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BARRIERS AND FACILITATORS TO ADHERENCE TO BEHAVIORAL WEIGHT LOSS INTERVENTIONS AMONG HISPANIC/LATINA WOMEN

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ABSTRACT

Behavioral weight loss (BWL) interventions can help combat obesity and related diseases, but rates of adherence are often low among Hispanic/Latina women. This study explored barriers and facilitators to adherence among this population. Fourteen women attended focus groups and were asked to identify barriers and facilitators to self-monitoring of food and exercise (SM). They additionally were asked to identify body image-related barriers and facilitators to adherence to meeting diet and exercise goals. Transcripts were analyzed using thematic analysis. Major suggestions relevant to SM were to intervene on multiple levels (i.e., community, group, individual), incorporate mental healthcare, reduce the burden of tracking, and prioritize health rather than weight. Major body image-related suggestions were to incorporate mental healthcare, provide multi-level programming, and increase positive body image. Many if not all the novel suggestions identified in this study could be incorporated into BWL interventions and possibly improve the health of this population.

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INTRODUCTION

Background

Hispanic/Latine populations are more likely to be overweight or obese than non-Hispanic white populations (CDC, 2018b; U.S. Department of Health and Human Services Office of Minority Health, 2020) and to experience related complications such as non-alcoholic fatty liver disease, obesity-related cancers, diabetes, and diabetes-related deaths (CDC, 2020, 2018a; Monestime et al., 2021; Rich et al., 2018; U.S. Department of Health and Human Services Office of Minority Health, 2021). As such, there have been many efforts to reduce rates of obesity among this population, many of which focus on increasing levels of physical activity and improving diet quality. Unfortunately, Hispanic/Latine individuals, particularly Hispanic/Latina women, tend to have low levels of physical activity (D'Alonzo & Saimbert, 2013; Montgomery & Kandi, 2019; Wilson & Bopp, 2021), and oftentimes find it difficult to maintain a healthy diet (Katiria Perez & Cruess, 2014).

One potential solution that has received considerable attention is behavioral weight loss (BWL) interventions. These interventions utilize behavior change techniques to improve diet and exercise and often include strategies such as nutrition and exercise education, stimulus control and goal setting, problem solving, and self-monitoring of diet, exercise, or weight (U.S. Preventative Services Task Force, 2018). BWL interventions consistently have been shown to lead to modest but clinically significant weight reductions (5-10%) as well as increases in physical activity, though the evidence for their long-term effects is lacking (U.S. Preventative Services Task Force, 2018). Nonetheless, given that these interventions are thought to pose small to non-existent risks and have at least short-term benefits, they have

been recommended for individuals in the "obese" BMI range (i.e., ≥30; US Preventative Task Force, 2018).

Unfortunately, there is some evidence of lower effectiveness, higher attrition, and lower levels of adherence in BWL interventions among both Hispanic/Latine and female participants as compared to White or male participants, respectively (Cannon et al., 2020; Evenson et al., 2015; Krukowski et al., 2013; Lindberg & Stevens, 2007; Moroshko et al., 2011). For example, a study that evaluated the CDC's National Diabetes Prevention Program (Diabetes Prevention Program Research Group, 2002), which is perhaps one of the largest BWL interventions ever conducted, found that Hispanic people were disproportionately represented among those who did not complete the minimally required "dose" of attending 4 out of 22 sessions (Ely et al., 2017). Interestingly, among the participants who *did* complete the Diabetes Prevention Program, there was no significant race/ethnicity difference in either the observed dose-response relationship for weight-loss, or the unadjusted weight-loss, indicating that the intervention *did* work for Hispanic people who completed the intervention as intended. Notably, increases in physical activity were lower in both female and Hispanic/Latine participants as compared to male and non-Hispanic White participants, respectively (Ely et al., 2017).

Subsequent studies evaluating the original Diabetes Prevention Program also have not found significant differences in weight-loss between female or male Hispanic/Latine participants and their non-Hispanic White counterparts (Ratner, 2006; West et al., 2008), but have observed differing rates of engagement (Cannon et al., 2020). Similarly, in a study that utilized a standard, non-adapted obesity prevention program with Mexican American women, Austin and colleagues (2013) were able to categorize less than half of their participants as

"treatment completers," which was defined as any participant who had attended more than half of the sessions. Thus, it appears that standard BWL interventions *may* be efficacious for Hispanic/Latine individuals, but their effectiveness for this population remains an issue due to adherence-related issues.

These discouraging rates of engagement have sparked interest in the development of culturally adapted weight-loss interventions. These adapted programs incorporate a variety of modifications to weight-loss and physical activity interventions, such as conducting the intervention in Spanish (Cousins et al., 1992; Marquez & Wing, 2013), including friends or family members (Cousins et al., 1992; Marquez & Wing, 2013; Sorkin et al., 2014), including traditional foods when teaching healthy cooking strategies (Corsino et al., 2012; Cousins et al., 1992; Hovell et al., 2008; Lindberg et al., 2012), only including female participants and interventionists (Lindberg et al., 2012), and offering childcare (Corsino et al., 2012). Furthermore, researchers have utilized modifications such as incorporating culture-specific exercise modalities (Harralson et al., 2007; Hovell et al., 2008; Sorkin et al., 2018), accommodating common beliefs about food that are contrary to typical dietary recommendations as long as they are not harmful (i.e., adding lime juice to foods in order to dissolve fat; Lindberg et al., 2012), collaborating with institutions trusted by the community such as churches (Keller & Gonzalez, 2008; Olvera et al., 2010), and including community advocates for health promotion called *promotoras* (Ayala & San Diego Prevention Research Center Team, 2011; Keller & Gonzalez, 2008).

These culturally relevant modifications have yielded encouraging yet mixed results in clinical trials. Mexican American women in an early adapted study by Cousins et al. (1992) lost a clinically significant amount of weight (and more than the informational control), but

these authors excluded the data of subjects who missed any of the follow-up assessments and thus were only able to include the data for 51.2% of their participants. Interestingly, although this intervention made a point to include the participants' husbands, less than 50% of the women's husbands attended *any* classes, indicating that this modification does not appear to be the most effective way to improve engagement (Cousins et al., 1992). More recent studies have also demonstrated clinically significant weight loss via culturally modified BWL interventions, some of which were as short as 20-weeks long (Corsino et al., 2012; Marques & Wing, 2013; Lindberg et al., 2012). Importantly, none of these trials included a condition which received a non-culturally adapted intervention for comparison.

Sorkin and colleagues (2018) modified the Diabetes Prevention Program for Mexican American women by implementing the program with mother-daughter dyads. The researchers focused on this permanent relationship as a means of support for lasting behavioral change, in part due to the previous finding that husbands tended to be inconsistent sources of support (Cousins et al., 1992). Participants in the intervention group lost significantly more weight than the informational control group and were more likely to consume foods with a lower glycemic load and less saturated fat at the 16-week follow-up (Sorkin et al., 2014). Conversely, another culturally modified physical activity intervention which included nutritional and behavioral counseling did not result in improvements in physical activity levels or BMI among Latina women (Olvera et al., 2010). Thus, similar to standard BWL interventions, the majority of culturally modified trials generally seem to be efficacious for those who receive them as intended. However, a recent systematic review concluded that wide heterogeneity in study methods and reporting, coupled with the fact that

most existing studies are pilot studies, makes it difficult to draw conclusions about the efficacy of these culturally modified interventions (Morrill et al., 2021).

Adherence to BWL interventions among Hispanic/Latina women

Unfortunately, evidence suggests that many participants still do not complete these interventions as intended, despite the lengths to which researchers have gone to make them more culturally appropriate. Adherence to BWL interventions can be defined in many ways, including the number of treatment sessions participants attend, the number of days they meet their step or calorie goals, or the number of days for which individuals monitor (i.e., record/track) their diet, physical activity levels, and/or weight. In terms of self-monitoring, common daily targets to track include calorie intake, number of steps, exercise minutes, and intensity of exercise as measured by heart rate. Studies consistently have shown that self-monitoring seems to be an integral aspect of BWL interventions, as evidenced by observations that higher levels of self-monitoring predict better outcomes concerning diet, physical activity, and weight-loss (Butryn et al., 2020; Gardiner & Bryan, 2021; Goldstein et al., 2019; Patel et al., 2020; Robertson et al., 2021; Tronieri et al., 2020). Indeed, self-monitoring alone has been identified as an efficacious method of increasing levels of exercise and fruit/vegetable consumption even in the absence of other components of BWL interventions (Gardiner & Bryan, 2021).

Unfortunately, rates of adherence to self-monitoring tend to be quite low across racial and ethnic groups (Krukowski et al., 2013; Patel et al., 2021; Peterson et al., 2014), including Hispanic/Latina women. A recent study on a culturally adapted BWL intervention for Latino adults found that 24% and 36% of their sample tracked food and physical activity for more than 50% of the days, respectively (Rosas et al., 2020). Interestingly, rates of tracking weight

in this trial were much higher: 65% of participants tracked their weight for more than 50% of the days of the trial and 40.2% tracked it for more than 75% of the days. In another culturally adapted BWL intervention study conducted with Mexican American women with overweight, participants completed their daily calorie and step logs on an average of 17.6% and 18% of the study days, respectively, but the authors did not report the relationships between self-monitoring and weight-related outcome (Austin et al., 2013).

