e.g., individual therapy, group therapy, couples therapy) and clinical populations (e.g., mood, anxiety, serious mental illness).

Finally, given the focus of this scoping review, we did not examine how MHPs might transition to becoming more weight-inclusive practitioners. Very few interventions to our knowledge have examined the impacts of weight bias reduction interventions in mental health trainees (56, 72), and few qualitative studies have examined the personal and professional work of MHPs specializing in body image concerns (73, 74). Generally, such providers endorsed a weight-inclusive approach, acknowledging body diversity, understanding sizeism as a form of oppression, and rejecting mainstream diet culture and weight-centric beliefs about weight and health. These studies also called attention to the need to examine one's own relationship with their bodies to best serve their clients and for more formal training within graduate school and counseling organizations. Investigating and understanding the processes by which MHPs unlearn harmful weight-based beliefs and embody weight-inclusive, harm reduction practices represent an essential area of future research.

6 Conclusions

The results of this scoping review suggest that weight bias is a serious issue in mental health settings, in need of attention and remediation. While future research is needed, it is evident that MHPs hold stigmatizing views toward higher-weight clients and that their clinical judgments and decisions are impacted by this bias. Given the negative mental health impact of weight stigma, this is especially concerning; clients may encounter the same form of stigma from MHPs that originally contributed to the development or exacerbation of their mental health challenges. The impacts of provider bias—suggested by the findings of this review— are that clients feel less safe with their providers, experience heightened mental health symptoms, are reluctant to share their true thoughts and feelings about their bodies, and are discouraged from seeking future treatment. Increased efforts in education, training, and research are needed to promote size-inclusive beliefs and practices in mental health trainees and professionals, such that therapy can be a safe and affirming space for people of all sizes.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material. Further inquiries can be directed to the corresponding author/s.

Author contributions

SaP: Writing – original draft, Investigation, Writing – review & editing, Visualization, Conceptualization, Project administration. ES: Visualization, Writing – review & editing, Conceptualization, Investigation. JS: Writing – review & editing, Investigation. SF: Investigation, Writing – review & editing. SeP: Investigation, Supervision, Conceptualization, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

References

1. Daníelsdóttir S, O'Brien KS, Ciao A. Anti-fat prejudice reduction: A review of published studies. *Obes Facts*. (2010) 3:47–58. doi: 10.1159/000277067

2. Puhl RM, Himmelstein MS, Pearl RL. Weight stigma as a psychosocial contributor to obesity. *Am Psychol*. (2020) 75:274–89. doi: 10.1037/amp0000538

3. Vartanian LR, Pinkus RT, Smyth JM. The phenomenology of weight stigma in everyday life. *J Contextual Behav Science*. (2014) 3:196–202. doi: 10.1016/j.jcbs.2014.01.003

4. Wu YK, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *J Adv Nurs*. (2018) 74:1030–42. doi: 10.1111/jan.2018.74.issue-5

5. Brochu PM. Weight stigma as a risk factor for suicidality. *Int J Obes*. (2020) 44:1979–80. doi: 10.1038/s41366-020-0632-5

6. Papadopoulos S, Brennan L. Correlates of weight stigma in adults with overweight and obesity: A systematic literature review: Correlates of Stigma in Adults with Overweight and Obesity. *Obesity*. (2015) 23:1743–60. doi: 10.1002/oby.21187

7. Alberga AS, Edache IY, Forhan M, Russell-Mayhew S. Weight bias and health care utilization: a scoping review. *Prim Health Care Res Dev*. (2019) 20:e116. doi: 10.1017/S1463423619000227

8. Sutin AR, Stephan Y, Terracciano A. Weight discrimination and risk of mortality. *Psychol Sci*. (2015) 26:1803–11. doi: 10.1177/0956797615601103

9. Tomiyama AJ, Epel ES, McClatchey TM, Poelke G, Kemeny ME, McCoy SK, et al. Associations of weight stigma with cortisol and oxidative stress independent of adiposity. *Health Psychol*. (2014) 33:862–7. doi: 10.1037/hea0000107

10. Cullin JM. Biological normalcy and body fat: Obesity prevalence, fat stigma, and allostatic load among late adolescents and young adults. *Am J Biol Anthropology*. (2023) 181:575–87. doi: 10.1002/ajpa.v181.4

11. Guidi J, Lucente M, Sonino N, Fava GA. Allostatic load and its impact on health: A systematic review. *Psychother Psychosom*. (2021) 90:11–27. doi: 10.1159/000510696

12. Phelan SM, Puhl RM, Burke SE, Hardeman R, Dovidio JF, Nelson DB, et al. The mixed impact of medical school on medical students' implicit and explicit weight bias. *Med Educ*. (2015) 49:983–92. doi: 10.1111/medu.2015.49.issue-10

13. Meyer IH, Frost DM. Minority stress and the health of sexual minorities. In: *Handbook of psychology and sexual orientation*. Oxford University Press, New York, NY, US (2013). p. 252–66.

14. Davis DE, DeBlaere C, Owen J, Hook JN, Rivera DP, Choe E, et al. The multicultural orientation framework: A narrative review. *Psychotherapy*. (2018) 55:89–100. doi: 10.1037/pst0000160

15. Owen J, Tao KW, Drinane JM, Hook J, Davis DE, Kune NF. Client perceptions of therapists' multicultural orientation: Cultural (missed) opportunities and cultural humility. *Prof Psychology: Res Practice*. (2016) 47:30–7. doi: 10.1037/pro0000046

16. Sue DW, Capodilupo CM, Torino GC, Bucceri JM, Holder AMB, Nadal KL, et al. Racial microaggressions in everyday life: implications for clinical practice. *Am Psychol*. (2007) 62:271–86. doi: 10.1037/0003-066X.62.4.271

17. Torino GC, Rivera DP, Capodilupo CM, Nadal KL, Sue DW. *Microaggression Theory: Influence and Implications*. Hoboken, NJ:: John Wiley & Sons (2018). p. 400.

18. Bergen M, Mollen D. Teaching sizeism: integrating size into multicultural education and clinical training. *Women Ther*. (2019) 42:164–80. doi: 10.1080/02703149.2018.1524065

19. Brochu PM. Teaching clinical psychology trainees about weight bias. *Women Ther*. (2019) 42:191–9. doi: 10.1080/02703149.2018.1524066

20. McHugh MC, Kasardo AE. Anti-fat prejudice: the role of psychology in explication, education and eradication. *Sex Roles*. (2012) 66:617–27. doi: 10.1007/s11199-011-0099-x

21. Cravens JD, Pratt KJ, Palmer E, Aamar R. Marriage and family therapy students' Views on including weight bias training into their clinical programs. *Contemp Fam Ther*. (2016) 38:210–22. doi: 10.1007/s10591-015-9366-2

22. Pratt KJ, Holowacz E, Walton NL. Marriage and family therapists' Perspectives on treating overweight clients and their weight-related behaviors. *Am J Family Ther*. (2014) 42:364–85. doi: 10.1080/01926187.2013.878170

23. Kasardo AE. Size as diversity absent from multicultural textbooks. *Women Ther*. (2019) 42:181–90. doi: 10.1080/02703149.2018.1524069

24. McEntee ML, Philip SR, Phelan SM. Dismantling weight stigma in eating disorder treatment: Next steps for the field. *Front Psychiatry*. (2023) 14:1157594. doi: 10.3389/fpsyt.2023.1157594

25. Philip SR, Fields SA, Van Ryn M, Phelan SM. Comparisons of explicit weight bias across common clinical specialties of US resident physicians. *J Gen Intern Med*. (2023) 39:511–8. doi: 10.1007/s11606-023-08433-8

26. Pratt KJ, Palmer E, Cravens JD, Ferriby M, Balk E, Cai Y. Marriage and family therapy trainees' Reports of explicit weight bias. *J Marital Family Ther*. (2016) 42:288–98. doi: 10.1111/jmft.2016.42.issue-2

27. Akoury LM, Schafer KJ, Warren CS. Fat women's experiences in therapy: "You can't see beyond … Unless I share it with you. *Women Ther*. (2019) 42:93–115. doi: 10.1080/02703149.2018.1524063

28. Harrop EN, Hutcheson R, Harner V, Mensinger JL, Lindhorst T. You Don't Look Anorexic": Atypical anorexia patient experiences of weight stigma in medical care. *Body Image*. (2023) 46:48–61. doi: 10.1016/j.bodyim.2023.04.008

29. Puhl RM, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obes (Silver Spring)*. (2006) 14:1802–15. doi: 10.1038/oby.2006.208

30. Phelan SM, Bauer KW, Bradley D, Bradley SM, Haller IV, Mundi MS, et al. A model of weight-based stigma in health care and utilization outcomes: Evidence from the learning health systems network. *Obes Sci Practice*. (2022) 8:139–46. doi: 10.1002/osp4.v8.2

31. Phelan SM, Burgess DJ, Yeazel MW, Hellerstedt WL, Griffin JM, Ryn M. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obes Rev*. (2015) 16:319–26. doi: 10.1111/obr.2015.16.issue-4

32. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodology*. (2005) 8:19–32. doi: 10.1080/1364557032000119616

33. Raves DM, Brewis A, Trainer S, Han SY, Wutich A. Bariatric surgery patients' Perceptions of weight-related stigma in healthcare settings impair post-surgery dietary adherence. *Front Psychol*. (2016) 7:1497. doi: 10.3389/fpsyg.2016.01497

34. Gilbert K. *Atypical Anorexia Nervosa: Examining the Impact of Weight Stigma on Weight Bias Internalization and Eating Disorder Symptoms*. United States – Connecticut: University of Hartford (2024). Available at: https://www.proquest.com/pqdtglobal/docview/3014023430/abstract/4DF385D04CC04B5CPQ/1 (Accessed January 7, 2025).

35. Young LM, Powell B. The effects of obesity on the clinical judgments of mental health professionals. *J Health Soc Behav*. (1985) 26:233–46. doi: 10.2307/2136755

36. Agell G, Rothblum ED. Effects of clients' obesity and gender on the therapy judgments of psychologists. *Prof Psychology: Res Practice*. (1991) 22:223–9. doi: 10.1037/0735-7028.22.3.223

37. Davis-Coelho K, Waltz J, Davis-Coelho B. Awareness and prevention of bias against fat clients in psychotherapy. *Prof Psychology: Res Practice*. (2000) 31:682–4. doi: 10.1037/0735-7028.31.6.682

38. Hassel TD, Amici CJ, Thurston NS, Gorsuch RL. Client weight as a barrier to non-biased clinical judgment. *J Psychol Christianity*. (2001) 20:145–61.

39. Adams LG. *Weight bias among counselors-in-training: A qualitative inquiry*. United States – Alabama: Auburn University (2008). Available at: https://www.proquest.com/pqdtglobal/docview/304688851/abstract/8AD529F5220F4DC9PQ/1 (Accessed January 7, 2025).

40. Hightower LA. *A mixed methods survey of fat bias in marriage and family therapists*. United States – Texas: St. Mary's University (Texas (2014). Available at: https://www.proquest.com/pqdtglobal/docview/1686814966/abstract/CC9BE8CB8F6A46C6PQ/1 (Accessed January 7, 2025).

41. Kasardo AE. *Fat bias in the field of psychology: Examining diversity counseling texts and clinical judgment across college counseling centers*. United States – Pennsylvania: Indiana University of Pennsylvania (2015). Available at: https://www.proquest.com/pqdtglobal/docview/1678895935/abstract/9FFC70B9F8D745D9PQ/1 (Accessed January 7, 2025).

42. Forristal KM. *Fatphobia and Clinical Counseling Decision Making in Counselor Education Students*. United States – Ohio: The University of Toledo (2018). Available at: https://www.proquest.com/pqdtglobal/docview/2243061279/abstract/56CB30EC3DFF4498PQ/1 (Accessed January 7, 2025).

43. Veillette LAS, Serrano JM, Brochu PM. What's weight got to do with it? Mental health trainees' Perceptions of a client with anorexia nervosa symptoms. *Front Psychol*. (2018) 9:2574. doi: 10.3389/fpsyg.2018.02574

44. McAshan M. *The Impact of Client Weight and Ethnicity on Counselors' Evaluation of Eating Disorders Symptoms: A Vignette Study*. United States – Texas: Texas Woman's University (2018). Available at: https://www.proquest.com/pqdtglobal/docview/2120950698/abstract/E4DCF0F9BB74229PQ/1 (Accessed January 7, 2025).

45. Ryland SC. *The Effect of Anti-Fat Bias on Therapists' Perception of Client Motivation, Prognosis, Severity of Mental Illness, and Working Alliance*. United States – Pennsylvania: Carlow University (2020). Available at: https://www.proquest.com/docview/2451414011/abstract/5A74E7B525854EA6PQ/1 (Accessed January 7, 2025).

46. Silbiger K. Mental health providers' perceptions of restrictive eating disorders: Relationship with client body weight. *Intl J Eating Disord*. (2024) 57:916–23. doi: 10.1002/eat.24154

47. O'Loughlin MK. *Therapists' preferences to provide treatment based on clients' body size and gender*. United States – New York: New York University (1994). Available at: https://www.proquest.com/pqdtglobal/docview/304123573/abstract/EFB3F0FEC2B44679PQ/1 (Accessed January 7, 2025).

48. McCardle M. *Weight bias and social work practice: An empirical exploration*. United States – New York: City University of New York (2008). Available at: https://www.proquest.com/pqdtglobal/docview/304676171/abstract/2431BD4FBFFE4BBAPQ/1 (Accessed January 7, 2025).

49. Puhl RM, Latner JD, King KM, Luedicke J. Weight bias among professionals treating eating disorders: Attitudes about treatment and perceived patient outcomes. *Intl J Eating Disord*. (2014) 47:65–75. doi: 10.1002/eat.22186

50. Puhl RM, Luedicke J, Grilo CM. Obesity bias in training: attitudes, beliefs, and observations among advanced trainees in professional health disciplines. *Obes (Silver Spring)*. (2014) 22:1008–15. doi: 10.1002/oby.20637

51. Stokes JA. *Stigma in Clinical Psychology Trainees: Bias Towards Eating Disorders on the Basis of Weight Variance and the Mediating Influence of Personal Psychological Traits*. Illinois, United States: The Chicago School of Professional Psychology (2015). Available at: https://www.proquest.com/pqdtglobal/docview/1559203860/abstract/8ED59758DDB74F11PQ/1 (Accessed January 7, 2025).

52. Soto L, Armendariz-Anguiano AL, Bacardí-Gascón M, Jiménez Cruz A. Beliefs, attitudes and phobias among Mexican medical and psychology students towards people with obesity. *Nutr Hosp*. (2014) 30:37–41. doi: 10.3305/nh.2014.30.1.7512

53. Darling R, Atav AS. Attitudes toward obese people: A comparative study of nursing, education, and social work students. *J Prof Nurs*. (2019) 35:138–46. doi: 10.1016/j.profnurs.2018.07.009

54. Lee SR. *Graduate Training in Body Image Complexity: Evolving Competence to Meet Emerging Research*. United States – Texas: Texas Woman's University (2019). Available at: https://www.proquest.com/pqdtglobal/docview/2391990319/abstract/AF64CDA56DD44067PQ/1 (Accessed January 7, 2025).

55. Christensen KN. *Factors Related to Weight-Bias among Counselors*. United States – North Carolina: The University of North Carolina at Charlotte (2021). Available at: https://www.proquest.com/pqdtglobal/docview/2562239518/abstract/B1AD212A96914F1DPQ/1 (Accessed January 7, 2025).

56. Brochu PM. Testing the effectiveness of a weight bias educational intervention among clinical psychology trainees. *J Appl Soc Psychol*. (2023) 53:231–41. doi: 10.1111/jasp.12653

57. Franko I. *The Correlates of Explicit Weight Bias Among Mental Health Providers in Training*. United States – New Jersey: Rutgers The State University of New Jersey, Graduate School of Applied and Professional Psychology (2023). Available at: https://www.proquest.com/docview/2835793739/abstract/3DAD0E0C5C7E4E97PQ/1 (Accessed January 7, 2025).

58. van der Voorn B, Camfferman R, Seidell JC, Puhl RM, Halberstadt J. Weight-biased attitudes about pediatric patients with obesity in Dutch healthcare professionals from seven different professions. *J Child Health Care*. (2023) 27:243–52. doi: 10.1177/13674935221133953

59. Sohier L, Ravet MS, Berger-Vergiat A, Iceta S. Bias related to overweight and obesity among French psychiatrists: Results of a national survey (2024). Available online at: https://www.sciencedirect.com/science/article/pii/S001370062400188X (Accessed January 7, 2025).

60. Aza MN. *What's the skinny on fat women in psychotherapy: mental health clinicians' countertransference with women of size*. Smith College School for Social Work (2009).

61. Hedden LE. *Novice Counselors' Weight and Body Image Beliefs: An Exploratory Q Study*. United States – Georgia: University of Georgia (2023). Available at: https://www.proquest.com/pqdtglobal/docview/2917438381/abstract/435568C33E72442CPQ/1 (Accessed January 7, 2025).

62. Chen C, Gonzales L. Understanding weight stigma in eating disorder treatment: Development and initial validation of a treatment-based stigma scale. *J Health Psychol*. (2022) 27:3028–45. doi: 10.1177/13591053221079177

63. Puhl RM, Lessard LM, Pearl RL, Himmelstein MS, Foster GD. International comparisons of weight stigma: addressing a void in the field. *Int J Obes*. (2021) 45:1976–85. doi: 10.1038/s41366-021-00860-z

64. Downes AM. *What do fat women want? An exploratory investigation of the influences of psychotherapy on the process by which fat women work toward acceptance of their size and weight*. United States – Massachusetts: University of Massachusetts Amherst (2001). Available at: https://www.proquest.com/pqdtglobal/docview/304699803/abstract/B47962898A0B4DCBPQ/1 (Accessed January 7, 2025).

65. Ciepcielinski E. Client perceptions of weight stigma among eating disorder professionals (2016). Available online at: https://hdl.handle.net/20.500.12588/3239 (Accessed January 7, 2025).

66. Abel SA. Let's talk about your weight": How fatphobia manifests in therapy (2020). Available online at: http://hdl.handle.net/10315/37782 (Accessed January 7, 2025).

67. Moore M. Exploring Higher Weight Women's Experiences of Provider Weight Stigma (2022). Available online at: https://scholarworks.uark.edu/etd/4507 (Accessed January 7, 2025).

68. Goehner HJ. *Finding Body Appreciation Through the Weight-Neutral Framework*. United States – Ohio: Antioch University (2023). Available at: https://www.proquest.com/pqdtglobal/docview/2869208320/abstract/6377EBB75F0A4F4APQ/1 (Accessed January 7, 2025).

69. Sonnenblick RM, Liu J, Riddle DR, Manasse SM, Forman EM, Juarascio AS. Behavioral weight loss treatment for adults with binge-eating disorder: A qualitative analysis of patients' perspectives and experiences. *Int J Eat Disord*. (2024) 57:1854–67. doi: 10.1002/eat.24234

70. Talbert P. *An Examination of the Lived Experiences of Those Who Have Received or Attempted to Receive Treatment and/or Recovery from Atypical Anorexia in a Higher Weight Body*. United States – California: Alliant International University (2024). Available at: https://www.proquest.com/pqdtglobal/docview/3055877473/abstract/C2A831A4930D4E0DPQ/2 (Accessed January 7, 2025).

71. DeVito NJ, Goldacre B. Catalogue of bias: publication bias. *BMJ Evid Based Med*. (2019) 24:53–4. doi: 10.1136/bmjebm-2018-111107

72. Gerringer BP. *Training Competent Counselors for EveryBODY: The Impact of a Health at Every Size Training on Weight Bias and Its Relationship to Multicultural Competence*. United States – North Carolina: The University of North Carolina at Greensboro (2022). Available at: https://www.proquest.com/pqdtglobal/docview/2719399449/abstract/F0C63FC4134343CAPQ/1 (Accessed January 7, 2025).

73. Ali SA. *A Qualitative Exploration of Licensed Professional Counselors' Therapeutic Relationships Working with Clients with Body Image Concerns*. United States – Texas: Sam Houston State University (2022). Available at: https://www.proquest.com/docview/2778883706/abstract/FCFDE9F3848E4DA0PQ/1 (Accessed January 7, 2025).

74. King KM, Wyche B, Umstead L. Broaching body size and sizeism: Input from specialized clinicians. *Body Image*. (2024) 51:101775. doi: 10.1016/j.bodyim.2024.101775

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 21 July 2025
DOI 10.3389/fpsyt.2025.1593145

OPEN ACCESS

EDITED BY
D. Catherine Walker,
Union College, United States

REVIEWED BY
Pasquale Scognamiglio,
ASL Napoli 3 Sud, Italy
Erin N Harrop,
University of Denver, United States

*CORRESPONDENCE
Mary A. Gerend
mary.gerend@med.fsu.edu

RECEIVED 13 March 2025
ACCEPTED 27 June 2025
PUBLISHED 21 July 2025

CITATION
Gerend MA, Lu AW and Teets EL (2025) Weight stigma and mental health in a racially and ethnically diverse sample of US adults. *Front. Psychiatry* 16:1593145. doi: 10.3389/fpsyt.2025.1593145

Weight stigma and mental health in a racially and ethnically diverse sample of US adults

Mary A. Gerend*, Anna W. Lu and Elizabeth L. Teets

College of Medicine, Florida State University, Tallahassee, FL, United States

Introduction: Weight stigma is associated with poor mental health outcomes. Yet little is known about whether the strength of the association between weight stigma and mental health outcomes differs by race or ethnicity, or factors that mitigate the mental health consequences of weight stigma. This study sought to address these research gaps.

Methods: A large sample of US adults (N = 2,632; aged 18–64 years; 50% women) completed an online survey. Quota sampling ensured that over two-thirds of respondents self-identified as Black/African American or Hispanic/Latino. Our primary predictors were experienced and internalized weight stigma. Primary outcomes included global mental health, depression severity, and history of diagnosis with a depressive disorder. Linear and logistic multivariable regression analyses tested whether the association between weight stigma and mental health outcomes was moderated by (1) race or ethnicity, and (2) frequency of using adaptive coping strategies to manage weight stigma-related stress (e.g., cognitive reframing, seeking social support).

Results: Both experienced and internalized weight stigma were associated with worse mental health (i.e., lower global mental health scores, more frequent depressive symptoms in the past two weeks, greater odds of depressive disorder diagnosis) and effects held while controlling for body mass index and sociodemographic characteristics. Further, the strength of the association between weight stigma and mental health outcomes was equivalent among Black and non-Black participants and among Latino and non-Latino participants. Adaptive coping was a significant moderator for global mental health and depressive disorder diagnosis but not depression severity such that the weight stigma-mental health relationship was weakest among respondents who engaged in adaptive coping strategies more frequently.

Discussion: Adults with more frequent exposure to interpersonal weight stigma and higher levels of internalized weight bias reported poorer mental health status. Notably, the strength of these associations was similar regardless of racial or ethnic identity suggesting no group is protected from the detrimental

health effects associated with weight stigma. Individuals who respond to weight stigma with adaptive coping strategies may be more protected from adverse psychological outcomes. Findings have important implications for initiatives aimed at reducing harm to mental health that may be associated with weight stigma.

KEYWORDS

weight stigma, perceived weight discrimination, internalized weight bias, global mental health, depressive symptoms, depression, adaptive coping strategies

Introduction

People with high body weight are devalued in American society. Being devalued because of one's body weight is known as *weight stigma* and can be a powerful source of chronic stress (1). Weight stigma arises from the inaccurate belief that body weight is highly controllable, leading to the perception that individuals are personally responsible for their weight (2). Indeed, people with high body weight are stereotyped as lazy, incompetent, and lacking in self-discipline (1, 3). Furthermore, these negative stereotypes are often used to justify discriminatory behavior against individuals with high body weight (2). Weight-based discrimination frequently occurs during interpersonal interactions with strangers, service employees, health care providers, and family members (4). It can also manifest as environmental barriers that disadvantage people with higher body weight or larger body size. Examples include inadequate medical equipment in clinics or hospitals, or poorly designed seating in public spaces (5). Repeated exposure to weight discrimination along with awareness of negative weight-based stereotypes also contributes to the internalization of weight stigma such that individuals come to devalue themselves because of their body weight (2, 6–8). Considerable evidence shows that weight stigma—whether self-directed or external—is a common experience for individuals with high body weight; approximately 20-40% have been exposed to weight stigmatizing experiences in their lifetime and over 50% endorse high levels of internalized weight stigma (9, 10).

Research consistently demonstrates a negative association between weight stigma and mental health outcomes (11–13). A meta-analysis of over 100 studies with nearly 60,000 participants confirmed that weight stigma is associated with worse mental health outcomes (r = -0.35; moderate effect size) (14). While the strength of the association varied across outcomes (r = -0.22 to -0.39), weight stigma was associated with a variety of mental health conditions including dysfunctional and disordered eating behavior, body image dissatisfaction, psychological distress, low self-esteem, and symptoms of depression or anxiety (14). Further, this negative association was observed for both experienced weight stigma (r = -0.33; also referred to as *perceived weight discrimination*) and internalized weight stigma (r = -0.39; also referred to as *internalized weight bias*).

Theoretical models describing the relationship between discrimination and health conceptualize weight stigma as a chronic stressor that impairs health through psychological, behavioral, and physiological pathways (2, 15–19). With respect to psychological pathways, weight stigma may contribute to poor mental health outcomes via increases in negative affect or use of poor emotion regulation strategies in response to discriminatory experiences (e.g., rumination, inability to reframe negative thoughts) (20–22). Weight stigma also triggers a variety of behaviors that can be harmful for mental wellbeing including emotional ("comfort") eating, sleep disturbance, substance use, and withdrawal from social activities (5, 19, 23–27). Indeed, some of these psychological and behavioral responses may reflect coping strategies aimed at reducing the immediate emotional burden of weight stigma (28). Physiologically, exposure to weight stigma has been shown to increase cardiovascular reactivity, secretion of cortisol, and inflammation (29–32). Over time, repeated activation of these pathways can impair mental health.

Despite the large body of research on weight stigma and mental health, relatively few studies have examined this association in Black and Latino populations. This gap is noteworthy, as Black and Latino individuals living in the United States face multiple forms of stigma and discrimination in their day-to-day lives (33, 34). Emmer and colleagues (14) conducted an exploratory analysis to test ethnicity as a potential moderator of the association between weight stigma and mental health outcomes. They found no evidence, however, that the strength of the relationship between weight stigma and mental health outcomes differed between White and non-White individuals. Nevertheless, an important limitation of this research was the fact that individuals from different cultural backgrounds were combined into a single category (i.e., "non-White") due to the low representation of Black and Latino individuals in previous weight stigma studies. Such an approach could obscure potential differences. To examine the independent contribution of both race and ethnicity as potential moderators of the link between weight stigma and mental health, the current study intentionally oversampled adults who self-identified as African American or Black and/or Hispanic or Latino. This was done to ensure sufficient representation of individuals from groups that are disproportionately affected by cultural stigma and discrimination in the US.

Further, surprisingly little is known about factors that mitigate the negative relationship between weight stigma and mental health (14). Such work is critical for informing future interventions aimed at reducing the harmful mental health consequences associated with weight stigma. Some research suggests that the coping strategies people use to manage weight stigma-related stress could have important implications for mental health (22, 28, 35, 36). For example, individuals who seek social support from family or friends after a weight stigmatizing encounter may be buffered from its negative psychological effects. Likewise, responding to weight stigma with cognitive reappraisal tactics (e.g., reframing an interpersonal encounter with weight discrimination as reflecting the perpetrator's own insecurity and low-self-esteem) may weaken the impact of weight stigma on mental health.

The aims of the present study were twofold. The first aim was to assess whether the strength of the association between weight stigma (experienced and internalized) and mental health outcomes varies by race or ethnicity. Due to limited research in this area, we did not have specific predictions about the moderating effects of race or ethnicity. The second aim was to assess whether the strength of the association between weight stigma and mental health outcomes depends on the coping strategies people use to manage stress from weight stigma. More specifically, we hypothesized that more frequent use of adaptive coping strategies (e.g., seeking support, using cognitive reframing, practicing self-acceptance) would weaken the association between weight stigma and mental health outcomes. We recruited a large sample of US adults with a broad representation across the body mass index (BMI) spectrum and a disproportionately high proportion of respondents who self-identified as Black or African American and/or Hispanic or Latino. We examined the association between weight stigma and three mental health outcomes in particular: self-reported global mental health, severity of depressive symptoms over the past two weeks, and previous diagnosis with a depressive disorder.

Materials and methods

Participants and procedure

This study was approved by the Institutional Review Board at Florida State University. All respondents provided electronic informed consent before they could begin the survey. Data for this study were drawn from a large cross-sectional study on weight stigma and health that was collected using Dynata's online sampling platform. A more detailed description of the study procedure is provided elsewhere (25). Potential respondents received a notification announcing the study opportunity, along with the estimated time to complete the survey (10–15 minutes) and a pre-determined incentive that would be awarded upon completion. To be eligible for the study, respondents had to be US residents between the ages of 18 to 64 years, have a BMI value between 12 to 70 kg/m^2, self-identify as a cisgender man or woman, and self-identify as Black or African American, Hispanic or Latino, or non-Hispanic White. The sample size goal for the study was 2,500 respondents. Quotas for race and ethnicity were specified in advance to oversample respondents who self-identified as Black or African American (≥33% of the sample) and/or Hispanic or Latino (≥33% of the sample). To further increase the diversity of the sample, we also oversampled respondents with a non-heterosexual sexual orientation (e.g., self-identified as gay, lesbian, or bisexual; ≥25% of the sample). Quotas were not specified for BMI. A total of 3,028 respondents completed the survey; however, 396 respondents were excluded for data quality concerns (e.g., failing attention checks, completing the survey in <30% of the median time). The final sample size for analysis was 2,632 respondents.

Measures

Weight stigma

Predictor variables of interest were experienced and internalized weight stigma. Experienced weight stigma was assessed with the Stigmatizing Situations Survey-Brief (SSI-B) (37), a 10-item version of the original 50-item scale (38). Respondents rated how often they experienced ten different "situations that people encounter because of their weight." Sample items include: "Having a doctor recommend a diet even if you did not come in to discuss weight loss" and "Overhearing other people making rude remarks about you in public." Following Puhl and Brownell (39), respondents rated how often they experienced each situation in their lifetime using a 4-point scale: 0 = *never*; 1 = *once*; 2 = *more than once*; 3 = *multiple times*. Items were averaged to create a total score representing lifetime experience with weight stigma. SSI-B scores ranged from 0 to 3, with higher scores indicating more frequent experience with weight stigma (Cronbach's α = .92 for the current sample).

Internalized weight stigma was assessed with the Modified Weight Bias Internalization Scale (WBIS-M) (8). Respondents rated their agreement with 11 items using a 7-point scale that ranged from 1 = *strongly disagree* to 7 = *strongly agree*. Sample items include: "I am less attractive than most other people because of my weight" and "Whenever I think a lot about my weight, I feel depressed." Following previous research (10, 21, 40), we excluded one reverse-scored item (i.e., "Because of my weight, I feel that I am just as competent as anyone.") that often has poor psychometric properties. The remaining 10 items were averaged to create a total score. WBIS-M scores ranged from 1 to 7, with higher scores indicating higher levels of internalized weight stigma (Cronbach's α = .93 for the current sample).

Mental health variables

Primary outcome variables were global mental health, depression severity, and diagnosis with a depressive disorder. Global mental health was assessed with two items from the Patient Reported Outcomes Measurement and Information System [PROMIS®] project (41): (1) "In general, how would you rate your mental health, including your mood and your ability to think?" and (2) "In general, how would you rate your satisfaction with your social activities and relationships?" Items were rated on a 5-point scale: 1 = *poor*; 2 = *fair*; 3 = *good*; 4 = *very good*; 5 = *excellent*.

The two items were averaged to create a total score. Scores ranged from 1 to 5 with higher scores representing better global mental health. Depression severity was assessed with the two-item version of the Patient Health Questionnaire (PHQ-2) (42). Respondents indicated how often they had been bothered by any of the following problems over the last two weeks: (1) "Little interest or pleasure in doing things." and (2) "Feeling down, depressed, or hopeless." Items were rated on a 4-point scale: 0 = *not at all*; 2 = *several days*; 3 = *more than half the days*; 4 = *nearly every day*. The two items were summed to create a total score. Scores ranged from 0 to 6 with higher scores representing higher severity of depressive symptoms. Previous diagnosis with a depressive disorder was assessed with a single item from the Behavioral Risk Factor Surveillance System (BRFSS) (43): "Has a doctor, nurse, or other health professional ever told you that you had a depressive disorder (including depression, major depression, dysthymia, or minor depression)?" Respondents who selected "yes" received a score of 1 while respondents who selected "no" received a score of 0.

Adaptive coping

Adaptive coping was assessed with six items we created for this study. We chose to create our own items for the study given limitations of existing measures (i.e., too lengthy or limited in scope) (20, 38). Items drew on our previous qualitative research that identified common strategies used to manage weight stigma-related stress (28), as well as the Coping Responses Inventory (38) and previous research on coping with racism (44). (Please see supplemental materials for an exploratory factor analysis of the coping items. Only those items that clearly loaded on the adaptive coping factor were included.) Coping strategies were assessed among the subset of respondents who indicated they had ever been teased, treated unfairly, or discriminated against because of their weight and/or attributed experiences with everyday discrimination to their weight (n = 1,546). Participants were asked "When you are teased, treated unfairly, or discriminated against because of your weight, how often do you do any of the following things in response? (1) Talk to other people about it; (2) Speak up for yourself; (3) See it as their problem not yours; (4) Work harder to prove them wrong; (5) Think about your good qualities; and (6) Love and accept yourself even when it seems like other people don't." Items were rated on a 5-point scale: 1 = *never*; 2 = *rarely*; 3 = *every now and then*; 4 = *often*; 5 = *very often*. The six items were averaged to create a total score. Scores ranged from 1 to 5 with higher scores representing higher frequency of using adaptive coping strategies to manage weight stigma-related stress (Cronbach's α = .79 for the current sample).

