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Experiences of weight stigma in everyday life: An ecological momentary assessment study

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Abstract

Weight stigma and discrimination have been linked to negative health outcomes. Most research on weight stigma and discrimination is retrospective, which may not accurately capture day-to-day experiences. The current used ecological momentary assessment (EMA) to examine weight stigma and discrimination in everyday life. Participants answered EMAs about the nature, frequency, and contextual details of weight stigma and discrimination. Over the course of the study, only eight episodes of weight stigma and discrimination were reported. Given that prior EMA studies reported substantially more frequent weight stigma and discrimination, possible explanations for the findings and implications for future research are discussed.

Keywords

weight stigma; weight discrimination; ecological momentary assessment

INTRODUCTION

Weight stigma refers to the social devaluation of individuals perceived to possess excess body weight (Rothblum, 1992), and includes a range of attitudes and behaviors, from negative stereotypes about higher-weight individuals¹ (e.g., perceiving them to be lazy or lacking in competence) to overt prejudice or discrimination (e.g., being called derogatory names or receiving poor service by a medical provider because of weight status; for review see (Puhl and Heuer, 2009). Weight stigma has been documented in a range of settings such as in the workplace (Rudolph et al., 2009), in the home (Carr and Friedman, 2006), and in medical settings (Phelan et al., 2015). Weight stigma is experienced more commonly in women, and at lower BMI than in men, and is experienced at a higher rate in both men and women as BMI increases (Hatzenbuehler et al., 2009).

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¹The term “higher-weight” is used throughout this manuscript in line with recommendations from several weight-related social justice organizations, researchers, and health professionals who advocate for the reduction of weight stigma in the academic and medical domains. The terms “overweight” or “obese” medicalize body weight, and mark heavier bodies as “diseased,” even in the absence of any other biological perturbations, which could be considered to perpetuate the stigmatizing status of higher body weight (Meadows and Danielsdottir, 2016).

Weight stigma may exert direct and indirect negative impact on the health and wellbeing of higher-weight individuals. Those who report experiencing weight stigma (versus those who report none or less) are more likely to suffer poor physiological health, including metabolic dysregulation (Potter et al., 2015; Vadiveloo and Mattei, 2017), cardiovascular disease (Udo et al., 2016), and chronic pain (Brown et al., 2018). They are also more likely to experience poor psychosocial outcomes, including greater anxiety and depressive symptoms (Hatzenbuehler et al., 2009), lower relationship satisfaction (Ball et al., 2004), and reduced levels of self-acceptance and self-esteem (Carr and Friedman, 2006; Friedman et al., 2005). Importantly, these differences exist even after controlling for BMI and other potential confounding factors. Several studies have also shown that individuals who reported weight stigma were likely to engage in fewer health behaviors and more unhealthy behaviors, including disordered eating (Ashmore et al., 2008), desire to avoid exercise (Vartanian and Shaprow, 2008), substance use (Hatzenbuehler et al., 2009), and healthcare avoidance (Mensing et al., 2018). Further, many higher-weight individuals also internalize negative societal attitudes about weight, devaluing themselves because of their weight status (Durso and Latner, 2008). This internalized weight stigma is also associated with a wide range of negative health and social outcomes (for review, see Puhl and Heuer, 2009).

Most studies of weight stigma have been conducted in a lab setting or rely on participants to retrospectively report on experiences (Puhl and Heuer, 2009). Although valuable for understanding between-person relationships between weight stigma and indicators of health (i.e., identifying who may be at risk for poor health outcomes), these studies may be subject to recall bias, for example, with some past events being forgotten, or recall being influenced by current mood or context (Heron and Smyth, 2010; Smyth and Stone, 2003). Thus, such studies may not reflect the actual lived experiences of higher-weight individuals as they go about their daily lives; that is, they lack ecological validity. Given the high prevalence of weight stigma suggested in retrospective studies (Andreyeva et al., 2008; Puhl et al., 2008) and general acceptability of weight stigma in society at large (Kristen, 2002; Major et al., 2012; Puhl and Heuer, 2010), there has been a growing interest in using ecologically valid methods such as ecological momentary assessment (EMA) to elucidate the extent and nature of weight stigma and discrimination in everyday life (Vartanian et al., 2014).