A study of primary care patients with obesity with a large portion of Hispanic/Latine and female participants (Orstad et al. 2021) defined valid step-count monitoring as four or more days reaching 1000 steps out of the week, and defined valid heart rate monitoring as four or more days of 10 or more hours of continuous heart rate recordings out of the week. In this study, 62.7% of participants met the criteria for valid step-count monitoring and 45.8% met the criteria for valid heart rate monitoring for the first and 13th week of the study. Participants who did not reach these validity criteria ("invalid wear") had a significantly higher average BMI than those with valid wear weeks and they were slightly more likely to be female, Hispanic, and Spanish-speaking, though these latter differences were not statistically significant. Data for both of these criteria were collected when the participant synced their Fitbits with the study platform, indicating that even technology-facilitated methods of tracking tend to be difficult for this population (Orstad et al. 2021). Conversely, a study by Xu et al. (2023) did not find a difference in race or ethnicity in their groups of high, medium, or low trackers.

Studies that report on the relationship between self-monitoring and clinical outcomes reiterate the importance of self-monitoring in BWL interventions conducted with Hispanic/Latina women. Pekmezi et al. (2013) asked Hispanic/Latine women to wear

pedometers daily, log their step count on a monthly paper log, and mail these logs to the study team. Although these researchers reported that 68.89% of their sample returned logs for at least five out of the six study months, the logs indicated that participants only wore their pedometers for an average of 14 days out of the month. Importantly, participants who returned at least 5 out of 6 of their pedometer logs increased their physical activity more from baseline to six months than participants who returned less than five. Similarly, participants in the aforementioned Marquez and Wing (2013) study submitted an average of 68% of self-monitoring diaries, and there was a significant association between weight loss and number of diaries submitted.

Thus, it appears that Hispanic/Latina women tend to have difficulty adhering to one of the most important aspects of BWL interventions. Although these interventions can possibly improve public health among this population, these potential impacts will not be fully realized until methods to maximize adherence to BWL interventions are identified. Methods of increasing Hispanic/Latina women's adherence to BWL interventions, especially in the form of self-monitoring, should be identified to address health disparities related to physical activity and overweight and obesity in this population.

Factors Associated with Self-Monitoring and Other Measures of Adherence

The wide variation in definitions of "adherence" to self-monitoring makes it difficult to summarize overall trends (Burke et al., 2011; Payne et al., 2018), but a multitude of psychological factors have been identified that may relate to adherence to BWL interventions. For example, attitudinal familism, a family-oriented value in which the needs of the family come first, is a particularly relevant influence on adherence to exercise and calorie goals for overweight/obese Mexican American women seeking to lose weight (Austin

et al., 2013). Other psychological constructs that have been identified to potentially influence adherence to BWL interventions include shame that is related to weight or calories consumed (Hartmann-Boyce et al., 2019), the tendency to avoid information about one's weight and weight-management strategies (Schumacher et al., 2021), low health literacy (Patel et al., 2020), depression (Leung et al., 2017), body dissatisfaction (Austin et al., 2017) and low self-efficacy (Gardiner & Bryan, 2021). Self-monitoring is a particularly important metric of adherence to BWL interventions, so it is worth exploring how these identified factors might influence self-monitoring specifically. However, many studies focus instead on the degree to which participants meet their daily diet and exercise goals (i.e., step-count, macronutrient counts) and it is also worth exploring barriers and facilitators to this type of adherence.

Body Image

A study by Austin et al. (2017) found that even when controlling for depression, higher rates of body dissatisfaction predicted decreased adherence, defined as the number of days meeting step and calorie goals, in a non-adapted BWL intervention implemented with Mexican American women. These results contribute to a body of research indicating that body image concerns can predict poor attendance at weight-loss interventions (Leung et al., 2017), less weight loss (Annesi & Powell, 2023; Teixeira et al., 2002, 2010), lower levels of maintenance of weight-loss (Teixeira et al., 2015), and higher dropout rates (Sawamoto et al., 2016). Additionally, negative body image has been shown to predict poor diet quality (Neumark-Sztainer et al., 2006) and low levels of physical activity (Kantanista et al., 2015; Mama et al., 2015; Sabiston et al., 2019). However, not all studies have replicated this relationship between body image and health behaviors. In a 12-month, culturally adapted

physical activity intervention conducted with Latinas, baseline body dissatisfaction did not predict change in moderate-to-vigorous physical activity (Marquez, et al., 2024).

Relatedly, BWL interventions that have led to significant reductions in internalized weight-stigma (i.e., the degree to which individuals with overweight/obesity have internalized negative values, stereotypes, and perceptions of themselves as a result of their weight), also have observed significant improvements in both body image and in self-monitoring of diet and physical activity (Pearl et al., 2020). These results support the findings of a BWL trial which observed that higher levels of weight stigma predicted less frequent self-monitoring of diet and exercise among individuals with overweight/obesity (Carels et al., 2009). Thus, it may be that the suboptimal responses to BWL interventions that have been observed for women with poor body image potentially could be related to lower levels of self-monitoring.

It should be noted that some evidence points to a potentially harmful effect of dietary self-monitoring on body image. One study which asked undergraduate women to monitor their diet found that 35% of their participants reported increased concerns with their weight and shape, and almost half of participants reported that they believed this practice might be detrimental for individuals with poor body image (Hahn et al., 2021). Conversely, a more recent study found that although fitness tracking frequency was positively related to shape and weight concerns among college women, it was not associated with obligatory exercise or dietary restraint (Berry et al., 2024). Also, tracking was not associated with prospective increases in shape or weight concerns, or any of the other outcomes. Nonetheless, as women with overweight/obesity are already at risk for poor body image (Weinberger et al., 2017), it

is important to explore ways to prevent these potential negative effects when implementing BWL interventions.

Self-efficacy

Self-efficacy, or the belief that one can successfully engage in or complete a behavior even when confronted with challenges, has been identified as a central factor in health behavior change (Bandura, 1977, 1998) and maintenance of that change (Palmeira et al., 2023). This construct also has been shown, though inconsistently, to be related to diet quality and physical activity levels among Hispanic women (D'Alonzo & Saimbert, 2013; Mendoza-Vasconez et al., 2018), to long-term outcomes of BWL interventions for women with overweight/obesity (Gardiner & Bryan, 2021; Teixeira et al., 2010), and to adherence as defined both by weekly exercise levels and consumption of fruit and vegetables (Guntzviller et al., 2017).

Self-efficacy also has been linked to engagement with self-monitoring in BWL interventions. Nezami et al. (2016) found that participants who completed their dietary and physical activity monitoring showed significantly greater increases in self-efficacy throughout the study compared to participants who did not complete the monitoring, although baseline self-efficacy did not predict levels of self-monitoring. Similar results were found in a small study comparing daily activity monitoring versus a no-activity monitoring control group in individuals with Type II Diabetes. In this study, the monitoring group increased in exercise self-efficacy whereas the control group experienced decreases in self-efficacy, though these differences were nonsignificant (Gleeson-Kreig, 2006). Although the direction of the relationship between self-efficacy and tracking is unclear, these studies do imply that outcomes in a BWL intervention may be associated with this relationship. As

such, it may be important to identify ways to increase self-efficacy among those participating in BWL interventions, especially those with low rates of self-monitoring.

The current study

Many factors have been identified that may affect levels of adherence to BWL interventions among Hispanic/Latina women. However, studies generally have not explored *why* or *how* these factors are related, nor have they asked members of this population for their interpretations of the findings or for suggestions regarding what might help remove some of these barriers. Additionally, most studies have not explored how these factors are related to self-monitoring specifically, despite consistently low levels of adherence to this particularly important aspect of weight-loss interventions. The current study aimed to explore overweight Hispanic/Latina women's: (1) perceived barriers to self-monitoring in BWL interventions, (2) suggested methods for facilitating self-monitoring in BWL interventions, and (3) ideas about why low self-efficacy may lead to low levels of self-monitoring and suggestions as to how to ameliorate these effects. A secondary aim was to explore the women's ideas as to why poor body image may lead to lower rates of meeting diet and exercise goals in BWL interventions, and suggestions regarding how to ameliorate these detrimental effects.

METHOD

Participants

Participants were Hispanic/Latina women recruited in the Albuquerque area. Eligibility criteria were designed to mimic a standard BWL intervention trial and included being designated female at birth, 18 years of age or older, self-identifying as Hispanic/Latina, expressing a desire to lose weight, having a BMI ≥ 25 and ≤ 40 (the upper limit is included in BWL programs to ensure that it is safe for participants to participate in physical activity requirements; see Marcus et al., 2022), and being proficient in English. Exclusion criteria included having a current diagnosis of an eating disorder or being pregnant.

The original plan had been to conduct four focus groups with 6-10 people in each group for a total of 24-40 participants based on guidance that data saturation often occurs with three to four groups of this size (Asbury, 1995). However, due to difficulty with recruitment, the final sample was three focus groups with 4-6 people in each group for a total of 14 participants. Although this was smaller than the originally proposed sample size, it appeared to be sufficient for data saturation given that no new themes or codes were identified during the third group and only one was identified during the second group.

Procedure

Participants were recruited via flyers in community locations, postings on virtual and in-person community boards, and referrals through collaborations with a community health center and cardiopulmonary rehabilitation center in the Albuquerque area. The flyers advertised focus groups exploring overweight Hispanic/Latina women's barriers to full participation in weight loss programs and their ideas regarding how to improve future interventions. All participants were offered a 1.5-hour workshop for improving body image

and weight-management. After struggling with recruitment, the compensation structure was amended to include a $30 gift card for participation in the study. The recruitment flyers contained a QR code that took interested individuals to an electronic eligibility screener provided via Qualtrics survey software. Candidates were also able to contact the research team via email or phone, at which point they were sent a link to the screener. Candidates referred to the research team via staff were given the choice between completing the screener on a laptop while at the clinic or being contacted via phone or email and subsequently being sent the screener link.