Demographic characteristics and body mass index

Sociodemographic characteristics assessed included age, sex, gender, ethnicity, race, sexual orientation, highest level of education, and annual household income. Respondents were asked to indicate their current height and weight which was used to compute BMI (kg/m^2).

Statistical analysis

Descriptive statistics were computed for sample characteristics, experienced and internalized weight stigma, and mental health outcome variables. Correlations among predictor and outcome variables were also estimated. We used linear and logistic multivariable regression to predict each outcome variable from weight stigma (experienced and internalized, assessed using separate models) while controlling for covariates. Covariates included sociodemographic characteristics and BMI. To assess whether the association between weight stigma and mental health outcomes was moderated by race (Black vs. non-Black) or ethnicity (Latino vs. non-Latino) centered interaction terms between each type of weight stigma (i.e., experienced and internalized) and race and ethnicity were added to the model. Likewise, to assess whether adaptive coping moderated the association between weight stigma and mental health outcomes, variables representing the centered interaction between each type of weight stigma and adaptive coping were added to the model. Significant interactions were followed with simple effects tests to assess the pattern of the interaction. Sensitivity power analysis (two-tailed tests with alpha set to.05) indicated that the study was adequately powered (power ≥.80) to detect effects as small as r ≥.055 across models. Given the preliminary nature of this investigation, we did not adjust our alpha levels to correct for family wise error so as to provide future researchers with greater opportunities to follow up on these findings.

Although the data were not missing completely at random (MCAR), Little's MCAR test, χ^2 (40) = 63.588. p = .010, whether a respondent was missing data on the variable responsible for the significant test (i.e., annual income, for which 73 of the 76 respondents who were missing this variable selected 'prefer not to answer'), was not significantly correlated with any of the primary outcome variables. Respondents with lower education levels and younger age were, however, more likely to be missing a value for income. Because having a missing value for annual income was not associated with any of the outcome variables, we used listwise deletion to handle missing data in the regression analyses (45).

Results

Sample characteristics are provided in Table 1. The mean age of respondents was 36.9 years (SD = 12.5). The sample included equivalent numbers of men and women. As intended, Black/African American and Hispanic/Latino participants were overrepresented in the sample with 36% of respondents identifying as Black or African American and 36% identifying as Hispanic or Latino. Eight percent (n = 212) of respondents identified as both Black/African American and Hispanic/Latino. Nearly 30% of the sample described their sexual orientation as non-heterosexual with 12% identifying as gay or lesbian and 17% identifying as bisexual, pansexual, or queer. With respect to highest level of education, 4% had less than a high school

10.3389/fpsyt.2025.1593145

TABLE 1 Sample characteristics (N = 2,632).

Variable	Mean (SD) or N (%)
Age (years)	36.9 (12.5)
Gender	
Men	1327 (50)
Women	1305 (50)
Latino or Hispanic ethnicity	
No	1690 (64)
Yes	942 (36)
Black or African American race	
No	1683 (64)
Yes	949 (36)
Race	
American Indian or Alaska Native	36 (1)
Asian	10 (<1)
Black or African American	888 (34)
Native Hawaiian or Other Pacific Islander	8 (<1)
White	1493 (57)
Multiracial	80 (3)
Unknown	117 (4)
Sexual orientation	
Bisexual, pansexual, or queer	454 (17)
Gay or lesbian	312 (12)
Straight or heterosexual	1866 (71)
Annual household income	
Less than $10,000	306 (12)
$10,000 - $24,999	396 (15)
$25,000 - $34,999	374 (14)
$35,000 - $49,999	350 (13)
$50,000 - $74,999	463 (18)
$75,000 - $99,999	275 (10)
$100,000 - $149,999	238 (9)
$150,000 or more	154 (6)
Prefer not to answer or unknown	76 (3)
Highest level of education	
Less than high school	92 (4)
High school diploma/equivalent	743 (28)
Some college	677 (26)
Associate degree or technical school	375 (14)
Bachelor's degree/College graduate	470 (18)
Master's degree	218 (8)
Doctoral degree	57 (2)
BMI (kg/m^2)	27.9 (8.2)

Percentages may exceed 100% due to rounding error.

education, 28% had a high school degree or equivalent, 26% attended some college, 14% completed an associate degree or technical school, 18% had a bachelor's degree, 8% had a master's degree, and 2% had a doctoral degree. Median annual income fell between $35,000-$49,999. Mean BMI of the sample was 27.9 kg/m^2 (SD = 8.2).

Descriptive statistics and correlations among key study variables are provided in Table 2. Consistent with previous studies (21), a large positive correlation was observed between experienced and internalized weight stigma (r = .56, p <.001). Ratings of global mental health fell just above a score of 3, where 3 represented "good" self-rated mental health. The mean depression severity score was 2.29, indicating that, on average, respondents experienced depressive symptoms at least "several days" over the last two weeks. Thirty-seven percent of the sample reported having a depressive disorder that had been diagnosed by a health care provider. Medium-sized correlations were observed among the three mental health variables.

Results from regression analyses that examined whether the association between weight stigma and mental health outcomes (i.e., global mental health, depression severity, and depressive disorder diagnosis) was moderated by race or ethnicity are reported in Tables 3–5, respectively. The top portion of each table presents the findings for the analysis with experienced weight stigma (i.e., SSI-B scores) as the primary predictor while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M scores) as the primary predictor. Both experienced and internalized weight stigma were robustly associated with worse mental health as indicated by lower global mental health scores, more frequent depressive symptoms in the past two weeks, and greater odds of diagnosis with a depressive disorder. Moreover, no interactions between weight stigma and race, or between weight stigma and ethnicity were observed, indicating that the strength of the association between weight stigma (experienced and internalized) and each mental health outcome was equivalent among Black and non-Black participants, and among Latino and non-Latino participants.

Results from regression analyses that examined whether the association between weight stigma and global mental health, depression severity, and depressive disorder diagnosis was moderated by adaptive coping are reported in Tables 6–8, respectively. Again, the top portion of each table represents findings for the analysis with experienced weight stigma as the primary predictor, while the bottom portion of the table represents the findings for the analysis with internalized weight stigma as the primary predictor. Adaptive coping was a significant moderator of the association between weight stigma and global mental health and between weight stigma and previous diagnosis with depression; however, adaptive coping did not moderate the association between weight stigma and depression severity.

To determine the pattern of the interactions, we examined simple effects at high (84% percentile), moderate (50% percentile), and low (14% percentile) values of adaptive coping. Results for the interaction between SSI-B scores (experienced weight stigma) and adaptive coping predicting global mental health are depicted in Figure 1. As shown in the figure, the negative association between weight stigma and global mental health was strongest among participants with low frequency of adaptive coping, B (95% CI) = -.32 (-.41, -.23), p <.001. In contrast, among participants with high frequency of adaptive coping, there was no association between SSI-B scores and global mental health, B (95% CI) = -.02 (-.10,.07), p = .707. In other words, more frequent engagement in adaptive coping was protective for global mental health even among individuals who

TABLE 2 Descriptive statistics and correlations among experienced weight stigma, internalized weight stigma, and mental health outcomes.

Variable	n	Range	*M*	*SD*	1	2	3	4	5
1. Experienced weight stigma (SSI-B)	2620	0-3	0.83	0.83	–				
2. Internalized weight stigma (WBIS-M)	2632	1-7	3.38	1.56	.56*	–			
3. Global mental health	2629	1-5	3.11	1.14	-.16*	-.30*	–		
4. Depression severity (PHQ-2)	2627	0-6	2.29	1.95	.49*	.46*	-.46*	–	
5. Depression diagnosis	2516	0-1	0.37	0.48	.26*	.24*	-.38*	.38*	–

SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale; PHQ-2, Patient Health Questionnaire-2.
*p <.001.

experienced weight stigma frequently. Results for the interaction between SSI-B scores and adaptive coping predicting history of a depressive disorder followed a conceptually similar pattern and are depicted in Figure 2. The odds of a depressive disorder diagnosis increased with higher exposure to weight stigma; however, the effect was the strongest among participants with low frequency of adaptive coping, log-odds (95% CI) = .72 (.51, .93), OR (95% CI) = 2.05 (1.66, 2.54), p <.001, and the weakest among participants with high frequency of adaptive coping, log-odds (95% CI) = .45 (.26, .64), OR (95% CI) = 1.57 (1.30, 1.90), p <.001. Thus, again, the

TABLE 3 Linear regressions predicting global mental health from weight stigma and interactions between weight stigma and race and ethnicity.

Variable	*B*	*SE*	95% CI for *B*		*t*	*Partial r*	*p*
			LL	*UL*			
First set of regression findings							
SSI-B	-.190	.026	-.242	-.139	-7.208	-.142	<.001
Black	.229	.046	.139	.319	4.990	.099	<.001
Latino	.028	.047	-.063	.120	.605	.012	.545
Gender	-.252	.045	-.339	-.164	-5.651	-.112	<.001
Sexual orientation	-.246	.048	-.340	-.152	-5.131	-.102	<.001
Age	.001	.002	-.003	.005	.514	.010	.607
Income	.077	.012	.053	.102	6.256	.123	<.001
Education	.075	.017	.041	.109	4.361	.086	<.001
BMI	-.015	.003	-.021	-.010	-5.525	-.109	<.001
SSI-B x Black	-.051	.054	-.157	.055	-.938	-.019	.348
SSI-B x Latino	-.045	.054	-.150	.060	-.837	-.017	.403
Second set of regression findings							
WBIS-M	-.196	.014	-.223	-.169	-14.021	-.268	<.001
Black	.161	.045	.073	.249	3.585	.071	<.001
Latino	.032	.045	-.056	.121	.718	.014	.473
Gender	-.234	.043	-.319	-.149	-5.416	-.107	<.001
Sexual orientation	-.237	.047	-.329	-.146	-5.102	-.101	<.001
Age	-.001	.002	-.004	.003	-.510	-.010	.610
Income	.079	.012	.056	.103	6.615	.130	<.001
Education	.080	.017	.048	.113	4.811	.095	<.001
BMI	-.008	.003	-.014	-.003	-3.084	-.061	.002
WBIS-M x Black	-.013	.029	-.069	.043	-.467	-.009	.641
WBIS-M x Latino	-.047	.028	-.103	.008	-1.682	-.033	.093

B, unstandardized regression coefficient; *SE*, standard error; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

TABLE 4 Linear regressions predicting depression severity from weight stigma and interactions between weight stigma and race and ethnicity.

Variable	*B*	*SE*	95% CI for *B*		*t*	*Partial r*	*p*
			LL	*UL*			
First set of regression findings							
SSI-B	1.132	.042	1.051	1.214	27.168	.475	<.001
Black	-.146	.072	-.288	-.005	-2.024	-.040	.043
Latino	.004	.074	-.141	.148	.050	.001	.960
Gender	.092	.070	-.046	.230	1.311	.026	.190
Sexual orientation	.175	.076	.027	.324	2.312	.046	.021
Age	-.014	.003	-.019	-.008	-4.737	-.094	<.001
Income	-.022	.019	-.060	.017	-1.112	-.022	.266
Education	-.055	.027	-.109	-.002	-2.046	-.041	.041
BMI	-.016	.004	-.024	-.007	-3.618	-.072	<.001
SSI-B x Black	.064	.085	-.103	.231	.752	.015	.452
SSI-B x Latino	-.020	.084	-.186	.145	-.241	-.005	.809
Second set of regression findings							
WBIS-M	.582	.023	.536	.627	25.256	.448	<.001
Black	.022	.074	-.123	.167	.298	.006	.766
Latino	.058	.074	-.088	.204	.782	.016	.435
Gender	.047	.071	-.092	.186	.660	.013	.509
Sexual orientation	.224	.077	.074	.374	2.921	.058	.004
Age	-.014	.003	-.020	-.008	-4.816	-.095	<.001
Income	-.019	.020	-.058	.019	-.980	-.019	.327
Education	-.044	.027	-.098	.009	-1.615	-.032	.106
BMI	-.025	.005	-.034	-.016	-5.428	-.107	<.001
WBIS-M x Black	.002	.047	-.090	.094	.038	.001	.969
WBIS-M x Latino	.031	.046	-.060	.122	.674	.013	.500

B, unstandardized regression coefficient; *SE*, standard error; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

TABLE 5 Logistic regressions predicting diagnosis with a depressive disorder from weight stigma and interactions between weight stigma and race and ethnicity.

Variable	*B*	*SE*	Wald	*OR*	95% CI		*p*
					LL	*UL*	
First set of regression findings							
SSI-B	.673	.057	140.390	1.959	1.753	2.190	<.001
Black	-.394	.100	15.637	.675	.555	.820	<.001
Latino	-.088	.101	.749	.916	.751	1.118	.387
Gender	.457	.095	23.232	1.579	1.312	1.902	<.001

(Continued)

TABLE 5 Continued

Variable	*B*	*SE*	Wald	*OR*	95% CI		*p*
					LL	*UL*	
First set of regression findings							
Sexual orientation	.682	.099	47.575	1.977	1.629	2.400	<.001
Age	.005	.004	1.614	1.005	.997	1.013	.204
Income	-.086	.027	10.321	.918	.871	.967	.001
Education	-.070	.037	3.609	.932	.867	1.002	.057
BMI	.010	.006	2.974	1.010	.999	1.022	.085
SSI-B x Black	.143	.117	1.498	1.154	.918	1.450	.221
SSI-B x Latino	.201	.117	2.960	1.222	.972	1.536	.085
Second set of regression findings							
WBIS-M	.317	.031	106.321	1.373	1.293	1.459	<.001
Black	-.271	.098	7.588	.763	.629	.925	.006
Latino	-.038	.100	.140	.963	.791	1.172	.708
Gender	.419	.093	20.135	1.520	1.266	1.826	<.001
Sexual orientation	.711	.098	52.888	2.037	1.681	2.467	<.001
Age	.004	.004	.984	1.004	.996	1.011	.321
Income	-.081	.026	9.621	.922	.876	.971	.002
Education	-.059	.037	2.581	.943	.878	1.013	.108
BMI	.006	.006	1.166	1.006	.995	1.018	.280
WBIS-M x Black	.035	.064	.299	1.035	.914	1.173	.584
WBIS-M x Latino	.064	.063	1.047	1.067	.943	1.207	.306

B, unstandardized regression coefficient; *SE*, standard error; *OR*, odds ratio; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

TABLE 6 Linear regressions predicting global mental health from weight stigma and the interaction between weight stigma and adaptive coping.

Variable	*B*	*SE*	95% CI for *B*		*t*	*Partial r*	*p*
			LL	*UL*			
First set of regression findings							
SSI-B	-.168	.034	-.234	-.101	-4.947	-.127	<.001
Adaptive coping	.321	.032	.258	.384	9.987	.251	<.001
Black	.126	.056	.015	.236	2.235	.058	.026
Latino	-.028	.055	-.136	.079	-.514	-.013	.607
Gender	-.186	.055	-.295	-.078	-3.359	-.087	.001
Sexual orientation	-.163	.058	-.276	-.050	-2.821	-.073	.005
Age	.000	.002	-.004	.005	.119	.003	.905
Income	.068	.015	.038	.097	4.474	.115	<.001
Education	.056	.021	.015	.097	2.675	.069	.008

(Continued)

TABLE 6 Continued

Variable	*B*	*SE*	95% CI for *B*		*t*	*Partial r*	*p*
			LL	*UL*			
First set of regression findings							
BMI	-.010	.003	-.016	-.004	-3.269	-.085	.001
SSI-B x Adaptive coping	.167	.032	.105	.229	5.251	.135	<.001
Second set of regression findings							
WBIS-M	-.163	.018	-.198	-.127	-9.077	-.229	<.001
Adaptive coping	.276	.031	.215	.337	8.902	.225	<.001
Black	.071	.056	-.038	.180	1.280	.033	.201
Latino	-.026	.054	-.132	.079	-.487	-.013	.627
Gender	-.192	.054	-.299	-.085	-3.518	-.091	<.001
Sexual orientation	-.165	.057	-.276	-.054	-2.910	-.075	.004
Age	-.001	.002	-.006	.003	-.579	-.015	.563
Income	.083	.015	.053	.112	5.560	.143	<.001
Education	.063	.021	.023	.104	3.056	.079	.002
BMI	-.006	.003	-.012	.000	-2.019	-.052	.044
WBIS-M x Adaptive coping	.068	.017	.034	.102	3.955	.102	<.001

B, unstandardized regression coefficient; *SE*, standard error; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

TABLE 7 Linear regressions predicting depression severity from weight stigma and the interaction between weight stigma and adaptive coping.

Variable	*B*	*SE*	95% CI for *B*		*t*	*partial r*	*p*
			LL	*UL*			
First set of regression findings							
SSI-B	1.043	.057	.931	1.154	18.299	.429	<.001
Adaptive coping	-.274	.054	-.380	-.168	-5.066	-.131	<.001
Black	-.080	.095	-.265	.106	-.842	-.022	.400
Latino	.008	.092	-.173	.189	.083	.002	.934
Gender	.045	.093	-.138	.228	.481	.012	.631
Sexual orientation	.053	.097	-.138	.244	.544	.014	.586
Age	-.014	.004	-.022	-.006	-3.461	-.090	.001
Income	-.004	.025	-.053	.046	-.139	-.004	.890
Education	-.033	.035	-.102	.037	-.928	-.024	.354
BMI	-.019	.005	-.029	-.009	-3.625	-.094	<.001
SSI-B x Adaptive coping	.055	.054	-.050	.160	1.034	.027	.301
Second set of regression findings							
WBIS-M	.567	.031	.507	.627	18.575	.434	<.001
Adaptive coping	.026	.053	-.077	.130	.496	.013	.620

(Continued)

TABLE 7 Continued

Variable	*B*	*SE*	95% CI for *B*		*t*	*partial r*	*p*
			LL	*UL*			
Second set of regression findings							
Black	.065	.095	-.121	.251	.686	.018	.493
Latino	.085	.092	-.095	.265	.926	.024	.355
Gender	.051	.093	-.131	.233	.549	.014	.583
Sexual orientation	.107	.097	-.082	.297	1.114	.029	.266
Age	-.010	.004	-.018	-.002	-2.439	-.063	.015
Income	-.029	.025	-.079	.021	-1.146	-.030	.252
Education	-.031	.035	-.100	.038	-.870	-.023	.384
BMI	-.027	.005	-.037	-.017	-5.215	-.134	<.001
WBIS-M x Adaptive coping	.054	.029	-.004	.111	1.842	.048	.066

B, unstandardized regression coefficient; *SE*, standard error; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

TABLE 8 Logistic regressions predicting diagnosis with a depressive disorder from weight stigma and the interaction between weight stigma and adaptive coping.

Variable	*B*	*SE*	Wald	*OR*	95% CI		*p*
					LL	*UL*	
First set of regression findings							
SSI-B	.585	.078	56.433	1.795	1.541	2.091	<.001
Adaptive coping	-.064	.072	.796	.938	.814	1.080	.372
Black	-.240	.124	3.729	.786	.616	1.004	.053
Latino	-.004	.122	.001	.996	.784	1.265	.974
Gender	.508	.122	17.256	1.663	1.308	2.114	<.001
Sexual orientation	.660	.126	27.446	1.935	1.512	2.478	<.001
Age	.004	.005	.455	1.004	.993	1.014	.500
Income	-.062	.034	3.389	.940	.879	1.004	.066
Education	-.045	.047	.951	.956	.872	1.047	.329
BMI	.008	.007	1.543	1.008	.995	1.022	.214
SSI-B x Adaptive coping	-.145	.074	3.872	.865	.748	.999	.049
Second set of regression findings							
WBIS-M	.276	.041	45.093	1.317	1.216	1.428	<.001
Adaptive coping	.132	.072	3.382	1.141	.991	1.312	.066
Black	-.164	.124	1.736	.849	.665	1.083	.188
Latino	.038	.121	.099	1.039	.819	1.318	.753
Gender	.492	.121	16.473	1.636	1.290	2.074	<.001
Sexual orientation	.705	.125	31.862	2.023	1.584	2.584	<.001
Age	.005	.005	1.075	1.005	.995	1.016	.300

(Continued)

TABLE 8 Continued

Variable	*B*	*SE*	Wald	*OR*	95% CI		*p*
					LL	*UL*	
Second set of regression findings							
Income	-.078	.033	5.390	.925	.866	.988	.020
Education	-.041	.046	.782	.960	.877	1.051	.377
BMI	.005	.007	.533	1.005	.992	1.019	.465
WBIS-M x Adaptive coping	-.100	.040	6.155	.905	.836	.979	.013

B, unstandardized regression coefficient; *SE*, standard error; *OR*, odds ratio; CI, confidence interval; *LL*, lower limit; *UL*, upper limit. SSI-B, Stigmatizing Situations Survey-Brief; WBIS-M, Modified Weight Bias Internalization Scale. The top portion of the table presents findings for the analysis with experienced weight stigma (i.e., SSI-B as the primary predictor) while the bottom portion of the table presents the findings for the analysis with internalized weight stigma (i.e., WBIS-M as the primary predictor). Black: 1, Black or African American race; 0, non-Black or African American race. Latino: 1, Hispanic or Latino; 0, non-Hispanic or non-Latino. Gender: 1, woman; 0, man. Sexual orientation: 1, gay, lesbian, bisexual, queer, or pansexual; 0, straight or heterosexual.

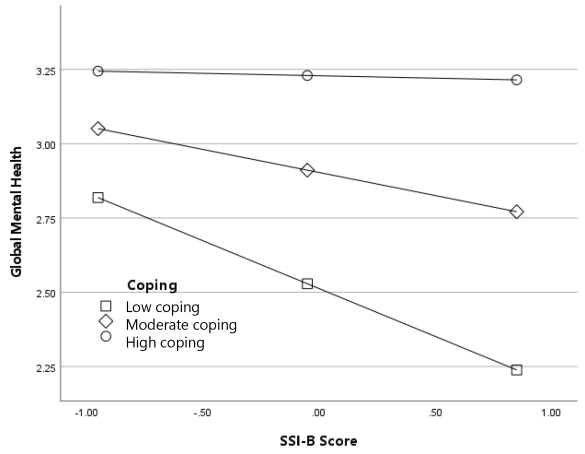


FIGURE 1
Adaptive coping as a moderator of the association between experienced weight stigma (SSI-B scores) and global mental health.

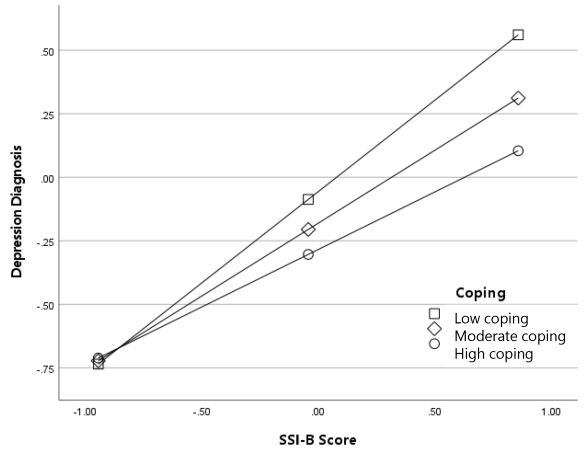


FIGURE 2
Adaptive coping as a moderator of the association between experienced weight stigma (SSI-B scores) and diagnosis with a depressive disorder (log-odds metric).

odds of receiving a depression diagnosis among participants exposed to weight stigma were lower among individuals who engaged in adaptive coping more frequently.

Results for the interaction between WBIS-M scores (internalized weight stigma) and adaptive coping predicting global mental health are depicted in Figure 3. In general, participants with higher levels of internalized weight stigma reported worse global mental health; as with the previous analyses, this association was strongest among participants with low frequency of adaptive coping, *B* (95% CI) = -.23 (-.27, -.17), *p* <.001, and weakest among participants with high frequency adaptive coping, *B* (95% CI) = -.10 (-.15, -.06), *p* <.001. Results for the interaction between WBIS-M scores and adaptive coping predicting diagnosis with a depressive disorder are depicted in Figure 4. The odds of a diagnosis increased with higher levels of internalized weight stigma; once again, the effect was the strongest among participants with low frequency of adaptive coping, log-odds (95% CI) = .37 (.25, .48), OR (95% CI) = 1.44 (1.29, 1.62), *p* <.001, and the weakest among participants with high frequency of adaptive coping, log-odds (95% CI) = .19 (.09, .29), OR (95% CI) = 1.20 (1.09, 1.33), *p* <.001.

Discussion

The present study examined the association between weight stigma and three indicators of mental health status in a racially and ethnically diverse sample of adults living in the United States. Consistent with previous research (14), more frequent exposure to weight discrimination and higher levels of internalized weight stigma were associated with poorer global mental health, more severe depressive symptoms, and greater odds of diagnosis with a depressive disorder. Notably, these associations held while controlling for BMI, suggesting that weight stigma confers independent risk to mental health over and above any effects of excess weight itself. Findings suggest that weight stigma is a powerful stressor that may have negative implications for psychological and social wellbeing.

One aim of this study was to assess whether the strength of the association between weight stigma and mental health differs as a function of respondents' race or ethnicity. Results indicated that neither race nor ethnicity moderated the association between weight stigma and any of the three primary mental health outcomes examined. This finding is consistent with previous

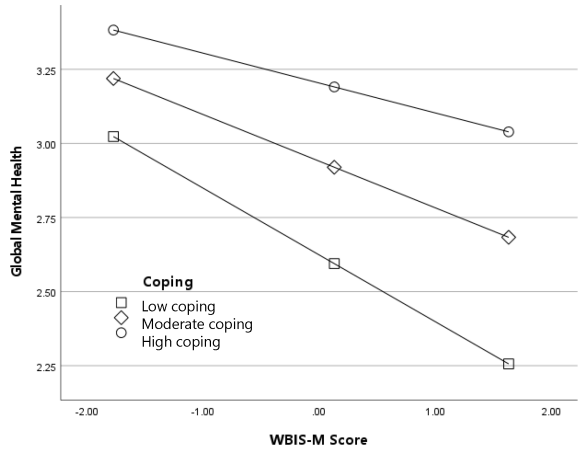


FIGURE 3
Adaptive coping as a moderator of the association between internalized weight stigma (WBIS-M scores) and global mental health.

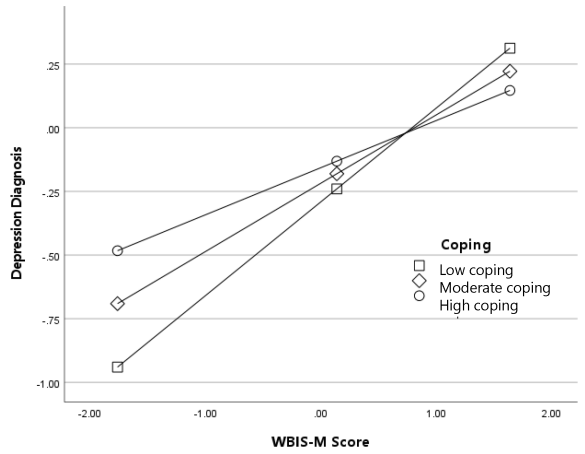


FIGURE 4
Adaptive coping as a moderator of the association between internalized weight stigma (WBIS-M scores) and diagnosis with a depressive disorder (log-odds metric).

meta-analytic research that observed null findings for White versus non-White ethnicity as a moderator of the association between weight stigma and mental health (14). An important limitation of previous work, however, was the limited representation of non-White participants in existing studies, which could reduce the ability to detect such moderating effects.

When interpreting the current null findings, it is important to distinguish between the prevalence of weight stigma (i.e., the extent to which individuals from different subgroups experience or internalize weight stigma) and its association with health outcomes (e.g., the extent to which weight stigma is associated with depression). Some research, for instance, suggests that Black women report relatively fewer experiences with weight discrimination and have lower levels of internalized weight stigma compared to White women (21, 46). Thus, scholars have speculated that Black women may be more protected from the negative health consequences of weight stigma (21). Experiencing weight stigma to a lower degree, however, does not imply that weight stigma, when it does occur, will have lesser consequences. Taken together with previous findings, the current work suggests that although some subgroups may not experience weight stigma quite as often as others do, the implications of weight stigma for mental health are similar among the different racial and ethnic groups examined in the present study. Findings suggest that individuals who experience and/or internalize stigma because of their body weight may be at increased risk for adverse mental health outcomes irrespective of their racial or ethnic identity.

The second aim was to assess factors that may mitigate mental health consequences associated with weight stigma. Results indicated that individuals who use adaptive coping responses to manage weight stigma-related stress may be less vulnerable to poor mental health outcomes. Consistent with hypotheses, more frequent use of adaptive coping was associated with less impaired mental health in the context of weight stigma. It was unclear why adaptive coping moderated effects for global mental health ratings and depressive disorder diagnosis but not severity of depressive symptoms. Emmer and colleagues attempted to examine the moderating effects of adaptive coping in their meta-analysis, yet they were unable to find a sufficient number of studies that had measured adaptive coping strategies and found no studies on social support seeking in particular. More research is needed to identify the primary coping strategies people use to manage weight stigma-related stress and evaluate how coping strategies impact mental health outcomes over time.

Study findings have significant implications for future initiatives aimed at supporting the psychological wellbeing of US adults with high body weight. As long as society continues to denigrate and devalue people because of their weight, it will be important to provide individuals with effective skills to manage weight stigma-related stress and protect their mental wellbeing. Our work suggests the adaptive coping strategies individuals use to manage stress from weight stigma may be protective for mental health. Nevertheless, while the moderating effects of adaptive coping strategies were statistically significant, the practical significance of these effects warrants further examination. Additionally, the observed effect sizes were small, suggesting that while adaptive coping may offer some psychological benefit, it may not fully offset the harmful mental health effects associated with weight stigma. Nonetheless, these findings highlight the potential value of incorporating coping skills—such as cognitive reframing and social support seeking—into future programs designed to mitigate the psychological burdens associated with weight stigma. Future work should use experimental methods to assess which coping strategies are most effective and investigate how promising strategies can be sustainably taught and reinforced in real-world settings. Findings also highlight the need to include participants from diverse racial and ethnic backgrounds in these initiatives, as no subgroup appears protected from the poor mental health consequences associated with weight stigma.

Limitations of the present study provide valuable directions for future research. First, our assessment of global mental health and depression severity relied on validated yet brief instruments—the two-item PROMIS global mental health scale and the PHQ-2. While these measures are widely used for screening purposes and can minimize participant burden, they do not capture the full range of symptoms and

functional impairments associated with mental health disorders. Moreover, these tools may overlook important components of psychological wellbeing, such as social connectedness, emotional regulation, and resilience. Future research investigating the association between weight stigma and psychological wellbeing should incorporate more comprehensive measures of mental health. Second, while this study controlled for BMI and several sociodemographic factors, it did not account for other potentially important confounding factors such as stressful life events, comorbid health conditions, other forms of structural and interpersonal discrimination, and socioeconomic stressors. The absence of these variables may have affected the observed results. Future research should incorporate a more comprehensive set of psychosocial and health-related variables to better capture the complex association between weight stigma and mental health. Third, the current study does not offer insight into which types of weight stigma (e.g., interpersonal, environmental, internalized) may be most damaging for mental health. Based on interpersonal theories of depression (47), interpersonal forms of weight stigma could be more consequential, however this remains an empirical question. Fourth, the present findings cannot speak to which coping tactics in particular may be most beneficial for mental wellbeing, nor whether or how coping strategies may vary between different racial/ethnic groups. A related limitation is that although our coping items were informed by our qualitative work and previous research, we did not use an established, validated coping scale. A fifth limitation of this study was the cross-sectional nature of the design thus it is unknown how these processes—both the damaging effects of weight stigma and the protective effects of adaptive coping—unfold over time. Further, we cannot determine whether any of the observed associations are causal. Most studies investigating the association between weight stigma and mental health are cross-sectional, thus there is a significant need for longitudinal and experimental research in this domain.

In closing, this study underscores the significant mental health risks posed by weight stigma, showing that both experienced and internalized stigma are linked to poorer mental wellbeing, including increased depression severity and greater likelihood of diagnosis with a depressive disorder. Notably, these effects were independent of BMI, emphasizing that weight stigma itself may be a harmful stressor beyond effects associated with BMI. Our findings suggest that all individuals, regardless of racial or ethnic identity, may be vulnerable to the detrimental mental health consequences of weight stigma. The study also highlights adaptive coping strategies—such as cognitive reframing and social support seeking—that can buffer individuals from these negative outcomes. Findings suggest that initiatives aimed at promoting adaptive coping could be key in mitigating the psychological impact of weight stigma. Given the pervasive nature of weight bias, it is essential that future initiatives be inclusive of diverse racial and ethnic groups to ensure equitable mental health support for all individuals affected by weight stigma.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: Open Science Framework https://osf.io/5qsjc/?view_only=9bd700f8afea47cf8cf7ca1cc13574b1.