EMA studies are advantageous because they allow participants to report on their experiences, mood, behaviors, and contextual factors in real-time. Using mobile electronic devices, such as smartphones, participants complete surveys either when prompted by the researcher (e.g., at random intervals during waking hours) or in response to specific events (e.g., following an experience of weight stigma), thus allowing them to provide data “in-the-moment” (Smyth and Heron, 2014). This naturalistic approach reduces recall bias by helping decrease the possibility that past events will be forgotten or influenced by current mood or context. It also increases ecological validity by asking individuals about their experiences in their natural settings. Further, EMA studies collect intensive longitudinal data – that is, repeated assessments across a relatively short period of time (e.g., hours, days, weeks, etc.). This is useful for capturing the nature and frequency of lived experiences in natural environments (Heron and Smyth, 2010; Smyth and Stone, 2003).

To date, there are few studies of which we are aware that utilize ecologically valid methods such as EMA or daily diaries to study weight stigma in everyday life (Potter et al., 2017). This small but growing body of literature suggests that weight stigma may occur repeatedly in everyday life and may be related to a variety of health indicators in-the-moment, such as depressed mood, shame, and reduced motivation to diet or exercise (Carels et al., 2019a; Vartanian et al., 2014; Vartanian et al., 2018). Incidence of weight-related stigmatizing experiences appears to be notably higher in EMA studies than in studies relying on retrospective recall; on average, occurring about three to four times per week (Seacat et al., 2016; Vartanian et al., 2018). Looking at the source of stigma, a study in 46 higher-weight men and women found that stigma was perpetrated by a variety of sources and in several different settings, but occurred most commonly in public places, by strangers, and through verbal comments (Vartanian et al., 2014). This is broadly consistent with cross-sectional studies that have identified public settings as a primary location for such experiences (Hatzenbuehler et al., 2009) and strangers as a primary source of stigma (Falkner et al., 1999; Himmelstein et al., 2018). However some studies have reported family members and friends to be the primary source of weight stigma (Puhl et al., 2006). In addition, Vartanian and colleagues (2014) found that weight stigma was related to higher levels of negative affect when perpetrated by strangers compared with when perpetrated by other sources, such as a spouse or the media. Given such a small number of studies using ecologically valid methods to study weight stigma, further work is needed to build a reliable understanding of the true frequency and nature of weight stigma in everyday life.

The present study

The primary aim of the present study was to build upon the small amount of existing literature and characterize the prevalence of weight stigma and discrimination in everyday life in a sample of higher-weight individuals who met the Centers for Disease Control and Prevention and the World Health Organization criteria of overweight or obesity (i.e., BMI greater than or equal to 25 kg/m²). Discrimination refers to the differential or treatment of individuals because of their membership in a group (Kaiser and Major, 2006). When an individual possesses a stigmatized attribute or mark (e.g., an undesirable phenotypic such as weight status) they may be assigned as a member of a devalued “out-group,” which makes them vulnerable to prejudice (i.e., negative attitudes, thoughts and feelings) when devalued attributes activate negative stereotypes in members of the in-group (Major and O’Brien, 2005). Prejudice and negative stereotypes are used to justify discrimination, which is the behavioral manifestation through which stigma, prejudice, and stereotypes may affect the lives of individuals with certain attributes or identities (Link and Phelan, 2001; Major and O’Brien, 2005). For the purposes of this study, discrimination and stigma were assessed separately to explore whether overt experiences (i.e., discrimination) or perceived devaluation (i.e., stigma) due to weight status were experienced differently in daily life. Weight discrimination was defined as overt negative actions against a target due to weight status (e.g., being hassled, teased, insulted), and weight stigma as devaluation due to weight status (e.g., made to feel inferior, look down upon). We examined the frequency of weight stigma and discrimination over a seven-day period using EMA. We also collected descriptive information about the location, modality, number of bystanders, and individuals’ response to each incident. Based on evidence from retrospective studies, we predicted that individuals

with a higher BMI would report more frequent weight stigma in everyday life compared with those with a lower BMI (Hatzenbuehler et al., 2009; Puhl and Brownell, 2006). Additionally, in line with cross-sectional findings and the limited available data from EMA studies, we expected that public settings would be the most frequent location for stigma or discrimination experiences, but do not offer specific hypotheses regarding the modality or contextual correlates of weight stigma experiences in everyday life.