After the screener, ineligible participants were notified of their ineligibility and thanked for their time. All eligible participants were presented with an electronic consent form. Once they indicated their consent, they were presented with a list of predetermined times for a potential focus group and asked to indicate when they were available. After indicating their availability, they were automatically taken to a separate Qualtrics containing the quantitative measures, which were presented in a randomized order. Efforts were made to schedule each participant for a focus group no later than three weeks after they completed the surveys, but participants were not excluded if this was not achieved.

Focus groups were led by a clinical psychology doctoral student interviewer and one undergraduate co-facilitator. The main interviewer posed questions, refocused the discussion when necessary, and facilitated participation from all participants. The co-facilitator took notes on group dynamics and participant behaviors. Groups averaged about 1 ½ hours long and were held at the clinic where recruitment took place. At the group sessions, participants first were reminded of the study purpose and procedures and were encouraged to ask questions. The participants were asked to keep the contents of the focus group discussions

confidential. The interviewer then described BWL interventions and the process of self-monitoring to the participants. This information was recorded on a whiteboard so that the participants had a visual reminder throughout the focus group discussion. Specifically, participants were presented with the following:

Behavioral weight-loss interventions are programs that use what we know about psychology to help people manage their weight. These programs usually include:

- *Learning what foods are part of a healthy diet, how to cook meals that are healthy, how big our food portions should be, and how to exercise.*
- *Helping us come up with clear goals for our daily exercise, food intake, and weight.*
- *Helping us plan ahead and setting us up for success in reaching our goals.*
- *Tracking (or monitoring) our weight, what we eat, and how much we exercise. Oftentimes, this includes:*
    - *Writing out and keeping a visual record of*
        - *What we eat in a day, including how much.*
        - *How many minutes per day we exercise.*
        - *How many steps we walk each day.*
        - *Our weight.*

Each focus group was then asked a total of four questions, as follows: 1) Tracking what we eat and how much we exercise, such as by writing it down or recording it somewhere, is an important part of weight-loss treatment, but Hispanic/Latina women tend to have a particularly hard time with it. Why do you think that might be? 2) How do you think we can make tracking food and tracking exercise easier for Hispanic/Latina women? 3) We

know that the more Hispanic/Latina women dislike their bodies, the less likely they are to meet their diet and exercise goals in these weight-loss programs. Why do you think this is? How can we help? and 4) We also know that people who do not believe in themselves tend to have a hard time tracking their exercise and food intake. Why do you think that might be and how can we help? All group discussions were recorded and transcribed. Participants were weighed, had their height measured, and were debriefed upon completion of the focus groups.

Measures

Quantitative measures were administered to characterize the sample in terms of demographics, physical health status, and previously identified constructs relevant to BWL interventions. All measures were administered electronically, in English.

Demographic Information

A questionnaire developed for this study assessed basic demographic information such as participant age, race, ethnicity (Chicana, Mexican American, New Mexican, etc.), generational status, marital status, number of children, annual household income, years of education, and employment status. Categories and definitions were determined according to the 2020 U.S. Census. This measure also asked participants if they were currently or had ever been involved in a formal weight-loss program.

Body mass index (BMI) was recorded via self-report as part of the eligibility screener and via in-person measurement after the focus group. Participants' height was measured in inches and their weight was measured in pounds using a standard electronic scale and stadiometer. BMI was calculated by the standard formula: (weight in pounds x 703) / (height in inches)^2.

Physical Activity and Health

Physical Activity Questionnaire (PAR-Q+; Warburton et al., 2011). This measure is commonly used to assess the risk of increasing physical activity. In addition to the typical seven question screen, the 17-item extended version includes follow up questions about medical problems such as high blood pressure and metabolic conditions. Only the responses to the 7-item screen were reported given that the measure was simply being used to characterize the sample. This screener includes yes/no questions such as "*Do you lose balance because of dizziness, or have you lost consciousness in the last 12 months?*". This measure frequently has been used as a screening method for physical activity interventions with Hispanic/Latina women (i.e., Benitez et al., 2020) and has been translated and validated in multiple Spanish-speaking countries (Schwartz et al., 2019).

International Physical Activity Questionnaire – Short Form (IPAQ-SF; *Craig* et al., 2003). This popular 7-item questionnaire is used to assess the type, amount, and intensity of physical activity, and time spent sitting that the participant engaged in over the last week. Participants are first asked how many days out of the last week they completed a type of exercise for more than 10 minutes at a time ("*During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling*"?). They next are asked for the amount of time spent doing these activities in hours and minutes ("*How much time did you usually spend doing vigorous physical activities on one of those days?*"). Participants are able to input the numerical responses or respond with "don't know/not sure." This measure can be scored either continuously or categorically. The categorical method was used in the present study. In this method, participants are categorized into either low, moderate, or high levels of activity depending on the number of days and

amount of time spent in activity. For example, “moderate” activity is defined by 3 or more days of at least 20-minutes of vigorous activity, 5 or more days of at least 30-minutes of moderate-intensity walking, or 5 or more days of any combination of activities that achieves a minimum of 600 metabolic equivalent of task (MET)-minutes per week. Average number of days and amount of time in each level of activity are reported and the sample averages are used to categorize the sample as engaging in either low, moderate, or high levels of activity. The IPAQ-SF has shown acceptable reliability in 12 countries and is comparable in validity to other self-report exercise measures (Craig et al., 2003).

Food Status

USDA Economic Research Service's U.S. Household Food Security Survey Module: Six-Item Short Form (HFSSM; USDA, 2012). This 6-item questionnaire assesses participant food security status; the participant's consistent access to sufficient food in the last month. Importantly, the short form excludes questions relevant to children, which appear to be answered differently by Latino/a parents than by other populations (McClain et al., 2023). Response format differs by question. There are two questions with response options that range from “*often true*” to “*never true*” (i.e., *The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more*.”), three “*yes/no*” questions (i.e., *“In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?*”), and one follow-up question with response options that range from “*almost every month*” to “*only 1 or 2 months*.” Missing values on this measure were imputed according to the method outlined in the USDA scoring guide (Bickel et al., 2000). These responses are coded into either an affirmative or negative response and then summed for a total food insecurity score. These scores are then classified into "*high or*

marginal food security" (i.e., a score from 0-1), "*low food security*" (i.e., a score from 2-4), or "*very low food security*" (i.e., a score from 5-6). The measure is part of the PhenX Toolkit (Hamilton, 2011) which includes measures that are well-established, validated, and broadly applicable (Krzyzanowski et al., 2023). It is well-validated among the general population (National Research Council, 2005). It performed well in a Rasch analysis with Latino migrant workers and showed invariance across acculturation status (Kilanowski & Lin, 2012).

Perceived Availability of Healthy Foods Scale (PAHF; MESA; Moore et al., 2012). The participant's neighborhood access to fresh fruits and vegetables and low-fat foods was assessed with this 3-item food environment scale created for the NIH-sponsored Multi-Ethnic Study of Atherosclerosis The measure asks the degree to which participants agree with each question (i.e., "*A large selection of fresh fruits and vegetables is available in my neighborhood*") on a scale from 1 (*strongly agree*) to 5 (*strongly disagree*). The items are summed for a total food environment estimation. The measure is part of the PhenX Toolkit (Hamilton, 2011) which includes measures that are well-established, validated, and broadly applicable (Krzyzanowski et al., 2023). Cronbach's alpha for the current sample was 0.86.

Ethnic Experiences

Scale of Ethnic Experiences – Short Form (Malcarne et al., 2022). This 12-item scale is an abbreviated version of the original 32-item scale (Malcarne et al., 2006) which assesses participants' experiences and attitudes related to their ethnic identity. The measure has four orthogonal subscales: ethnic identity (i.e., "*Being a member of my ethnic group is an important part of who I am")*, perceived discrimination (i.e., "*My ethnic group has been treated well in American society"*), mainstream comfort (i.e., "*I'm what most people think of*

as a typical American"), and social affiliation (i.e., "*I find it easiest to trust people from my own ethnic group*"). Items are scored on a 5-point Likert-type scale from 1 (*strongly agree*) to 5 (*strongly disagree*), with higher scores indicating higher levels of each construct. The scale has displayed adequate validity and reliability among a community sample of Mexican Americans born both within and outside of the United States (Malcarne et al., 2022), but Cronbach's alpha for the current sample was 0.58 for the ethnic identity subscale, 0.86 for the perceived discrimination subscale, 0.75 for the social affiliation scale, and 0.62 for the mainstream comfort subscale. One possible explanation for the low reliability on the ethnic identity and social affiliation scales could be the wide range of generational statuses reported on the demographic questionnaire. Generational status has been shown to be inversely related with acculturation among Hispanic individuals (Valentine, 2001), so it is quite conceivable that individuals would respond differently on this scale, especially the mainstream comfort subscale, depending on their generational status.

Self-Efficacy

Self-Efficacy for Exercise Scale (SEE Resnick & Jenkins, 2000). The SEE is a 9-item scale assessing the degree to which participants feel able to exercise three times a week for 20- minutes when faced with challenging situations (i.e., "*You were bored by the program or activity*"). Responses are scored from 0 (*not confident*) to 10 (*very confident*) and summed for a total score. This scale has displayed reliability and validity in a sample of Hispanic/Latine older adults (Resnick et al., 2004). An error during creation of the electronic survey resulted in response options for this questionnaire ranging from 1-10 rather than 0-10 as intended. The response options were converted to the correct scale via the survey toolbox

package (Chan, 2024) in R Version 4.3.3 (R Core Team, 2021). Cronbach's alpha for the current sample was 0.87.