Ethics statement

The studies involving humans were approved by the Florida State University Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MG: Formal analysis, Project administration, Conceptualization, Methodology, Writing – original draft, Writing – review & editing. AL: Writing – original draft, Writing – review & editing. ET: Writing – review & editing, Writing – original draft.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This research was funded in part by the Florida State University College of Medicine. The funder was not involved in the study design, collection, analysis, interpretation of data, the writing of this article, or the decision to submit it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1593145/full#supplementary-material

References

1. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity*. (2009) 17:941–64. doi: 10.1038/oby.2008.636

2. Major B, Tomiyama AJ, Hunger J. The negative and bidirectional effects of weight stigma on health. In: Major B, Dovidio JF, Link BG, editors. *The Oxford Handbook of Stigma, Discrimination, and Health*, vol. p . Oxford University Press, New York (2018). p. 499–520.

3. Pearl RL, Wadden TA, Groshon LC, Fitterman-Harris HF, Bach C, LaFata EM. Refining the conceptualization and assessment of internalized weight stigma: A mixed methods approach. *Body Image*. (2023) 44:93–102. doi: 10.1016/j.bodyim.2022.12.002

4. Sutin AR, Terracciano A. Sources of weight discrimination and health. *Stigma & Health*. (2017) 2:23–7. doi: 10.1037/sah0000037

5. Gerend MA, Patel S, Ott N, Wetzel K, Sutin AR, Terracciano A, et al. A qualitative analysis of people's experiences with weight-based discrimination. *Psychol Health*. (2022) 37:1093–110. doi: 10.1080/08870446.2021.1921179

6. Durso LE, Latner JD. Understanding self-directed stigma: development of the weight bias internalization scale. *Obesity*. (2008) 16:S80–S6. doi: 10.1038/oby.2008.448

7. Lillis J, Luoma JB, Levin ME, Hayes SC. Measuring weight self-stigma: The weight self-stigma questionnaire. *Obesity*. (2010) 18:971–6. doi: 10.1038/oby.2009.353

8. Pearl RL, Puhl RM. Measuring internalized weight attitudes across body weight categories: validation of the modified weight bias internalization scale. *Body Image*. (2014) 11:89–92. doi: 10.1016/j.bodyim.2013.09.005

9. Spahlholz J, Baer N, Konig HH, Riedel-Heller SG, Luck-Sikorski C. Obesity and discrimination - A systematic review and meta-analysis of observational studies. *Obes Rev*. (2016) 17:43–55. doi: 10.1111/obr.12343

10. Puhl RM, Himmelstein MS, Quinn DM. Internalizing weight stigma: Prevalence and sociodemographic considerations in US adults. *Obesity*. (2018) 26:167–75. doi: 10.1002/oby.22029

11. Pearl RL, Puhl RM. Weight bias internalization and health: a systematic review. *Obes Rev*. (2018) 19:1141–63. doi: 10.1111/obr.12701

12. Romano KA, Heron KE, Sandoval CM, MacIntyre RI, Howard LM, Scott M, et al. Weight bias internalization and psychosocial, physical, and behavioral health: A meta-analysis of cross-sectional and prospective associations. *Behav Ther*. (2023) 54:539–56. doi: 10.1016/j.beth.2022.12.003

13. Wu YK, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *J Adv Nursing*. (2018) 74:1030–42. doi: 10.1111/jan.13511

14. Emmer C, Bosnjak M, Mata J. The association between weight stigma and mental health: A meta-analysis. *Obes Rev*. (2020) 21:e12935. doi: 10.1111/obr.12935

15. Pascoe EA, Lattanner MR, Richman LS. Meta-analysis of interpersonal discrimination and health-related behaviors. *Health Psychol*. (2022) 41:319–31. doi: 10.1037/hea0001147

16. Pascoe EA, Richman LS. Perceived discrimination and health: A meta-analytic review. *psychol Bull*. (2009) 135:531–54. doi: 10.1037/a0016059

17. Ratcliffe D, Ellison N. Obesity and internalized weight stigma: a formulation model for an emerging psychological problem. *Behav Cogn Psychother*. (2015) 43:239–52. doi: 10.1017/S1352465813000763

18. Sikorski C, Luppa M, Luck T, Riedel-Heller SG. Weight stigma "gets under the skin"-evidence for an adapted psychological mediation framework: a systematic review. *Obesity*. (2015) 23:266–76. doi: 10.1002/oby.20952

19. Tomiyama AJ. Stress and obesity. *Annu Rev Psychol*. (2019) 70:703–18. doi: 10.1146/annurev-psych-010418-102936

20. Hayward LE, Vartanian LR, Pinkus RT. Coping with weight stigma: development and validation of a Brief Coping Responses Inventory. *Obes Sci Pract*. (2017) 3:373–83. doi: 10.1002/osp4.125

21. Himmelstein MS, Puhl RM, Quinn DM. Intersectionality: an understudied framework for addressing weight stigma. *Am J Prev Med*. (2017) 53:421–31. doi: 10.1016/j.amepre.2017.04.003

22. Himmelstein MS, Puhl RM, Quinn DM. Weight stigma and health: The mediating role of coping responses. *Health Psychol*. (2018) 37:139–47. doi: 10.1037/hea0000575

23. Major B, Hunger JM, Bunyan DP, Miller CT. The ironic effects of weight stigma. *J Exp Soc Psychol*. (2014) 51:74–80. doi: 10.1016/j.jesp.2013.11.009

24. Schvey NA, Puhl RM, Brownell KD. The impact of weight stigma on caloric consumption. *Obes (Silver Spring)*. (2011) 19:1957–62. doi: 10.1038/oby.2011.204

25. Gerend MA, Zetrenne S, Sutin AR, Naar S, Maner JK. Weight discrimination and health risk behavior in racial, ethnic, and sexual minority adults. *Ann Behav Med*. (2023) 57:571–81. doi: 10.1093/abm/kaad003

26. Lee KM, Hunger JM, Tomiyama AJ. Weight stigma and health behaviors: evidence from the Eating in America Study. *Int J Obes*. (2021) 45:1499–509. doi: 10.1038/s41366-021-00814-5

27. Tomiyama AJ. Weight stigma is stressful. a review of evidence for the Cyclic Obesity/Weight-Based Stigma model. *Appetite*. (2014) 82:8–15. doi: 10.1016/j.appet.2014.06.108

28. Gerend MA, Patel S, Ott N, Wetzel K, Sutin AR, Terracciano A, et al. Coping with weight discrimination: Findings from a qualitative study. *Stigma Health*. (2021) 6:440–9. doi: 10.1037/sah0000335

29. Himmelstein MS, Incollingo Belsky AC, Tomiyama AJ. The weight of stigma: Cortisol reactivity to manipulated weight stigma. *Obesity*. (2015) 23:368–74. doi: 10.1002/oby.20959

30. Hunger JM, Blodorn A, Miller CT, Major B. The psychological and physiological effects of interacting with an anti-fat peer. *Body Image*. (2018) 27:148–55. doi: 10.1016/j.bodyim.2018.09.002

31. Schvey NA, Puhl RM, Brownell KD. The stress of stigma: Exploring the effect of weight stigma on cortisol reactivity. *Psychosom Med*. (2014) 76:156–62. doi: 10.1097/PSY.0000000000000031

32. Sutin AR, Stephan Y, Luchetti M, Terracciano A. Perceived weight discrimination and C-reactive protein. *Obes (Silver Spring)*. (2014) 22:1959–61. doi: 10.1002/oby.20789

33. Lewis TT, Cogburn CD, Williams DR. Self-reported experiences of discrimination and health: scientific advances, ongoing controversies, and emerging issues. *Annu Rev Clin Psychol*. (2015) 11:407–40. doi: 10.1146/annurev-clinpsy-032814-112728

34. Williams DR, Mohammed SA. Discrimination and racial disparities in health: Evidence and needed research. *J Behav Med*. (2009) 32:20–47. doi: 10.1007/s10865-008-9185-0

35. Gerend MA, Stewart C, Wetzel K. Vulnerability and resilience to the harmful health consequences of weight discrimination in Black, Latina, and sexual minority women. *Soc Sci Med*. (2022) 315:115555. doi: 10.1016/j.socscimed.2022.115555

36. Himmelstein MS, Puhl RM, Pearl RL, Pinto AM, Foster GD. Coping with weight stigma among adults in a commercial weight management sample. *Int J Behav Med*. (2020) 27:576–90. doi: 10.1007/s12529-020-09895-4

37. Vartanian LR. Development and validation of a brief version of the Stigmatizing Situations Inventory. *Obes Sci Pract*. (2015) 1:119–25. doi: 10.1002/osp4.11

38. Myers A, Rosen JC. Obesity stigmatization and coping: relation to mental health symptoms, body image, and self-esteem. *Int J Obes Relat Metab Disord*. (1999) 23:221–30. doi: 10.1038/sj.ijo.0800765

39. Puhl RM, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obesity*. (2006) 14:1802–15. doi: 10.1038/oby.2006.208

40. Levy M, Kakinami L, Alberga AS. The relationship between weight bias internalization and healthy and unhealthy weight control behaviours. *Eating Weight Disord*. (2022) 27:1621–32. doi: 10.1007/s40519-021-01291-5

41. Hays RD, Schalet BD, Spritzer KL, Cella D. Two-item PROMIS(R) global physical and mental health scales. *J Patient Rep Outcomes*. (2017) 1:2. doi: 10.1186/s41687-017-0003-8

42. Lowe B, Kroenke K, Grafe K. Detecting and monitoring depression with a two-item questionnaire (PHQ-2). *J Psychosom Res*. (2005) 58:163–71. doi: 10.1016/j.jpsychores.2004.09.006

43. Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System Survey Questionnaire*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (2020).

44. McNeilly MD, Anderson NB, Armstead CA, Clark R, Corbett M, Robinson EL, et al. The perceived racism scale: a multidimensional assessment of the experience of white racism among African Americans. *Ethn Dis*. (1996) 6:154–66.

45. van Buuren S. *Flexible Imputation of Missing Data. 2nd ed*. New York: Chapman and Hall/CRC (2018).

46. Dutton GR, Lewis TT, Durant N, Halanych J, Kiefe CI, Sidney S, et al. Perceived weight discrimination in the CARDIA study: differences by race, sex, and weight status. *Obesity*. (2014) 22:530–6. doi: 10.1002/oby.20438

47. Joiner TE, Van Orden KA, Witte TK, Selby EA, Ribeiro JD, Lewis R, et al. Main predictions of the interpersonal-psychological theory of suicidal behavior: empirical tests in two samples of young adults. *J Abnorm Psychol*. (2009) 118:634–46. doi: 10.1037/a0016500

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 02 October 2025
DOI 10.3389/fpsyt.2025.1687680

OPEN ACCESS

EDITED BY
Georgios Paslakis,
University Clinic for Psychosomatic Medicine and Psychotherapy, Germany

REVIEWED BY
Paolo Meneguzzo,
University of Padua, Italy
Fabiola Raffone,
Asl Napoli 1 Centro, Italy

*CORRESPONDENCE
Lauren A. Fowler
lauren.fowler@sc.edu

RECEIVED 18 August 2025
ACCEPTED 15 September 2025
PUBLISHED 02 October 2025

CITATION
Fowler LA, Wang Y, Wall C, Velkovich A, Harrop EN, Vázquez MM, Mensah J, Flentje A and Mann ES (2025) "If I can accept my queerness, I can accept my body as it is": Understanding weight-related perspectives and stigma from sexual minority women. *Front. Psychiatry* 16:1687680. doi: 10.3389/fpsyt.2025.1687680

"If I can accept my queerness, I can accept my body as it is": Understanding weight-related perspectives and stigma from sexual minority women

Lauren A. Fowler[1]*, Yilin Wang[2], Catherine Wall[1,3], Allyson Velkovich[1], Erin N. Harrop[4], Melissa M. Vázquez[5], Janis Mensah[1], Annesa Flentje[6] and Emily S. Mann[1,7]

[1]Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, SC, United States, [2]Brown School of Social Work, School of Public Health, Washington University in St. Louis, St. Louis, MO, United States, [3]Department of Psychology, Virginia Commonwealth University, Richmond, VA, United States, [4]Graduate School of Social Work, University of Denver, Denver, CO, United States, [5]Department of Psychiatry, Washington University School of Medicine, St. Louis, MO, United States, [6]Stanford Prevention Research Center, Department of Medicine, School of Medicine, Stanford University, Stanford, CA, United States, [7]Department of Women's and Gender Studies, McCausland College of Arts and Sciences, University of South Carolina, Columbia, SC, United States

Introduction: Sociocultural norms that conflate thinness with health and morality contribute to widespread weight stigma, with well-documented consequences for physical and mental health. Sexual minority women (SMW), particularly those living in larger bodies, may be especially affected due to the intersection of heterosexism, sexism, and weight stigma across their lives.

Methods: This qualitative study utilized life history-informed semi-structured interviews with 24 cisgender SMW, ages 22–46, to explore how they experience sociocultural messages about weight, body size, and health over time, and how these experiences intersect with other aspects of structural marginalization. Interviews were audio recorded and transcripts were coded using a reflexive thematic analysis approach.

Results: Three overarching contexts were identified in which weight stigma is reinforced and resisted (1): dominant cultural norms—across media, healthcare, and public spaces—that moralized weight and pathologized larger bodies (2); families of origin, where intergenerational dieting, food restriction, and body surveillance reinforced weight bias beginning in childhood; and (3) queer communities, which sometimes fostered acceptance but also reproduced exclusionary body norms shaped by gender presentation, race, and size. Across settings, participants described the cumulative and compounding effects of stigma on mental health, including disordered eating. Their experiences also highlighted the complex role of sexual identity and queer community in shaping body-related experiences, which were affirming, marginalizing, and both simultaneously.

10.3389/fpsyt.2025.1687680

Discussion: Our findings underscore the importance of applying intersectional and life-course frameworks and call for systemic changes in public health to shift from weight-centric approaches toward affirming, weight-inclusive paradigms that address interlocking systems of oppression.

KEYWORDS

weight stigma, sexual minority women, disordered eating, body norms, minority stress, structural stigma

Introduction

Sociocultural ideals regarding body size, weight management, and "health" play a significant role in shaping our health behaviors, mental health, and overall wellbeing. Western social norms center body size as a reliable metric of health, equate thinness with moral virtue, and place responsibility for health as a moral imperative that individuals are responsible to achieve (1). These dominant narratives are reinforced through weight discourses disseminated across medicine, public health, and media platforms, contributing to a broader culture of diet and body surveillance (2). Individuals whose bodies are not thin, gender-conforming, and able-bodied, especially when they are non-white, often face body- and weight-related stigma. This stigma, manifesting as both interpersonal and structural prejudice and discrimination against people with higher weight (3) can be internalized, resulting in self-blame and self-hatred (4, 5).

Body Mass Index (BMI), a ratio of weight (kg) divided by height (m) squared and informed by observations of an astronomer and statistician to describe an "average" (white) individual (6), is a strong predictor of weight stigma, such that individuals who have higher BMI are more likely to face discrimination based on their body size or shape (7, 8). Weight stigma itself (and not higher weight) is associated with poor self-rated health, morbidity, and mortality. Other consequences of weight stigma include dysregulation of physiological systems due to chronic stress exposure (9, 10), internalized weight bias, and maladaptive weight-control behaviors, as well as cycles of repeated weight loss and gain that elevate health risks regardless of BMI (10). Finally, weight stigma also limits access to and utilization of healthcare services, yielding worse long-term outcomes (4).

Weight stigma experiences do not occur in isolation. Individuals who are multiply minoritized by race, gender, sexual orientation, social class, and/or ability may experience distinct forms of stress due to structural oppression (e.g., racism, sexism, heterosexism, classism, and/or ableism) that compound the effects of weight stigma and its consequences (11, 12). Intersectionality theory offers a valuable framework for examining how multiple systems of oppression interact to create unique and compounded experiences of harm at the intersections of race, gender, sexual orientation, class, and body size (13–15). In the context of weight stigma, this framework highlights how marginalized groups may encounter overlapping forms of discrimination that cannot be fully understood through single-axis analyses (16).

Focusing on groups who are more likely to experience both weight stigma and other forms of oppression provides greater insight into the diversity of ways individuals experience weight stigma and interpret sociocultural messages that can lead to health disparities. Sexual minority women (SMW—i.e., women who identify as a sexual orientation other than heterosexual, such as lesbian, gay, or bisexual) are more likely to have higher BMIs (17, 18), placing them at increased risk for experiencing weight-related stigma and its consequences. Moreover, SMW are disproportionately impacted by mental health disparities, including higher rates of depression and self-harm, disordered eating, and unhealthy weight-control behaviors when compared to heterosexual women; researchers attribute these disparities in part to minority stress (19). Sexual minority health researchers highlight how experiences of minority stress due to increased exposure to stigma and discrimination at the structural, interpersonal, and individual levels can place sexual minorities at greater risk for mental health disparities (20, 21). Structural stigma, or the "societal-level conditions, cultural norms, and institutional policies that constrain the opportunities, resources, and wellbeing of the stigmatized", is especially relevant for understanding how weight stigma intersects with other experiences of oppression to shape SMW's mental health (22).

While most research using minority stress theory has focused on sexual identity-related stigma, SMW also face intersectional stigma that shapes how they experience and respond to body and weight-related stigma. Weight stigma itself has been consistently linked to elevated psychological distress, depression, and disordered eating (23), yet little research has examined how these effects may be amplified when experienced in concert with other oppressive conditions related to social class, race/ethnicity, and/or disability. Intersectional approaches suggest that SMW's experiences of weight stigma cannot be fully understood without considering how minority stress, including sexuality-related stigma, and weight stigma interact in unique, and potentially mutually reinforcing ways. For example, emerging evidence indicates that SMW may find the increasing medicalization of body size—whereby larger

body size is framed primarily as a medical problem requiring intervention to treat (24)—less relevant (and potentially harmful) to their wellbeing (25).

Despite the emergence of critical inquiry in the social and health sciences examining the consequences of weight stigma among diverse women, this scholarship primarily relies on quantitative methods, overlooks intersectional frameworks, and underemphasizes structural-level contributors to health inequities for individuals living in larger bodies. Recent studies also suggest that racially minoritized women may experience different stigma processes compared to white women due to discrimination, socioeconomic disparities, and access to care (11, 19). Less attention has been paid to SMW, who are more likely to live in larger bodies than their heterosexual counterparts and are more likely to experience intersectional stigma and associated inequities. Centering SMW in research examining the relationship between weight stigma and mental health, with attention to interlocking and mutually reinforcing systems of oppression, can enhance our understanding of how stigma drives health disparities, and identify modifiable social-structural factors to promote health equity. This study contributes to new knowledge by using a life-course perspective and exploring weight stigma as the driver of adverse health outcomes as opposed to weight.

Methods

Study design and approach

This study used intersectionality theory, minority stress theory, and a life course perspective as foundational frameworks to understand the complexities surrounding weight stigma among SMW. We employed an epistemological approach that avoided moralizing questions and used non-judgmental language to increase comfort when sharing experiences of weight stigma. This approach centered participants' lived realities, prioritized their perspectives over predetermined frameworks (e.g., weight-centric approaches), and sought to facilitate open, respectful explorations of weight-related experiences within the context of intersecting systems of oppression.

We aimed to examine how SMW perceived and experienced sociocultural norms and expectations around weight, body size, and weight management during their lifetime, with attention to intersecting structures of oppression related to gender, sexual orientation, and other social categories, including how body size-related discrimination is experienced. The first author conducted semi-structured life history interviews (approximately 60–90 minutes in length) with adult cisgender women who identify with non-heterosexual sexual orientations. Interviews examined how participants perceived the mental health impact of weight stigma and its intersections with other forms of discrimination. A Community Advisory Board, comprised of experts on queer health or weight stigma, and/or self-identified community members, were recruited through social media and word of mouth for the purposes of this project (n = 6). Council members provided iterative feedback on the research questions, eligibility criteria, and the semi-structured interview guide through independent review, team meetings, and individual meetings. All members were compensated for their time.

Inclusion and exclusion criteria

Participants were eligible if they met the following inclusion criteria: 1) adults, aged 18 years or older; 2) identified as non-heterosexual (e.g., lesbian, bisexual, pansexual, queer, questioning, fluid, or report other non-heterosexual identities); 3) identified as cisgender women, and 4) were able to speak English. No additional restrictions were placed on the sample, including by BMI or body size. Exclusion criteria were: 1) under 18 years old; 2) exclusively heterosexual; 3) not cisgender woman; 4) could not speak English comfortably; and 5) not a current U.S. resident.

Sampling strategy and participants

Twenty-four participants were recruited. To ensure a diverse sample, purposive sampling using a maximum variation strategy (26) was employed, prioritizing individuals with diverse sexual orientations, ages, weight statuses, and racial/ethnic backgrounds.

Recruitment, consent, and study procedures

A study flier with a link to the screening survey was distributed through social media (e.g., Facebook, Instagram). Interested individuals completed an online consent form for both the screener and interview before filling out the screener, which included demographic information. Consent to audio and visual recording via Zoom was included in the informed consent. All procedures were approved by the IRB of record. All interviews were conducted virtually via video conference by the first author in a private setting.

Interview guide

The semi-structured interview (see Appendix A for interview guide) was guided by a life history calendar approach (27), which is appropriate for research involving populations who are historically marginalized and/or have experienced trauma, including sexual minorities (28). This approach encouraged participants to identify salient life experiences and prompted participants to consider important moments in their sexual identity development and weight-related experiences over the life course. The life history approach is particularly appropriate for this study given that normative messages around health, appearance, and body image are influenced by early life experiences (29) and are related to chronic disease risk and disordered eating cross-sectionally and prospectively (30, 31). The preliminary interview guide (including

questions and follow up probes) was developed from the extant literature on minority stress, weight stigma, body image development, and disordered eating behaviors, and existing instruments used in previous research, with a focus on identifying and probing for salient systems of oppression related to weight, race/ethnicity, gender, ability, and class that may intersect with sexuality. Community board members provided feedback on the preliminary interview guide and research questions. Following, we piloted this revised interview guide with three pilot interviews to clarify language and questions, and ensure the guide was of appropriate length for a 60-to-90-minute interview.

Transcription, validation, and deidentification

Transcription type: verbatim with lexical repetitions preserved; non-lexical fillers (um, uh, coughs, sighs) omitted. Prior to analysis, transcripts were de-identified in accordance with standard ethical and privacy guidelines (e.g., replacing direct identifiers with coded labels, substituting personal names with descriptors (e.g., "participant's friend"), and generalizing third-party names and locations. All de-identification steps were validated by independent review and by cross-referencing a subset of transcripts with the corresponding audio to ensure fidelity and absence of residual identifiers. Transcripts were de-identified and validated (checked against audio recordings for accuracy) prior to analysis.

Epistemological approach and theoretical frame

In this study, we employed a consensus coding approach grounded in interpretivist and narrative frameworks, which recognizes that "truth" is subjective and shaped by individual perspectives and social contexts. Rather than relying on inter-rater reliability, which assumes a singular "true code" for each transcript segment, our methodology emphasized collaborative discussions among the coding team to develop a shared understanding of participant narratives. As different coders analyzed the data, they engaged in discussions to resolve discrepancies in code interpretation, ensuring that the analysis reflected the diverse viewpoints inherent in the participants' stories. Ultimately, the coding team organized emerging codes into coherent themes through group discussions, which highlighted both similarities and differences in the participants' experiences. This approach underscores our commitment to an inclusive and nuanced exploration of the data, ensuring that our findings are reflective of the complexities of the participants' lived experiences.

Thematic data analysis

Thematic analysis employed a constructivist-reflexive approach (32) facilitated by Dedoose software (33), blending inductive emergence with structured taxonomic development through three iterative phases involving four trained coders (L.A.F., Y.W., C.W., A.V.). Beginning with independent review of eight initial transcripts, the team generated ~100 preliminary codes encompassing descriptive categorizations, participant-derived *in vivo* language, and processual codes tracking stigma trajectories. Weekly analytic dialogues then organized these into a three-tiered taxonomy: externalized stigma (societal/interpersonal bias), internalized stigma (self-directed negativity), and *a priori* categories (protective factors, intersectionality), with non-stigma codes retained exclusively when contextualizing central phenomena such as mental/physical health comorbidities. The process culminated in intersectional mapping through six *a priori* domains selected for research relevance and data prevalence, narrative tracing of stigma experiences across life trajectories, and refinement cycles of dynamic codebook evolution. This iterative consensus-building preserved experiential diversity through constant comparison of linguistic patterns and situational contexts. The resultant hybrid methodology balanced inductive sensitivity to lived experience with deductive validation of theoretically significant constructs, particularly regarding intersectional stigma manifestations, with a consolidated codebook detailing operational definitions and decision rules available from the first author upon reasonable request.

The researchers identified key concepts that encapsulated participants' experiences, such as "intersectional stigma," "protective factors," and "queer community." These concepts were not merely emergent but were constructed through careful analysis and clustering of related codes. Codes that shared similar meanings or addressed common experiences were grouped together to form coherent themes. For example, codes related to classism, heterosexism, and ableism were clustered under the theme of "Intersectional Stigma." The team considered candidate themes and checked the data to ensure they accurately represented the dataset and addressed the research questions. The research team revisited the transcripts to confirm that each theme was well-supported by multiple excerpts, ensuring that the themes reflected the diversity of experiences shared by participants. The refinement process involved iterating back to the dataset, modifying themes based on new insights, and ensuring that each theme maintained internal coherence while also reflecting the broader narrative of the participants' experiences. Each theme was clearly defined and distinct from others, preventing overlaps. The themes were internally consistent, with all data extracts supporting the identified themes. Data extracts were used to illustrate themes, ensuring that the analysis remained closely tied to participants' voices. Themes and selected illustrative quotes were organized into tables, with themes and corresponding quotes discussed in the text.

Positionality and reflexivity

As a research team exploring intersectional stigma among the SMW community, we recognize that our perspectives are shaped by our lived experiences. The coding team was comprised of

individuals who identify as larger bodied, big-sized, or mid-size/plus-size who have lived experience of weight stigma, and one member who is currently straight-sized. The coding team identifies as: heterosexual, heterosexual/questioning, queer, transgender, and cisgender, and team members were White and Asian, two with lived experience of disordered eating. No coding team members identify as disabled. The research team was comprised primarily of people who identify as a sexual and/or gender minority and non-disabled, and were predominately, but not exclusively, white and U.S.-born, with varied lived experiences of weight stigma and thin privilege. Throughout the coding and analysis process, the team regularly reflected on how our positionality impacted our perspectives (including areas of insight or biases), with special consideration of our experiences related to body-related oppression. This involved activities such as positionality worksheets, reflexive journaling memos, and regular coding discussions. In alignment with critical constructivist approaches, we explored and interrogated how our identities and experiences shaped our interpretations rather than assuming we could approach the data neutrally.

Results

Participant characteristics

Participants (N = 24) were cisgender women aged 22 - 46 (M = 32.0, SD = 6.3). Participants reported their race and ethnicity separately, with the option to select more than one racial category. Six participants (25.0%) identified as Hispanic/Latinx, (including multiracial combinations: Hispanic/Latinx only (n = 2, 8.3%), Hispanic/Latinx and White (n = 2, 8.3%), Hispanic/Latinx and Black/African American (n = 1, 4.2%), and Hispanic/Latinx, Native American/Indigenous, and White (n = 1, 4.2%). Non-Hispanic participants (n = 18, 75.0%), included White (n = 14, 58.3%), Asian American/Pacific Islander and White (n = 2, 8.3%), Black/African American and White (n = 1, 4.2%), and Native American/Indigenous (n = 1, 4.2%). Sexual orientation responses (multi-select allowed) included 12 pansexual participants (50%), 11 queer participants (45.8%), 10 asexual spectrum (ACE spectrum; e.g., graysexual, demisexual, asexual) participants (41.7%), eight lesbian participants (33.3%), six bisexual participants (25%), one biromantic (4.2%), and one same-gender-loving participant (4.2%). Most participants (58.3%, n = 14) had a bachelor's degree or higher. BMI, calculated from self-reported height and weight, is presented here as a proxy for weight-based discrimination experiences, and ranged from 18.9 to 68.8, with a mean of 38.8 (SD = 13.6). See Table 1 for sample characteristics.

Overview of themes

Participants described encountering, reinforcing, or resisting gendered body ideals across three overlapping contexts: dominant culture, families of origin, and queer communities. While each context operated in distinct ways, they often overlapped, for example, families of origin in childhood served as conduits of dominant body norms, instilling fear of fat and the moralization of body size at a young age. Participants highlighted how sociocultural norms tied women's worth to thinness and heteronormative beauty standards, with weight stigma intersecting with gender identity, sexual orientation, disability, race, and class with cascading perceived effects on their mental health and wellbeing. For SMW in larger bodies, stigma manifested uniquely through gendered norms related to femininity, womanhood, and

TABLE 1 Sample characteristics (N = 24).

Characteristic	*N*	%	% of cases
Race[a]/Ethnicity			
Hispanic/Latinx			
Hispanic/Latinx	2	8.3%	
Hispanic/Latinx, White	2	8.3%	
Hispanic/Latinx, Black/African American	1	4.2%	
Hispanic/Latinx, Native American/Indigenous, White	1	4.2%	
Non-Hispanic			
Non-Hispanic, White	14	58.3%	
Non-Hispanic, Asian American/Pacific Islander, White	2	8.3%	
Non-Hispanic, Black/African American, White	1	4.2%	
Non-Hispanic, Native American/Indigenous	1	4.2%	
Education			
High school diploma or GED equivalent	4	16.7%	
Some college or associate degree	6	25%	
Bachelor's degree	8	33.3%	
Graduate degree	6	25%	
Sexual Orientation[a]			
ACE spectrum (e.g., graysexual demisexual, asexual)	10		41.7%
Biromantic	1		4.2%
Bisexual	8		33.3%
Lesbian	6		25.0%
Pansexual	12		50.0%
Queer	11		45.8%
Same gender loving	1		4.2%
	M	*SD*	
Age (mean, *SD*)	33.0	6.5	
Range = 22.6 – 46.3			
BMI (mean, *SD*)	38.8	13.6	
Range = 18.9 – 68.8			

[a]Participants could select multiple responses for race and sexual orientation.

queer presentation. See Figure 1 for a visual representation of the three identified themes.

The influence of dominant cultural body norms

Participants described how dominant cultural norms shaped their understanding of bodies and weight over their life course. They routinely acknowledged that these influences contributed to their internalized anti-fat bias and diet culture (i.e., a prevailing norm equating body size with health and moralizing weight, eating, and physical activity) (34). Participants shared how these norms were encountered early in childhood, and shared through peers, media, families, health care experiences, and institutions, which taught them early on that body size was something others would monitor, praise, pathologize, exclude, or mistreat. Table 2 provides illustrative quotes for the influence of dominant cultural body norms.

Participants shared how public spaces also communicated exclusionary norms. Size-inaccessible seating, transportation, and fitness environments reinforced the message that larger bodies did not belong. Participants shared that when they were growing up, the clothing options for children in larger bodies were relatively non-existent, forcing them to shop in the adult women's section, and limiting their choice of child-appropriate, fashionable clothing styles. Participant 23 reflected, "I'd never had the clothes that the other kids had, because … they weren't made in plus sizes. So, my clothes had to come from … the old fat lady stores … so they were very … ordinary, boring … middle-aged … church lady clothes. (ID 23: Bisexual, Queer, Black/African American, White/Caucasian, Non-Hispanic, 46 years old) Participant 20 shared how childhood experiences of interpersonal weight-related discrimination reinforced body norms, suggested that some spaces were not safe for all bodies, and discouraged participation in enjoyable, health-promoting activities:

> The girls in the bleacher[s] started laughing when I took off my towel… 'Hey, I didn't know they allowed whales in the pool' …I didn't really stick around for swimming, and I didn't go back. (ID 20: Pansexual, Queer, ACE spectrum, White/Caucasian, Non-Hispanic, 41 y/o)

Participants also discussed how early internalization of dominant narratives shaped self-perception and body image in enduring ways, leading to internalized weight bias, and damaging their mental health. For example, Participant 24 reflected on how she internalized weight bias which resulted in severe disordered eating, "I fasted and … tried to convince myself that … it was better to want to be anorexic than to just accept myself as big. I wanted to be a waif; a person who could live on six cups of coffee, a cracker or two, and nothing else." (ID 24: Pansexual, ACE spectrum, White/

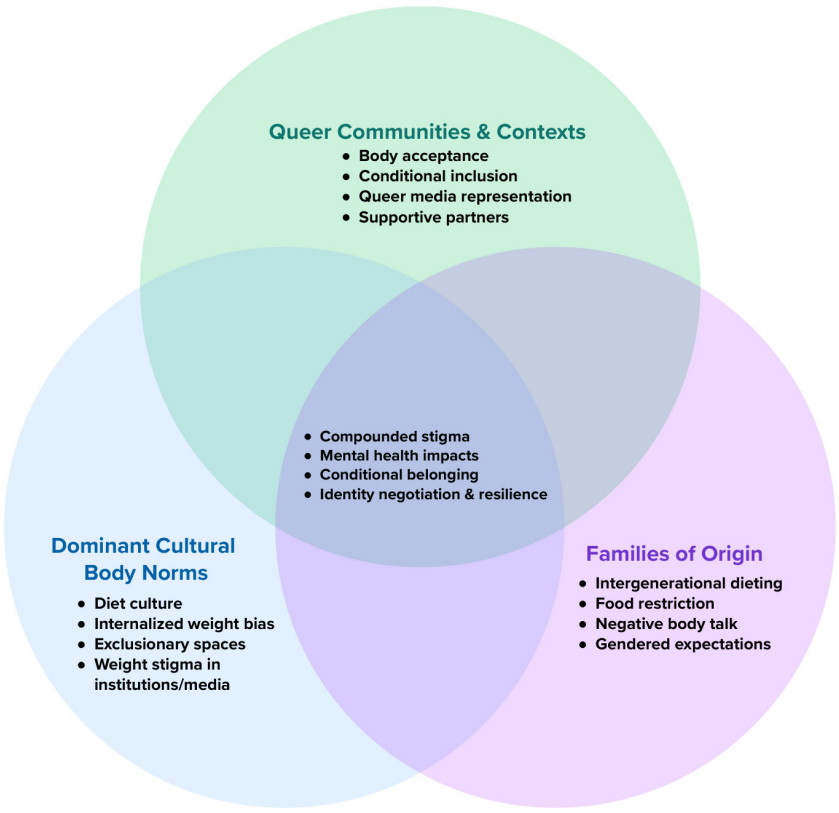


FIGURE 1
Intersecting contexts shaping body and weight-related experiences of SMW.