METHODS

Participants

Individuals from the community volunteered to participate in a study of “Weight Status and Health in Everyday Life”. Recruitment materials that specified age and BMI criteria were placed around the community (e.g., bulletin boards in academic buildings and classrooms, inside businesses such as coffee shops and convenience stores, etc.), on Facebook, and in online advertisements. Eligible participants were between 18 and 55 years of age and fluent in English so they could complete all study protocol. Individuals who had a body mass index (BMI) greater than or equal to 25 kg/m² were eligible to participate. Individuals were excluded if they were pregnant, nursing, had previously been diagnosed with an eating disorder, or had previously been diagnosed with any other psychiatric disorder for which they had been hospitalized in the previous three months. This study was approved by the Pennsylvania State University’s institutional review board.

Procedure

Interested participants were instructed to call the laboratory to be screened over the phone. Eligible individuals (i.e., met all criteria above, including having a self-reported height and weight that equated to a BMI of 25 kg/m² or greater) were then scheduled for two in-person laboratory visits. During each participant’s first (i.e., baseline) visit, a trained research assistant (RA) provided the participant with detailed information about the purpose of the study and an overview of the procedures, then obtained informed consent if the individual was still interested in participating. Following the consent process, the RA measured the participant’s height and weight to calculate BMI to confirm eligibility, then asked the participant to fill out a series of baseline questionnaires that assessed demographic information and lifetime experiences of weight stigma. After baseline measures were completed, the RA trained the participant on the study protocol and use of the equipment. In order to capture variability of experiences on both weekends and weekdays, the protocol involved data collection on seven continuous days (two weekend days and five weekdays). The duration of EMA data collection typically depends on the nature of the research question, however seven days with 4–10 survey prompts per day is a normative sampling period for EMA studies to reflect a trade-off between data capture and participant burden (Conner & Lehman, 2012). During the seven days, participants received six EMA surveys each day on a pre-programmed smart phone. EMA prompts were delivered at random intervals between 8.30am and 8.30pm, with no two prompts occurring within 30 minutes of each other. This random sampling technique was chosen to help capture experiences of weight stigma and discrimination that may not occur at predictable times. Following the end of the EMA portion of the study, participants returned to the laboratory to return study

equipment and to provide qualitative information about their experiences during the study period.²

Participant burden and compensation

Participants received monetary compensation in the amount of up to \$50.00 upon completion of the study, which was estimated to equate to about \$12.00 per hour. EMA surveys consisted of approximately 40 questions and pilot testing suggested that each survey took no more than three minutes to complete. Morning and evening surveys were estimated to take about one minute each. As such, it was estimated that over the course of the EMA portion of the survey, participants spent approximately two hours completing surveys. The baseline and follow-up visits lasted no more than one hour each. In sum, the total study time was approximately four hours. Compensation was calculated incrementally such that participants received \$10.00 for participating in the baseline visit, up to \$30.00 for participating in the EMA portion (compensation for the EMA portion was tied to returning all study equipment in good working condition - \$10.00 was deducted if equipment was lost or damaged), and \$10.00 for participating in the follow-up visit. Participants were paid at the end of the study period.

Measures

Baseline—Lifetime weight stigma was assessed at baseline using the Stigmatizing Situations Inventory (SSI; (Myers and Rosen, 1999). The SSI is a 50-item measure asking participants to rate their lifetime frequency of negative weight-related experiences (e.g., “Other people having low expectations of you because of your weight,” “Overhearing other people making rude remarks about you in public”). The SSI is scored on a scale from 0 (*Never*) to 9 (*Daily*). Ratings are averaged to create a total score, with higher scores indicating more experiences of weight stigma over the lifetime. The SSI had good internal consistency ($\alpha = .92$).

EMA—Weight stigma and discrimination in everyday life were assessed using one question each relating to experiences of weight stigma (i.e., devaluation) and discrimination (i.e., mistreatment). The two items were modified from the SSI – although the SSI scale was created to assess weight stigma, there are items within the scale that correspond to both devaluation and overt mistreatment. Participants in the current study were asked, “Since the last beep, have you felt stigmatized due to your weight status (e.g., felt devalued, made to feel inferior to others, looked down upon by others?” and “Since the last beep, have you experienced discrimination due to your weight (e.g., experienced being threatened or hassled, teased, or insulted due to your weight?” Participants who indicated they had experienced weight stigma and/or discrimination since the previous assessment were then asked several follow-up questions:

²During the EMA portion of the study, participants self-initiated a morning survey and an evening survey, which included items relating to sleep quality, affect, self-worth, body appreciation, stress, and weight-related vigilance. They also wore a monitor to collect objective assessments of activity and provided a blood sample at follow up to assess HbA1c. Additional personality and psychological constructs (e.g., big-5, depressive symptoms, lifetime weight stigma) were collected at baseline and during EMA in the larger study. Findings from these measures are not reported herein but will be included in manuscripts forthcoming. Details of all measures used in larger study available upon request.