Weight Lifestyle Efficacy Questionnaire – Short Form (WEL-SF; Ames et al., 2015). This 8-item measure assesses individuals' belief in their ability to control their eating, even when facing challenges (i.e., "*I can resist overeating when I am anxious (or nervous)*"). Participants rate their confidence on a scale ranging from 0 (*not confident*) to 10 (*very confident*). The measure has a maximum score of 80, with higher scores indicating higher levels of confidence. The WEL-SF has shown adequate reliability and validity among women with overweight/obesity (Ames et al., 2015). The same error noted above for the *Self-Efficacy for Exercise* Scale was made during the creation of this electronic survey as well; it was addressed in the same manner. Cronbach's alpha for the current sample was 0.95.

Body Dissatisfaction

Body Shape Questionnaire-34 (BSQ-34; Cooper et al., 1987). The BSQ is a 34-item scale which asks participants to rate the degree to which they have been concerned with their body shape and weight over the past four weeks (i.e., "*Have you worried about your flesh being not firm enough?*"). Participants rate the frequency of their experiences on a scale of 1 (*never*) to 6 (*always*), which is summed across all items for a total score. The measure has a maximum score of 204, with higher scores indicating higher levels of concern with one's body. The BSQ-34 has been validated among a community sample (Cooper et al., 1987) and women with overweight/obesity looking to lose weight (Rosen et al., 1996). Furthermore, it has shown good reliability and validity among Hispanic/Latine female college students (Franko et al., 2012; Warren et al., 2008). Cronbach's alpha for the current sample was 0.96.

Data Analysis

All quantitative analyses were conducted in Jamovi V2.5.3 (The Jamovi Project, 2024) and all qualitative coding was conducted in Dedoose V9.2.7. Codes for each open-ended question were identified using thematic analysis as detailed by Braun and Clarke (2006). Each member of a team of researchers first independently read the group transcripts to familiarize themselves with the data. The coding team consisted of three clinical psychology doctoral students and one licensed clinical psychologist, all of whom research diet, exercise, and body image. After meeting as a team and clarifying the purpose of each question, each coder individually developed and assigned preliminary codes to participant responses. Separate codes were developed for each question, i.e., separate categories for barriers and facilitators related to self-monitoring, self-efficacy as related to self-monitoring, and body image and diet and exercise goals. The team then discussed these codes and collaboratively developed a preliminary codebook. This codebook was then iteratively refined into a finalized codebook which each researcher independently used to code participant responses. Weekly meetings were held during which disagreements were resolved by consensus. Once final codes were assigned, the team met to organize them into overarching themes, which also were iteratively refined. Demographic and quantitative questionnaires were scored, summarized, and compared to normative scores and/or scores from comparable samples.

RESULTS

Participants

A total of 32 women were recruited (mean age = 51.4 years, SD = 15.4; average self-reported BMI = 30.3 kg/m², SD = 3.37). Thirty of these women (93.8%) were recruited prior to amending the compensation structure to include a $30 gift card. However, two of those women were re-consented as they had not yet completed the focus groups by the time the gift card was introduced, and thus they received the compensation. Most participants were recruited from a primary care center. Comparisons on demographics other than group differences in BMI could not be made between completers and non-completers as data were anonymized from the point of first contact in an effort to maximize confidentiality. Independent samples t-tests revealed that the self-reported BMI of the women who completed the focus groups (mean = 29.0 kg/m², SD = 2.58) was significantly lower than the self-reported BMI of women who did not complete the focus groups (mean = 31.5 kg/m², SD = 3.63; $p = 0.04$). Paired sample t-tests revealed no significant differences between self-reported BMI (mean = 29.0 kg/m², SD = 2.58) and calculated BMI for women who completed the focus groups (mean = 29.3 kg/m², SD = 2.41; $p = 0.05$).

The main ethnicities represented in this entire recruited sample (N = 32) were Mexican/Mexican American/Chicana (65.6%) or “of another Hispanic/Latino origin” (31.3%), and the main races represented were either White/Caucasian (56.3%) or “other” (40.6%). The most common response in the open-ended ethnicity question was “Hispanic” (40.6%) followed by “Latina” (15.6%) and “Mexican” (15.6%). Participants in the sample generally had either a high-school level education or had completed some college, reported a

range of generational statuses, and were married and living with a partner, low-income, and employed full-time. See Table 1 for a full description of participant demographics.

Table 1

Participant demographics.

Characteristic		N	%	Mean	SD	Min	Max
Age		32		51.4	15.4	26	76
Self-reported BMI		32		30.3	3.37	25.1	38.6
Calculated BMI		15		29.3	2.41	25.5	33.3
Number of children		32		2.56	1.95	0	8
Marital Status		32					
	Single/never been married	7	21.9				
	Unmarried but cohabitating with a partner	5	15.6				
	Married and living with a partner	13	40.6				
	Separated	3	9.4				
	Divorced	1	3.1				
	Widowed	3	9.4				
Education							
	High School/GED	10	31.3				
	Some college	10	31.3				
	2-year degree	4	12.5				
	4-year degree	4	12.5				
	Master's degree	2	6.3				
	Professional degree	2	6.3				
Employment Status							
	Unemployed	4	12.5				
	Employed part-time	5	15.6				
	Employed full-time	15	46.9				
	Retired	8	25.0				
Annual household income							
	<$25,000	11	34.4				
	$25,000-50,000	10	31.3				
	$50,000-100,000	8	25.0				
	$100,000-200,000	2	6.3				
	>$200,000	1	3.1				
Race							
	White/Caucasian	18	56.3				
	Black/African American	0	0				
	Asian	0	0				
	Hawaiian/Pacific Islander	0	0				

Table 1 (*Cont.*)

	American Indian/Alaska Native	0	0
	Other	13	40.6
	White/Caucasian and Other	1	3.1
Ethnicity			
	Mexican/Mexican American/Chicana	21	65.6
	Puerto Rican	0	0
	Honduran	0	0
	Cuban	0	0
	Ecuadorian	1	3.1
	Of another Hispanic/Latino origin	10	31.3
Self-described ethnicity			
	American	1	3.1
	Chicana-Hispanic	1	3.1
	Hispanic	13	40.6
	Hispanic/Mexican	1	3.1
	Latina	5	15.6
	Latina Hispanic	1	3.1
	Mexican	5	15.6
	Mexican American	1	3.1
	Mixture of Mexican/Indigenous	1	3.1
	Spanish	2	6.3
	White	1	3.1
Generational Status			
	First generation	9	28.1
	Second generation	6	18.8
	Third generation	5	15.6
	Fourth generation	4	12.5
	Fifth generation	7	21.8
	Other (born in USA)	1	3.1

Note: BMI = Body Mass Index

Most participants (65.6%) had never participated in a formal weight-loss program and 26.7% of the sample did not report any health problems on the PAR-Q+. The main health problem reported was high blood pressure (40.0%), and 42.9% of the sample reported taking medication for a chronic medical condition. Participants were minimally active according to cutoffs proposed in the IPAQ-SF scoring protocol (IPAQ, 2005) and generally were food secure. See Table 2 for a full description of sample characteristics.

Table 2

Participant Characteristics

Construct		N	Mean	SD	Min	Max
Weight-loss program participation						
	Never	21	65.6			
	Currently	4	12.5			
	Previously	7	21.9			
PAR-Q+						
	Heart condition	4	13.3			
	High blood pressure	12	40.0			
	Pain in chest	5	16.7			
	Dizziness or LOC	6	20.0			
	Other chronic medical condition	9	31.0			
	Medication for chronic medical condition	12	42.9			
	Bone, joint, tissue problem	9	31.0			
	Medically supervised physical activity	0	100			
IPAQ-SF						
	Vigorous activity days	30	1.83	1.97	0	7
	Vigorous activity minutes	26	41.9	76.1	0	360
	Moderate activity days	29	1.57	1.83	0	5
	Moderate activity minutes	26	26.0	41.0	0	180
	Walking days	30	3.8	2.51	0	7
	Walking minutes	19	34.2	35.7	0	120
	Sitting hours	18	5.61	2.67	1	10
HFSSM		29	1.14	1.64	0	6
PAHF		30	2.47	1.04	1	5
Scale of Ethnic Experiences						
	Ethnic identity	31	11.3	2.18	6	15
	Perceived discrimination	31	8.13	2.84	3	15
	Mainstream comfort	31	9.19	2.43	3	12
	Social affiliation	31	7.35	2.60	3	11
SE for Exercise Scale		30	4.84	2.28	0	9.5
WEL-SF		30	41.7	23.9	0	80

Table 2 (*Cont.*)

BSQ-34	31	103	31.3	52	183

Note: PAR-Q+ = Physical Activity Readiness Questionnaire (PAR-Q+), IPAQ-SF = International Physical Activity Questionnaire – Short Form (IPAQ-SF), HFSSM = U.S. Household Food Security Survey Module: Six-Item Short Form, PAHF = Perceived Availability of Healthy Foods Scale, SE = Self-Efficacy, WLEQ-SF = Weight Efficacy Lifestyle Questionnaire – Short Form, BSQ-34 = Body Shape Questionnaire-34. LOC = loss of consciousness.

Qualitative Analysis

Out of the 32 women recruited, only 14 women (43.8%) completed the focus groups. There was an average of 4 or 5 participants per focus group. The average number of days between taking the surveys and completing the focus group was 47, with a range of zero to 309 days. However, this average was skewed by two participants who took 309 and 215 days to complete the focus groups. The median number of days between surveys and focus group was 15. Ten (71.4%) of these women completed the focus group before the compensation structure was amended to include a gift card and four (28.6%) completed the focus group after the change.