TABLE 2 Illustrative quotes of influence of dominant cultural body norms.

Weight stigma impacts on mental health	
I was bullied heavily in school. I was literally told to kill myself multiple times. … When I was like 17, 18, I started working at McDonald's, and I just ate all the food … I hated myself so much for it. I just stopped eating. I would eat, and I would throw up…. I just felt wrong, and I stopped getting my free meals at work … [I] was so disgusted with myself.	ID 29: Lesbian, Pansexual, ACE spectrum, White/Caucasian, Non-Hispanic, 28 y/o
The older I got, the more aware of my body image and body size I became, [the] more developed those insecurities … became.	ID 40: Lesbian, Queer, Hispanic/Latinx, White/Caucasian, 30 y/o
Long-term impacts of childhood weight stigma	
So, it took me a long time to get over it. And even as I did grow up and have … intimate partners and stuff … for a long time, I felt really like, 'Oh, I can't believe … somebody that was so attractive would want to be with me.	ID 41: Bisexual, Pansexual, Queer, Native American/Indigenous, Hispanic/Latinx, White/Caucasian, 36 y/o
I feel like no woman would find me attractive because, like, I'm not. …[I] convinced myself, as a child, that I was basically just too fat and ugly for someone to love. And it's bled into other parts of my life where I get too self-conscious to do the things that I actually really want.	ID 24: Pansexual, ACE spectrum, White/Caucasian, Non-Hispanic, 29 y/o
Intersectional weight stigma	
It was hard being Black, and it was hard being fat, in a town where everyone is white and not everyone is fat, especially at a young age. And I found most times that I would be more alienated for my weight than for my race, and that was hard to wrap my mind around. And of course I had race issues growing up … I was, Lord, probably seven the first time someone called me a [racial slur], so, [state in northeast region], what are you gonna do? But as I got older, my weight became more of an issue.	ID 52: Pansexual, Same Gender Loving, Queer, Black/African American, Hispanic/Latinx, 37 y/o

Caucasian, Non-Hispanic, 29 y/o) This same participant said she "genuinely wanted that [be]cause to me, that felt like a more acceptable, better option than just being big.

Additionally, participants shared how the ramifications of weight stigma internalized during youth could continue throughout their life without resolution, consuming significant mental bandwidth through persistent intrusive thoughts. Participant 22 recounted the physical and mental toll that her relationship with food had taken on her, prompting her efforts toward eating disorder recovery:

> I realized that I didn't want to live my life in this … binge/restrict [cycle]. I started to feel a lot of digestive fallout … My relationship with food was doing violence to my body, and that's what triggered my [eating disorder] recovery. (ID 22: Queer, ACE spectrum, Biromantic, White/Caucasian, Non-Hispanic, 47 y/o)

This participant noted that she had to find recovery through yoga philosophy due to weight stigma in eating disorder treatment and lack of affordable healthcare "both because of lack of health insurance and the size of my body, I've never been able to access inpatient care, even when I was probably behaviorally qualified for inpatient." (ID 22: Queer, ACE spectrum, Biromantic, White/Caucasian, Non-Hispanic, 47 y/o)

Participants discussed how prolonged exposure to societal weight bias and intersectional body norms starting in childhood permeated different facets of their lives, ranging from their mental health to their social relationships to their sexual identity. For example, Participant 37 noted how her own internalized negative feelings about body size and poor body image affected her when she said, "[F]or a very long time, I had major depression, suicide attempts." (ID 37: Bisexual, Pansexual, Native American/Indigenous, Non-Hispanic, 38 y/o). She also disclosed that it affected her romantic relationships throughout her life. Participants described how cultural body norms and anti-fat bias intersected with beliefs about race and disability. Participant 6, who uses a wheelchair, explained, "using mobility [devices] absolutely changes almost everybody's perspective immediately, especially being a "not-Barbie-size" person … It's a true stereotype… 'You're fat because you're disabled … and both of those things cause each other.'" (ID 6: Queer, ACE spectrum, White/Caucasian, Non-Hispanic, 43 y/o) This intersection had impacted healthcare stigma and misdiagnosis. Participant 52 shared how racism and sizeism in healthcare impacted her life, saying.

> Every health issue I've ever had has been contributed to my weight or to my race … I have chronic Lyme [disease] … [that] went undiagnosed for so long because the bullseye rash you get from Lyme was not visible on my skin … And it was a lot of what doctors always do to larger people—"Have you tried losing weight?"… [and] it was twofold because they didn't know what the disease looked like on my skin tone and then … blame[d] it on my weight. It was a double whammy. (ID 52: Pansexual, Same Gender Loving, Queer, Black/African American, Hispanic/Latinx, 37 y/o)

While participants reflected on experiences of weight bias in healthcare settings leading to poor care quality, Participant 46 shared her experience facing racialized beauty standards shaping body policing: "Predominantly white people went … to my school, and a lot of the girls would critique on my body…. I wasn't overweight. I was like a size one back then." (ID 46: Pansexual, ACE spectrum, Hispanic/Latinx, 38 y/o). Taken together, these

narratives illuminate how early, pervasive weight-centric norms shaped trajectories across health, relationships, and social systems of oppression.

Families of origin

Messages from family members of origin and across generations emerged as particularly formative, reinforcing systemic body norms that participants internalized as anti-fat attitudes and bias. The participants described their families of origin as influential sources where weight-related messages were first learned and reinforced, shaping their understanding of bodies and weight over their life courses. These messages often validated broader societal biases observed in media, peers, and institutions (e.g., schools and healthcare). Participants shared how family members, mostly women but some men, including mothers, fathers, grandmothers, aunts, and sisters, influenced their early body image through chronic dieting, verbal comments about weight, encouragement or criticism around eating, and modeling of restrictive behaviors. This intergenerational messaging reinforced the idea that weight and body size were key measures of one's worth. Participant 49 described the contradictory food-related messages from older generations, saying "Chinese parents or grandparents saying, 'Why aren't you eating more? You're so thin,' but then, on a dime, switching to, 'Stop eating so much, you're getting chubby.'" (ID 49: ACE spectrum, Lesbian, Asian/Pacific Islander, White, 26 y/o) Participant 52 shared her experience growing up in a Puerto Rican family: "The Puerto Rican side always had nicknames for those of us who were a little bit bigger, "gordita" just being "little fat girl" nickname. Hurtful, yes. Did I get over it? Probably not. But that was just kind of the talk." (ID 52: Pansexual, Same Gender Loving, Queer, Black/African American, Hispanic/Latinx, 37 y/o). Table 3 provides illustrative quotes for families of origin.

Participants also highlighted subtle forms of sexism within their families, noting how brothers or "male presenting" siblings "didn't have it as rough as the younger female children" (ID 42: Bisexual, ACE spectrum, Hispanic/Latinx, 23 y/o) and that [boys] didn't have their "food restricted in the same way." (ID 3: Pansexual, White/Caucasian, Non-Hispanic, 28 y/o). These experiences reflected how boys' and girls' bodies were surveilled differently, with girls often facing heightened scrutiny. Family and close others were also mentioned by participants as sources of enacted interpersonal stigma regarding body size and eating, both in childhood and adulthood. Participant 33 elaborated:

> I just got more and more fat as I got older, despite the fact that I was in body conditioning for all four years of high school. I was strong, set personal records for women. I was a healthy person, but my family treated me like I wasn't, because I was fat. And my little brother is like stick thin. We are the complete opposites, as far as body types go … Nobody ever bothered him about the amount that he would eat, but whatever I ate was always being criticized, and my dad would use terms like, 'Go stuff your face, go eat like a pig…' Which is just wild to think about … that adults were talking to a child that way. (ID 33: Pansexual, White/Caucasian, Non-Hispanic, 28 y/o).

This participant noted that her body size was larger or "fat" despite being young, regularly physically active, and "healthy" by her own account. She described her father's stigmatizing language "making fun of me for my body type … calling me names"–in stark contrast to her brother's treatment.

TABLE 3 Illustrative quotes of families of origin.

Culture & familial body messages	
[W]e're from a Hispanic and … Native American background. … those are typically … curvier bodies. And just naturally … all my family … I did see … a larger body on them. And … I feel like, because of the relationship I had at home with my mom, it was like this … thing of … well, you don't want to grow up to look like them … you don't want to grow up to have that sort of shape, right? … so that definitely played a part of like … that's … gross. That's not right. That's like … not pretty.	ID 41: Bisexual, Pansexual, Queer, Native American/Indigenous, Hispanic/Latinx, White/Caucasian, 36 y/o
…Chinese parents or grandparents saying, 'Why aren't you eating more? You're so thin,' but then, on a dime, switching to, 'Stop eating so much, you're getting chubby.'	ID 49: Lesbian, ACE spectrum, Asian/Pacific Islander, White/Caucasian, Non-Hispanic, 27 y/o
Forced restriction, weighing, and disordered eating	
She'd [participant's mother] put me on diets. She would force me to vomit if she thought that I had too much food … I had to weigh in a lot … probably as young as five. … I don't remember a time living with her when I wasn't on some sort of diet.	ID 20: Pansexual, Queer, ACE spectrum, White/Caucasian, Non-Hispanic, 41 y/o
Family modeling overvaluation of appearance and weight	
All the women in my family have been highly conscious of their bodies and appearances. My mother tends to measure her life not in years, but by how much she weighed at different times.	ID 32: Lesbian, White/Caucasian, Non-Hispanic, 31 y/o
Heteronormativity	
[W]hen I was a kid … my mom … was pretty chill … but for years, she would tell me, 'I don't really think you're bi[sexual] because you always … want to be with men.'	ID 15: Bisexual, Queer, Hispanic/Latinx, White/Caucasian, 34 y/o

Participants described their families of origin as influential sources where weight-related messages were first learned and reinforced. Negative body talk was routine, particularly among women relatives: "My mom trying to … just maintain … the words that they spoke… 'I'm so fat. I'm so fat … I ate so much. Oh, my arms are so huge'" (ID 37: Bisexual, Pansexual, Native American/Indigenous, Non-Hispanic, 38 y/o) These messages shaped their understanding of bodies and weight over their life courses, validating the negative, pervasive societal bias they observed in media, from peers, and in institutions (e.g., school, healthcare). Participant 29 shared how family experiences reinforced the violent weight-based oppression she experienced from peers saying, "Struggling with being fat, being told by my mom I was fat, her restricting food, her literally locking cabinet doors so I wouldn't eat…." (ID 29: Lesbian, Pansexual, ACE spectrum, White/Caucasian, Non-Hispanic, 28 y/o) Participants shared experiences of the ways that diet culture was perpetuated intergenerationally, such that parents tried to monitor and control weight-related behaviors, induce weight loss for their children, and even forced them to engage in disordered eating and purging behaviors.

Family expectations around appearance often intersected with participants' sexual orientation and gender expression. Coming out was sometimes met with conditional acceptance or dismissive comments, reinforcing feelings of scrutiny about sexuality. Participant 15 shared, "when I was a kid … my mom … was pretty chill … but for years, she would tell me, 'I don't really think you're bi[sexual] because you always … want to be with men.'" (ID 15: Bisexual, Queer, Hispanic/Latinx, White, 33 y/o) Participants also discussed their emerging sexual minority identities in relation to their experiences in girlhood, and how sociocultural body-related pressures and norms had a deleterious effect on their mental health and wellbeing which persisted into adulthood. These patterns of familial messaging did not occur in a vacuum; they intersected with broader social contexts and communities that shaped how individuals experienced body image and stigma.

Queer communities and contexts

Participants' accounts of queer community norms around bodies suggested that they perceived affirming messages about body inclusivity and size acceptance within queer spaces. Participants' descriptions of body-related messages in queer communities suggested that dominant cultural norms seeped into queer spaces, creating a backdrop of size-related oppression within environments they thought should be more inclusive. That is, while participants discussed the queer community in terms of its general acceptance of sexuality and gender, not all participants agreed that queer spaces were "radically inclusive space[s]" (ID 22: ACE spectrum, Queer, White/Caucasian, Non-Hispanic, 46 y/o). The participant continued: "my corner of queer community is also very accepting and accessible." She implied that her experiences in the queer community were "unique" and accepting, diverging from typical queer spaces. Participant 40 noted that, "The queer community is more accepting, more body positive. Like, I love going to pride or to the gay clubs, and people of all shapes and sizes are wearing whatever the hell they want, and nobody's judging them about it." (ID 40: Lesbian, Queer, Hispanic/Latinx, White/Caucasian, 30 y/o). Supportive, inclusive queer communities were discussed in terms of fostering body acceptance and positive body image, as well as self-image. Table 4 summarizes queer community and contexts. Participant 37 described that her experience with the queer community "seems to be so extremely accepting of everyone … it's all inclusive and it's all welcomed and all loved." (ID 37; Bisexual, Pansexual; Native American/Indigenous; 37 y/o) Participant 15 shared "I think part of … what helped me feel less hatred towards myself is just some of the communities I found; the queer community, the alt[ernative] community; you know, places where your body doesn't matter as much." (ID 15: Bisexual, Queer, Hispanic/Latinx, White/Caucasian, 34 y/o). This participant mentioned moving away from self-hatred related to body size but could also have been reflective of other internalized bias related to their sexuality.

Queer relationships and partners also were places where support was found, and a shared female identity seemed to allow for a deeper connection around body image issues, a possible protective factor against weight stigma among some queer women with women/femme/queer partners. One participant explained how her partner supports her:

> And every time I … brought it up sometimes, like, 'Oh, I look fat in this dress, Oh, I look like this', she [participant's partner] would always tell me, 'No, you look beautiful, I don't see what you see.' So that made me feel a little bit better about myself because she never talked down to me about my body … I think the other aspect of it is that someone from my culture doesn't think I'm fat, accepts me for who I am, and is nurturing and caring … it fulfilled that little me inside that lingered for someone to say something like that, that was a female. (ID 46: Pansexual, ACE spectrum, Hispanic/Latinx, 38 y/o).

Participant 46's use of the word "fat" with a negative connotation conflicts with other participants' uses of the word "fat" as a neutral descriptor of body size, demonstrating internalized weight bias.

Participants' descriptions of body-related messages in queer communities suggested that dominant cultural body norms seeped into queer spaces, and intersected with gender presentation, race, and disability to create unique community experiences across social categories. Participant 40 explained how she felt her gender expression might be protective against weight stigma, stating, "For me, personally, I have not experienced a lot of … appearance-based discrimination related to being queer. And I think that has a lot to do with being more femme presenting." (ID 40: Lesbian, Queer, Hispanic/Latinx, White/Caucasian, 30 y/o) Participant 41 observed how the Pride event in her area in the Western U.S. was not accessible for disabled or chronically ill people who have significant mobility issues: "[it] is so not accessible …

TABLE 4 Illustrative quotes of queer communities and contexts.

Support within queer communities	
I feel like there is a lot more acceptance of any kind of body type in the queer community.	ID 3: Pansexual, White/Caucasian, Non-Hispanic, 27 y/o
I see more openness and acceptance of my fat body in the queer, poly community than I've seen in any other community that I've ever been a part of.	ID 23: Bisexual, Queer, Black/African American, White/Caucasian, Non-Hispanic, 45 y/o
Shared queer/gender/woman experiences and body image	
I'm with someone who understands what I'm going through and understands what it's like to be a woman and also … have issues with body image … It's something that we're able to really openly talk about. And it feels a lot less isolating [be]cause I'm not comparing in the way of, like, 'Oh, I wish I looked like you,' but more so, like, we're comparing our experiences and sharing our experiences and being able to support each other through that. And I think that's honestly, like, really, really helpful, because it doesn't feel so shameful.	ID 32: Lesbian, White/Caucasian, Non-Hispanic, 31 y/o
Queer media and representation	
I think … something that I enjoy about the queer community … is that I do see a very wide variety of, like, body shapes represented in social media…	ID 47: Bisexual, Queer, Asian/Pacific Islander, White/Caucasian, Non-Hispanic, 30 y/o
…In my books that I write, my characters, my girl heroines are always bigger because I do want to be a part of that representation in media.	ID 15: Bisexual, Queer, Hispanic/Latinx, White/Caucasian, 34 y/o
Cisnormativity, heteronormativity, gender norms and weight stigma	
If you're large [and queer] then you're supposed to be … butch or non-binary, but because I like to be feminine and large, that's a no, and people wouldn't like that."	ID 24: Pansexual, ACE spectrum, White/Caucasian, Non-Hispanic, 29 y/o

there [are] steps everywhere." (ID 41: Bisexual, Pansexual, Queer, Native American/Indigenous, Hispanic/Latinx, White/Caucasian, 36 y/o) Participant 52 discussed the challenges she encounters related to representation and discrimination at intersections of sizeism, racism, and homophobia:

> Gayness in the Black community is difficult … I feel like being white and gay is something so celebrated and so welcomed … if you are fat and Black and gay, you have to be the self-appointed punchline to be accepted, and if you're not, you are an outcast, or you are not fun to be around. If you are not the life of the party, if you are not the one who drinks too much, if you don't have a designated spot as a fat, Black, queer person, you're kind of left to the side, especially with outside communities like the white community. I mean they want someone who's like, "Oh my God, I want my own Billy Porter."…If you're not entertaining, you are not valid as a larger Black person. (ID 52: Pansexual, Same Gender Loving, Queer, Black/African American, Hispanic/Latinx, 37 y/o)

Together, participants highlighted the ways that queer communities upheld broader systems of oppression, which intersected with weight stigma to create unique and compounded experiences of exclusion and harm.

Participants also observed how queer media spaces upheld appearance and body size ideals for SMW, demonstrating how dominant cultural body norms intersected with queer body norms and weight stigma, stunting body acceptance in these spaces. Participant 20 shared, "Your worth is how skinny you are … even in a lot of the … lesbian media … there was a really big emphasis on how you looked." (ID 20: Pansexual, Queer, ACE spectrum, White/Caucasian, Non-Hispanic, 41 y/o) Participants also described how queer media and digital content perpetuated community-specific ideals of bodies, beauty, and health, where even body-positive content often centered white, non-disabled, conventionally attractive, mid-size bodies, rather than larger plus-size bodies less represented in mainstream fashion. Participant 33 noted that there is an "ideal lesbian woman that is heavily perpetuated by things like TikTok, who is thin, with long hair, and she's masc[uline] but not too masc, because then it's too manly … it becomes a sort of inherent biphobia and fatphobia, and they're tied together, because they're both impacted by social media." (ID 33: Pansexual, White/Caucasian, Non-Hispanic, 27 y/o) This reflects concerns about media-enforced standards perpetuating weight-based oppression and bi-erasure.

Participants also talked about the ways that coming to understand and accept their sexuality and queer identity helped them nurture more positive body image:

> [O]nce I acknowledged that I was queer, my goal was always to be … happy with myself … That also comes in the realm of body positivity, [be]cause if I wanted to feel comfortable with my queer identity, I also wanted to feel comfortable with my body and also be kind to myself … Those kinda tied in together … If I can accept my queerness, I can accept my body as it is." (ID 42: Bisexual, ACE spectrum, Hispanic/Latinx, 23 y/o)

Navigating homophobia along with body-related oppression allowed participants to draw parallels between stigmas, recognizing how stigma, whether related to sexual identity or body size, harmed

their self-image and well-being. As Participant 40 explained: "Realizing that I was a lesbian also made a huge impact on my body image. [Bec]ause I was like, I love all bodies, why wouldn't they love mine?" (ID 40: Lesbian, Queer, Hispanic/Latinx, White/Caucasian, 30 y/o) She noted how accepting her queerness was intertwined with unlearning internalized anti-fat bias, and that finding self-kindness involved understanding and accepting all aspects of herself. She continued, "[A]lso realizing that the queer gaze is far, far different than the straight cis male gaze," (ID 40: Lesbian, Queer, Hispanic/Latinx, White/Caucasian, 30 y/o), suggesting that navigating queer attraction fostered greater body acceptance. Participant 49 (Lesbian, ACE spectrum, Asian/Pacific Islander, White/Caucasian, Non-Hispanic, 27 y/o) describes how queer spaces feel protective for her body image and freeing from dominant cultural body norms:

> [Being queer] has been freeing … If I were … trying to … meet … heterosexual beauty standards … I would probably have worse body image than I do now … It's nice to know that one, my girlfriend finds me attractive kind of no matter what I look like, and two, even if we weren't dating, I can … dress however I want, and you know there'd be a lesbian out there who was into it.

These narratives collectively illuminate how queer contexts can both challenge and reproduce body norms, underscoring the complexity of body image within diverse queer communities.

Discussion

In this study, we examined how this sample of cisgender SMW experience weight stigma and sociocultural body norms using semi-structured interviews and an intersectional, weight-inclusive framework and life history approach. Participants' accounts illustrated how weight stigma was embedded within cultural, familial, and queer community contexts, operating as a pervasive and at times violent force that reinforced size, gender, race, and class hierarchies. While some queer spaces fostered greater body acceptance and challenged heteronormative beauty ideals, others reproduced size-based exclusion and oppression, underscoring how cisgender SMW navigate complex and at times contradictory sociocultural messages about bodies that both reinforce and resist weight stigma.

This study is unique in its departure from mainstream public health discourse on SMW and weight in that we center weight *stigma* as a public health problem that is *exacerbated* by conventional public health research, which typically pathologizes SMW, as well as racially minoritized women, who have higher BMIs. Scholarship on weight stigma is frequently embedded within weight-centric approaches that focus on single-axis experiences of interpersonal or internalized bias and overlook how weight stigma intersects with heterosexism, racism, ableism, and classism (35). By drawing on intersectional, life course, and minority stress approaches to analyze and interpret participants' accounts, the present study shifts our attention away from individual weight control and towards the structural and cultural systems that shape body image and health. This alternative focus highlights unique stigma configurations and shared mechanisms of exclusion that can shape population-level variability in health and enhance public health strategies for population-based health (e.g., culturally sensitive weight-inclusive anti-bullying campaigns).

In considering health promotion for SMW, larger-bodied participants mentioned that disordered eating behaviors were encouraged and at times forced on them as children by their parents and doctors. Participants reflected on these experiences as traumatic and harmful, with mental health impacts lasting into adulthood. These early life experiences reflect how minority stress processes may extend beyond heterosexism to include weight stigma, compounding distal stressors such as interpersonal discrimination from families with proximal ones (e.g., internalized homophobia and weight bias). These findings align with research documenting greater body dissatisfaction and eating concerns among sexual minorities, especially gay men and bisexual women, compared to heterosexual peers (36, 37).

The recent findings have important implications for prevention and clinical care. These narratives underscore a need for routine, stigma-informed screening practices in clinical and school settings for early detection of and intervention for disordered eating symptomology and its sequelae (38). In the context of eating disorder care, participant narratives reinforce the need for addressing weight bias not as a single-axis issue but one that is compounded by sexual orientation, gender, race, ability, and class. For individuals with eating disorders, using affirming, weight-inclusive, patient-centered approaches that are informed by anti-racist, intersectional understandings of body image can address treatment inequities (39). While our analysis emphasizes structural stigma, individual differences in emotion regulation and self-conscious emotions (e.g., guilt/shame) may shape how weight stigma is internalized and experienced (40, 41).

Participants' accounts demonstrated that queer spaces were not immune to size-based exclusion. Many cisgender SMW described how body size intersected with gender presentation and race to shape belonging, where some larger-bodied feminine-presenting women described feeling subject to heighted scrutiny, while others encountered assumptions that queer women in larger bodies should adopt more masculine or androgynous styles. This illustrates how queer spaces may present an intersectional paradox such that they may resist dominant gender and sexuality norms, while simultaneously upholding or reproducing sizeism and racialized beauty standards. Minority stress theory may help explain how intra-community exclusions could create cumulative and compounding stressors and conditions that mitigate the protective potential of queer community. Research with sexual minority communities, and particularly SMW, has found mixed evidence about the protective nature of queer communities for body image (42–44). Findings from this study echo previous mixed findings (45), demonstrating both affirming and exclusionary dynamics within queer spaces, relationships, and communities.

These findings highlight the need to consider weight stigma not only as a product of dominant cultural ideals, but also as a process embedded within queer communities and subcultures that intersects with broader systems of oppression (e.g., sexism, racism, heterosexism). Mixed findings regarding the protective nature of queer community and queer identity may be reflective of this; where communities that tend to challenge traditional gender presentation norms may be relatively more inclusive but still exist within a larger system of intersectional weight-based oppression.

These findings point to actionable implications for health promotion among SMW, and the population more broadly, by targeting modifiable structural determinants. For example, public health promotion should give greater attention to structural ways of supporting inclusive norms, such as advocating for queer-affirming children's clothing that is available in diverse sizes. Public health promotion should also involve greater advocacy for policy-level interventions that protect children and adults from weight-based discrimination. These strategies align with both minority stress and intersectionality frameworks by shifting the focus from individual behaviors to structural-level factors.

Educational programs for queer youth could address body diversity alongside sexuality and gender, interrupting sizeist norms before they are reproduced within community spaces. Incorporating weight inclusivity into public health and school-based anti-bullying campaigns could extend current allyship approaches that address sexual orientation and gender identity toward intersectional, inclusive curricula. Healthcare and clinical practice settings should ensure that spaces are affirming for all identities as well as body sizes, and DEI training should include weight-inclusive education. Addressing weight stigma structurally can disrupt the pathways through which intersecting forms of oppression (e.g., heterosexism, ableism, racism) lead to poor health and well-being.

Weight stigma researchers should place the emphasis on modifiable social-structural factors that perpetuate the interlocking oppressive systems that harm people in larger bodies and contribute to health inequities rather than locating the issue of weight stigma within an individual. Intersectionality researcher Lisa Bowleg (2023) reminds us that, "the remedy for racialized health inequities is not to change the "race" of people oppressed by structural racism, it is to dismantle structural racism" (p. 106) (46). The mental health harms of weight stigma have been evidenced (47), yet still "non-stigmatizing" weight management and lifestyle intervention is upheld as a way to mitigate the impacts of weight stigma, while still viewing "fixing" large people's bodies (however "kindly") as the goal. The current findings demonstrate how greater attention toward the effects of interlocking social-structural inequality on health could refocus the intervention priority away from a problem of the individual[‘s body] to the totality of ways in which our society fosters body size-related discrimination through mutually reinforcing inequitable systems (e.g., healthcare, media, education, employment, access to public spaces) that in turn reinforce discriminatory beliefs, values, and distribution of resources (48). Participants in this study discussed the ways that health-promoting spaces (e.g., gyms, swimming pools) were inaccessible for and/or exclusionary of larger bodies, creating oppressive barriers to life-enhancing movement. For example, one participant's record-setting body was viewed as less worthy than her thin brother's body, leading to a relationship with her body marked by shame and surveillance. These accounts illustrate how weight stigma operates as a distal minority stress, where structural exclusion and interpersonal discrimination fosters internalized stigma (a proximal minority stressor). From an intersectional perspective, these experiences do not exist in isolation, but are compounded by gendered and familial expectations and messaging that position larger-bodied SMW differently from their peers. Addressing these inequities requires structural changes that communicate acceptance of larger bodies and challenges sizeist norms (e.g., by advocating for availability of athletic clothes in larger sizes and reframing physical activity spaces to emphasize inclusion rather than weight loss).

Our study is not without limitations. The thematic framework in the present study is limited by author positionality including that the first author and many co-authors use a weight-inclusive, body liberation lens. The sample was adult cisgender women, majority (58%) Non-Hispanic White, U.S.-based, and middle-aged. The results may not be transferable to other populations, including transgender and non-binary individuals, who may face distinct forms of stigma, particularly as it relates to cisnormativity within body ideals. While intersectionality played a role within the results, particularly with respect to sexual orientation, further work explicitly examining additional intersectional forces of discrimination (e.g., race, disability, etc.) would be needed to determine how those facets of identity and resulting privilege/oppression shape experiences of weight stigma. Additionally, many life-course qualitative approaches rely on longer and repeated interviews; with additional time we could have elicited more depth from participants, particularly when exploring how weight stigma impacted older individuals in the later decades of their lives.

Greater knowledge of these factors, particularly for at-risk groups like SMW, can offer insight into broader mechanisms influencing mental health risk and enhance public health strategies for population-based health. By centering the lived experiences of SMW in this discourse, this study demonstrates how weight stigma operates intersectionally, intertwined with gender, sexual orientation, class, and ability. Integrating these insights with minority stress theory extends the framework beyond sexuality to show how multiply marginalized populations face compounded forms of stress and oppression impacting health inequities, highlighting intervention targets relevant to many different axes of oppression.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by University of South Carolina Institutional Review Board. The studies were

conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

LF: Resources, Data curation, Funding acquisition, Formal analysis, Writing – original draft, Project administration, Conceptualization, Investigation, Writing – review & editing, Methodology. YW: Conceptualization, Investigation, Writing – original draft, Writing – review & editing, Formal analysis. CW: Methodology, Writing – review & editing, Formal analysis, Writing – original draft. AV: Methodology, Writing – original draft, Formal analysis, Writing – review & editing. EH: Writing – original draft, Writing – review & editing, Conceptualization, Methodology. MV: Methodology, Investigation, Writing – review & editing, Conceptualization, Writing – original draft. JM: Writing – review & editing, Investigation, Conceptualization. AF: Writing – review & editing. EM: Writing – review & editing.

Funding

The author(s) declare financial support was received for the research and/or publication of this article. LF was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health, K01MD017630.

Acknowledgments

We want to acknowledge our deepest gratitude for our participants who shared with us their stories and were so forthcoming with their experiences. We hope we have honored your stories and experiences here. This work is dedicated to Jeremy T. Goldbach, PhD; my mentor, friend, colleague, and inspiration. Your impact on the field of LGBTQ+ health will live on through every person you've touched. This work and the body equity project would not have been possible without your unwavering support.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

Author disclaimer

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1687680/full#supplementary-material

References

1. Saguy AC, Riley KW. Weighing both sides: morality, mortality, and framing contests over obesity. *J Health Polit Policy Law.* (2005) 30:869–921. doi: 10.1215/03616878-30-5-869

2. Frederick DA, Saguy AC, Sandhu G, Mann T. Effects of competing news media frames of weight on antifat stigma, beliefs about weight and support for obesity-related public policies. *Int J Obes (Lond).* (2016) 40:543–9. doi: 10.1038/ijo.2015.195

3. Puhl RM, King KM. Weight discrimination and bullying. *Best Pract Res Clin Endocrinol Metab.* (2013) 27:117–27. doi: 10.1016/j.beem.2012.12.002

4. Pearl RL, Sheynblyum M. How weight bias and stigma undermine healthcare access and utilization. *Curr Obes Rep.* (2025) 14:11. doi: 10.1007/s13679-025-00605-3

5. Puhl RM, Suh Y, Li X. Legislating for weight-based equality: national trends in public support for laws to prohibit weight discrimination. *Int J Obes (Lond).* (2016) 40:1320–4. doi: 10.1038/ijo.2016.49

6. Flegal KM. How body size became a disease: A history of the body mass index and its rise to clinical importance. In: *Routledge handbook of critical obesity studies, 1st ed.* London: Routledge (2021).

7. Papadopoulos S, Brennan L. Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obes (Silver Spring).* (2015) 23:1743–60. doi: 10.1002/oby.21187

8. Ma L, Chu M, Li Y, Wu Y, Yan AF, Johnson B, et al. Bidirectional relationships between weight stigma and pediatric obesity: A systematic review and meta-analysis. *Obes Rev.* (2021) 22:e13178. doi: 10.1111/obr.13178

9. Lee KM, Wang C, Du H, Hunger J, Tomiyama AJ. Weight stigma as a stressor: A preliminary multi-wave, longitudinal study testing the biobehavioral pathways of the cyclic obesity/weight-based stigma (COBWEBS) model. *Appetite.* (2024) 201:107573. doi: 10.1016/j.appet.2024.107573

10. Romo L, Earl S, Mueller KA, Obiol M. A qualitative model of weight cycling. *Qual Health Res*. (2024) ;34:798–814. doi: 10.1177/10497323231221666

11. Liu X, Conlin SE. Experienced weight stigma among Asian, Black, and Latinx sexual and gender minorities: A systematic review. *Soc Sci Med*. (2025) 383:118412. doi: 10.1016/j.socscimed.2025.118412

12. Darling KE, Panza E, Warnick J, Small E, Derrick A, Jelalian E. Weight stigma in adolescents with obesity from low-income backgrounds: qualitative perspectives from adolescents and caregivers. *J Adolesc Health*. (2025) 76:928–34. doi: 10.1016/j.jadohealth.2024.12.019

13. Bowleg L. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. *Am J Public Health*. (2012) 102:1267–73. doi: 10.2105/AJPH.2012.300750

14. Crenshaw K. *Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics* Vol. 1989. Chicago, Illinois: University of Chicago Legal Forum (1989).