- “Who or what made you feel stigmatized/discriminated against?”
(Response options: *Romantic/dating partner, Parent/sibling/other relative, Friend/acquaintance, Stranger, Customer service representative (e.g., store employee or waiter/waitress), Doctor/healthcare professional, Teacher/instructor, Physical environment (e.g., can’t fit in chair), Media/advertising, Other*).
- “How was the weight stigma/discrimination expressed?”
(Response options: *Verbal comment, Body language/gesture, Exclusion, Physical contact, Text/email/social media site, Other written communication, Physical barriers, Other*).
- “Where did the weight stigma/discrimination take place?”
(Response options: *Private setting (e.g., home/dorm), Workplace, Educational setting (e.g., library/classroom), Medical setting, Public place (e.g., public transportation/restaurant/store/street), Gym/exercise class, Other*).
- “Who was present during the episode of weight stigma/discrimination?”
(Response options: *Just yourself, 1–3 other people, 4–8 other people, More than 8 other people*).
- “What kind of response did you have to the weight stigma/discrimination?”
(Response options: *Confrontational response [e.g., yelling or rolling eyes at the perpetrator(s)], Non-confrontational response [e.g., playing along, being sarcastic], Psychological response [e.g., keeping feelings to self, ignoring the situation]*).
- “To what extent did you suppress how you wanted to respond to the weight stigma/discrimination?”
(Response options: *Not at all; A little; A moderate amount; A lot; A great deal*).

Analytic Plan

Descriptive statistics were used to characterize the prevalence of weight stigma and discrimination and contextual factors. Effect size estimates from existing cross-sectional (e.g., Major et al., 2012) and EMA studies (e.g., Vartanian et al., 2016) of weight stigma were used to conduct a preliminary power analysis using Monte Carlo simulation in Mplus Version 6.2 (Bolger, Stadler, & Laurenceau, 2012). Results suggested a sample size of 45 with 42 observations each across the 7 study days would sufficiently power (.80) the detection of small within- and medium to large between-person effects.

To test whether individuals with a higher BMI reported significantly more frequent weight stigma or discrimination in everyday life than those with a lower BMI, we used a multilevel mixed model with the following equations:

$$WS_{ij} = \beta_{0i} + \epsilon_{ij} \quad \text{Level 1:}$$

$$\beta_{0i} = Y_{00} + Y_{01}(\text{BMI}_i) + \mu_{0i}$$

Level 2:

The Level 1 equation specifies that weight stigma for person i at moment j is equal to an intercept (β_{0i}) for each person. The within-subject residual (ϵ_{ij}) is the difference, at a given time, between the model-predicted weight stigma level for a given subject and the actual value for that person. The Level 2 equation specifies that a person's intercept is determined by a common (fixed) intercept for the population (Y_{00}), a common (fixed) effect of the Level 2 variable (BMI) for the population (Y_{01}), and a subject-specific intercept deviation (μ_{0j}). All analyses were run using SAS 9.4.

RESULTS

Participant characteristics are shown in Table 1. Across all participants over the course of the seven-day study, a total of three instances of weight stigma and five of weight discrimination were reported. One male participant (age = 21, BMI = 45.4) reported one instance of weight stigma and two of weight discrimination. One female (age = 22, BMI = 28.2) reported one instance each of weight stigma and discrimination. The other report of weight stigma was from a female participant (age = 19, BMI = 25.1). The other two instances of weight discrimination were reported by two males (one age = 20, BMI = 29.7; one age = 19, BMI = 28.9). Due to the very low frequency of weight stigma reported across the study, variability in everyday weight stigma by BMI was too low to estimate the multi-level model. However, differences in BMI between participants who reported incidents and those who did not (BMI = 31.8 versus 32.1 kg/m², respectively) were not statistically significant ($p = .89$).