In general, the women in the focus groups universally appeared to have attempted weight loss in the past, and many of them even reported efforts to track their food or exercise, either via a commercial program such as Weight Watchers or on their own. A full list of themes, codes, definitions, and quotations can be found in Appendices J, K, and L.

Barriers and Facilitators to Self-Monitoring

Question: "Tracking what we eat and how much we exercise, such as by writing it down or recording it somewhere, is an important part of weight-loss treatment, but Hispanic/Latina women tend to have a particularly hard time with it. Why do you think that might be?"

Thematic analysis revealed five themes related to barriers to self-monitoring (i.e., tracking food or exercise in the context of a BWL intervention) and five themes related to facilitators to self-monitoring. These themes, their definitions and codes, and example quotations can be found in Table 3 and Appendix J. The most endorsed barriers to self-monitoring were related to *negative perceptions of self-monitoring*. In general, the

participants reported that they felt self-monitoring was either not helpful, too time-consuming, too complicated, or even aversive, especially if it was only focused on calories. They also stated that commercially available food monitoring apps historically have not included culturally relevant foods *and* have made it difficult to customize existing foods, which has prevented them from tracking their food intake accurately. The second most frequently endorsed theme was *cultural features,* which implied that certain features of Hispanic/Latina culture might make self-monitoring difficult. For example, participants reported that familism (i.e., prioritizing the needs of the family before the needs of the self) or aspects of their food culture, such as not being accustomed to writing down anything related to food, might make it hard for Hispanic/Latina women to track their food.

Other themes that represented barriers to self-monitoring included *avoidance*, *food choices*, and *mental health*. Barriers related to *avoidance* included a desire to avoid monitoring due to feelings of fear or anxiety associated with guilt or shame for eating "bad" foods. The *food choices* theme described how participants either felt as if they did not have adequate health literacy to make healthy choices or did not have a good relationship with food. In the *mental health* theme, participants suggested that low self-efficacy or low self-worth made it difficult to track.

Table 3

Barriers and Facilitators to Self-Monitoring

Theme		Definition	Code	*Example Quotation*
Barriers				
	Avoidance	Participant wants to avoid a perceived aversive consequence of SM	Avoidance due to guilt/shame	*We don't want to see how bad we're eating.*
			Avoidance of criticism by others	*We get scared because we're like, oh, they're going to get mad at me. They're going to tell me I'm not eating healthy or they're going to tell me, they're going to make me feel bad.*
			Fear/anxiety	*Tracking and everything kind of gets me, makes me anxious and stress me already.*
			Gaining weight/lack of progress decreases motivation	*When I started, I wanted results right away. I was writing everything down... I lost motivation... I think I lost it because I wanted it quick... so I think my writing, my exercise just wasn't enough.*
	Cultural features	Some aspect of Hispanic/Latine culture makes it difficult to track	Cultural attitudes about mental health	*I think our parents, or our ancestors made it so clear to us that if we weren't crazy, we didn't have to have any professional help.*
			Familism	*I feel it's a very self-centered type of approach to care so much for myself versus caring for everybody else*

Table 3 (*Cont.*)

		Food culture/tradition/habit	*I come from Central America and then I- I noticed this among other cultures that we are not used to writing things down.*
Food choices	Participant does not feel confident or knowledgeable about making food choices	Lack of health/nutrition literacy	*If you're not really educated on how to look those things up, it's going to be really hard.*
		Negative relationship with food	*I don't have a good relationship with food.*
Mental health	A comorbid mental health issue makes it difficult to track	Comorbid mental health issues	*I always say if you're mentally in bad shape, or you're going through something, everything's wrong. If you don't fix it, you're not able to eat healthy. You're not able to live your life because you have this problem.*
		Low self-efficacy	*I always feel like it's going to be a fail, honestly.*
		Low self-worth interferes with tracking	*...when [my kids] left... I just kind of let myself do whatever I wanted to do and, which wasn't healthy for me. And I think… when we're raising the kids... at least we have more structure because we're trying to set an example...We don't pay enough attention to ourselves."*
Negative perception of SM	The participant has a negative perception of some aspect of SM	Negative perception of SM	*[Tracking] is a positive thing, not a negative thing. I don't want to see it as negative anymore.*

Table 3 (*Cont.*)

			SM feels restrictive	*It's like I don't want to be restrained or restricted, it feels restrictive.*
			SM is not helpful/motivating if only focused on calories	*If it's only telling me calories and how much I ate, then it's just kind of a downside, for myself.*
			SM is too time consuming/too much effort/too complicated	*It's too complicated; I don't have time for that.*
			Tracking apps are inaccessible	*A lot of… families… don't have the money to buy an Apple Watch…so that they can get those apps to be tracking.*
			Lack of culturally relevant foods in tracking apps	*[Those apps] don't have much of our food culture, like pinto beans. They only tend to have a certain type of food and culture. It's not designed for us Latinas.*
Facilitators				
	Educate	Provide education on how/why to track	Educate	*But I think it would have to reeducate ourselves…We have to educate ourselves, cause otherwise we're going to keep falling in the same hole.*
			Educate on the benefits of SM	*Educating women on the importance and the benefits of [self-monitoring]? And not just seeing it as a negative.*
			Educate to help teach future generations	*I think more education, so we can definitely start tracking and start breaking the cycle. And teaching our future generations.*

Table 3 (*Cont.*)

		Educate the whole family	*Education to the whole family, not just the mom. Not just the kids. It has to be the whole family.*
		Educate in steps	*Start from level one, ABC… Not just giving you the full information at once because you're like, you're not going to get it"*
		Teach how to track	*Saying food is important for you and then this is how you can start logging your food.*
Incorporate mental health content	Incorporate content that will help participant improve their mental health	Encourage self-compassion/ forgiveness	*I will write stuff down, but I'm going to also give myself some forgiveness and some grace and know that I'm going to try to make a better place within my little world.*
		Encourage mindfulness	*You fix yourself when you can hear yourself. It's that you, we don't get to hear ourselves because we hear the noise of everybody else telling us how we should do things.*
		Emphasize the importance of prioritizing self	*There's those that thrive and excel, but usually they're focused a little bit more on self. And they limit what comes into their life. And they're taking care of other pillars that can help them move forward.*
		Help them hold themselves accountable	*Accountability for self...if we really want to make change, it comes from self.*
		Provide encouragement/ support	*Obviously, encouragement, that helps.*

Table 3 (*Cont.*)

	Prioritize health rather than weight loss	Utilize SM as a way to improve health rather than lose weight	Emphasize nutrition over calories	*If we can get more education on what we're eating and what is it for, what's good for us and all that, that will motivate us more on tracking it…if we track and the application tells us… 'oh well these have these nutrients and this and that'...then I'm going to feel, oh, this is good for my body.*
			Emphasize something other than appearance or weight	*When you change for you, you'll be happy inside. And you'll be a better mother, a better person, and you'll like yourself more…like I say, I may have not lost the weight I would have liked to in this [previous wellness] class. But you know what? What I didn't lose in physical weight, I lost in weight up here [points to head]. Because I was like, I just. I'm fat. I'm this. I'm never going to do it… but you lose that weight in your mind, you feel better. "*
			Encourage gradual change	*It's hard to have a lot of changes at one time. It has to be one little thing at a time.*
			Focus on tracking healthy foods	*Track the healthy food that you ate today, only, not the bad food, only the good things, and then maybe that would be an easier way.*

Table 3 (*Cont.*)

	Provide multilevel programming	Provide support on multiple levels (individual, group, community, etc.)	Collaborate with community institutions	*Not only educating families, but also educating schools, hospitals, clinics so they can be on board, and everybody can work together.*
			Make sure basic needs including mental health are being met	*I feel that finding the meaning of a person's life. What is it make you happy and concentrate on those things, because if you aren't happy then you're going to do and have energy to do more things, like self-care.*
			Facilitate cohesive small groups	*Maybe having this kind of conversations more often, or a place where we can go and join women that wants to lose weight and we can talk and maybe we can do exercise together.*
			Individualize programs	*Well, everybody has a different thing, you know, learning that I'm [participant X]. I'm not [participant Y]. So, participant Y's] system is not going to work.*
			One on one consultation	*More one on one.*
			Include more relevant representation	*I think seeing more Hispanic, Latina women actually doing it, and having them as my role model.*
	Reduce burden related to tracking	Reduce the amount of time or effort required to track	Improve customizability of food in tracking apps	*It would be nice if we had these little squares, and you can just click on them… and then it will calculate how many calories you're eating and stuff.*

Table 3 (*Cont.*)

	Reduce time burden	*[Saying] this is how you can start logging your food. Even just two or three days a week.*
	Tracking apps	*I needed [an app] for me to…lose the weight… I did great… when I was following that."*

Note: SM = self-monitoring

Question: “How do you think we can make tracking food and tracking exercise easier for Hispanic/Latina women?”

The most commonly identified facilitators to self-monitoring were related to *providing multilevel programming*. This theme indicated that participants wanted support at the community, group, and individual level. It included ensuring that participants’ basic needs (i.e., food, transportation, shelter) were met before attempting to improve health. The second most endorsed facilitator theme was related to providing *education*. Participants suggested teaching BWL intervention participants and their entire families how and why to track. The third most frequently endorsed facilitator theme was related to *incorporating mental health content* and included encouraging self-compassion.

Less frequently endorsed self-monitoring facilitator themes were related to *prioritizing health improvement rather than weight-loss* and *reducing the burden related to tracking*. For the former, participants suggested it may be helpful to emphasize nutrition over calories when tracking, to focus only on tracking healthy foods, to encourage gradual change, and to emphasize something other than appearance or weight. For the latter, participants suggested utilizing tracking apps but emphasized the need to make the food in these apps easily customizable to facilitate accurate tracking of food content. They also suggested only tracking on several days a week instead of attempting to do so daily.