15. Collins PH. Intersectionality's definitional dilemmas. *Annu Rev Sociol*. (2015) 41:1–20. doi: 10.1146/annurev-soc-073014-112142

16. Himmelstein MS, Puhl RM, Quinn DM. Intersectionality: an understudied framework for addressing weight stigma. *Am J Prev Med*. (2017) 53:421–31. doi: 10.1016/j.amepre.2017.04.003

17. Azagba S, Shan L, Latham K. Overweight and obesity among sexual minority adults in the United States. *Int J Environ Res Public Health*. (2019) 16. doi: 10.3390/ijerph16101828

18. Boehmer U, Bowen DJ, Bauer GR. Overweight and obesity in sexual-minority women: evidence from population-based data. *Am J Public Health*. (2007) 97:1134–40. doi: 10.2105/AJPH.2006.088419

19. Leonard SI, Sharma Y, Hughes TL, Jackman KB, Bruzzese JM. Weight stigma and mental and emotional health among sexual and gender minority individuals: A scoping review. *LGBT Health*. (2024) 11:496–513. doi: 10.1089/lgbt.2023.0025

20. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull*. (2003) 129:674–97. doi: 10.1037/0033-2909.129.5.674

21. Hatzenbuehler ML, Lattanner MR, McKetta S, Pachankis JE. Structural stigma and LGBTQ+ health: a narrative review of quantitative studies. *Lancet Public Health*. (2024) 9:e109–e27. doi: 10.1016/S2468-2667(23)00312-2

22. Gee GC, Payne-Sturges DC. Environmental health disparities: a framework integrating psychosocial and environmental concepts. *Environ Health Perspect*. (2004) 112:1645–53. doi: 10.1289/ehp.7074

23. Alimoradi Z, Golboni F, Griffiths MD, Broström A, Lin CY, Pakpour AH. Weight-related stigma and psychological distress: A systematic review and meta-analysis. *Clin Nutr*. (2020) 39:2001–13. doi: 10.1016/j.clnu.2019.10.016

24. Bombak AE, Adams L, Thille P. Drivers of medicalization in the canadian adult obesity clinical practice guidelines. *Can J Public Health*. (2022) 113:743–8. doi: 10.17269/s41997-022-00662-4

25. Sheppard A, Mann ES. Resisting and reframing explanations for "lesbian obesity": LGBTQA+ young women's narratives of sexual identity as a protective factor. In: *Sexual and gender minority health. Advances in medical sociology*, vol. p. Emerald Publishing, Bingley, United Kingdom (2021). p. 207–28.

26. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health*. (2015) 42:533–44. doi: 10.1007/s10488-013-0528-y

27. Caspi A, Moffitt TE, Thornton A, Freedman D, Amell JW, Harrington H, et al. The life history calendar: A research and clinical assessment method for collecting retrospective event-history data. *Int J Methods Psychiatr Res*. (1996) 6:101–14. doi: 10.1002/(SICI)1234-988X(199607)6:2<101::AID-MPR156>3.3.CO;2-E

28. Goldbach JT, Gibbs JJ. A developmentally informed adaptation of minority stress for sexual minority adolescents. *J Adolesc*. (2017) 55:36–50. doi: 10.1016/j.adolescence.2016.12.007

29. Panza E, Olson K, Goldstein CM, Selby EA, Lillis J. Characterizing lifetime and daily experiences of weight stigma among sexual minority women with overweight and obesity: A descriptive study. *Int J Environ Res Public Health*. (2020) 17:4892–906. doi: 10.3390/ijerph17134892

30. Gluckman PD, Hanson MA, Cooper C, Thornburg KL. Effect of in *utero* and early-life conditions on adult health and disease. *N Engl J Med*. (2008) 359:61–73. doi: 10.1056/NEJMra0708473

31. Herle M, Stavola BD, Hübel C, Abdulkadir M, Ferreira DS, Loos RJF, et al. A longitudinal study of eating behaviours in childhood and later eating disorder behaviours and diagnoses. *Br J Psychiatry*. (2020) 216:113–9. doi: 10.1192/bjp.2019.174

32. Braun V, Clarke V. *Thematic analysis: A practical guide*. London, United Kingdom: Sage Publications Ltd (2021).

33. Dedoose web application for managing, analyzing, and presenting qualitative and mixed method research data. (2025).

34. Jovanovski N, Jaeger T. Demystifying 'diet culture': Exploring the meaning of diet culture in online 'anti-diet' feminist, fat activist, and health professional communities. *Womens Stud Int Forum*. (2022) 90:1–10. doi: 10.1016/j.wsif.2021.102558

35. Gerend MA, Stewart C, Wetzel K. Vulnerability and resilience to the harmful health consequences of weight discrimination in Black, Latina, and sexual minority women. *Soc Sci Med*. (2022) 315:115555. doi: 10.1016/j.socscimed.2022.115555

36. Meneguzzo P, Collantoni E, Bonello E, Vergine M, Behrens SC, Tenconi E, et al. The role of sexual orientation in the relationships between body perception, body weight dissatisfaction, physical comparison, and eating psychopathology in the cisgender population. *Eating Weight Disord - Stud Anorexia Bulimia Obes*. (2021) 26:1985–2000. doi: 10.1007/s40519-020-01047-7

37. Meneguzzo P, Collantoni E, Meregalli V, Favaro A, Tenconi E. Addressing weight bias in the cisgender population: differences between sexual orientations. *Nutrients*. (2022) 14:1735. doi: 10.3390/nu14091735

38. Harrop EN, Hutcheson R, Harner V, Mensinger JL, Lindhorst T. You Don't Look Anorexic": Atypical anorexia patient experiences of weight stigma in medical care. *Body Image*. (2023) 46:48–61. doi: 10.1016/j.bodyim.2023.04.008

39. Lubieniecki G, Fernando AN, Randhawa A, Cowlishaw S, Sharp G. Perceived clinician stigma and its impact on eating disorder treatment experiences: a systematic review of the lived experience literature. *J Eating Disord*. (2024) 12:161. doi: 10.1186/s40337-024-01128-3

40. Favaretto E, Bedani F, Brancati GE, De Berardis D, Giovannini S, Scarcella L, et al. Synthesising 30 years of clinical experience and scientific insight on affective temperaments in psychiatric disorders: State of the art. *J Affect Disord*. (2024) 362:406–15. doi: 10.1016/j.jad.2024.07.011

41. Raffone F, Atripaldi D, Barone E, Marone L, Carfagno M, Mancini F, et al. Exploring the role of guilt in eating disorders: A pilot study. . *Clinics Pract*. (2025) 15:56. doi: 10.3390/clinpract15030056

42. O'Flynn JL, Nowicki GP, Laveway K, Gordon AR, Rodgers RF. Toward inclusivity: A systematic review of the conceptualization of sexual minority status and associated eating disorder outcomes across two decades. *Int J Eat Disord*. (2023) 56:350–65. doi: 10.1002/eat.23830

43. Dahlenburg S, Hutchinson A, Gleaves D. How coming out and community involvement affects body image: An in-depth examination of lesbian women's personal experiences. *J Lesbian Stud*. (2021) 25:1–21. doi: 10.1080/10894160.2021.1937844

44. Dahlenburg SC, Gleaves DH, Hutchinson AD, Coro DG. Body image disturbance and sexual orientation: An updated systematic review and meta-analysis. *Body Image*. (2020) 35:126–41. doi: 10.1016/j.bodyim.2020.08.009

45. Kalash N, Harb H, Zeeni N, El Khoury M, Mattar L. Determinants of body image disturbance and disordered eating behaviors among self-identified LGBTQ individuals. *J Eat Disord*. (2023) 11:87. doi: 10.1186/s40337-023-00810-2

46. Bowleg L. Beyond intersectional identities: Ten intersectional structural competencies for critical health equity research. *Routledge Companion to Intersectionalities. 1st ed: Routledge;*. (2023) p:101–16.

47. Talumaa B, Brown A, Batterham RL, Kalea AZ. Effective strategies in ending weight stigma in healthcare. *Obes Rev*. (2022) 23:e13494. doi: 10.1111/obr.13494

48. Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. *Lancet*. (2017) 389:1453–63. doi: 10.1016/S0140-6736(17)30569-X

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 03 October 2025
DOI 10.3389/fpsyt.2025.1623411

OPEN ACCESS

EDITED BY
Lily O'Hara,
Griffith University, Australia

REVIEWED BY
Pasquale Scognamiglio,
ASL Napoli 3 Sud, Italy
Mary A. Gerend,
Florida State University, United States

*CORRESPONDENCE
Dimitra Anastasiadou
dimitra.anastasiadou@uab.cat

RECEIVED 05 May 2025
ACCEPTED 08 September 2025
PUBLISHED 03 October 2025

CITATION
Anastasiadou D, Tárrega S, Fornieles-Deu A and Sánchez-Carracedo D (2025) Family-based weight stigma and psychological well-being of adolescents: a longitudinal analysis of recent vs. cumulative exposure.
Front. Psychiatry 16:1623411.
doi: 10.3389/fpsyt.2025.1623411

Family-based weight stigma and psychological well-being of adolescents: a longitudinal analysis of recent vs. cumulative exposure

Dimitra Anastasiadou [1]*, Salomé Tárrega [1,2], Albert Fornieles-Deu [3] and David Sánchez-Carracedo [1]

[1]Department of Clinical and Health Psychology, Universitat Autònoma de Barcelona, Bellaterra (Cerdanyola del Vallés), Barcelona, Spain, [2]Department of Epidemiology and Methodology of Social and Health Sciences, Faculty of Health Sciences at Manresa, Universitat de Vic - Universitat Central de Catalunya (UVic- UCC), Manresa, Barcelona, Spain, [3]Department of Psychobiology and Methodology of Health Sciences, Universitat Autònoma de Barcelona, Bellaterra (Cerdanyola del Vallés), Barcelona, Spain

Introduction: Family-based weight stigma has been linked to adverse psychological outcomes in adolescents. Research on weight stigma in the Mediterranean area is scarce. This study aims to longitudinally explore the association between family-based weight stigma and adolescents' psychological well-being, considering recent vs cumulative exposure.

Methods: Data from the two-year longitudinal WbSad study were drawn from baseline assessments (T1) of a representative sample of 1,016 secondary school adolescents in a large Spanish city. At follow-up (T2), 551 adolescents participated. The mean age at T2 was 15.8 years, with 48.5% girls. Multivariate linear regression models, adjusting for relevant covariates and baseline values, examined the impact of exposure (Never, Only at T1, at T1 and T2, or Only at T2) to family-based weight stigma and to parental comments about weight and dieting on psychological outcomes, measured with the Depression Anxiety Stress Scale-21 (DASS-21) and the Rosenberg Self-Esteem Scale.

Results: Family-based weight stigma was reported more frequently among girls and was associated with higher psychological distress. Girls exposed to family stigma (at T1 and T2, and Only at T2) reported higher psychological distress, with significant associations across all DASS-21 outcomes for those exposed at T2 only. Maternal comments were linked to greater distress and lower self-esteem in girls and higher stress and total distress in boys at T2 only. Paternal comments at T2 were significantly associated with higher depression and total DASS-21 scores in girls, and higher scores in all DASS-21 outcomes in boys. No significant associations were found between parental encouragement to diet and any psychological outcomes in either gender.

Discussion: This study provides novel insights into how the timing (recency vs. persistent exposure) and source (maternal vs. paternal) of family-based stigma shape adolescent outcomes in a non-Anglo-Saxon sample. Recent family-based weight stigma negatively impacts adolescent psychological well-being, with girls being particularly vulnerable. The absence of an effect from cumulative exposure warrants further exploration. Preventive strategies should educate parents to

10.3389/fpsyt.2025.1623411

avoid stigmatizing comments and promote messages that prioritize well-being over weight, particularly before the onset of mid-to-late adolescence. Finally, research is needed to better understand the temporal dynamics of parental weight-related comments and their impact on adolescents.

KEYWORDS

weight stigma, families, adolescents, well-being, longitudinal

Introduction

Individuals with higher weight experience pervasive stigma driven by cultural reinforcement of the thin ideal, negative social perceptions of them, and the blame-and-shame framing in media and public health, where their weight is attributed to personal responsibility (1). This stigma remains highly tolerated throughout the lifespan and across multiple domains of everyday life (2, 3). In youth, weight-based victimization —including teasing, bullying, and harassment— is highly prevalent and disproportionately affects children with higher body weight (4). In fact, body weight is reported as the most common reason for peer-based teasing and bullying, surpassing other forms of discrimination such as race/ethnicity, sexual orientation, or disability status (5).

Extensive evidence documents the negative impacts of weight stigma on youth's physical, psychological, and social health (6–8). Psychological consequences include depression, anxiety, poor body image, disordered eating, substance abuse, and self-harming behaviors (9). Longitudinal research further highlights enduring negative health outcomes, showing that weight stigma contributes to weight gain over time regardless of initial weight status, race, or sociodemographic factors (10–12).

Weight stigma is exacerbated when stigmatized individuals internalize these negative attitudes, a phenomenon known as weight bias internalization (WBI). WBI is associated with decreased overall functioning and lower quality of life (13), and has also been documented among children and adolescents (14). Research among Spanish adolescents indicates that WBI is higher among girls compared to boys and more prevalent in adolescents with a higher zBMI-for-age (15).

Families play a critical role in adolescents' self-esteem, body image, and lifelong health habits (16). However, familial dynamics can also foster weight stigma, posing significant risks to adolescents' health and well-being (17, 18). Recent research has identified family members as the most common interpersonal source of weight stigma experienced by adolescents (19). In particular, weight-related conversations between parents and their children, including parental critical comments promoting the need for weight loss and dieting, are associated with negative psychological outcomes among children, such as anxiety, depressive symptoms, body dissatisfaction, unhealthy weight control behaviors, and WBI (17, 20–23). From adolescents' perspective, 66% reported experiencing weight-based teasing or bullying from their parents, with higher prevalence among girls and those with BMI ≥95th percentile or <5th percentile compared to other weight categories (24, 25). Similarly, from parents´ perspectives, 93% of parents of higher-weight adolescents endorse moderate explicit weight bias (26).

Longitudinal evidence from Project EAT suggests that parental weight talk tends to persist over time with negative outcomes that may extend beyond adolescence into adulthood, especially in relation to disordered eating behaviors. Retrospective findings further indicate that exposure to family weight talk as a child is associated with enduring negative outcomes in adulthood, including lower self-esteem and body satisfaction, and heightened depressive and anxious symptoms (18, 27, 28). Additionally, cumulative encouragement to diet from parents has been significantly associated with adverse weight-related and psychosocial outcomes in young adults, such as unhealthy weight control behaviors, low self-esteem, body dissatisfaction and depression in females, and weight control behaviors, low self-esteem, and body dissatisfaction in males (29).

Extensive research on the cumulative burden of adversity (30) —including cumulative exposures to weight stigma in family contexts (29)— demonstrates clear dose–response links with health across the life span, including exposures beyond the family, such as peer victimization, community violence, and racism. In adolescence, adverse childhood experiences (ACEs) are common and strongly related to the first onset of psychiatric disorders (31), and a meta-analysis indicates that multiple ACEs in youth are associated with higher odds of adult obesity (32). Within this cumulative-risk perspective, sensitization theory posits that recurrent stigma progressively heightens reactivity via stress-sensitization and allostatic processes, such that each additional episode evokes stronger affective and cognitive responses, consistent with the dose–response evidence above (33). By contrast, desensitization/habituation theory (34) proposes that repeated comments can lose novelty and emotional salience —especially when normalized within family routines— so a recent episode may exert stronger impact than a long history of lower-intensity exposure. These considerations motivate our objective to compare the associations of recent versus cumulative family-based weight stigma with adolescents' psychological outcomes. Moreover, stigma can be understood as a dynamic process unfolding across

historical/structural context, human developmental stage, and status course, and underscores the understudied developmental timescale in shaping stigma experiences and health outcomes (35). Consistent with this view, developmental science identifies early–mid adolescence as a particularly sensitive period for stigma effects given heightened sensitivity to social evaluation. Classic theories describe the "imaginary audience", a normative preoccupation with others' judgments that is pronounced in early adolescence and decreases with maturation (36). Consistent behavioral and neurodevelopmental work indicates mid-adolescent peaks in social-evaluative reactivity, followed by a decrease in late adolescence as identity consolidates and regulatory control improves (37). In line with this work, studies on weight stigma report an age-graded decline in the prevalence of reported experiences from early/mid to late adolescence (38). However, to our knowledge, no study has directly compared adolescents' social-evaluative reactivity to these experiences across early, mid, and late adolescence. Moreover, some cohorts show mid- to late-adolescent peaks in weight-stigma exposure and in negative self-judgments relative to early adolescence (15, 39).

Additionally, gender differences have emerged in the experience and impact of parental weight stigma. Maternal critical comments have been found to provoke stronger WBI in adolescents compared to paternal comments (40), though this gender difference has not been confirmed by Lessard and colleagues (17), who indicate that weight stigma from both parents is associated with poorer psychological health indicators in adolescents. Additionally, more girls than boys report weight teasing from family members (11), and parental weight talk is more strongly linked to disordered eating behaviors in girls than in boys (22).

The present study is part of the longitudinal WbSad project, which aims to describe the prevalence of weight stigma experiences and their internalization, and to explore their association with sociodemographic and psychological variables across two time points (T1 in 2022 and T2 in 2024) among a representative sample of secondary school adolescents from Spain. Initial findings from the WbSad study have been previously published (15).

Considering all the aforementioned, the main aim of the present study is to longitudinally explore how the frequency and recency of family-based weight stigma experiences (Never, Only at T1, at T1 and T2, and Only at T2) is associated with the psychological well-being of adolescents at T2. A secondary aim is to differentiate between weight stigma expressed by mothers versus fathers, examining their distinct impacts on adolescents' well-being, as well as potential gender differences in adolescents´ responses.

Materials and methods

Design and participants

This is a two-year longitudinal survey-based study based on data from the WbSad study, a funded project on weight stigma in adolescents. As one of the main goals of the study was to obtain, for the first time in Spain, prevalence data of experienced and internalized weight stigma and its association with sociodemographic variables, in 2022 (T1), a representative sample of 1,016 adolescents (12–16 years) from the four courses of mandatory secondary education Spanish system was selected using random multistage cluster sampling (sampling error of 2.97% under the assumption of maximum indeterminacy and a confidence level of 95.5%; $p = q = 0.5$, 2σ). They came from 7 public and 9 grant-aided schools and one classroom for each course, with a total of 64 classrooms, coming from Terrassa, the third most populous city in Catalonia, Spain. Exclusion criteria were not having parental informed consent, not responding to the parental informed consent request, refusal to participate, or providing invalid answers because of language issues or failing the survey controls. Details of flow diagram of the sample at T1 can be found elsewhere (15). For data collection in 2024 (T2), a sample loss of approximately 50% was expected because participants who were in the last two years of the Spanish compulsory secondary education system at T1 would no longer be at that educational level two years later. They might have dropped out or continued studying other options such as high school or vocational training, which are usually attended at different institutions, making it difficult to locate these participants. Therefore, data collection at T2 focused on students who were in the first two years of secondary education at T1 (n = 519). Of these, a total of 422 students (81.3%) participated. Among these participants, 34 (6.6%) had dropped out of school and were not located in other participating schools, 29 (5.6%) did not attend class on the evaluation day, 23 (4.4%) did not pass the inventory controls, 8 (1.5%) did not give their informed consent, and 3 (0.58%) were excluded for other reasons. Despite the difficulties in doing so, a total of 129 students who were in the last two years of secondary education at T1 (n = 497) were located to participate in T2. Of these, most losses were due, as expected, to not being located in the participating schools because they had left the system (n = 351, 70.1%). Additionally, 16 (3.2%) were not present at the time of the evaluation, and 1 (0.2% did not pass the inventory controls. Finally, 551 (54.2%) adolescents from the same cohort of T1 participated again in T2, two years later.

Procedure

The study was supported by the Community and Health Service of the City Council of Terrassa, which facilitated the sampling and contact with participating schools. Parental informed consent and participants' assent were obtained at T1. The assessments in T1 were carried out in April and May 2022. The survey was administered over the course of one hour in the classrooms on an online platform of the company Digital Insights S.L. The assessment was supervised by a group of graduate psychologists previously trained. The survey employed forced responses and incorporated controls for response ranges and interspersed control questions to verify the level of attention of the participants, avoiding missing data. While the participants answered the survey, a group of 5–7 adolescents were moved to a private area, where anthropometric

measurements were taken following a standardized protocol (41) and recommendations by the Catalan Public Health Agency to minimize any possible adverse effect (42). After that, the participants returned to the classroom and completed the survey. Data was pseudo-anonymized. Regarding the second measure, it took place in April and May 2024. The procedure was the same except that, since all participants were over 14 years old, they provided their informed consent, and it was not necessary to obtain parental informed consent, in accordance with article 7 of the Spanish Organic Law 3/2018 on the Protection of Personal Data and guarantee of digital rights. Nevertheless, the families were informed about the study. The WbSad study was conducted in accordance with the Declaration of Helsinki of the World Medical Assembly (43) and approved by the Ethics Committee of the author's university for both the first (CEAAH 3451) and the second measure (CERec-6677). More details about the procedure can be found in (15).

Instruments

Sociodemographics and anthropometrics

Participants provided information on their age, gender, parental origin, and socioeconomic status. Socioeconomic status was estimated using the Hollingshead Two-Factor Index of Socioeconomic Status (SES) (44), which combines the parents' educational and occupational levels. Levels of SES were classified into low, medium-low, medium, medium-high, and high. Height (in cm) was measured using a SECA 214 portable stadiometer (20–207 cm; accuracy range of 0.1 cm) and weight (in kg) using a SECA portable scale (Model 8777021094) (0–200 kg; accuracy range of 0.1 kg). Weight status was then calculated based on z-BMI scores, in accordance with the World Health Organization growth reference criteria (45).

Experiences of family stigma

Assessments of Experiences of Family Stigma at T1 (2022) and T2 (2024) were based on a proposal of previous research to assess sources of stigma and their frequency (46). Participants were asked: "Have family members ever teased, harassed or treated you unkindly, or made you feel bad or uncomfortable because of your weight?" Response options ranged from 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often to 5 = Very often. The internal consistency in our sample at T1 was $\alpha = 0.817$ and $\omega = 0.817$, and at T2 was $\alpha = 0.740$ and $\omega = 0.736$.

To construct exposure groups, responses were first recoded into a binary indicator at T1 and at T2: Never/Rarely as "No" and Sometimes/Often/Always as "Yes". Based on these binary indicators at T1 and T2, we then created a four-category mutually exclusive exposure variable: Never (no exposure at T1 or T2), Only at T1 (earlier-only), at T1 and T2 (cumulative), and Only at T2 (recent).

Parental comments about weight and dieting

Adolescents' perspectives on parental comments about weight and dieting were based on previous research focused on weight stigma in adolescents (40), which adapted a measure used in Project EAT (47). Adolescents were asked the following 3 questions: (1) "how often does your mother make comments to you about your weight?" and (2) "how often does your father make comments to you about your weight?". Responses to these questions were rated on a 5-point scale from never to very often. Additionally, they were asked (3) "to what extent does your father or mother encourage you to start a diet to lose weight or avoid gaining weight?", rated on a 5-point scale from not at all to very much. Responses were recoded into two categories: Never/Rarely or Not at all/Very little as "No" and Sometimes/Often/Always or Sometimes/Quite a lot/Very much as "Yes". Using the same four-category scheme as above, we combined T1 (2022) and T2 (2024) to classify exposure as Never, Only at T1, at T1 and T2 (cumulative), or Only at T2 (recent).

Depression, anxiety, and stress scales (DASS-21)

The DASS-21 (48) is a 21-item self-report questionnaire designed to measure the severity of symptoms common to depression, anxiety, and stress. We used the Spanish validation (49). Participants rated on a Likert scale from 0 to 3 the intensity/frequency with which they experienced each of the 21 negative emotional symptoms that make up the questionnaire during the previous week. It contains 3 scales of 7 items each. The Depression scale evaluates sadness, lack of positive emotions, lack of enthusiasm and initiative to do things, self-devaluation, and lack of meaning in life (e.g., "I couldn't seem to experience any positive feeling at all"). It has an internal consistency of 0.91. The Anxiety scale mainly evaluates somatic activation and worries about situations and the subjective experience of anxiety (e.g., "I felt scared without any good reason"). It has an internal consistency of 0.84. The Stress scale evaluates difficulty relaxing, hyperreactivity to situations, agitation, irritability, energy expenditure, and impatience (e.g., "I found it difficult to relax"). It has an internal consistency of 0.90. The final scores for each scale are multiplied by two, so the score range is from 0 to 42. Higher scores indicate more depression, anxiety, and stress. The internal consistency (α/ω) of the Depression, Anxiety, and Stress scales, and for the total score has been found to be 0.902/0.905, 0.857/0.859, 0.830/0.834, and 0.945/0.946 respectively for T1, and 0.892/0.858, 0.854/0.856, 0.835/0.839, and 0.941/0.941 for T2.

Rosenberg self-esteem scale

Self-esteem was assessed with the RSES (50) in its Spanish validation (51). It has 10 items (e.g. "I certainly feel useless at times") that are answered on a scale from 1 (strongly disagree) to 4 (strongly agree). With a unidimensional structure, the internal consistency ranged from 0.85 to 0.88. The internal consistency in our sample at T1 was $\alpha = 0.890$ and $\omega = 0.892$, and at T2 was $\alpha = 0.885$ and $\omega = 0.887$.

Weight bias internalization

The Modified Weight Bias Internalization Scale (WBISM) (52) in its Spanish validation for adolescents (53) was used as an adjustment variable. It measures WBI across the body weight statuses (e.g., "I hate myself for my weight"). This version has 10

10.3389/fpsyt.2025.1623411

TABLE 1 Sample description stratified by gender at T2 (n=551).

	Gender		Sig.
	Girls	Boys	
N	267 (48.46%)	284 (51.54%)	
Age (Years) *mean (SD)*	15.75 (1.05)	15.79 (1.04)	0.634
Parental origin (ethnicity)			
Europe	207 (77.5%)	214 (75.4%)	0.548
Other	60 (22.5%)	70 (24.6%)	
SES			
Low	13 (4.9%)	8 (2.8%)	0.209
Middle–low	44 (16.5%)	38 (13.4%)	
Middle	57 (21.3%)	77 (27.2%)	
Middle–high	92 (34.5%)	85 (30.0%)	
High	61 (22.8%)	75 (26.5%)	
WBISM *mean (SD)*	2.77 (1.62)	1.94 (1.25)	<0.001
Weight Status (WHO)			
zBMI < -2 SD	1 (0.4%)	10 (3.5%)	0.026
zBMI between -2DS and 1SD	216 (80.9%)	208 (73.2%)	
zBMI between 1DS and 2SD1	39 (14.6%)	50 (17.6%)	
zBMI > 2SD2	11 (4.1%)	16 (5.6%)	

T1, Time 1; T2, Time 2; SD, Standard deviation; Sig., Statistical significance. [1] Equivalent to BMI 25 kg/m^2 at 19 years. [2] Equivalent to BMI 30 kg/m^2 at 19 years.

items with responses rated on a 7-point Likert scale (from strongly disagree to strongly agree). The mean of the item responses serves as the participant's score (range 1–7), with higher scores indicating higher WBI. The Spanish validation of WBISM for adolescents of WBISM has showed a high internal consistency ($\alpha = 0.93$; $\omega = 0.93$) and showed a unidimensional structure with an adequate fit. The internal consistency in our sample at T1 was $\alpha = 0.941$ and $\omega = 0.946$, and at T2 was $\alpha = 0.944$ and $\omega = 0.949$.

Statistical analysis

Statistical analyses were conducted using STATA version 18. The significance level was set at 0.05, and all hypothesis tests were two-tailed. Analyses were stratified by gender. Sociodemographic, anthropometric characteristics, outcome variables (including DASS-21 subscale scores and total score, and Rosenberg Self-Esteem Scale score) at T1 and T2, and predictors —Experiences of Family Stigma and Parental Comments about Weight and Dieting (coded as: Never, Only at T1, at T1 and T2, Only at T2)— were described using frequencies and percentages for categorical variables, and means and standard deviations (SD) for continuous variables. Gender differences were assessed using Pearson's Chi-Squared test for categorical variables and linear regressions for continuous variables, as appropriate. Multivariate linear regression models were used to examine the associations between predictors and outcomes at T2. All models were adjusted for relevant covariates, including baseline scores (T1) of the corresponding outcome, age, BMI z-scores at T1, European origin, socioeconomic status, internalized weight stigma (WBISM) at T1. Adjusted estimated means, Regression coefficients (B) with their 95% confidence intervals, and the R^2 value were used to express the proportion of variance explained by the model. Preliminary diagnostic tests indicated heteroskedasticity and non-normally distributed residuals ($p < .001$ for skewness and kurtosis tests). Therefore, all regression models were estimated using robust standard errors. For models involving Experiences of Family Stigma, analyses were conducted and reported only for the female subsample due to the limited number of boys who reported such experiences. However, for exploratory purposes, adjusted estimated means were also plotted for the male subsample to allow visual comparison with the models conducted in girls.

Results

Sample description

Descriptive statistics of sociodemographics and weight status, stratified by gender, were focused on the sample at T2 and are presented in Table 1. The mean age of participants was 15.8 years (SD = 1.04), and 48.5% were girls. No participants identified as non-binary. No statistically significant gender differences were observed in sociodemographic variables. However, girls showed significantly higher internalized weight bias scores (WBISM) than boys. Descriptive statistics for Experiences of Family Stigma and Parental Comments about Weight and Dieting, as well as for the outcome variables, are shown in Table 2. Gender differences were observed in exposure to both Experiences of Family Stigma and Maternal Comments about Weight, with girls reporting higher exposure overall, particularly at T2. Regarding the outcome variables at T1 and T2, girls showed worse scores across all measures. Specifically, they reported higher levels of psychological distress on all DASS-21 subscales (Depression, Anxiety, and Stress) and lower self-esteem scores on the RSES compared to boys.

Experiences of family stigma and adolescent well-being

Table 3 shows the associations between Experiences of Family Stigma and psychological distress (DASS-21 subscales) and self-esteem (RSES) measures among girls, after adjusting for covariates and baseline values of each outcome. The explained variance (adjusted R^2) of the multivariate models ranged from 0.27 to 0.34.

Overall, a similar pattern was observed across all DASS-21 subscales. Compared to the group that reported no family stigma

10.3389/fpsyt.2025.1623411

TABLE 2 Descriptives of the predictors, and outcomes at T1 and T2, stratified by gender (n=551).

	Gender		Sig.
	Girls	Boys	
n	267 (48.46%)	284 (51.54%)	
Experiences of Family Stigma			
Never	190 (71.2%)	250 (88.0%)	<0.001
Only at T1	16 (6.0%)	9 (3.2%)	
at T1 and T2	26 (9.7%)	4 (1.4%)	
Only at T2	35 (13.1%)	21 (7.4%)	
Maternal Comments about Weight			
Never	170 (63.7%)	221 (77.8%)	<0.001
Only at T1	28 (10.5%)	28 (9.9%)	
at T1 and T2	32 (12.0%)	9 (3.2%)	
Only at T2	37 (13.9%)	26 (9.2%)	
Paternal Comments about Weight			
Never	202 (75.7%)	232 (81.7%)	0.062
Only at T1	24 (9.0%)	29 (10.2%)	
at T1 and T2	17 (6.4%)	8 (2.8%)	
Only at T2	24 (9.0%)	15 (5.3%)	
Parental Comments about Dieting			
Never	197 (73.8%)	205 (72.2%)	0.613
Only at T1	28 (10.5%)	34 (12.0%)	
at T1 and T2	16 (6.0%)	23 (8.1%)	
Only at T2	26 (9.7%)	22 (7.7%)	
DASS21 Depression, *mean (SD)*			
T1	14.40 (11.46)	7.21 (8.52)	<.001
T2	12.54 (10.39)	6.18 (7.30)	<.001
DASS21 Anxiety, *mean (SD)*			
T1	14.20 (10.93)	7.23 (7.10)	<.001
T2	12.76 (9.93)	5.96 (6.65)	<.001
DASS21 Stress, *mean (SD)*			
T1	15.27 (9.99)	9.59 (7.94)	<.001
T2	14.83 (9.34)	9.38 (8.26)	<.001
DASS21 Total, *mean (SD)*			
T1	43.87 (30.13)	24.03 (21.36)	<.001
T2	40.13 (27.24)	21.52 (19.68)	<.001
RSES, *mean (SD)*			
T1	27.66 (6.47)	32.50 (5.77)	<.001
T2	29.09 (6.62)	33.89 (4.85)	<.001

T1, Time 1; T2, Time 2; SD, Standard deviation; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale. In bold: p <.05.

(Never group), the adjusted mean scores were lower for those who reported experiences Only at T1. Girls exposed to family stigma (at T1 and T2, and Only at T2) reported higher levels of depressive symptoms, anxiety symptoms, and stress, as well as higher total DASS-21 scale scores. However, the highest adjusted mean scores across all DASS-21 scores were observed in girls who reported family stigma only at T2. In this group, the differences were statistically significant for all outcomes (p<.05), and these were the only significant associations found. Regarding RSES, no significant associations were observed in any exposure group.

Given the lower prevalence of reported family stigma across time points among boys, adjusted analyses were not reported for this group. Nevertheless, Figure 1 includes the estimated marginal means of DASS-21 scales and total scores at T2 by Experiences of Family Stigma exposure for girls and boys, for descriptive and exploratory purposes. Adjusted estimated means suggest a different pattern than those found among girls with smaller differences across exposure categories and lower levels of emotional distress compared to girls. However, these observations should be regarded as exploratory, as the low prevalence of stigma in boys limited statistical power.