Two of the instances of weight discrimination were from family members, whereas the remainder were from friends or acquaintances. Weight stigma came mainly from friends and acquaintances and occurred mostly in private settings in the absence of bystanders. When reporting weight stigma, two of three participants ignored the situation. In contrast, all participants acted in some way (e.g., confronted or played along with perpetrator) when reporting overt weight discrimination. When participants ignored the situation or kept feelings to themselves, they reported a desire to have done something differently. However, when participants acted in some way, both challenging and more subtly, they mostly reported low or no discrepancy between desired and actual response. The data that support the findings of this study are available from the corresponding author upon reasonable request.

DISCUSSION

The primary aim of the present study was to characterize the prevalence and contextual nature of weight stigma and discrimination in everyday life in a sample of higher-weight individuals. Overall, there was an unexpectedly low frequency of reported weight stigma and discrimination, with only 3 instances of weight stigma and 5 instances of weight discrimination across the entire seven-day study period. This result was similar to a recent study that found only a modest number of overt experiences of weight stigma in a sample of adults seeking weight-loss treatment, in which only slightly more than half of participants

reported 2.4 events on average during a 2-week period (Carels et al., 2019a). However the results of the current study contrast other ecologically valid studies suggesting weight stigma may occur several times a week or more. For example, participants in one recent study reported approximately 11 instances of weight stigma on average across a two-week period – just under one per day (Vartanian et al., 2014, 2018). In another study, higher-weight individuals experienced up to three “weight related hassles” per day, on average (Seacat et al., 2016). The higher rates of weight stigma observed in the cited research are broadly consistent with findings from qualitative studies, which suggest that weight stigma is “unavoidable” and a frequent occurrence in the daily lives of higher-weight individuals (Lewis et al., 2011; Rogge et al., 2004) – something that is generally not captured by cross-sectional research using retrospective measures.

A number of explanations could account for the low levels of weight stigma and discrimination reported in our sample. First, the low frequency of weight stigma and discrimination may be due to the fact that they simply did not occur in the present sample. It is possible that the nature of the study environment was not conducive to these events. Many of the participants attended college or lived and worked in a college town that may have been genuinely more inclusive and thus stigma and discrimination may have been less common than in some other environments.

Another possible explanation is that lower reported levels of stigma and discrimination experiences may be due to differences in the sample in the present study compared with those in previous reports. Prior EMA studies that found more frequent weight stigma in everyday life recruited participants for a study on “the life experiences of overweight and obese individuals,” (Vartanian et al., 2014). Others recruited from obesity-related social media sites (e.g., weight-related discussion forums; (Seacat et al., 2016), or treatment-seeking clinical samples (Carels et al., 2019). By definition, these groups are likely to attract higher-weight individuals for whom their weight is salient and likely a source of distress in their daily lives. Participants in these studies would likely have been more cognizant of, and more likely to report, negative experiences related to their weight. In contrast, the present study recruited a non-treatment-seeking sample of individuals for a study on “weight status and health in everyday life ... that will explore how experience related to weight status may influence health and well-being.” The rationale for this broad advertisement was that the parent study was assessing weight-related vigilance. In order to avoid biasing recruitment towards individuals who are more likely to report weight stigma or discrimination, recruitment was conducted to capture a broader sample and their experiences related to weight status using a variety of recruitment methods (e.g., flyers, online advertisements, and undergraduate class announcements). Taken together, perhaps the current study attracted a subset of higher-weight individuals for whom their weight was not a source of stress in their daily lives. Qualitative information collected at the follow-up visit supports the hypothesis that at least some participants in our sample (despite their verified BMIs) may not have identified as “overweight” or “obese” or perceived negative experiences to have happened to them. For example, one participant noted that they did not look or feel “obese” despite having a BMI that put them in that category, and that they sympathized with people who had negative experiences because they were “visibly obese.” Another mentioned they did not feel they should have qualified for the study because they

had never had negative experiences because of their weight status. In this way, it is possible that participants in our sample were not attune weight stigma. In fact, the mean SSI score in this sample was 0.69 (SD = 0.59), which is quite lower than has been found in prior samples of treatment-seeking (Friedman et al., 2005), and non-treatment seeking (Vartanian and Novak, 2011), in which the mean levels were 1.3 and 1.1, respectively. Importantly, a recent EMA study among a weight-loss treatment-seeking sample found that individuals who reported weight stigma in everyday life during the study also reported experiencing more lifetime occurrences of weight stigma and had higher levels of internalized weight bias compared with those who did not report instances of weight stigma during the study (Carels et al., 2019a). Although the low frequency of reported weight stigma in our sample prohibited testing differences between reporters and non-reporters, the role of internalized weight stigma in perceiving and reporting weight stigma warrants further study.