Self-Efficacy Barriers and Facilitators to Self-Monitoring

Question: “We also know that people who do not believe in themselves tend to have a hard time tracking their exercise and food intake. Why do you think that might be and how can we help?”

Participants identified only one major self-efficacy-related barrier to self-monitoring and three facilitators. These themes and an example quotation for each can be found in Table 4 and Appendix K. The self-efficacy-related barrier was labeled *feeling helpless* and essentially included the defining features of low self-efficacy, such as feeling hopeless and like tracking and weight-management were outside of one's control. This theme also included comments about how negative self-talk may lead to avoidance of tracking and that those low in self-efficacy may have difficulty changing their habits.

The most commonly reported self-efficacy-related facilitators were related to *providing individualized support,* which included having health care providers (doctors, nutritionists, psychologists, etc.) spending more time with each participant to better understand their circumstances and offering individualized mental health support. This theme was followed in frequency by *building motivation by identifying consequences,* in which participants suggested identifying both positive effects of monitoring and negative effects of not monitoring as potential self-efficacy motivators. The last facilitator theme identified that was related to self-efficacy was *avoiding terms with negative connotations*, in which participants suggested using neutral language to describe food (i.e., not calling food "good" or "bad").

Table 4

Self-Efficacy Barriers and Facilitators to Self-Monitoring

Theme		Definition	Code	Example Quotation
Barriers				
	Feels helpless	Participant might feel unable to change their behavior	Feels hopeless	*I don't believe I'm enough or I don't believe I can accomplish this. Because I am going to be the same, this, fat, for the rest of my life, and I'm like, like I think we don't see hope.*
			Feels outside of one's control	*It's because of everything outside of our world that it affects us versus recognizing we're the source of what happens to us.*
			Hard to change habits	*It's just hard to change our habits.*
			Negative self-talk leads to avoidance of SM	*If you're having a day where you don't believe in yourself, you- you've already failed. If the thought is there, you've already failed for the day.*
Facilitators	Avoid terms with negative connotations	Use neutral language that does not assign value to food or weight	Avoid terms with negative connotations	*When you [say] this is healthy and this is bad, automatically clicks in their head and... they feel bad, and they, they don't do the change. So, I think it's also wording, changing the words and not putting that bad connotation, saying oh, it's bad.*
	Build motivation by identifying consequences	Help participant build motivation for tracking by identifying both positive and negative consequences	Build motivation by identifying personal values or benefit	*Find those reasons why you want to do this, why you want to be healthy… finding that important thing in your life that is going to benefit from doing these healthy things.*

Table 4 (*Cont.*)

		Give real life examples of dangerous consequences of not making lifestyle changes	*If we see a person that is overweight and… is amputating both legs. And they would say, yeah, unfortunately, this person didn't want to stop eating 20 tortillas a day and eating a liter of coke a day. And then if we don't put that in perspective, we're never going to make that click in our head. And I think it's like giving examples of real life.*
	Provide individualized support	Provide support that is tailored to each participant's needs	Offer mental health support	*…in that case you need some kind of professional help? Because when you don't believe in yourself, then that means that there's something going on in your mind.*
			Spend more time in order to understand client	*If you spend that extra minute, that makes a huge difference... if I spend an extra time with my patients, I get better results. They open up and I kind of have an idea of like OK this-what's going on? Well, this is the direction that I have to go with this patient to help…*

Note: SM = self-monitoring

Body Image Barriers and Facilitators to Reaching Diet and Exercise Goals

Question: "We know that the more Hispanic/Latina women dislike their bodies, the less likely they are to meet their diet and exercise goals in these weight-loss programs. Why do you think this is? How can we help?"

The participants identified three barrier themes and five facilitator themes related to body image and reaching diet and exercise goals. These themes and example quotations can be found in Table 5 and Appendix L. By far, the most endorsed barriers were related to *comorbid mental health issues,* in which participants reported that low self-worth may prevent women with poor body image from reaching their goals, and that cultural attitudes about mental health prevented them from seeking help. Other themes were that *negative self-talk* and a *lack of progress* may diminish motivation. Detrimental types of self-talk identified in this study were those related to comparisons with others or with a younger self. Participants reported that this type of self-talk, in addition to either gaining weight or not losing weight, might make people with poor body image feel hopeless. They also stated that familism may prevent Hispanic/Latina women from focusing on improving their own self-talk and body image because they spend all their energy on their families.

Given that a commonly reported body-image-related barrier to reaching diet and exercise goals was comorbid mental health issues, it is not surprising that the most endorsed theme of facilitators was to *incorporate mental health content* into the BWL intervention. For example, the women identified that encouraging self-care and mindfulness, building assertiveness, teaching cognitive flexibility, and helping them hold themselves accountable may help ameliorate the detrimental effects of poor body image on reaching one's goals. The next most identified theme, *provide multi-level programming,* was similar to the theme of the

same name identified as a self-monitoring facilitator, and included making sure basic needs were being met, offering formal mental health care, and facilitating cohesive small groups intended to motivate and support other participants in reaching diet and exercise goals. The next most endorsed facilitator was to *increase positive body image*. Specifically, the women identified emphasizing something other than appearance, promoting body acceptance, teaching media literacy skills (i.e., the knowledge that images presented in the media are carefully curated and the ability to critically consume such media in order to reduce internalization of unrealistic appearance ideals; Paxton, McLean & Rodgers, 2022), and discouraging social comparisons as potential facilitators. The last theme was *education*, in which the women suggested teaching participants with poor body image about why making lifestyle changes would benefit their health, as well as discussing the importance of making gradual changes. Although these suggestions were not directly related to body image, it appeared that the participants felt that providing this type of education would help motivate women with poor body image to reach their goals.

Table 5

Body Image Barriers and Facilitators to Reaching Diet and Exercise Goals

Theme		Definition	Code	Example Quotation
Barriers				
	Mental health	A comorbid mental health condition exacerbates the detrimental effects of body dissatisfaction	Comorbid mental health issues	*I feel the mental health… I think it's the key. Because we have problems with trauma, and we never deal with that first.*
			Cultural attitudes about mental health	*That's cultural, right? Like we don't, culturally- Hispanic, Latinos don't believe in depression and anxiety?*
			Low self-efficacy	*I think that's why we tend to block ourselves. And say 'oh no… I'm not going to lose weight because I'm never going to accomplish that because I'm going to keep eating whatever I'm eating*
			Low self- worth interferes with diet and exercise	*We dislike our bodies because we don't love ourselves, and if we don't love ourselves, how are we going to put exercise and, and good diet into, you know, into an action … How are we going to get that motivation if we don't even love our bodies first.*
	Lack of progress decreases motivation	Poor body image and a lack of progress make it difficult for the participant to maintain motivation for behavioral change	Gaining weight/lack of progress decreases motivation	*As you gain more weight, you have less motivation.*
			Hard to change habits	*I want to get in a habit because I think it has to become a way of living.*

Table 5 (*Cont.*)

Negative self-talk	Body dissatisfaction is related to negative self-talk which makes it hard to reach goals	Discouraged by comparison with a younger self	*I see myself… I'm not getting any younger. I cannot eat, I mean, I can eat a lot, but I'm gaining that weight, you know, before I can eat everything and still skinny.*
		Negative self-talk leads to avoidance of PA	*It's our self-talk… if it's negative then we're feeding that and that is creeping into like, oh, I can't walk… I'm just going to stay home. It's too cold… So disliking your body eliminates you from diet and exercise goal because… it's our own self-talk that is limiting us from getting up. How am I going to feel confident to go exercise if my self-talk is negative?*
		Social comparisons of body functionality	*I've disliked my body for many years. And it has kept me enclosed in my apartment when I was a little girl, you know? And I didn't want to go play because when I run, or I can't do a cartwheel because of the weight issue and then seeing my friends that they were just so agile and like they would just do it like nothing. And this whole level of confidence.*
		Feels hopeless	*So growing up like that [i.e., with poor body image], it just really, it makes you negative about your whole like how you look. You know, you're never really, I was never really satisfied…*

Table 5 (*Cont.*)

			Familism	*We need to turn that energy inward, and we've never been brought up like that because it's always everybody else and we're at the back of the line. Porque tienes familia [because you have a family], and you have your... significant other. And your mom and your dad and your abuelitos [grandparents]. And it, just, you're the last one.*
Facilitators				
	Educate	Teach participant why and how to make health-promoting lifestyle changes	Educate	*Having places where to go, so they train you how to exercise, how to do that.*
			Educate - benefits of exercise	*Try to encourage the person that well, if you lose the weight this is going to benefit you in other ways like as far as your health is concerned. And of course, you'll look better.*
			Give real life examples of dangerous consequences of not making lifestyle changes	*Letting them know that 'well, it would be healthier for you if you're at a healthy weight. Because otherwise you have high blood pressure, you have high blood sugar, you have high cholesterol, you're diabetic. You could have a stroke, have a heart attack because of your weight.'*
	Incorporate mental health content	Incorporate content that will help participant improve their mental health	Build assertiveness to set boundaries	*I want to learn skills like psychologically building my... confidence to build those boundaries with my mom to say, you know what, mom? OK, you might feel that way, but I don't feel that way.*

Table 5 (*Cont.*)