Maternal comments about weight and adolescent well-being

The associations between Maternal Comments about Weight and psychological distress and self-esteem measures among girls, after adjusting for covariates and baseline values of each outcome, are shown in Table 4. The explained variance (adjusted R^2) of the multivariate models ranged from 0.29 to 0.40. In general, similar trends were observed across the DASS-21 subscales and RSES. Compared to girls who reported no Maternal Comments about Weight (Never group), those who reported such comments at T1 and T2, or Only at T2, showed higher adjusted mean scores on the DASS-21 Depression, Anxiety, Stress, and Total scales. However, statistically significant differences were found only among girls who reported such comments at T2 only (p<.01 to p<.001). Regarding RSES adjusted mean scores, no differences were found among girls who reported Maternal Comments about Weight Only at T1 or at both time points (at T1 and T2), compared to Never group. In contrast, those who reported maternal comments only at T2 showed significantly lower adjusted mean RSES scores.

Table 5 provides the associations between Maternal Comments about Weight and psychological distress and self-esteem outcomes among boys, after adjusting for covariates and baseline values of each outcome. The explained variance (adjusted R^2) of the models ranged from 0.24 to 0.36. Nevertheless, this group showed significantly higher adjusted mean scores in the DASS-21 Stress and Total scales compared to those in the Never group (p<.05). No significant associations were found between Maternal Comments about Weight and RSES scores among boys.

As a graphical summary, Figure 2 presents the estimated marginal means of DASS-21 subscales and total scores at T2 by Maternal Comments about Weight exposure group and gender.

TABLE 3 Association between experiences of family stigma (T1–T2) and psychological outcomes at T2 in girls, adjusted for baseline values (T1), age, BMI-z score at T1, European origin, socioeconomic status, and WBISM at T1.

Outcome (T2)	Experiences of family stigma	Adjusted marginal mean	95% CI		Adjusted B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.31**
	Never	11.90	10.54	13.27	ref.				
	Only at T1	8.88	5.28	12.48	-3.03	-6.91	0.85	0.126	
	at T1 and T2	14.85	10.62	19.07	2.94	-1.63	7.51	0.206	
	Only at T2	16.47	13.24	19.69	**4.56**	**0.95**	**8.18**	**0.014**	
DASS21 Anxiety								**<.001**	**0.34**
	Never	12.15	10.90	13.40	ref.				
	Only at T1	9.63	5.62	13.64	-2.52	-6.78	1.74	0.245	
	at T1 and T2	14.58	11.33	17.84	2.43	-1.21	6.07	0.190	
	Only at T2	15.85	12.55	19.15	**3.70**	**0.11**	**7.29**	**0.043**	
DASS21 Stress								**<.001**	**0.27**
	Never	14.20	12.91	15.47	ref.				
	Only at T1	13.20	9.35	17.05	-1.00	-5.13	3.12	0.632	
	at T1 and T2	16.81	13.42	20.20	2.61	-1.11	6.33	0.169	
	Only at T2	17.89	15.28	20.50	**3.69**	**0.68**	**6.70**	**0.016**	
DASS21 Total								**<.001**	**0.34**
	Never	38.32	34.80	41.84	ref.				
	Only at T1	31.29	21.27	41.32	-7.03	-17.78	3.73	0.199	
	at T1 and T2	46.05	36.45	55.65	7.73	-2.85	18.31	0.152	
	Only at T2	50.22	42.05	58.38	**11.89**	**2.71**	**21.08**	**0.011**	
RSES								**<.001**	**0.40**
	Never	29.08	28.32	29.85	ref.				
	Only at T1	31.15	28.48	33.81	2.06	-0.74	4.87	0.149	
	at T1 and T2	29.14	26.62	31.66	0.06	-2.60	2.72	0.967	
	Only at T2	28.26	26.52	30.00	-0.82	-2.73	1.08	0.395	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: p <.05.

10.3389/fpsyt.2025.1623411

10.3389/fpsyt.2025.1623411

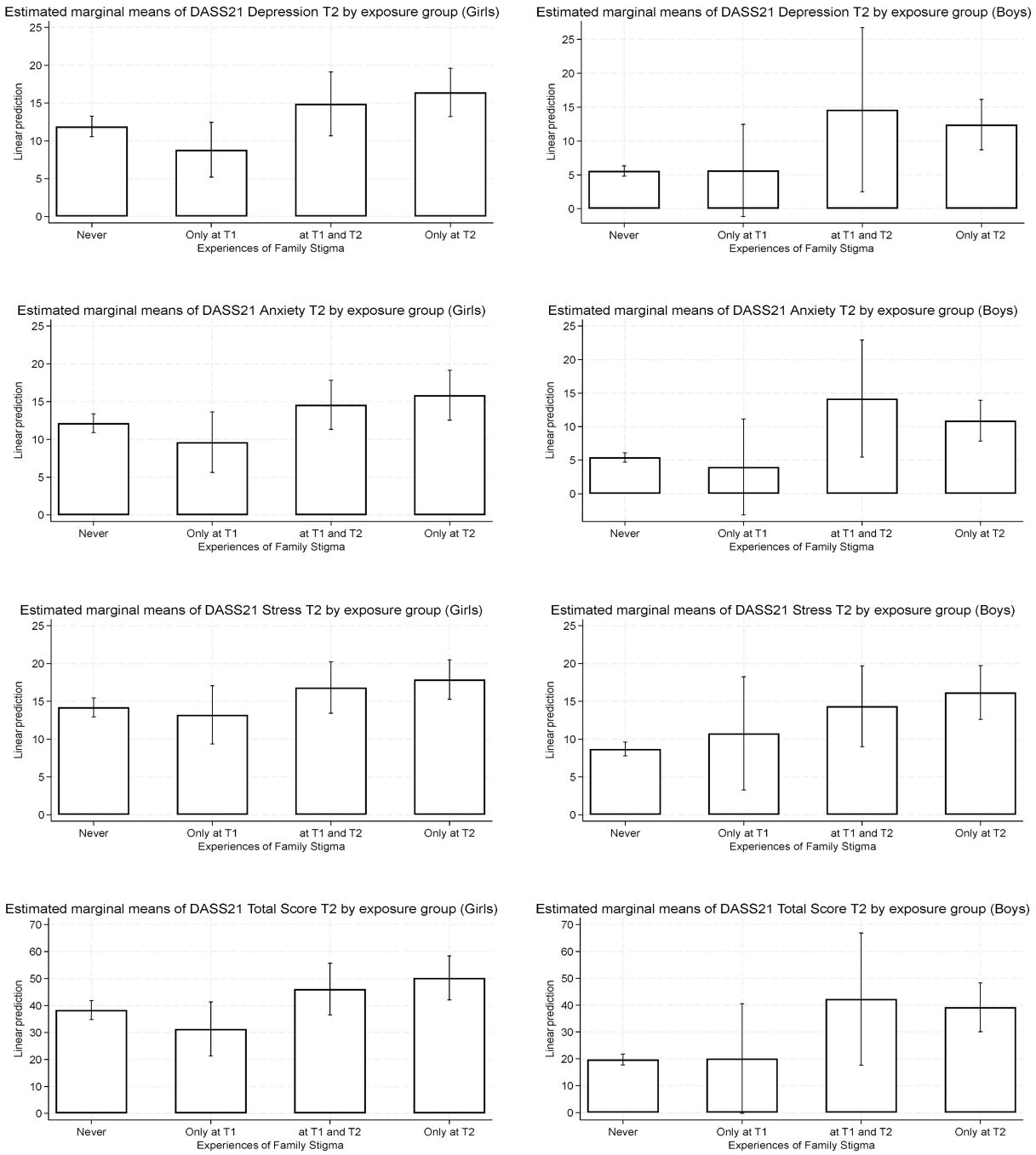


FIGURE 1
Adjusted estimated means (and 95% confidence intervals) DASS-21 scales by experiences of family stigma exposure.

Among girls, a consistent pattern is observed whereby those exposed to maternal comments only at T2 showed the highest adjusted mean scores across all outcomes, followed by those exposed at T1 and T2. In contrast, the lowest scores were observed in the Never group. Among boys, no clear or consistent gradient emerged across exposure groups. Across all exposure categories, girls consistently showed higher adjusted mean scores on the DASS-21 subscales compared to boys.

Paternal comments about weight and adolescent well-being

Table 6 shows the associations between Paternal Comments about Weight and psychological distress and self-esteem among girls, adjusted for covariates and baseline values of each outcome. The explained variance (adjusted R^2) of the multivariate models ranged from 0.28 to 0.40. A general pattern was observed across all

TABLE 4 Association between maternal comments about weight (T1–T2) and psychological outcomes at T2 in girls, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status, and WBISM at T1.

Outcome (T2)	Maternal comments about weight	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.31**
	Never	11.50	10.01	12.99	Ref.				
	Only at T1	11.67	8.67	14.67	0.17	-3.30	3.64	0.922	
	at T1 and T2	14.62	10.78	18.47	3.12	-1.15	7.40	0.151	
	Only at T2	16.48	13.53	19.43	**4.98**	**1.58**	**8.38**	**0.004**	
DASS21 Anxiety								**<.001**	**0.34**
	Never	11.94	10.61	13.28	Ref.				
	Only at T1	11.18	7.80	14.56	-0.76	-4.47	2.95	0.687	
	at T1 and T2	14.19	10.72	17.65	2.24	-1.65	6.14	0.258	
	Only at T2	16.04	13.35	18.73	**4.10**	**1.07**	**7.13**	**0.008**	
DASS21 Stress								**<.001**	**0.29**
	Never	13.79	12.47	15.11	Ref.				
	Only at T1	14.33	11.34	17.32	0.54	-2.77	3.86	0.747	
	at T1 and T2	16.61	13.63	19.57	2.81	-0.60	6.22	0.105	
	Only at T2	18.68	15.94	21.41	**4.89**	**1.77**	**8.01**	**0.002**	
DASS21 Total								**<.001**	**0.34**
	Never	37.28	33.51	41.04	Ref.				
	Only at T1	37.04	28.64	45.45	-0.23	-9.65	9.18	0.961	
	at T1 and T2	45.37	36.23	55.50	8.09	-2.66	18.44	0.125	
	Only at T2	51.17	43.72	58.50	**13.89**	**5.37**	**22.41**	**0.001**	
RSES								**<.001**	**0.40**
	Never	29.52	28.69	30.35	Ref.				
	Only at T1	29.78	27.77	31.78	0.26	-1.96	2.47	0.820	
	at T1 and T2	28.51	26.31	30.71	-1.01	-3.39	1.36	0.403	
	Only at T2	27.31	25.76	28.87	**-2.21**	**-4.00**	**-0.41**	**0.016**	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: p <.05.

10.3389/fpsyt.2025.1623411

TABLE 5 Association between maternal comments about weight (T1–T2) and psychological outcomes at T2 in boys, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status and WBISM at T1.

Outcome (T2)	Maternal comments about weight	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.24**
	Never	5.99	5.14	6.86	Ref.				
	Only at T1	6.91	4.03	9.80	0.92	-2.03	3.87	0.541	
	at T1 and T2	3.91	-2.34	10.17	-2.08	-8.53	4.36	0.525	
	Only at T2	8.51	5.58	11.44	2.51	-0.53	5.55	0.105	
DASS21 Anxiety								**<.001**	**0.26**
	Never	5.94	5.16	6.74	Ref.				
	Only at T1	4.32	1.75	6.89	-1.62	-4.23	0.98	0.221	
	at T1 and T2	3.94	-2.24	10.11	-2.01	-8.36	4.33	0.533	
	Only at T2	8.19	5.73	10.63	2.24	-0.33	4.81	0.087	
DASS21 Stress								**<.001**	**0.27**
	Never	9.00	8.04	9.96	Ref.				
	Only at T1	9.75	6.65	12.85	0.75	-2.50	3.98	0.651	
	at T1 and T2	8.85	2.72	14.97	-0.16	-6.4	6.13	0.961	
	Only at T2	12.85	9.31	16.40	**3.85**	**0.16**	**7.54**	**0.041**	
DASS21 Total								**<.001**	**0.30**
	Never	21.01	18.76	23.25	Ref.				
	Only at T1	20.83	13.37	28.29	-0.18	-7.82	7.46	0.964	
	at T1 and T2	15.39	-2.02	32.80	-5.62	-23.50	12.26	0.537	
	Only at T2	29.63	21.71	37.55	**8.62**	**0.38**	**16.86**	**0.040**	
RSES								**<.001**	**0.33**
	Never	34.08	33.52	34.64	Ref.				
	Only at T1	32.78	31.18	34.38	-1.30	-2.97	0.38	0.128	
	at T1 and T2	35.32	31.75	38.89	1.24	-2.44	4.92	0.508	
	Only at T2	32.74	31.07	34.41	-1.34	-3.11	0.44	0.139	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: $p < .05$.

10.3389/fpsyt.2025.1623411

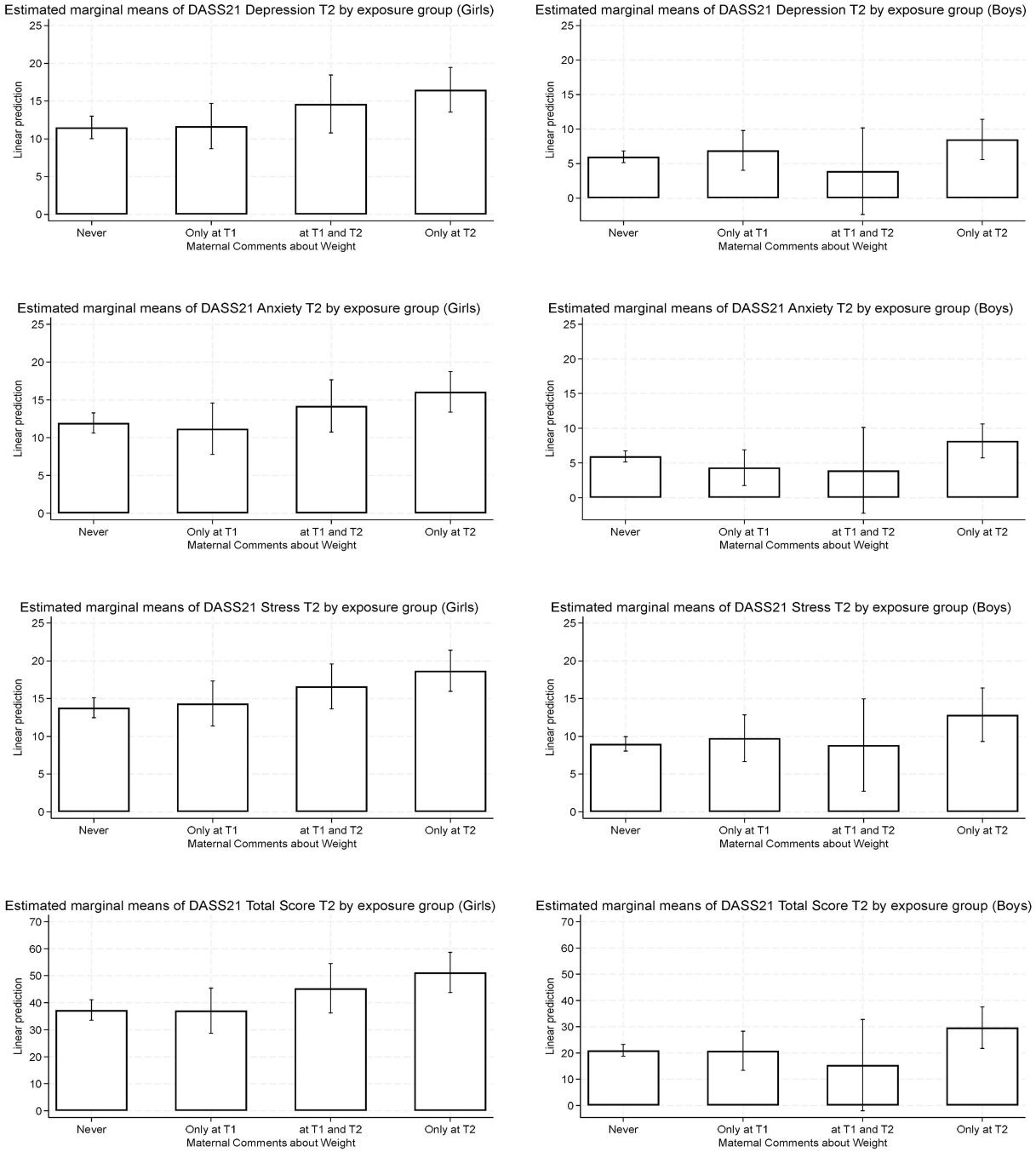


FIGURE 2
Adjusted estimated means (and 95% confidence intervals) for DASS-21 scales by maternal comments about weight exposure.

adjusted means for the DASS-21 subscales. The lowest adjusted means were found among girls who reported no Paternal Comments about Weight, whereas those who reported such comments at any time point showed higher adjusted mean scores for the DASS-21 subscales, particularly among those exposed only at T2. Compared to the Never group, girls who reported comments only at T2 showed significantly higher adjusted mean scores on the DASS-21 Depression and Total scales ($p < .05$). No other statistically significant associations were found for girls exposed to paternal comments Only at T1 or at T1 and T2 except fort girls who reported comments Only at T1, who had significantly lower adjusted mean scores on the Stress subscale compared to those in the Never group ($p = .020$). Regarding RSES, no significant differences in RSES adjusted mean scores were found between groups.

Table 7 presents the associations between Paternal Comments about Weight and psychological distress and self-esteem among boys, after adjusting for covariates and baseline values of each outcome. The explained variance (adjusted R^2) of the models ranged from 0.26 to 0.32. Compared to boys who reported no Paternal Comments about Weight, no significant differences were

TABLE 6 Association between paternal comments about weight (T1–T2) and psychological outcomes at T2 in girls, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status, and WBISM at T1.

Outcome (T2)	Paternal Comments about Weight	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted R^2
DASS21 Depression								**<.001**	**0.31**
	Never	12.09	10.84	13.34	Ref.				
	Only at T1	9.82	6.17	13.46	-2.28	-6.20	1.61	0.253	
	at T1 and T2	16.54	10.98	22.10	4.44	-1.29	10.18	0.128	
	Only at T2	17.03	13.04	21.03	**4.94**	**0.70**	**9.18**	**0.023**	
DASS21 Anxiety								**<.001**	**0.33**
	Never	12.24	11.13	13.34	Ref.				
	Only at T1	11.34	7.70	14.70	-0.90	-4.49	2.69	0.623	
	at T1 and T2	15.10	9.69	20.50	2.86	-2.67	8.38	0.309	
	Only at T2	16.61	12.29	20.92	4.37	-0.10	8.84	0.055	
DASS21 Stress								**<.001**	**0.28**
	Never	14.75	13.59	15.90	Ref.				
	Only at T1	11.13	8.33	13.92	**-3.62**	**-6.68**	**-0.56**	**0.020**	
	at T1 and T2	17.03	13.04	21.53	2.54	-1.91	6.98	0.262	
	Only at T2	18.22	14.71	21.72	3.47	-0.24	7.18	0.067	
DASS21 Total								**<.001**	**0.34**
	Never	39.12	36.00	42.23	Ref.				
	Only at T1	32.07	23.23	40.89	-7.05	-16.54	2.43	0.144	
	at T1 and T2	49.03	34.71	63.36	9.91	-5.80	24.62	0.186	
	Only at T2	51.63	40.66	62.60	**12.51**	**1.03**	**23.99**	**0.033**	
RSES								**<.001**	**0.40**
	Never	29.39	28.65	30.13	Ref.				
	Only at T1	29.91	27.85	31.97	0.52	-1.68	2.73	0.641	
	at T1 and T2	27.36	24.24	30.50	-2.02	-5.25	1.20	0.218	
	Only at T2	27.15	24.98	29.32	-2.24	-4.56	0.08	0.058	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: p <.05.

observed for boys exposed Only at T1 or at T1 and T2 for any of the DASS-21 subscales. However, those who reported paternal comments only at T2 showed significantly higher adjusted mean scores on the DASS-21 Depression, Anxiety, Stress, and Total scales compared to Never group (p<.05). Regarding RSES, no significant differences in adjusted mean scores were found between boys exposed to Paternal Comments about Weight and those who were not exposed.

Figure 3 presents a graphical summary of the estimated marginal means of DASS-21 subscales and total scores at T2 by parental comments exposure group and gender. Different gender-specific patterns emerged. Among girls, adjusted mean scores were higher across exposure groups compared to the Never group, with the highest values in those exposed only at T2, while girls exposed Only at T1 had significantly lower Stress scores. Conversely, among boys, lower adjusted mean scores were observed at T1 and T2, and only those exposed Only at T2 showed the highest scores across all DASS-21 outcomes. Overall, girls tended to show higher adjusted scores than boys across outcomes and exposure groups.

Parental comments about dieting and adolescent well-being

The associations between Parental Comments about Dieting (T1–T2) and psychological outcomes among girls, adjusted for

TABLE 7 Association between paternal comments about weight (T1–T2) and psychological outcomes at T2 in boys, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status and WBISM at T1.

Outcome (T2)	Paternal comments about weight	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.26**
	Never	6.08	5.22	6.94	Ref.				
	Only at T1	4.82	2.74	6.90	-1.26	-3.54	1.02	0.279	
	at T1 and T2	6.90	-0.27	14.07	0.82	-6.45	8.09	0.827	
	Only at T2	11.25	6.55	15.95	**5.17**	**0.38**	**9.96**	**0.034**	
DASS21 Anxiety								**<.001**	**0.29**
	Never	5.89	5.10	6.69	Ref.				
	Only at T1	3.86	1.90	5.83	-2.02	-4.19	0.14	0.067	
	at T1 and T2	4.61	-2.13	11.35	-1.28	-8.11	5.54	0.711	
	Only at T2	10.87	6.92	14.81	**4.98**	**0.89**	**9.06**	**0.017**	
DASS21 Stress								**<.001**	**0.28**
	Never	9.22	8.27	10.18	Ref.				
	Only at T1	8.25	5.63	10.87	-0.97	-3.77	1.82	0.495	
	at T1 and T2	7.79	0.78	14.80	-1.43	-8.56	5.70	0.693	
	Only at T2	15.38	10.43	20.33	**6.16**	**1.05**	**11.26**	**0.018**	
Total DASS21								**<.001**	**0.32**
	Never	21.22	18.99	23.47	Ref.				
	Only at T1	16.88	11.26	22.51	-4.34	-10.46	1.77	0.163	
	at T1 and T2	18.88	-1.40	39.16	-2.35	-22.87	18.17	0.822	
	Only at T2	37.28	25.29	49.27	**16.05**	**3.70**	**28.39**	**0.011**	
RSES								**<.001**	**0.32**
	Never	33.95	33.39	34.52	Ref.				
	Only at T1	33.60	32.24	34.96	-0.35	-1.86	1.16	0.649	
	at T1 and T2	34.07	32.22	35.92	0.12	-1.85	2.09	0.905	
	Only at T2	32.91	30.13	35.70	-1.04	-3.89	1.81	0.475	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: p <.05.

10.3389/fpsyt.2025.1623411

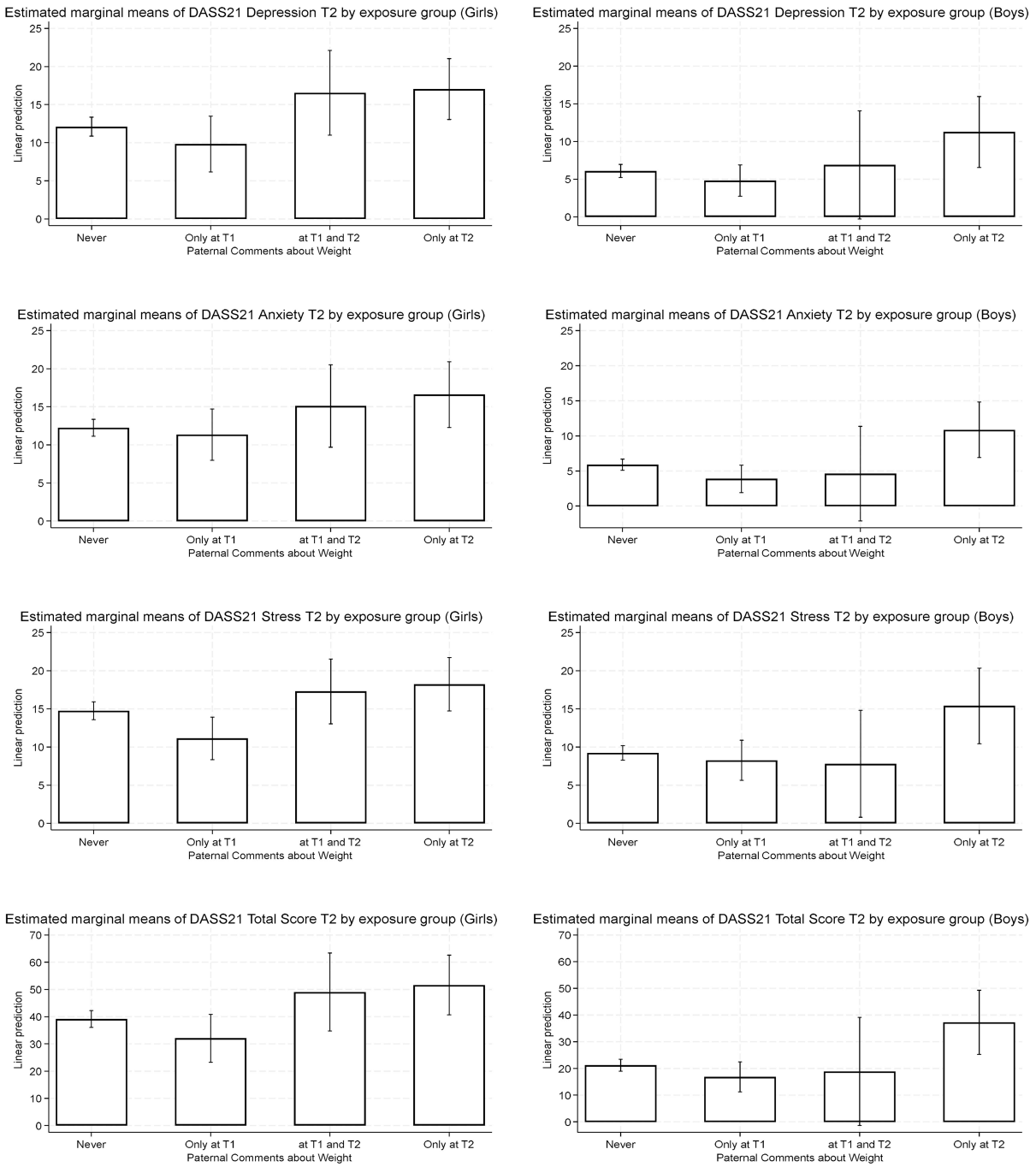


FIGURE 3
Adjusted estimated means for DASS-21 scales (and 95% confidence intervals) by paternal comments about weight exposure.

covariates and baseline values of each outcome are presented in Table 8. The explained variance (adjusted R^2) of the multivariate models ranged from 0.26 to 0.39. Higher adjusted mean scores on the DASS-21 subscales were observed among girls who reported Parental Comments about Dieting at T2 only. For example, compared to the Never group, these girls had higher scores on the DASS-21 Anxiety subscale, although the difference did not reach statistical significance ($p = .073$). No significant associations were found for girls exposed Only at T1 or both at T1 and T2 for any of the rest of DASS-21 subscales. Regarding self-esteem (RSES), no significant differences in adjusted mean scores were observed between groups.

Table 9 presents the associations between Parental Comments about Dieting (T1–T2) and psychological outcomes at T2 among boys, adjusted for covariates and baseline values of each outcome. The explained variance (adjusted R^2) of the models ranged from 0.24 to 0.32. Although no significant associations emerged when exposed groups to Parental Comments about Dieting were compared with

TABLE 8 Association between parental comments about dieting (T1–T2) and psychological outcomes at T2 in girls, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status, and WBISM at T1.

Outcome (T2)	Parental comments about dieting	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.30**
	Never	12.51	11.17	13.85	Ref.				
	Only at T1	11.59	8.94	14.25	-0.92	-4.01	2.18	0.561	
	at T1 and T2	9.30	3.93	14.68	-3.21	-8.87	2.46	0.266	
	Only at T2	16.20	12.02	20.38	3.69	-0.72	8.11	0.101	
DASS21 Anxiety								**<.001**	**0.33**
	Never	12.52	11.29	13.76	Ref.				
	Only at T1	11.33	8.26	14.41	-1.19	-4.58	2.20	0.490	
	at T1 and T2	12.26	7.11	17.41	-0.26	-5.71	5.18	0.924	
	Only at T2	15.84	12.47	19.21	3.32	-0.31	6.95	0.073	
DASS21 Stress								**<.001**	**0.26**
	Never	14.89	13.64	16.14	Ref.				
	Only at T1	13.64	11.23	16.06	-1.24	-4.01	1.53	0.278	
	at T1 and T2	14.07	8.79	19.36	-0.82	-6.33	4.70	0.597	
	Only at T2	16.55	13.85	19.25	1.67	-1.35	4.68	0.335	
DASS21 Total								**<.001**	**0.33**
	Never	39.97	36.54	43.39	Ref.				
	Only at T1	36.34	29.05	43.61	-3.63	-11.92	4.66	0.389	
	at T1 and T2	35.42	20.60	50.25	-4.55	-20.09	11.00	0.565	
	Only at T2	48.65	39.12	58.17	8.68	-1.55	18.91	0.096	
RSES								**<.001**	**0.39**
	Never	29.31	28.49	30.13	Ref.				
	Only at T1	29.29	27.40	31.17	-0.11	-2.23	2.02	0.921	
	at T1 and T2	29.36	26.97	31.75	0.16	-2.91	2.59	0.909	
	Only at T2	27.37	25.50	29.25	-1.88	-3.98	0.23	0.081	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale; Ref., reference category. In bold: p <.05.

10.3389/fpsyt.2025.1623411

Never group for any of the DASS-21 subscales, boys who reported parental comments Only at T1 showed lower adjusted mean scores on all DASS-21 subscales, with the difference reaching marginal statistical significance for Depression ($p = .060$) and Total score ($p = .061$), while boys who reported parental comments only at T2 tended to have higher mean scores on Stress. Regarding RSES, no significant differences in adjusted mean scores were found between groups.

Discussion

This longitudinal study examined how adolescents' reports of family-based weight stigma is associated with their psychological well-being two years later, with particular attention to differences based on parent type and adolescent gender. Additionally, the study provided insights into how both the recency and cumulative exposure to weight stigma within the family context affect mental health outcomes over time. These findings support prior calls for further research into the temporal dynamics of parental weight-related comments and their impact on adolescent well-being, i.e., whether adult psychological effects stem from early-life exposure, more recent experiences, or the cumulative burden of recurrent stigma (23), given that, to our knowledge, no prior research explicitly differentiates recent from cumulative family-based weight stigma exposure. Overall, our framing acknowledges robust dose–response links between adversity and health, uses sensitization and desensitization as exploratory lenses, and emphasizes that the developmental timing of exposure (i.e., *when* during adolescence stigma occurs) may be as consequential as its cumulative burden (i.e., *how much* stigma is experienced).

Before interpreting specific influences, we first situate the sample's DASS-21 and RSES scores using Spanish reference values. Benchmarking our adjusted marginal means against Spanish DASS-21 patient norms (49), scores were generally below the patient mean across Depression, Anxiety, and Stress, with one exception: Anxiety among girls exposed to familial weight stigma or parental weight-related comments at T2 approached or slightly exceeded the patient mean. These comparisons are indicative rather than diagnostic because validated Spanish cut-offs or minimal clinically important differences (MCIDs) for DASS-21 are unavailable; moreover, youth internalizing symptoms have risen in recent years —particularly post-COVID-19 and among adolescent girls— so contemporary baselines may exceed 2005 norms (54). Regarding self-esteem, the Spanish validation of the RSES (51) (Martín-Albo et al., 2017) reports only sex-specific means (men: M = 32.53, SD = 3.92; women: M = 31.14, SD = 4.51) and no clinical cut-offs, precluding clinical interpretation of RSES scores in our sample.

Longitudinal associations between family-based weight stigma and adolescent well-being

The proportion of adolescents reporting family-based weight stigma (6-13% among girls and 1-7% among boys depending on the time point assessed) was relatively low compared to prior literature (23, 55) and cumulative exposure across both waves was uncommon. As regards the longitudinal association between experiences of family stigma and adolescents' psychological distress, the finding that the highest levels of distress were observed among girls exposed only at T2 suggests that recent exposure may have a stronger emotional impact than earlier or cumulative experiences, underscoring the acute influence of current family dynamics during mid-adolescence. These temporal patterns are further discussed in a later section.

Longitudinal associations between parental comments about weight and adolescent well-being

Findings indicate that mothers were more frequently identified as sources of stigmatizing weight-related comments than fathers, at either T1 or T2, consistent with previous research suggesting that, within families, such comments tend to be more prevalent from mothers than from fathers (23, 55). In examining the associations between family-based weight stigma and adolescents' psychological well-being, the strongest associations for girls were observed when exposure occurred only at T2, with higher levels of stress, anxiety, depression, and lower self-esteem, compared to those who never reported maternal stigma. By contrast, earlier (Only at T1) or cumulative (at T1 and T2) exposure did not differ significantly from the Never group. These patterns suggest that recent exposure may have a greater impact than earlier or cumulative exposure. Among boys, maternal stigma was specifically associated with elevated stress, both on the DASS Stress subscale and Total score, with stronger effects observed for those recently exposed (Only at T2) compared to the never exposed. Similarly, among girls, paternal weight-related stigma was linked to higher depression –both on the DASS depression subscale and total score–, relative to the Never group. For boys, paternal stigma followed a comparable pattern, with recent exposure associated with higher scores across all DASS subscales compared to the never exposed. Our findings are consistent with prior longitudinal research demonstrating that family-based weight stigma is associated with a deterioration in psychological well-being over time, including higher stress, depressive symptoms, and WBI, as well as lower self-esteem and body appreciation in adolescent and emerging adult populations (18, 27, 56).