Another possible explanation for the low frequency of incidents reported in the present study is that instances of weight stigma and discrimination may have occurred but were not reported. This may have been because the event was either not readily observable to the participant, or perhaps not recognized by the participant as stigmatizing or discriminatory. In several prior studies of weight stigma, participants were provided a clear definition and examples of the types of experiences others have endorsed as stigmatizing situations during the training period (e.g., not being able to find clothing that fits, being glared at in public, a doctor blaming physical problems on weight). Participants were also trained to self-initiate a survey each time they perceived to have experienced stigma or discrimination due to weight (Carels et al., 2019a; Vartanian et al., 2014, 2018). In contrast, participants in the present study were neither provided an explicit definition nor examples of weight stigma or discrimination during the pre-study training session. The EMA prompts contained a relatively clear definition of weight stigma (“felt devalued or looked down upon due to weight”) and weight discrimination (“experienced being threatened, insulted, or teased due to weight”). The purpose of this prompt was to provide information that allowed participants to reflect upon whether they perceived any encounter or experience to be stigmatizing or discriminatory. However, the prompt was not designed to prime them to an exact situation because the intent was for participants to report on any type of experience they perceived to be negative. In other words, the focus was on subjective experiences. In addition, the parent study was aiming to assess weight-related vigilance – thus, in an effort not to induce vigilance bias during training sessions, participants were not provided explicit examples of the types of experiences that could be interpreted as weight stigma or discrimination (Kaiser and Major, 2006). Clear operationalization of constructs during training may have helped individuals more clearly detect experiences related to their weight in everyday life that they may not have otherwise considered stigma or discrimination. However drawing attention to these experiences may have been counter-productive to the aims of the larger study. Finding the appropriate balance between optimizing recognition and recording of stigma experiences with the potential risk of introducing bias by altering participants’ awareness of more subtle or minor forms of stigma will likely depend on the nature of the research question. If the goal is to capture the actual exposure to weight stigma in everyday life then raising awareness of and recognition of stigma would be helpful; however, if the goal is to assess

participants' current levels of perceived stigma and how this affects downstream outcomes, then a more conservative approach would be necessary.

It is also possible that participants may have been exposed to weight stigma or discrimination but did not report it. This could have been because they attributed the event to some other factor (i.e., they felt devaluation or mistreatment was due to some reason other than weight) or because the cause was ambiguous. Each EMA survey asked participants to report whether stigma or discrimination related to weight status had occurred since the last prompt (i.e., the weight attribution was contained in the survey item), which may have implications for how participants responded (Gomez and Trierweiler, 2001). In other words, the item asked both whether stigma or discrimination had occurred, as well as whether this experience was due to weight status. Some individuals may have felt they had experienced stigma or discrimination but answered the EMA survey in the negative because they felt the experience was due to another reason, such as gender or race, or because the reason was unclear (i.e., there was attributional ambiguity; (Inzlicht et al., 2006).

One intriguing possibility is that recent efforts to promote acceptance (i.e., a diversity and inclusion campaign on the college campus) changed the way participants interpreted any negative experiences that may have occurred. In other words, perhaps the campaign changed the way negative experiences were understood, such that being in an "inclusive" town caused participants to attribute experiences to other reasons. Such a phenomenon has been reported in studies of organizational diversity programs. For example, experimental studies demonstrate that if a company provides diversity training or has a diversity policy, women and ethnic minorities are more likely to perceive the company as socially just and delegitimize claims of sexism or racism (even when presented with objective information suggestive of discriminatory practices), compared with companies that do not have such diversity structures in place (Brady et al., 2015; Gundemir and Galinsky, 2018). Thus, the setting of the present study in an environment with a strong program of diversity and inclusion efforts may have made it more difficult for potential instances of weight-related stigma or discrimination to be attributed as such.