		Encourage cognitive flexibility of perceived criticism	*I have to rewrite that script and I know that my mom, my mom is- just she wants me to be healthy. Ultimately is what she wants. And she's trying to be courteous in the way she tells me.*
		Encourage self-care	*Do always do one thing that will make your stress go out because it's so easy for you to get stressed, but then how am I reflecting it or taking it out of my life? With self-care, I think that is good.*
		Encourage mindfulness	*I've been listening to a lot of mindfulness*
		Find non-food rewards	*If you're sad or if you're happy, you're going to celebrate with food no matter what, you know? And, and that's one of the things that we should be able to change…whenever I feel happy, what am I going to do if it's, it's not going to be related to food... It could be related to something else… like an activity or something that, that it's going to give you a reward, right?*
		Help them hold themselves accountable	*It will- would have to be accountable to someone… next time you go to the meeting. Accountability, I guess, to someone.*
		Provide encouragement/ support	*Just try to encourage them.*
Increase positive body image	Help participant increase aspects of positive body image	Discourage social comparisons	*To realize and to learn that I'm [participant X]. I'm not [participant Y], you know, I'm, I don't have to compare myself with others.*

Table 5 (*Cont.*)

		Don't focus on weight	*If we don't concentrate on, on weight because weight is a very, a very negative connotation. When- when people talk- tells me about my weight… I get hurt.*
		Emphasize something other than appearance	*Or maybe not put so much of an emphasis on bodies!*
		Promote body acceptance	*We have to accept each other. It doesn't matter how, but you're beautiful. Just because you're a human being.*
		Teach media literacy skills	*I want to learn skills like psychologically building my confidence to set boundaries, boundaries with social media.*
Provide multi-level programming	Provide support on multiple levels (individual, group, community, etc.)	Provide long term, consistent mental health care	*If you can have providers who are consistent, if a psychologist is always changing on me or I have a new clinician, that's not going to help me because it defeats the whole purpose, I'm set back and now I need to start over and tell my story all over again.*
		Offer mental health support	*I think you just have to concentrate more on mental health.*
		Make sure basic needs including mental health are being met	*I feel that wherever you go, people should focus on do you have food? Do you have a place? Or transportation, anything that… you can never educate our community if they're worried about 'where am I going to eat or where am I going to live in the next month or so because I don't have money to pay my rent.'*

Table 5 (*Cont.*)

	Individualize programs	*You need learn what exercise is good for for… for example, my problem is my [gestures to stomach].*
	Help find motivation by facilitating social support	*I have to have someone who motivates, holds my hand.*
	Facilitate cohesive small groups	*I think support groups like this helps, you know, talking about it. Because I know like I don't really talk about it with like my husband.*

Note: PA = physical activity

DISCUSSION

Focus groups were conducted with Hispanic/Latina women with overweight/obesity to identify potential barriers and facilitators for both self-monitoring and for reaching diet and exercise goals in behavioral weight-loss (BWL) interventions. Self-monitoring of diet and exercise is highly predictive of success in BWL interventions, but unfortunately adherence rates are low typically, especially among Hispanic/Latina women (Krukowski et al., 2013; Patel et al., 2021; Peterson et al., 2014).

Participants recruited in this sample (N=32) reported lower levels of body dissatisfaction (mean BSQ-34 = 103, SD = 31.3) than a comparable sample of overweight Hispanic/Latina women participating in a behavioral weight-loss intervention (mean BSQ-34 = 116.37, SD = 30.11; Austin et al., 2017). They reported lower levels of exercise self-efficacy (mean = 4.84, SD = 2.28) than both a sample of older minoritized adults that was 20% Latino (mean = 5.7, SD = 2.7; Resnick et al., 2004) and the original sample on which the measure was developed (Resnick & Jenkins, 2000). They also reported lower levels of eating self-efficacy on the Weight Efficacy Lifestyle Questionnaire-SF (average = 41.7, SD = 23.9) than a sample of obese women with a low percentage of ethnic minorities (mean = 54.33, SD = 18.46; Ames et al., 2015). Unfortunately, only 44% (n = 14) of the participants who completed the surveys attended a focus group. Although it was determined that these women had a lower average self-reported BMI than those who did not attend a focus group, the anonymized nature of the descriptive data did not allow for further parsing out for the 14 focus group participants.

Participants identified many barriers to self-monitoring or reaching diet and exercise goals and frequently also proposed a solution to these barriers. The suggested solutions often

were in accordance with currently utilized methods to make BWL interventions culturally appropriate, but also included novel suggestions that may provide slight adjustments to existing designs and facilitate higher rates of adherence.

Self-monitoring

Barriers

Negative Perceptions of SM and Avoidance. The main barrier to self-monitoring identified by women in this study was feeling as if self-monitoring was cumbersome, difficult, unmotivating, and not worth the time or effort. A related but less frequently discussed theme was distress at the idea of tracking their food, which in turn made participants want to avoid the activity entirely. Specifically, many reported that self-monitoring of their food intake made them feel guilty because it showed them how much "bad" food they were eating. Similarly, mostly White, female, non-overweight undergraduate students in a qualitative study reported that tracking their food intake led to an increase in guilt and anxiety related to their food choices, especially when they consumed "bad" food (Hahn et al., 2021). However, others in this same sample reported that self-monitoring resulted in feelings of pride when they met their daily calorie and nutrient goals. It appears that the feelings associated with self-monitoring may depend on the degree to which the person "succeeds" in meeting daily goals. Lupton (2018) offers a thoughtful discussion of how food monitoring apps, which are viewed as one method for making self-monitoring less cumbersome, *can* lead to beneficial effects, such as by increasing a person's sense of agency. But they also are developed from (and reinforce) the idea that health is a matter of self-control and self-regulation, and as such, failure to meet daily food intake goals is a failure of

self-control. This consideration may explain the feelings of guilt and shame that are associated with consuming and tracking food that is not in line with diet and exercise goals.

Interestingly, some of the participants in the current study reported that it was much more feasible and even enjoyable to track their *exercise*, which is in line with another study in which Latina women tracked exercise to a higher degree than they tracked food (Rosas et al., 2020). At the same time, a recent systematic review found that a sample of majority White women tracked their exercise at a *lower* rate than their weight or diet (Patel et al., 2021), so it could be that these considerations are unique to the current population. Overall, qualitative studies have found mixed results indicating the acceptability of tracking exercise, inasmuch as *most* individuals report that utilizing pedometers is highly motivating and helpful, but a minority report some negative reactions (Dasgupta et al., 2014; Orstad et al., 2021). The different attitudes of the women in the current study toward tracking food versus exercise may also have been partially due to them primarily tracking their exercise via wearable electronic fitness trackers that automatically track and display their levels of exercise (i.e., Fitbit, Apple Watch). This "passive" tracking is linked to much higher levels of monitoring adherence (Gardiner & Bryan, 2021; Patel et al., 2021), but it appears that passive exercise monitoring alone may not be associated with the same positive outcomes as more active methods of food or exercise monitoring. In Robertson and colleagues' (2021) study, activity data were collected when the participant synchronized their Fitbit to a mobile app. Importantly, those who had high levels of self-monitoring of activity *and* food consumption lost more weight than those who only had high levels of activity monitoring (Robertson et al., 2021). These researchers theorized that tracking physical activity in this way does not bring as much attention to one's progress toward their goals as manually tracking food does.

Thus, more research needs to be done before passively monitoring exercise can be suggested as a clinically useful means of improving outcomes.

Cultural Features. The second most frequently discussed theme in the current study was that aspects of Hispanic/Latina culture seemingly make it difficult to adhere to self-monitoring. Participants mentioned that Hispanic/Latina women are not in the habit of writing down food in general (e.g., writing grocery lists) and that tracking food intake may simply be unfamiliar to members of this population. Indeed, the women frequently deviated away from the topic of self-monitoring during the focus groups and instead discussed diet and exercise problems more generally, which might be viewed as validation of the idea that tracking food and exercise was quite unfamiliar to them. This barrier contributes to a body of literature identifying cultural differences in attitudes toward food that may make BWL interventions, which were developed from a Western standpoint, difficult to adhere to for Hispanic/Latina women. For example, Lindberg and colleagues (2013) reported that Mexican culture often does not focus on precise measurements of food (indeed, there is no direct Spanish translation for “teaspoon” or “tablespoon”; Lindberg et al., 2013), so the idea of portion control or precisely following recipes may be unfamiliar to members of this culture. This may be another reason that tracking food intake tends to be done at a lower rate than tracking exercise. Participants also reported that cultural attitudes about mental health make it difficult to track, which is particularly relevant given that one of the other most frequently identified barriers was mental health concerns.

Mental Health. Participants frequently spoke about how comorbid mental health issues might make it difficult to self-monitor. For example, the women suggested that they were not motivated to care for themselves (such as by participating fully in BWL

interventions, including monitoring) because they did not feel like they were worth the time or energy. Importantly, they reported these issues were perpetuated by cultural expectations of not asking for help when struggling (and being called "dramatic" if they did) as well as intense stigma surrounding seeking mental health care. Familism (i.e., a tendency commonly endorsed by Hispanic/Latine individuals to put the needs of their family over their own needs) was another cultural feature that the participants felt may make it difficult for Hispanic/Latina to self-monitor, given that their time and energy was dedicated to family obligations and needs. Moreover, they reported feeling selfish for taking time for themselves rather than for their family. This theme has appeared frequently in literature exploring barriers to lifestyle changes among this population (Austin et al., 2013; Im et al., 2010; Jay et al., 2014).

Food Choices. The least frequently discussed self-monitoring barrier was a lack of knowledge of food and a general discomfort dealing with food, which often materialized as low nutrition literacy making it difficult to track food intake. This further explains the lower rates of tracking food versus tracking exercise and weight that has been observed for this population, and also fits with literature indicating a link between health literacy and self-monitoring consistency. For example, Patel and colleagues (2020) discovered that *none* of their five participants categorized as having "limited" health literacy tracked their food consistently.