The different models accounted for a moderate proportion of the variance in psychological outcomes, with greater explanatory power observed among girls, particularly in models involving maternal comments and paternal comments. Additional covariates, such as baseline levels of WBI and zBMI, also made significant contributions to the prediction of anxiety, depression, stress, and self-esteem, particularly among female participants. Regarding WBI, extensive literature supports the notion that experiences of weight stigma are exacerbated when internalized, leading to greater psychological distress (13), and that WBI may mediate the relationship between weight stigma and psychological

TABLE 9 Association between parental comments about dieting (T1–T2) and psychological outcomes at T2 in boys, adjusted for baseline values, age, BMI-Z score at T1, European origin, socioeconomic status and WBISM at T1. n=266.

Outcome (T2)	Parental comments about dieting	Adjusted marginal mean	95% CI		B	95% CI		Sig.	Adjusted r^2
DASS21 Depression								**<.001**	**0.24**
	Never	6.34	5.37	7.31	Ref.				
	Only at T1	4.03	1.88	6.18	-2.31	-4.71	0.10	0.060	
	at T1 and T2	7.52	3.99	11.04	1.18	-2.55	4.90	0.535	
	Only at T2	7.63	4.81	10.45	1.29	-1.76	4.34	0.405	
DASS21 Anxiety								**<.001**	**0.27**
	Never	5.75	4.84	6.66	Ref.				
	Only at T1	4.25	2.64	5.87	-1.50	-3.39	0.40	0.121	
	at T1 and T2	7.94	4.83	11.05	2.19	-1.09	5.48	0.189	
	Only at T2	8.04	5.39	10.69	2.30	-0.59	5.18	0.119	
DASS21 Stress								**<.001**	**0.27**
	Never	9.30	8.23	10.36	Ref.				
	Only at T1	7.52	4.95	10.09	-1.78	-4.59	1.02	0.212	
	at T1 and T2	9.93	6.66	13.21	0.63	-2.98	4.25	0.729	
	Only at T2	12.89	9.03	16.75	3.59	-0.46	7.64	0.082	
DASS21 Total								**<.001**	**0.30**
	Never	21.40	18.87	23.98	Ref.				
	Only at T1	15.66	10.32	20.93	-5.74	-11.74	0.27	0.061	
	at T1 and T2	25.56	16.58	36.72	4.16	-5.39	13.71	0.392	
	Only at T2	28.53	20.18	36.87	7.12	-1.78	16.02	0.116	
RSES								**<.001**	**0.32**
	Never	34.05	33.46	34.65	Ref.				
	Only at T1	33.33	31.79	34.87	-0.73	-2.37	0.92	0.384	
	at T1 and T2	33.59	31.90	35.28	-0.47	-2.32	1.38	0.620	
	Only at T2	33.17	30.89	35.45	-0.89	-3.32	1.54	0.473	

T1, Time 1; T2, Time 2; CI, Confidence Interval; Sig., Statistical significance; DASS21, Depression Anxiety Stress Scales; RSES, Rosenberg Self-Esteem Scale, Ref., reference category. In bold: p <.05.

10.3389/fpsyt.2025.1623411

outcomes (57). Additionally, according to previous studies, more frequent negative weight-related comments from parents were associated with higher levels of WBI, regardless of whether they came from mothers or fathers. Conversely, positive comments were linked to lower levels of WBI and greater body appreciation among adolescents (17). Weight status may function both as a risk factor for exposure to family-based stigma (25) and as an independent predictor of emotional difficulties (58), possibly due to the increased salience of body weight in the context of thin ideal internalization, peer interactions, and adolescents' self-concept (59). Accordingly, in our study, weight status appeared to play a more direct and pervasive role in adolescent psychological well-being than parental weight-related comments alone.

Longitudinal associations between parental encouragement to diet and adolescent well-being

Regarding parental encouragement to diet, no significant effects of this variable were found on any of the dependent variables in either boys or girls. This finding contrasts with the majority of previous studies, which have shown that parental encouragement to diet predicts children's dieting behaviors (20), with some also suggesting a gender-linked transmission pattern in which mothers are more likely to influence daughters (25, 55). It is important to note, however, that the present study focused on psychological well-being rather than weight-control behaviors. It is possible that the psychological impact of such encouragement may take longer to emerge, or that it may be attenuated by competing sociocultural influences during adolescence, such as peer dynamics and social media exposure (60, 61). This null effect could also be related to the limited sensitivity of the measurement tool used (single-item with binary response).

Recency and cumulative exposure to family-based weight stigma

In terms of temporal dynamics, the evidence from this study suggests that recent exposure to family-based weight stigma may have a more immediate and pronounced effect on adolescents' psychological well-being than earlier or cumulative exposure. This pattern stands in contrast to previous research highlighting the cumulative impact of weight-related pressures —such as parental encouragement to diet— on long-term health outcomes. For instance, in a study by Berge and colleagues (29), each occurrence of encouragement to diet from close relationships between Time 1 and 3 was associated with a 17% increased risk of binge eating at Time 4 in females and a 39% increase in males, even after adjusting for baseline BMI, underscoring the lasting influence of repeated weight-related messaging on disordered eating behaviors. Moreover, the persistence of weight stigma experiences across adolescence and young adulthood is well established. Eisenberg and colleagues (62) found that family-based weight stigma can persist over time: adolescents who experienced weight-related teasing from family members were twice as likely to report similar hurtful comments ten years later, independent of gender, race, socioeconomic status, or weight change. Haines et al. (38) similarly found that the prevalence of weight-related teasing remained high and relatively stable from adolescence into young adulthood, with one exception: males first assessed in early adolescence, among whom teasing rates increased over time. Although neither study directly assessed the psychological impact of persistent weight-related teasing, the observed stability in stigma exposure may reflect desensitization/habituation processes, whereby repeated exposure leads to a decreased emotional response over time while, in line with the sensitization theory, more recent or novel experiences of stigma may elicit a stronger psychological impact. In our study, the lack of significant associations for cumulative exposure (at T1 and T2) suggests that the timing of exposure may play a more critical role than its duration. Specifically, recent exposure appeared to be associated with a stronger emotional response than chronic or earlier experiences, raising the possibility that repeated stigma may lead to psychological adaptation, reducing its perceived salience over time. This hypothesis warrants further empirical exploration.

When interpreting the findings related to the heightened psychological impact of recent exposure at T2, it is important to consider participants' developmental stage. At T1, participants were in early-to-mid adolescence. However, at T2, the majority of participants were in mid-to-late adolescence (mean age was approximately 16 years), a developmental period characterized by heightened sensitivity to social evaluation and body image concerns, as well as a critical window for identity formation. Exposure to family-based weight stigma during this stage may therefore interfere with the development of a positive body image and a stable self-concept, ultimately contributing to a decline in psychological well-being (63). However, these findings contrast with those of a recent meta-analysis (58), which concluded that younger age moderated the association between weight stigma and mental health, with stronger effects observed in younger populations. One explanation proposed by Warnick and colleagues (9) is that younger children may be especially vulnerable to the psychological effects of weight stigma due to their limited coping skills and lack of prior experience in managing social stressors such as peer or family-based victimization. In any case, the relationship between experiences of weight stigma and health outcomes across developmental stages remains underexplored (35). Future research should further examine how the timing of parental weight-related comments shapes adolescent well-being.

Gender differences

Our findings align with previous research, showing that girls reported higher overall exposure to family-based weight stigma —especially at T2— and exhibited greater psychological vulnerability compared to boys. This may be linked to girls' heightened sensitivity to, and greater likelihood of reporting weight-related comments from family members -particularly from mothers- which

have been more strongly associated with depressive symptoms in this group (17, 62). Puhl and colleagues (25) further note that such stigma often occurs more frequently within same-gender parent–child dyads. It should be noted that the very low prevalence of reported family stigma among boys substantially limited the statistical power of the analyses. As a result, gender comparisons and the observed trends in boys should be considered exploratory only. In our study, maternal comments about weight, both recent and cumulative, were more frequently reported by girls than by boys, and recent maternal comments (T2) emerged as the strongest predictor of psychological distress among adolescent girls. This aligns with prior evidence showing that mothers are more likely than fathers to engage in weight-focused conversations with their children (18, 23). However, emerging literature highlights that when fathers do participate in such conversations, their comments may have particularly strong associations with adverse outcomes in emerging adults (17, 18). Despite the historical underrepresentation of fathers in research on parent–adolescent weight communication (64), available evidence underscores that both maternal and paternal input can have meaningful impacts, though they may differ in frequency, content, and psychological consequences.

It is important to acknowledge both the strengths and limitations of this study. Strengths include a large, population-based adolescent cohort from a Mediterranean context, where evidence on family-based weight stigma remains limited, enhancing generalizability to similar settings. The prospective, two-wave design allowed us to implement a time-sensitive framework that explicitly contrasts recent (Only at T2) versus cumulative (at T1 and T2) exposure using a transparent four-category scheme. We conducted gender-sensitive analyses by examining maternal and paternal comments separately and reporting results for girls and boys, and we adjusted for key covariates (age, origin, socioeconomic status, zBMI, baseline WBI) to reduce the influence of potential confounding variables. Finally, by objectively measuring the weight and height of participants, the accuracy of weight status estimation is ensured, whereas most community studies on this topic rely on self-reported data.

However, several limitations should be considered when interpreting these findings. First, all data were obtained through adolescent self-report, which may be subject to social desirability bias and potential perceptual or recall biases, particularly for sensitive topics like family-based weight stigma. Second, the assessment of parental weight-related comments and encouragement to diet relied on a limited number of binary-coded items, which can undermine measurement reliability and construct validity. Additionally, they did not fully capture the complexity of family communication around weight. Future work should focus on developing validated multi-item scales for assessing this variable. Moreover, this study focused on negative parental communication and did not adequately consider the potential protective effects of positive weight-related messages –shown to be impactful in previous research (25)– or the role of adolescents' coping strategies in response to family-based weight stigma. Both factors may have buffered the psychological impact in our sample and thus warrant further investigation. In addition, because validated Spanish DASS-21 cut-offs/MCIDs are unavailable, we cannot estimate the proportion of adolescents with clinically meaningful symptoms; thus, clinical inferences should be interpreted with caution. Finally, as with many longitudinal studies, there was a notable loss of participants between the two assessment points; however, among adolescents who remained in the Spanish mandatory secondary education system –the study´s primary target population–, the retention rate exceeded 80%. In addition, sample sizes for several exposure categories were low even among girls, and particularly low among boys. This limited prevalence reduced statistical power across models and precluded testing formal interaction effects with gender.

Future research should address these limitations by developing and using more comprehensive, culturally validated instruments in Spanish to assess the full spectrum of parental communication about weight. It is crucial to include both negative and positive parental messages –for example, encouragement to eat more healthily, engage in physical activity, or participate in family meals– to better understand the unique and longitudinal effect of each variable on adolescent well-being. Equally important is examining how adolescents perceive these messages, as the same comment may be interpreted as supportive by some and stigmatizing by others. Although we included WBI as a covariate, future studies should conduct additional analyses to assess its potential mediating role in the observed associations between parental comments about weight and psychological well-being. Additionally, future studies should examine adolescents' differential coping strategies in response to both recent and cumulative experiences of family-based weight stigma. This is particularly important given that our results, which contrast with previous evidence highlighting the negative effects of cumulative weight stigma within families, suggest a possible role for desensitization or psychological adaptation.

Conclusions

Given the negative impact of recent family-based weight stigma on adolescent well-being observed in this longitudinal study, particularly among girls and when maternal and paternal comments are involved, our findings underscore the importance of implementing preventive strategies before the onset of mid-to-late adolescence, when these effects appear to be most pronounced. These results highlight the need for targeted efforts, particularly within pediatric healthcare and school settings, to educate parents on how to recognize and avoid stigmatizing weight-related comments. Instead, they should be encouraged to promote positive, health-focused messages that prioritize well-being over weight and support the adoption of healthy behaviors within the entire family unit, with parents serving as role models. This approach, which is already supported by national guidelines in Spain (65), may be more feasible than attempting to modify deeply rooted parenting styles. Finally, our findings emphasize the importance of considering gender-specific dynamics such as the differing roles of mothers and fathers, and the gender of the

adolescent, in the context of family-based weight stigma. Tailoring interventions to account for these nuanced influences may enhance their effectiveness.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were approved by the Comisión de Ética en la Experimentación Animal y Humana (CEEAH; 3451), Universitat Autònoma de Barcelona, for the first assessment (T1, 2022), and by the Comité de Ética en la Investigación (CERec; 6677), Universitat Autònoma de Barcelona, for the second assessment (T2, 2024). The studies were conducted in accordance with local legislation and institutional requirements. Written informed consent for participation was obtained from the participants' legal guardians or next of kin.

Author contributions

DA: Writing – review & editing, Writing – original draft, Funding acquisition, Investigation, Conceptualization. ST: Formal analysis, Writing – original draft, Funding acquisition, Methodology, Investigation, Data curation, Writing – review & editing. AF-D: Investigation, Writing – review & editing, Funding acquisition, Methodology, Formal analysis, Data curation. DS-C: Supervision, Project administration, Funding acquisition, Writing – original draft, Conceptualization, Resources, Investigation, Writing – review & editing.

Funding

The author(s) declare financial support was received for the research and/or publication of this article. This research was supported by Research Grants from the Spanish Ministry of Science and Innovation (RTI2018-099293-B-I00 and PID2022-138977OB-I00). This study was also financially supported by the Serra Húnter program in the form of a grant awarded to DA.

Acknowledgments

The authors would like to thank all the adolescents and families for their participation in the study, as well as the participating schools Andersen, Can Jofresa, Can Roca, Cavall Bernat, Creixen, El Cim, Escola Goya, IES Ègara, INS El Cingle, Les Aimerigues, Montserrat Roig, Nicolau Copèrnic, Ramon Pont, Sagrat Cor de Jesús, Sant Domènec Sàvio, and Tecnos. They would also like to thank the Community and Health Service of the City Council of Terrassa, with which the sampling of the participating schools was made, and which mediated to obtain the participation of the schools.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Generative AI was used in the creation of this manuscript. The authors utilized Microsoft's Copilot, version GPT-4, model Generative Pre-trained Transformer 4 (GPT-4), based on the GPT-4-turbo model, developed by OpenAI and integrated by Microsoft, to assist in refining the manuscript. The AI was exclusively used to improve grammar and writing fluency while maintaining the original content, created by the authors.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

References

1. Crandall CS, D'Anello S, Sakalli N, Lazarus E, Wieczorkowska G, Feather NT. An attribution-value model of prejudice: Anti-fat attitudes in six nations. *Pers Soc Psychol Bull.* (2001) 27:30–7. doi: 10.1177/0146167201271003

2. Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JI, et al. Joint international consensus statement for ending stigma of obesity. *Nat Med.* (2020) 26:485–97. doi: 10.1038/s41591-020-0803-x

3. Nutter S, Eggerichs LA, Nagpal TS, Ramos Salas X, Chin Chea C, Saiful S, et al. Changing the global obesity narrative to recognize and reduce weight stigma: A position statement from the World Obesity Federation. *Obes Rev.* (2023) e13642:1–9. doi: 10.1111/obr.13642

4. Waasdorp TE, Mehari K, Bradshaw CP. Obese and overweight youth: Risk for experiencing bullying victimization and internalizing symptoms. *Am J Orthopsychiatry.* (2018) 88:483–91. doi: 10.1037/ort0000294

5. Bucchianeri MM, Gower AL, McMorris BJ, Eisenberg ME. Youth experiences with multiple types of prejudice-based harassment. *J Adolesc*. (2016) 51:68–75. doi: 10.1016/j.adolescence.2016.05.012

6. Haqq AM, Frcp C, Kebbe M, Tan Q, Manco M, Salas XR. The complexity and stigma of pediatric obesity. *Childhood Obesity*. (2021) 14:229–40. doi: 10.1089/chi.2021.0003

7. Puhl RM, Lessard LM. Weight stigma in youth: prevalence, consequences, and considerations for clinical practice. *Curr Obes Rep*. (2020) 9(4):402–11. doi: 10.1007/s13679-020-00408-8

8. Tanas R, Gil B, Marsella M, Nowicka P, Pezzoli V, Phelan SM, et al. Addressing weight stigma and weight-based discrimination in children: preparing pediatricians to meet the challenge. *J Pediatr*. (2022) 248:135–136.e3.

9. Warnick JL, Darling KE, West CE, Jones L, Jelalian E. Weight stigma and mental health in youth: A systematic review and meta-analysis. *J Pediatr Psychol*. (2021) 47 (3):1–19. doi: 10.1093/jpepsy/jsab110

10. Gmeiner MS, Warschburger P. Interrelation between weight and weight stigma in youth: is there evidence for an obesogenic vicious cycle? *Eur Child Adolesc Psychiatry*. (2023) 32:697–704. doi: 10.1007/s00787-021-01922-3

11. Puhl RM, Wall MM, Chen C, Bryn Austin S, Eisenberg ME, Neumark-Sztainer D. Experiences of weight teasing in adolescence and weight-related outcomes in adulthood: A 15-year longitudinal study. *Prev Med (Baltim)*. (2017) 100:173–9. doi: 10.1016/j.ypmed.2017.04.023

12. Schvey NA, Marwitz SE, Mi SJ, Galescu OA, Broadney MM, Young-Hyman D, et al. Weight-based teasing is associated with gain in BMI and fat mass among children and adolescents at-risk for obesity: A longitudinal study. *Pediatr Obes*. (2019) 14:1–9. doi: 10.1111/ijpo.12538

13. Pearl RL, Puhl RM. Weight bias internalization and health: a systematic review. *Obes Rev*. (2018) 19:1141–63. doi: 10.1111/obr.12701

14. Butt M, Harvey A, Khesroh E, Rigby A, Paul IM. Assessment and impact of paediatric internalized weight bias: A systematic review. *Pediatr Obes [Internet]*. (2023) 18:e13040. doi: 10.1111/ijpo.13040

15. Anastasiadou D, Tárrega S, Fornieles-Deu A, Moncada-Ribera A, Bach-Faig A, Sánchez-Carracedo D. Experienced and internalized weight stigma among Spanish adolescents. *BMC Public Health*. (2024) 24:1–14. doi: 10.1186/s12889-024-19246-7

16. Tort-Nasarre G, Pollina-Pocallet M, Ferrer Suquet Y, Ortega Bravo M, Vilafranca Cartagena M, Artigues-Barberà E. Positive body image: a qualitative study on the successful experiences of adolescents, teachers and parents. *Int J Qual Stud Health Well-being*. (2023) 18(1):2170007. doi: 10.1080/17482631.2023.2170007

17. Lessard LM, Puhl RM, Foster GD, Cardel MI. Parental communication about body weight and adolescent health: the role of positive and negative weight-related comments. *J Pediatr Psychol*. (2023) 48:700–6. doi: 10.1093/jpepsy/jsad040

18. Berge JM, Hazzard VM, Arlinghaus KR, Larson N, Hahn SL, Neumark-Sztainer D. Do parents engage in weight- and health-focused conversations with their emerging adult children and are there cross-sectional associations with weight and well-being outcomes? *Prev Med (Baltim)*. (2024) 186:108066. doi: 10.1016/j.ypmed.2024.108066

19. Pearl RL, Groshon LC, Hernandez M, Bach C, LaFata EM, Fitterman-Harris HF, et al. Characterising first, recent and worst experiences of weight stigma in a clinical sample of adults with high body weight and high internalised stigma. *Clin Obes*. (2025) 15(4):1–12. doi: 10.1111/cob.70005

20. Balantekin KN. The influence of parental dieting behavior on child dieting behavior and weight status. *Curr Obes Rep*. (2019) 8:137–44. doi: 10.1007/s13679-019-00338-0

21. Berge JM, Wall M, Larson N, Loth KA, Neumark-Sztainer D. Family functioning: Associations with weight status, eating behaviors, and physical activity in adolescents. *J Adolesc Health*. (2013) 52:351–7. doi: 10.1016/j.jadohealth.2012.07.006

22. Gillison FB, Lorenc AB, Sleddens EFC, Williams SL, Atkinson L. Can it be harmful for parents to talk to their child about their weight? A meta-analysis. *Prev Med (Baltim)*. (2016) 93:135–46. doi: 10.1016/j.ypmed.2016.10.010

23. Lawrence SE, Puhl RM, Watson RJ, Schwartz MB, Lessard LM, Foster GD. Family-based weight stigma and psychosocial health: A multinational comparison. *Obesity*. (2023) 31:1666–77. doi: 10.1002/oby.23748

24. Wu R, Puhl RM, Lessard LM, Foster GD, Cardel MI. Exploring the interplay of weight-based teasing and sociodemographic factors in adolescent weight bias internalization. *J Pediatr Psychol*. (2024) 49(8):547–58. doi: 10.1093/jpepsy/jsae042

25. Puhl RM, Lessard LM, Foster GD, Cardel MI. A comprehensive examination of the nature, frequency, and context of parental weight communication: perspectives of parents and adolescents. *Nutrients*. (2022) 14. doi: 10.3390/nu14081562

26. Lydecker JA, O'Brien E, Grilo CM. Parents have both implicit and explicit biases against children with obesity. *J Behav Med*. (2018) 41:784–91. doi: 10.1007/s10865-018-9929-4

27. Berge JM, Hazzard VM, Aqeel M, Miller L, Brandenburg D. The influence of family weight talk on health and well-being from childhood to adulthood. *Fam Relat*. (2025) 74(4):2117–30. doi: 10.1111/fare.13173

28. Lessard LM, Puhl RM, Larson N, Simone M, Eisenberg ME, Neumark-Sztainer D. Parental contributors to the prevalence and long-term health risks of family weight teasing in adolescence. *J Adolesc Health*. (2021) 69:74–81. doi: 10.1016/j.jadohealth.2020.09.034

29. Berge JM, Christoph MJ, Winkler MR, Miller L, Eisenberg ME, Neumark-Sztainer D. Cumulative encouragement to diet from adolescence to adulthood: longitudinal associations with health, psychosocial well-being, and romantic relationships. *J Adolesc Health*. (2019) 65:690–7. doi: 10.1016/j.jadohealth.2019.06.002

30. Hamby S, Elm JHL, Howell KH, Merrick MT, Hamby S. Recognizing the cumulative burden of childhood adversities transforms science and practice for trauma and resilience. *The American Psychologist*. (2021) 76:230–42. doi: 10.1037/amp0000763

31. McLaughlin KA, Greif Green J, Gruber MJ, Sampson NA, Zaslavsky AM, Kessler RC. Childhood adversities and first onset of psychiatric disorders in a national sample of US adolescents. *Arch Gen Psychiatry*. (2012) 69:1151–60. doi: 10.1001/archgenpsychiatry.2011.2277

32. Wiss DA, Brewerton TD. Physiology & Behavior adverse childhood experiences and adult obesity: A systematic review of plausible mechanisms and meta-analysis of cross-sectional studies. *Physiol Behav*. (2020) 223:112964. doi: 10.1016/j.physbeh.2020.112964

33. Mclaughlin KA, Conron KJ, Koenen KC, Gilman SE. Childhood adversity, adult stressful life events, and risk of past-year psychiatric disorder: a test of the stress sensitization hypothesis in a population-based sample of adults. *Psychological medicine*. (2010) 40(10):1647–58. doi: 10.1017/S0033291709992121

34. Rankin CH, Abrams T, Barry RJ, Bhatnagar S, Clayton DF, Colombo J, et al. Neurobiology of Learning and Memory Habituation revisited: An updated and revised description of the behavioral characteristics of habituation. *Neurobiol Learn Mem*. (2009) 92:135–8. doi: 10.1016/j.nlm.2008.09.012

35. Earnshaw VA, Fox AB. Introduction to the special section on stigma and time. *Stigma Health*. (2024) 9:423–4. doi: 10.1037/sah0000572

36. Elkind D, Bowen R. Imaginary audience behavior in children and adolescents. *Dev Psychol*. (1979) 15:38–44. doi: 10.1037/0012-1649.15.1.38

37. Somerville LH. The teenage brain: sensitivity to social evaluation. *Current Directions in Psychological Science*. (2013) 22(2):121–7. doi: 10.1177/0963721413476512

38. Haines J, Hannan PJ, Van Den BP, Eisenberg ME. Weight-related teasing from adolescence to young adulthood: longitudinal and secular trends between 1999 and 2010. *Obesity (Silver Spring, Md.)*. (2013) 21:428–34. doi: 10.1002/oby.20092

39. Moses-payne ME, Chierchia G, Blakemore S. Age-related changes in the impact of valence on self-referential processing in female adolescents and young adults. *Cognit Dev*. (2022) 61:101128. doi: 10.1016/j.cogdev.2021.101128

40. Puhl RM, Himmelstein MS. Weight bias internalization among adolescents seeking weight loss: Implications for eating behaviors and parental communication. *Front Psychol*. (2018) 9:1–9. doi: 10.3389/fpsyg.2018.02271

41. Sánchez-Carracedo D, López-Guimerà G, Fauquet J, Barrada JR, Pàmias M, Puntí J, et al. A school-based program implemented by community providers previously trained for the prevention of eating and weight-related problems in secondary-school adolescents: The MABIC study protocol. *BMC Public Health*. (2013) 13:955. doi: 10.1186/1471-2458-13-955

42. Bujalance Arguijo S, Menera Bassols M, Salvador-Castell G, Sánchez-Carracedo D. Statement of the Roundtable for the Prevention of Eating Disorders on the Practice of Body Mass Index (BMI) Measurements in Children and Adolescents in Schools. Barcelona: Generalitat de Catalunya. Departament de Salut (2023). Available online at: https://hdl.handle.net/11351/10985 (Accessed June 19, 2025).

43. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA - J Am Med Assoc*. (2013) 310:2191–4. doi: 10.1001/jama.2013.281053

44. Hollingshead AB. Four factor index of social status (Unpublished Working Paper, 1975). *Yale J Sociol*. (2011) 8:21–52. Available online at: http://elsinore.cis.yale.edu/sociology/yjs/yjs_fall_2011.pdfpage=21 (Accessed June 19, 2025).

45. World Health Organization. BMI-for-age (5–19 years) (2007). Available online at: https://www.who.int/tools/growth-reference-data-for-5to19-years/indicators/bmi-for-age.

46. Vartanian LR, Pinkus RT, Smyth JM. The phenomenology of weight stigma in everyday life. *J Contextual Behav Sci*. (2014) 3:196–202. doi: 10.1016/j.jcbs.2014.01.003

47. Neumark-Sztainer D, Bauer KW, Friend S, Hannan PJ, Story M, Berge JM. Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *J Adolesc Health*. (2010) 47:270–6. doi: 10.1016/j.jadohealth.2010.02.001

48. Lovibond PF, Lovibond SH. *Manual for the Depression Anxiety Stress Scales*. Sidney: Psychology Foundation of Australia (1995).

49. Bados A, Solanas A, Andrés R. Psycometric properties of the spanish version of depression,Anxiety and stress scales (DASS). *Psicothema*. (2005) 17:679–83. Available online at: http://dialnet.unirioja.es/servlet/articulo?codigo=1314066.

50. Rosenberg M. *Society and the adolescent self-image*. Princeton NJ, editor. Press PU (1965).

51. Martin-Albo J, Nunez JL, Navarro JG, Grijalvo F. The Rosenberg self-esteem scale: translation and validation in university students. *Spanish J Psychol*. (2007) 10:458–67. doi: 10.1017/S1138741600006727

52. Pearl RL, Puhl RM. Measuring internalized weight attitudes across body weight categories: Validation of the Modified Weight Bias Internalization Scale. *Body Image*. (2014) 11:89–92. doi: 10.1016/j.bodyim.2013.09.005

53. Andrés A, Fornieles-Deu A, Sepúlveda AR, Beltrán-Garrayo L, Montcada-Ribera A, Bach-Faig A, et al. Spanish validation of the Modified Weight Bias Internalization Scale (WBIS-M) for adolescents. *Eating Weight Disord*. (2022) 27(8):3245–56. doi: 10.1007/s40519-022-01453-z

54. Madigan S, Racine N, Vaillancourt T, Korczak DJ, Hewitt JMA, Pador P, et al. Changes in depression and anxiety among children and adolescents from before to during the COVID-19 pandemic: A systematic review and meta-analysis. *JAMA Pediatr*. (2023) 177:567–81. doi: 10.1001/jamapediatrics.2023.0846

55. Dahill L, Mitchison D, Morrison NMV, Touyz S, Bussey K, Trompeter N, et al. Prevalence of parental comments on weight/shape/eating amongst sons and daughters in an adolescent sample. *Nutrients*. (2021) 13:1–12. doi: 10.3390/nu13010158

56. Lessard LM, Puhl RM. Adolescents' exposure to and experiences of weight stigma during the COVID-19 pandemic. *J Pediatr Psychol*. (2021) 46(8):950–9. doi: 10.1093/jpepsy/jsab071

57. Bidstrup H, Brennan L, Kaufmann L, de la Piedad Garcia X. Internalised weight stigma as a mediator of the relationship between experienced/perceived weight stigma and biopsychosocial outcomes: a systematic review. *Int J Obes*. (2021) 46:1–9. doi: 10.1038/s41366-021-00982-4

58. Warnick JL, Darling KE, West CE, Jones L, Jelalian E. Weight stigma and mental health in youth: A systematic review and meta-analysis. *J Pediatr Psychol*. (2022) 47:237–55. doi: 10.1093/jpepsy/jsab110

59. Toro J. *El adolescente ante su cuerpo: Cuerpo, vestido y sexo [The adolescent and their body: Body, clothing, and sex]*. Madrid: Ediciones Pirámide (2013).

60. Khan A, Feng J, Chachay V, Tsang JH, Huang WY, Sit CHP, et al. Bytes and bites: social media use and dietary behaviours among adolescents across 41 countries. *Pediatr Res*. (2025). doi: 10.1038/s41390-025-04030-z

61. Eisenberg ME, Neumark-Sztainer D, Story M, Perry C. The role of social norms and friends' influences on unhealthy weight-control behaviors among adolescent girls. *Soc Sci Med*. (2005) 60:1165–73. doi: 10.1016/j.socscimed.2004.06.055

62. Eisenberg ME, Berge JM, Fulkerson JA, Neumark-Sztainer D. Weight comments by family and significant others in young adulthood. *Body Image*. (2011) 8:12–9. doi: 10.1016/j.bodyim.2010.11.002

63. Calado M. *Young women and eating disorders: The impact of gender roles and stereotypes [Mujeres jóvenes y trastornos de la conducta alimentaria: impacto de los roles y estereotipos de género]*. Madrid: Instituto de las Mujeres. Subdirección General de Estudios y Cooperación (2024).

64. Yourell JL, Doty JL, Beauplan Y, Cardel MI. Weight-talk between parents and adolescents: A systematic review of relationships with health-related and psychosocial outcomes. *Adolesc Res Rev*. (2021) 6:409–24. doi: 10.1007/s40894-021-00149-2

65. Alto Comisionado para la Pobreza Infantil. Plan estratégico nacional para la reducción de la obesidad infantil (2022 - 2030). Madrid: Presidencia del Gobierno de España – Alto Comisionado contra la Pobreza (2022). Available online at: https://www.comisionadopobrezainfantil.gob.es/sites/default/files/2023-01/Plan_obesidad_Completo_DIGITAL_paginas_1_0.pdf (Accessed June 19, 2025).

frontiers | Frontiers in Psychiatry

TYPE Community Case Study
PUBLISHED 18 November 2025
DOI 10.3389/fpsyt.2025.1589858

OPEN ACCESS

EDITED BY
Lily O'Hara,
Griffith University, Australia

REVIEWED BY
Mohsen Khosravi,
Zahedan University of Medical Sciences, Iran
Kiki Fornero,
Linfield-Good Samaritan School of Nursing, United States
Gabriele Gomez,
Macalester College, United States

*CORRESPONDENCE
Chioma N. Tomlinson
cntomlinson@bwh.harvard.edu

†These authors share senior authorship

RECEIVED 08 March 2025
ACCEPTED 23 October 2025
PUBLISHED 18 November 2025

CITATION
Tomlinson CN, Hampson MM, Patil A, Liu J, DuBreuil L and Rich-Edwards JW (2025) Chutes and ladders: collaborating across disciplines to improve mental and physical healthcare for larger-bodied people. *Front. Psychiatry* 16:1589858. doi: 10.3389/fpsyt.2025.1589858

Chutes and ladders: collaborating across disciplines to improve mental and physical healthcare for larger-bodied people

Chioma N. Tomlinson[1*], Mara M. Hampson[2], Ankita Patil[2], Jacqueline Liu[3], Lisa DuBreuil[4,5†] and Janet W. Rich-Edwards[2,3,6†]

[1]Primary Care Center of Excellence, Department of Medicine, Brigham and Women's Hospital, Boston, MA, United States, [2]Division of Women's Health, Department of Medicine, Brigham and Women's Hospital, Boston, MA, United States, [3]Harvard Medical School, Boston, MA, United States, [4]Massachusetts General Hospital, Boston, MA, United States, [5]Department of Medicine, Massachusetts General Hospital, Boston, MA, United States, [6]Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, United States

Weight stigma in healthcare contributes to poor patient outcomes, emotional harm, and avoidance of care. Healthcare systems are often perceived as hostile environments for many larger-bodied people who often report feeling judged, dismissed or denied appropriate treatment. Despite growing awareness, most medical educational programs and healthcare systems do not address weight bias directly. Persuading clinicians and staff to disrupt the traditional medical paradigm and instead adopt a size-inclusive perspective requires educational materials that push the envelope without pushing learners off a cliff. This paper describes the development of a weight-inclusive e-course designed to raise awareness of the impact of anti-fat bias in medicine. Grounded in the philosophical frameworks of Health at Every Size™ (HAES™) and Trauma-Informed Care (TIC), the course was co-created by a multidisciplinary team including clinicians, educators, activists, and individuals with lived experience. The collaborative process emphasized shared leadership, inclusive design, and emotional safety. We detail the course's development over six months of weekly virtual meetings, including content creation, conflict resolution, accessibility planning, and evaluation design. The course includes three tracks tailored to clinicians, staff, and patients, and integrates practical tools for weight-neutral care. Lessons learned from this process offer a replicable model for inclusive curriculum design. Our aim is for learners to engage deeply with this work in order to fully reap the benefits for themselves and their patients. Institutions seeking to address weight stigma can use this framework to foster respectful, equitable care for people in all bodies.