Lastly, participants may have experienced weight stigma or discrimination, recognized the event, but simply did not report it in the EMA surveys. This could have been due to non-compliance with the study protocol, although this is unlikely given that response rates to randomly prompted EMA surveys denoted good protocol compliance. Minimization bias is another possible explanation that may have influenced reporting of weight stigma and discrimination. Prior studies conducted among racial and ethnic minority groups suggest that some individuals may fail to admit they have experienced discrimination due to social costs associated with reporting these events (e.g., being viewed as "complainers," overly emotional, hypersensitive, or unpleasant; (Crosby, 1984; Kaiser and Miller, 2001; Major and Sawyer, 2009). In this way, minimization may reflect self-preservation (i.e., to avoid social costs) or an effort to preserve their view that the world is fair and just (Carvallo and Pelham, 2006; Kaiser and Major, 2006; Shelton and Stewart, 2004).

Given the extremely low number of weight-related incidents reported, we cannot make any generalizations regarding findings on location, source, or number of bystanders. Yet, a

potentially interesting trend with regard to participants' responses did emerge that may be worthy of future study. Two of the three participants experiencing stigma reported keeping their feelings to themselves or simply ignoring the situation. In contrast, when reporting overt discrimination, all participants reported acting in some way. Prior work has suggested that active-style responding is associated with less discrepancy between how participants responded to the negative event and how they wished they had responded. For example, in a diary-style study of responding to racism, anti-Semitism, heterosexism and sexism on a college campus, women who responded non-assertively experienced less satisfaction with their responses after the fact and greater residual anger and rumination (Hyers, 2007). Only limited information is available on how individuals cope when exposed to stigmatizing experiences. Some evidence from the wider stigma literature suggests that challenging stigma is generally associated with more positive psychological outcomes (Chronister et al., 2013; Corrigan et al., 2013; Foster, 2015). Similar findings are emerging in the context of weight stigma (Saguy and Ward, 2011) as well as findings showing that avoidant or disengagement strategies may be related to poorer wellbeing and increased levels of disordered eating behavior in some groups (Hayward, et al., 2017; Himmelstein et al., 2017; Myers and Rosen, 1999). To our knowledge, only two studies have explored weight stigma coping using ecologically valid techniques (Carels, Hlavka, et al., 2019b; Carels, Rossi, et al., 2019a), and this remains an under-studied domain.

Limitations

There are several limitations that should be mentioned. First, participants in the present study were recruited from a community setting in a small college town, and thus, the results may not be generalizable to the wider population. Secondly, the decision not to provide participants with training in identifying stigmatizing experiences may have resulted in under-reporting compared with previous EMA studies. This decision was taken so as to minimize researcher influence on weight-related vigilance in the parent study but may have limited efforts to fully capture participants' exposure to weight stigma in everyday life. However, future EMA studies of this kind may consider modifying protocol to include event-contingent recording that would allow perhaps capture more episodes of weight stigma or discrimination than random signals throughout the day. The duration (one-week) of the EMA period may have also played a role in the low frequency of reports. Future studies should consider collecting data for longer periods of time to capture typical experiences that may have been too infrequent to capture with a seven day protocol. This study was powered to detect small within-person and medium to large between-person effects. As such future studies with larger sample sizes would be more sufficient for examining interactions between dynamic experiences of weight stigma or discrimination and individual level characteristics (e.g., BMI, gender). Finally, although some potentially interesting findings emerged regarding stigma coping response styles, no firm conclusions can be drawn from such a small number of observations; we see this as an area that warrants further study.

Conclusion

Prevalence of reported weight stigma and discrimination was remarkably low in the present sample. Future study of weight stigma and discrimination in everyday life should carefully

consider sample and design factors prior to implementing EMA studies of this kind. However, the results of this study may also highlight the importance of conducting EMA research on weight stigma and discrimination in a variety of populations and provides some caution against generalizing from treatment- or support-seeking samples.

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Table 1.

Participant characteristics

	M or n	SD or %
Age (Range 18.0 – 54.0)	27.7	9.6
BMI (Range = 25.0 – 59.0)	31.9	6.2
Sex at Birth		
Male	21	43.8%
Female	27	56.3%
Race		
White	37	77.1%
African-American or Black	5	10.4%
Asian	4	8.3%
No answer	2	4.2%
Ethnicity		
Not of Hispanic, Latino, or Spanish origin	41	85.4%
Hispanic	7	14.6%
Highest Degree Earned		
Bachelor's degree or less	13	27.1%
Master's or Doctorate degree	8	16.7%
Professional (e.g., MD, JD)	11	22.9%
Other/refuse to answer	16	33.3%
Stigmatizing Situations Inventory	0.69	0.59