KEYWORDS

weight bias and stigma, trauma informed approach, health at every size (HAES), multidiscipliary team, primary care

Introduction

Larger-bodied individuals face systemic bias in healthcare, often resulting in delayed diagnoses, emotional harm, and reduced trust. Traditional medical education rarely addresses weight stigma. This topic is also fraught with conflicting and seemingly incompatible points of view between entrenched clinical beliefs and an emerging movement of larger-bodied patients and fat activists who have found traditional healthcare systems unsympathetic, frustrating, and often harmful (1–3, 6, 7). This project aims to create a course that promotes a novel approach to respectful, evidence-based, weight-neutral care using Health at Every Size (HAES™) and Trauma-Informed Care (TIC) frameworks. Our team included professionals in clinical medicine, epidemiology, public health and social work. Our experience ranged from trainees to established clinicians and varied in body size, sexual orientation, and race. Collaboration across fields can be risky especially when personal and professional stakes are involved. This paper describes the process of team building and course creation by this diverse team. Our process centered lived experiences, challenged dominant narratives, and modeled inclusive design (10). We outline the barriers we've faced as well as solutions that made collaboration not only possible, but a source of personal and professional growth.

The project

Theoretical approach

This course was created for healthcare providers, trainees, staff, and patients seeking practical tools to recognize and reduce weight stigma. Our work is guided by HAES™ and TIC principles, to emphasize safety, dignity, and patient choice.

Health at Every Size (HAES™) principles challenge traditional weight-centric approaches to healthcare. Instead of pathologizing fatness and thus automatically attributing a higher weight to all adverse medical outcomes, HAES™ encourages the pursuit of health across a spectrum of body sizes and advocate that larger-bodied individuals deserve the same dignity and quality of care as anyone else (4). Our e-course contrasts the culturally dominant weight normative approach with weight inclusive approaches like Health at Every Size (Figure 1).

Trauma-Informed Care (TIC) principles recognize the widespread prevalence and impact of trauma and aim to minimize re-traumatization by creating safe, supportive environments. TIC emphasizes trust, empowerment, autonomy and collaboration while acknowledging historical/gender-specific trauma, cultural biases and systemic inequities. When applied in clinical settings, TIC often manifests as screening for trauma, awareness of triggers and giving patients choice (5, 9).

Together, HAES™ and TIC principles provide a framework to transform how larger-bodied patients experience healthcare by reducing the downstream effects of weight bias and stigma. When applied effectively, larger-bodied patients report feeling more respected, validated, safe and engaged in healthcare environments.

We made every effort to center the voices of those most affected by weight bias and challenge harmful norms in healthcare. This statement reflects our commitment to equity, not neutrality.

Origins of the project

The team's epidemiologist (JRE) is an academic in the Division of Women's Health (DWH) at Brigham and Women's Hospital (BWH) who had been working on studies linking child abuse to adult chronic disease; in her population data, the association was partly mediated by disordered eating and consequent ob*sity. She received pilot funding from the Lifecourse Research Network (LCRN) of the University of Los Angeles, California to translate research findings on early childhood adversity to a large-scale prevention project. These funds allowed her to convene a group of experts to advise on the design of a community intervention. The DWH administrative assistant (MH) helped prepare the workshop and proposed including the perspectives of fat activists. The workshop ultimately included activists, academics, clinicians and a representative from the Obesity Action Committee. Tensions arose almost immediately between an activist and a clinician over their perspectives on weight and its causes. Both later declined to advise the project. The input of the activists steered the project in a radically new direction, shifting the emphasis to the harm caused by often unbridled anti-fat bias in medicine. The workshop also revealed that anti-fat bias in medicine could be considered a source of trauma, and that there were few educational resources designed to address the issue.

Team formation: Identifying anti-fat bias as a source of trauma enabled us to adopt TIC practices that recognize the impact of trauma, reduce re-traumatization, and promote healing. We continued to reach out to the workshop participants for their advice. To learn more about TIC practices, we turned to experts within DWH (Drs. Annie Lewis-O'Connor and Eve Rittenberg) and to Harvard Medical School (Dr. Jennifer Potter) as early advisors to the project. The next step was to probe our network of clinical colleagues who could inform our clinical education. Chioma Tomlinson (CT) is a primary care provider well known for effective patient-centered care focused on improving outcomes for larger-bodied patients. CT was also familiar with applying HAES™ and TIC principles within her practice.

Funding the e-course development

JRE, MH, and CT applied for the BWH Research Institute's BRIght Futures Prize which is given to 'answer provocative questions or solve grand problems.' We successfully leveraged our personal and professional networks to win the prize in a competitive field. This allowed us to fund the assistance of Ankita Patil (AP) to translate the content into the online platform and along with MH conduct interviews with clinicians, community members and activists. Lisa DuBreuil (LD), a social worker and fat activist from Mass General Hospital (MGH) brought needed clarity and nuance

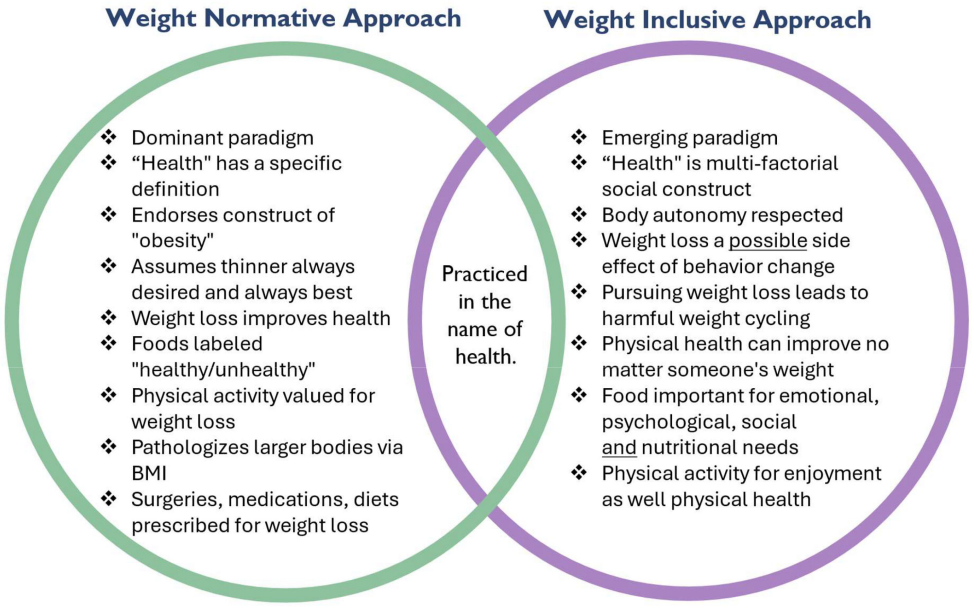


FIGURE 1
Excerpted script for this slide in the e-course: The "Weight Normative" perspective is the currently dominant view of weight: it proposes that people above specific BMI thresholds must lose weight to avoid various health complications. Therefore, a patient's weight can become the primary health issue in a provider's mind, regardless of their patient's goals or reason for visiting. The fat body is seen as evidence of a problem, and obesity is perceived as an epidemic that must be solved. The Weight Inclusive Approach is a direct response to the weight normative perspective. Prioritizing the lived experience of individuals and celebrating body diversity, it questions BMI as a tool for indicating health for any given individual. Weight Inclusive advocates posit that people can be healthy at a wide range of weights and can improve their health without focusing on weight loss. Health At Every Size™ and other weight inclusive frameworks emphasize a people-centric and patient-led approach. Both the Weight Normative and Weight Inclusive perspectives are practiced in the name of health and share the goal of making people healthier and safer, while taking different approaches to that goal (4, 5, 9).

to our understanding of HAES™ and continued to provide us with important references and contacts in the fat-positive community. Jackie Liu (JL) a second-year Harvard Medical School (HMS) student who had studied medicalized fatphobia as an undergraduate brought us insight into how medical students might receive our course.

Other resources

Though we feared this topic and our approach might be too provocative for our own institutions, we have been well received at nearly every turn. We were fortunate to be well-supported by our institutions given this is typically not the case for work on anti-fat bias and stigma. Our professional credentials bought us credibility and afforded access to resources that would be inaccessible to activists without hospital and medical school affiliations. For instance, despite the change in project aims after the workshop, the LCRN leadership remained supportive. BWH Primary Care and DWH are home to many of the early pioneers in TIC who provided early counsel. The BWH Department of Primary Care wrote letters of support for our BRIght Future's proposal and agreed to have us test our e-course at four clinics. When the BRIght Futures Prize reviewers cleared us to move forward in the competition, we were affirmed in our belief that our project was as valid and relevant as the typical basic science and clinical research proposals that won funding in the previous ten-year life of the prize. Division leadership at BWH provided time and flexibility for JRE and MH, as well as enthusiasm, expertise, and an opportunity to present our work to a national audience as part of the HMS Career Advancement and Leadership Skills for Women in Healthcare conference. Through JL's advocacy at HMS, we were able to pilot the e-course with multiple cohorts of students. We took feedback from the pilot test with medical students to focus on the common core and to design the clinical track.

E-course creation and evaluation process

Originally conceived as a presentation, JRE and MH collaborated on a PowerPoint that could be given to various audiences of clinicians and community members. However, after seeing another e-course created by Dr. Brittany Charlton on LGBTQ+ experiences of stigma in the medical field, we realized that an e-course could be a more effective way to disseminate our message, because it would be more engaging and could be accessed online for asynchronous learning. With the BRIght Futures funding, we proposed to: 1) solicit the input and stories of patients in larger bodies, weight-inclusive clinicians and fat

activists; 2) design an e-course incorporating their input with HAES™ and TIC principles; 3) test the e-course with clinicians; and 4) publish the course and its evaluation as an open resource (Figure 2).

At the outset, we realized that learning needs and styles may differ between clinicians and staff. We therefore proposed a course with two tracks, one for clinicians and the other for practice staff such as medical and administrative assistants. The need for a third track designed for patients arose during the process. At present, we have concluded the design of the clinician and practice staff tracks and have pilot-tested the clinician track with medical students (results in Supplementary 1). We are now preparing to test the e-course in two primary care clinics.

Soliciting input

We invited participants in larger bodies via Instagram and word of mouth for semi-structured interviews regarding their experiences of living in a fat body and interacting with medical care. When given consent we recorded the Zoom interviews and extracted video or audio clips for the e-course. Participants chose whether to include their names along with their video (one declined) and if they wished to replace their image with an avatar to allow anonymity (none chose this option). We offered honoraria to community members regardless of their level of participation.

Technology and accessibility

We chose the Articulate platform for e-course development and deployment based on its flexibility, design options, and data tracking abilities. MH, AP and JL performed the iterative drafting and review process of the course content within the e-course platform, which featured closed captioning and screen-reader capability. The visual images and figures were deliberately intended to avoid stigmatizing imagery. Figure 3 shows a screenshot of a community video that demonstrates the accessibility feature of subtitles.

Meeting structure and workflow

JRE, MH, CT and AP officially began construction of the e-course in June 2023. LD officially joined the team in September 2023 followed by JL in February 2024. Weekly 60–90 minute in-person and virtual meetings were held over 2 years. We began every meeting with check-ins to build trust, followed by updates, draft reviews, and problem-solving. Smaller groups worked between meetings on writing, design, and evaluation tasks, then shared progress with the full team. Written course content, interviews, sources and presentations were centrally located using DropBox™. Figure 4 and Supplementary 2 summarize the e-course content.

Testing the e-course with clinicians

We have plans with several Mass General Brigham (MGB) primary care clinics to evaluate the course with clinicians and practice assistants this winter. We will seek resources to test the patient track once it is designed. Supplementary 1 shows an example of the pre and post course surveys.

Publishing the e-course and its evaluation

Assuming that the evaluation is generally positive and we can refine the e-course with minor improvements suggested by the evaluators, we will seek to publish the e-course on a peer-reviewed, open-source platform to make it widely available at no cost.

Collaboration and conflict resolution

Initial perspectives and positionality

Each team member brought perspectives foundational to course development. Here we capture each member's initial perspectives and their evolution.

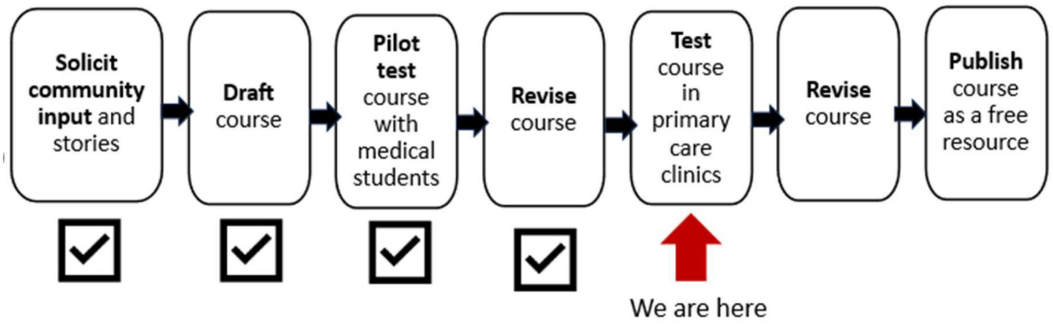


FIGURE 2
Timeline of e-course development, testing, and dissemination.

FIGURE 3
Screenshot from e-course of a community member interview (subtitles abridged for illustration).

JRE (epidemiologist, she/her): I'm a white, cis-gendered, straight, woman scientist born in the Midwest in the 1960s to a life of thin privilege. I've studied the determinants of women's health and chronic disease for nearly thirty years. Like my predecessors and contemporaries, I was trained that BMI is a strong determinant of health. I therefore believed a high BMI was something to prevent in childhood, since it was so hard to reverse in adulthood. I was startled early on by the candor with which a fat activist steered me from my focus on preventing ob*sity stating: 'That's not the real problem here.' The experience opened my eyes to anti-fat bias and how plainly disrespectful, counter-productive and even traumatizing

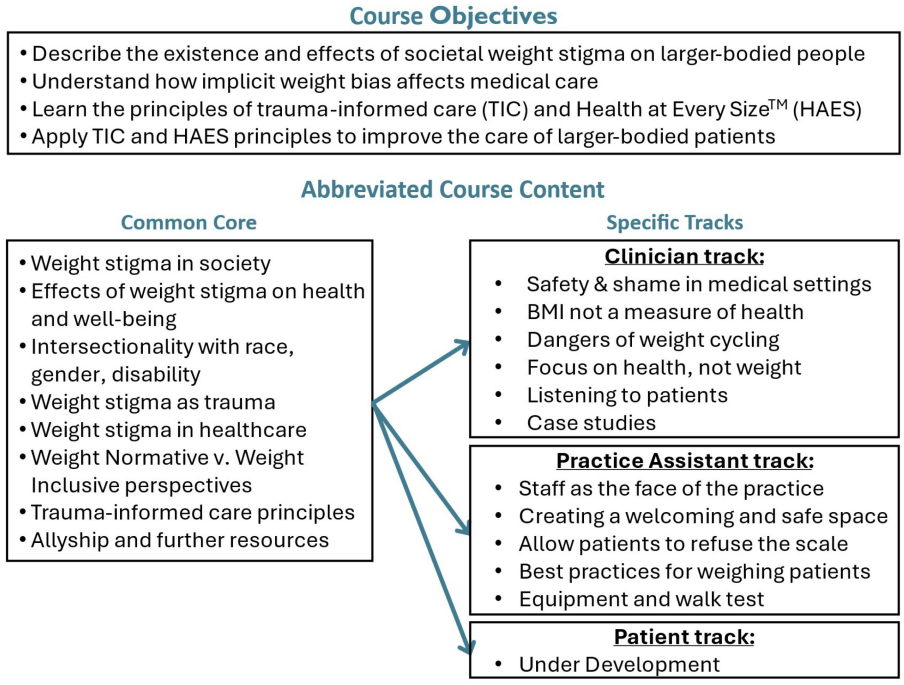


FIGURE 4
E-cource objectives and abbreviated content.

medical care can be for larger-bodied patients. As we approached the e-course, I was worried that my ignorance would hurt my colleagues. I was also wary that this project would ask me to deny my beliefs in the evidence regarding the associations of body size and health. I didn't know if I could stand by my work and by my colleagues at the same time. While I still believe BMI impacts health, I now understand the futility of trying to create small people from large people and deeply appreciate the profound harms of medical and societal shaming of fat people.

MH (administrative assistant, she/her): I have been fat since I was a child. I have encountered anti-fat bias in nearly every venue possible, including church, family dinners, and most especially in the doctor's office. While I've experienced prejudice my whole life, I never expected that it could risk my life until a doctor wrote off my acute abdominal pain as a signal that I "just" needed to lose weight. The next week I found myself in the ER with a ruptured ovarian cyst. That experience changed my perception of weight and what it meant about the person carrying it. Through friends I found an online blog that pointed out how society fails its fat members. I found a community of people that helped me reconceptualize what life could be like if, instead of hating my body and calling myself a failure, I could love my body for what it does for me. However, I was still so accustomed to being ignored or told that my opinion wasn't valid. I was therefore astonished that an academic like JRE would listen to a non-academic like me, and that once I showed her the evidence of the harm anti-fat bias itself has on health, a partnership emerged which shifted the project's emphasis to educate healthcare providers and staff about the downstream consequences of anti-fat bias. My voice was heard and that makes all the difference. I now consider myself a fat activist.

CT (primary care clinician, she/her): I am a first-generation African American. My cultural upbringing allows me to see beyond the typical western ideals of beauty and wellness. In 2013, two years into my career, the American Medical Association deemed "ob*sity" as a chronic disease. Over the ensuing years there was a palpable shift toward tackling this "epidemic" head on. By 2017 I began to develop a foundation in lifestyle medicine. The following year I started to explore the emerging field of ob*sity medicine. The dominant theme was that weight loss was a goal anyone could achieve at any time. This translated into a high degree of shame many patients in larger bodies would share with me about their struggle to lose and maintain weight loss. These personal stories fundamentally changed my approach to patient-centered care. As nutrient-stimulating hormone-based therapies for weight management have gained popularity and become ubiquitous within primary care, there has been an unfortunate sharp increase in anti-fat bias in patients and providers. When I was approached by JRE and MH to join their team I was eager to offer my clinical expertise and valuable insights on how to improve the clinical experience for both patients and providers. What challenged me early on was realizing that there was a whole community of activists that are strongly against medical treatment of any kind for weight management. I was initially wary of offering my options and anecdotes for fear I would be viewed as "one of them." I now have a better understanding of how harmful experiences, often stemming from childhood, can be considered an independent risk factor for poor health outcomes in larger patients. Addressing anti-fat bias and stigma with weight neutral approaches is a matter of health equity and social justice.

AP (research assistant, she/her): Having worked closely with incarcerated individuals, I have seen how systemic oppression, stigma, and dehumanizing environments create lasting harm, making compassion and respect critical cornerstones of care. This work made me attentive to the ways social marginalization shapes health, but I had not fully considered how these dynamics extend to people in larger bodies. Joining this project led me to recognize the ways in which weight stigma parallels the very forms of marginalization I have witnessed in correctional settings – both rooted in societal bias, both perpetuating trauma, and both requiring a deliberate commitment to dignity in care. In confronting my own assumptions, I realized that weight stigma operates as its own pervasive and insidious form of oppression that demands its own framework of care.

LD (clinical social worker, fat activist, she/her): I'm a white, cis-gendered straight woman born in Boston in the 1960s to a working-class Irish-Catholic family. I've been in recovery from an eating disorder for 25 years and I am "super fat" – a term coined in 2008, essentially means most stores do not carry clothing in my size, and finding seating that works for me in restaurants, theatres and other public venues is often difficult. I work with people with substance use disorders and eating disorders and educate various groups of people about the impact of weight stigma on people's health, especially in medical settings. At MGB I am part of the Size Diversity Group, a multi-disciplinary team that provides education and consultation to colleagues and patients about weight-inclusive medical care.

I first heard about the e-course project in May 2023. I remember being both very excited to hear about this project but also anxious as many similar projects don't include any actual fat people or consider the importance of the language used to describe fat people. It was heartening to see that MH was highly involved, and I did not see (to my recollection) any use of the term ob*sity to disparage fat people. Encouraged, I reached out and very quickly got a warm email back with plans to meet virtually. When I viewed the draft material, it was clear the team did not have a good grip on the HAES™ approach. This is not unusual, in my experience it's often difficult for people to get their heads around what to do to help fat people improve their health other than losing weight. There are also lots of misconceptions about HAES™ such as: a belief that weight has no impact on health or that food and exercise changes cannot improve health.

Given the clear commitment this team had to this project I drafted an email explaining my concerns and offering to assist them in understanding the HAES™ model. Once again, I got a quick and friendly reply taking me up on my offer. What was initially going to

be a couple of consultation meetings turned into weekly zooms for the past 16 months. When doing this kind of activism, I always have to balance how anxiety-provoking engaging can be with the positive outcomes that can come from this work. While our early meetings often left me uneasy and fatigued, I was able to develop the necessary coping skills to make sure the HAES™ model was accurately represented and that the e-course was informed by the actual experts on the best medical care for fat people – which are fat people. Eventually I learned to trust and moved from someone who was trying to act as a type of guardrail to a real member of the team creating a first of its kind e-course. I gained a deeper understanding and appreciation for the challenges of providing weight-inclusive, trauma-informed care in clinical settings especially when patients want to lose weight.

JL (medical student, she/they): I have been a thin person my whole life. I used to pride myself on my below average BMI. During that time, I restricted my food intake, over-exercised, and obsessed over the way my body looked. I was introduced to the notion of fatphobia as an undergraduate in my first gender studies class. That class allowed me to question the presumptions I had about larger bodies being unhealthy and undesirable. It made me confront the futile goal I had been pursuing of achieving the "ideal" and began the process of healing my relationship with my body. As I learned more about the research on medicalized weight stigma and bias, I knew that I wanted to pursue a career in medicine and dedicate my practice towards ending weight bias and stigma. I decided to write my senior thesis on this topic. There, I proposed a medical environment devoid of subpar care for larger-bodied people, where each patient is empowered to lead a life that they find satisfying and whole.

In my first year of medical school, I was confronted with the standard messaging that weight is a risk factor for several medical pathologies. What was lacking however was pathophysiological mechanism or epidemiological evidence; instead, there is often an automatic presumption that fatness equates to bad health. I found it difficult to continuously fight against the traditional paradigm. It became even muddier when I would talk to patients who lamented their body size or arbitrarily connected all their medical conditions to their weight. Who am I to try and correct them, especially when we live in such a fatphobic world? I joined the project to provide my perspective as a future clinician. I wholeheartedly agreed there needed to be a change to the fundamental way healthcare providers are trained to think about patients in larger bodies. As the team engaged in sticky discussions on how fat patients should be counseled, I was able to appreciate the nuance that surfaces when practitioners from different fields weigh in on this topic. After working with this team, I've learned what it takes to change minds and practice, as well as how incremental change is still just as meaningful as sweeping reform.

Trust-building, consensus and conflict

A significant challenge was to create space for opposing viewpoints, particularly regarding the tone and content of the course. Anti-fat bias and stigma are commonly an emotionally charged space. HAES™ activists are often labeled as "angry," a harmful stereotype also shared by women of color. Finding common ground could not be assumed. We slowly built trust through several factors. On the one hand, while we acknowledged the need to deliver updated content to individuals already familiar with concepts of anti-fat bias, intersectionality, and hierarchies in medicine, we also needed to speak to healthcare professionals and patients firmly rooted in the prevailing zeitgeist of the 'ob*sity epidemic.' Our team often had divergent views of how to meet the traditional viewpoints of more conservative learners while presenting the evidence to convince staff and providers to abandon the BMI as a sole predictor of health, to refrain from attributing every complaint to a patient's size, and to appreciate the expertise that every person has of their own body. MH and LD in particular took risks by sharing personal examples from their lives, since larger-bodied people are often not believed when they recount painful experiences. We each ventured opinions from our own disciplines while stretching to meet the others where they stood in their core beliefs. By listening carefully, we learned to express our feelings and speak our beliefs without shutting down the conversation and impede compromise. As the team successfully navigated these differences, we quickly established a shared understanding that anti-fat bias in medicine is a social determinant of health and agreed to focus on reducing its pervasiveness and harm. When we disagreed, we kept returning our focus to the touchstone of reducing bias, not teaching medicine. Our purpose was not to convince clinicians and staff that increased adiposity is harmless, but to teach them that an unthinking and biased approach is harmful and counterproductive. Through structured dialogue, silent reflections and shared values, we also leveraged the team's diversity of race, body size and profession to inform course content. We fully acknowledge, however, the limitation that we all live in female bodies.

Conflicts were expected and handled with care. When tensions ran high, team members reached out individually to support each other and clarify concerns. Our shared goal—reducing anti-fat bias in healthcare—helped us stay focused and move forward together. We each respected the particular expertise of the other team members. Patient perspectives were informed mostly by MH and LD. They also ensured course content aligned with HAES™ and TIC principles. CT provided insight into clinical recommendations and strategies while JRE ensured adherence to research guidelines and ethics as well as devised pre/post evaluation assessments.

Summary of barriers to replicability

Institutional Support and Resources: The content challenged dominant medical paradigms and risked institutional pushback. The project benefited from unusually strong institutional backing. Others may struggle to get similar backing, especially without medical or academic connections and in more traditional environments.

Team Composition and Diversity: The collaborative process relied heavily on a multidisciplinary team with diverse lived experiences, including clinicians, educators, activists, and patients which may be challenging to replicate in other settings.

Trust-Building and Conflict Resolution: Building trust among team members required a strong commitment to structured dialogue and sometimes difficult conversations and significant time for consensus-building which may be difficult to achieve in other settings.

Emotional Labor and Risk-Taking: Team members with lived experience of weight stigma took personal and professional risks by sharing their stories and perspectives. Sustaining this level of vulnerability can be a barrier to others attempting similar work.

Access to Funding and Technology: The ability to secure competitive grants and access user-friendly technology platforms (like Articulate) facilitated course creation and dissemination.

Discussion

We are aware that there is still a long way to go toward treating all people with dignity and respect in all settings, always. Many academic medical centers remain steeped in a strong culture of treating "ob*sity" as a disease requiring aggressive action (1). Our goal is not just to change the conversation; we want to see an entire paradigm shift. Our project exemplifies hope for progress in understanding and addressing the unique barriers larger-bodied patients face when accessing medical care in this charged landscape (2, 6, 7). We acknowledge we were exceptionally lucky to find each other; this type of coalition building is not only possible but necessary to advance health equity. This course is more than a training tool: it's a step toward changing how healthcare treats larger-bodied people. By combining lived experience with clinical insight and grounding our learnings in HAES™ and TIC, we created a replicable model for equity-driven curriculum design that is practical, inclusive, and adaptable (8). We know this is just the beginning. Our hope is that this course sparks deliberate reflection, shifts practices, and opens doors to more respectful and compassionate care that fosters resilience and healing—for everyone, in every body. Creating this course was both challenging and rewarding. Team members brought different experiences, ideas, and emotions to the table. Some had lived through medical weight stigma; others were learning about it for the first time. These differences sometimes led to tension, but they also made the course stronger. What kept us moving forward was a shared goal: to make healthcare safer and more respectful for people in larger bodies. We learned to listen deeply, speak honestly, and stay open to change. The process wasn't perfect, but it was real—and it reflected the kind of care we hope to inspire.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material. Further inquiries can be directed to the corresponding author.

Author contributions

CT: Writing – original draft, Writing – review & editing. MH: Writing – original draft, Writing – review & editing. AP: Writing – original draft, Writing – review & editing. JL: Writing – original draft, Writing – review & editing. LD: Writing – original draft, Writing – review & editing. JR: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare financial support was received for the research and/or publication of this article. This project was supported by a pilot grant from the Maternal and Child Health Life Course Research Network of the University of California Los Angeles, CA and by the BRIght Futures Prize of Brigham and Women's Hospital Research Insitute Boston, MA.

Acknowledgments

The authors wish to thank the activists, community members and clinicians who contributed to the e-course as well as Tess Federico-Maietta for their assistance with graphic design.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2025.1589858/full#supplementary-material

References

1. Alberga AS, Edache IY, Forhan M, Russell-Mayhew S. Weight bias and health care utilization: a scoping review. *Prim Health Care Res Dev*. (2019) 20:e116. doi: 10.1017/S1463423619000227

2. Jayawickrama RS, Hill B, O'Connor M, Flint SW, Hemmingsson E, Ellis LR, et al. Efficacy of interventions aimed at reducing explicit and implicit weight bias in healthcare students: A systematic review and meta-analysis. *Obes Rev*. (2025) 26: e13847. doi: 10.1111/obr.13847

3. Tomiyama A, Carr D, Granberg E, Major B, Robinson E, Sutin AR, et al. How and why weight stigma drives the obesity 'epidemic' and harms health. *BMC Med*. (2018) 16:123. doi: 10.1186/s12916-018-1116-5

4. Association for Size Diversity and Health. Available online at: https://asdah.org/haes (Accessed October 24, 2025).

5. Substance Abuse and Mental Health Services Administration. *SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach. HHS Publication No. (SMA) 14-4884*. Rockville, MD: Substance Abuse and Mental Health Services Administration (2014).

6. D'Arpino E, Kardong-Edgren S. From education to patient care: the impact of weight stigma in healthcare. *Proc (Bayl Univ Med Cent)*. (2025) 38:769–78. doi: 10.1080/08998280.2025.2528397

7. Phelan SM, Burgess DJ, Yeazel MW, Hellerstedt WL, Griffin JM, van Ryn M. Obesity stigma and patient care. *Obes Rev*. (2015) 16:319–26. doi: 10.1111/obr.12266

8. Marler GS, Turk MT, Kalarchian M, Oermann MH, Sabol VK, Phelan SM. Weight bias interventions for healthcare professionals: an integrative review. *J Adv Nurs*. (2025). doi: 10.1111/jan.17065 Online ahead of print

9. Mosier-Mills ABA, Vagwala MM, Potter JMD, Elisseou SMD. Respecting body-size diversity in patients: A trauma-informed approach for clinicians. *Perm J*. (2024) 28:206–11. doi: 10.7812/TPP/23.104

10. Heidebrecht C, Fierheller D, Martel S, Andrews A, Hollahan A, Griffin L, et al. Raising awareness of anti-fat stigma in healthcare through lived experience education: a continuing professional development pilot study. *BMC Med Educ*. (2024) 24:64. doi: 10.1186/s12909-023-04889-8

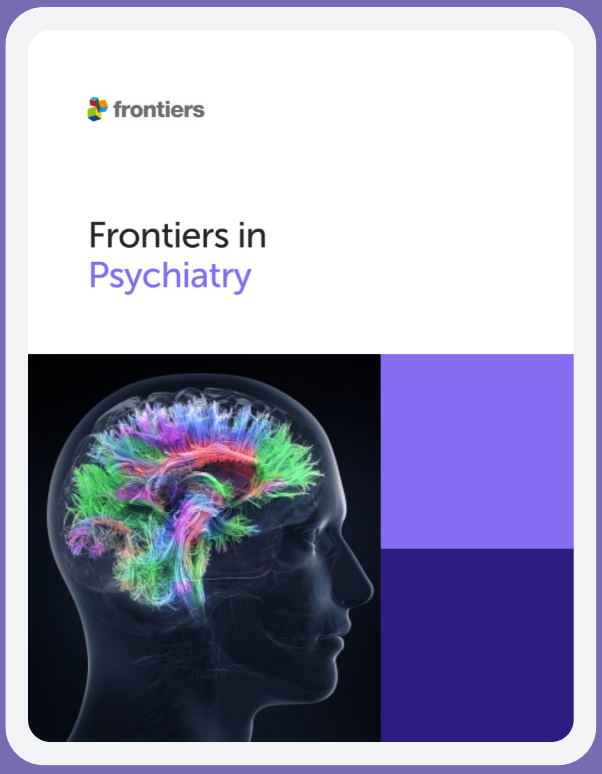
Frontiers in Psychiatry

Explores and communicates innovation in the field of psychiatry to improve patient outcomes

The third most-cited journal in its field, using translational approaches to improve therapeutic options for mental illness, communicate progress to clinicians and researchers, and consequently to improve patient treatment outcomes.

Discover the latest Research Topics

See more →



Frontiers

Avenue du Tribunal-Fédéral 34
1005 Lausanne, Switzerland
frontiersin.org

Contact us

+41 (0)21 510 17 00
frontiersin.org/about/contact