Facilitators

Reducing the Burden. Participants in this study identified that reducing the burden of tracking may be one practical facilitator to self-monitoring, and they also recommended strategies that may ameliorate the negative perceptions toward SM. Specifically, they

suggested reducing the time required to track by only tracking on several days out of the week, by only tracking certain types of food, or by utilizing tracking apps. These may be particularly helpful suggestions given research which indicates that simplified and less frequent methods of tracking are still beneficial. For example, less complex self-monitoring techniques such as tracking food groups or general eating patterns are associated with clinically relevant weight loss (Raber et al., 2021). A similar solution was proposed in a weight-loss intervention for Mexican American women, in which researchers asked participants to keep tallies of numbers of servings of food groups such as fruits, dairy, or protein (Lindberg et al., 2012). Participants in this trial lost an average of 7.6% of their baseline weight, but the authors did not report rates of adherence to food monitoring. Importantly, existing research indicates that it is not necessary to reach 100% adherence to reach clinically significant weight loss. One 6-month weight-loss study found that tracking *any* food for 39.4% of the intervention days was associated with a ≥5% weight loss and tracking for 67.1% of the intervention days was associated with a 10% weight loss (Xu et al., 2023). Thus, reducing the burden of tracking via either tracking less frequently or tracking less comprehensively may be a viable solution.

Tracking Apps. The participants also recommended utilizing tracking apps that allow flexible customization of foods in their database, which may be particularly relevant given that they identified inflexibility in the apps as a major barrier. This seems to be an improvement on an alternative but similar strategy used by Lindberg and colleagues (2012) which provided participants with a list of foods commonly consumed by Mexican American women along with their caloric content. Although providing such a list may facilitate traditional methods of monitoring, promoting flexibility in tracking applications may be more

motivating given that it could have fewer steps and higher precision. These suggestions may at least reduce the perception that SM is cumbersome and not worth the time or effort.

Prioritize Health Rather than Weight Loss. Participants suggested that it might be helpful to prioritize health rather than weight-loss by encouraging gradual change, emphasizing nutrition over calories, focusing on tracking healthy foods rather than all foods, and emphasizing something other than appearance. The importance of gradual, attainable changes for preventing loss of motivation was also identified by participants in a similar qualitative study (Leng et al., 2022) and evidence does indicate that dieting for health rather than appearance reasons is linked to lower body dissatisfaction (Prichard & Tiggeman, 2008; Vartanian et al., 2012). As discussed below, these suggestions corroborate the theory behind health interventions that take either a weight-neutral or weight-inclusive approach to health promotion (Robison, 2005). Additionally, this suggestion has potential to reduce the avoidance reported by the women in the current study, since shifting the focus away from weight and/or appearance to nutrition and general health may reduce some of the guilt and shame caused by self-monitoring. Perhaps focusing more on nutrition, health, and the way the women feel rather than an appearance- or weight-related end goal could make tracking food less aversive.

Multi-Level Programming. The women identified providing multi-level programming (i.e., community-, group-, and individual-level) as another facilitator for self-monitoring. They suggested collaborating with community institutions such as schools and hospitals to educate entire communities as to the benefits of SM. They saw advantages to making health promotion ubiquitous (i.e., as common as Pepsi commercials). Fortunately, this suggestion supports methods utilized in some BWL interventions and physical activity

interventions which have collaborated with community institutions such as churches or community centers in an effort to adapt these interventions for Hispanic/Latina women (Arredondo et al., 2017; Olvera et al., 2010). One such intervention, which was implemented at churches and asked participants to wear pedometers, found that individuals in the intervention group had higher levels of activity and were more likely to meet physical activity guidelines than the comparison group (Arredondo et al., 2017). These authors did not report pedometer adherence rates. Another community-based intervention, which was implemented with mother-daughter dyads, resulted in a 76% retention rate and significant increases in physical fitness for the daughters but not the mothers (Olvera et al., 2010). Daughters in this study wore accelerometers but there was no report of their adherence to this form of monitoring. Although it is unclear whether utilizing community resources impacted self-monitoring in these studies, this strategy appears to be an effective way to improve activity outcomes in general, and it is conceivable that the increase in community-level support may directly impact levels of self-monitoring.

The necessity for community- and environmental-level interventions for reducing obesity and improving health is well corroborated (Dendup et al., 2018), and interventions that have included multiple types of support, such as by identifying a community member as a “walking champion” and facilitating walking groups, enhancing local parks and walking trails, and posting success stories in a community newspaper, tend to be quite successful (Hess & Davis, 2020). Importantly, this suggestion may be one approach to the barriers related to cultural features; it is possible that collaborating with trusted community institutions, in addition to intervening at the group and individual level, may facilitate

adherence by reducing stigma related to mental health, and familiarizing women with the idea of self-monitoring.

As another part of the multi-level intervention strategies, the women in the current study frequently suggested facilitating small groups of women with similar goals and experiences to foster social support. Similar to other qualitative studies, the participants did not identify husbands or children as potential sources of social support for diet and exercise (Diaz et al., 2007; Leng et al., 2022). Interestingly, research has found that including husbands in a BWL intervention is not an effective way of providing social support (Cousins et al., 1992). The suggestions of the women in the current study corroborate and support the idea behind the many culturally modified BWL interventions that utilize exercise *comadres* as a means of fostering social support (Hovell et al, 2008). However, it is unclear whether this strategy actually improves outcomes, because most partner-based (e.g., friends or exercise *comadres*) interventions have not compared the strategy to an individual-based control. One pilot study that did compare the two interventions did not observe any additional benefit of including a weight-loss partner, albeit the sample was quite small (N=27; Marquez & Wing, 2013). Although participants in the current study suggested that future interventions should implement such procedures, more randomized comparison studies should be conducted to determine the practice's utility.

Incorporate Mental Health Content. In response to identifying mental health issues as a barrier to tracking, the participants frequently suggested incorporating mental health content into the interventions. They encouraged the inclusion of healthful practices such as self-compassion and mindfulness. Additionally, they emphasized the importance of prioritizing oneself, which may help women who are high in familism and therefore typically

do not prioritize their own needs. However, it would be important for researchers and clinicians to employ cultural humility and competence when implementing this suggestion, as familism is a valuable and often adaptive characteristic of this culture (Katiria Perez & Cruess, 2014). One potential way to make this suggestion culturally appropriate is to reframe the belief that wanting to be healthy is selfish into the belief that taking care of oneself is a way to take care of one's family. This reframe is corroborated by participants in similar qualitative studies by Jay and colleagues (2014), Leng and colleagues (2022), and McLaughlin and colleagues (2017), the last of which was specifically conducted to explore how BWL interventions could be adapted to prevent familism from negatively impacting women's levels of adherence.

Future interventions may consider including mental health programming and even offering therapy, as proposed by the women in this study, as opposed to simply utilizing behavioral and medical health promotion strategies. However, the women frequently discussed how Hispanic/Latine culture stigmatizes mental health and therefore makes it difficult to seek care; they expressed a desire to be able to address mental health issues without judgement from their families. This may be difficult to address with a standard BWL intervention given that it is a larger societal issue. Nonetheless, perhaps the community-level intervention strategies identified here could incorporate mental health normalization strategies in addition to just health education as proposed by the women in this study.

Educate. Lastly, in correspondence with the barrier of lack of knowledge of food choices and general discomfort dealing with food, the participants suggested that implementers of BWL interventions strive to educate their participants, in small steps, on *how* and *why* to self-monitor. Education on how to track, cook healthy foods, set goals, and

exercise is generally included in BWL interventions (Diabetes Prevention Program Research Group, 2002), and these results emphasize the necessity of this strategy for behavior change. One recommendation from the women in this study was to educate in small steps that are built upon a woman's level of health literacy at baseline. In other words, BWL interventions may benefit from a flexible, progressive curriculum that can be tailored to each individual participant's needs. This type of education stands to circumvent many of the barriers identified in this study, such as a lack of knowledge about food, negative perceptions of SM, and familism-related perceptions that caring for oneself is selfish and unnecessary. Of note, interventions such as the Diabetes Prevention Program typically include a "health coach" that is designed to help meet each individual participant's needs (Diabetes Prevention Program Research Group, 2002). Perhaps the lower rates of adherence among Hispanic/Latina women indicate that this coaching should be modified to be more available or relevant for women from this population. The participants also suggested educating the whole family about self-monitoring and framing it as a way to improve the health of future generations. Involving the *entire* family in education efforts and emphasizing the benefit that behavior change has on the family may make self-monitoring more attainable and relevant for this population of women. This recommendation is supported by the results of a more recent weight-management intervention with adolescents and their parents which led to a more nutritious diet and decreased BMI among parents, though these results were not sustained long-term (Prado et al., 2020).

Self-Efficacy Barriers and Facilitators

Feeling Hopeless. The only identified self-efficacy-related barrier to self-monitoring was that women may feel helpless. This theme included codes related to feeling hopeless or

like their health was out of their control, which, when coupled with negative self-talk, could interfere with motivation to track food or exercise. This identified barrier generally did not represent much more than the concept of low self-efficacy itself, but the identified facilitators may help inform future interventions.

Provide Individualized Support and Identify Consequences. For one, the participants in this study believed that if healthcare workers offered more individualized mental health support (and for those situations in which they already did, if they spent more time with individual patients), then women with low self-efficacy might more fully adhere to self-monitoring. They also noted that identifying consequences for self-monitoring, both positive and negative, may help motivate women with low self-efficacy. Taken together, these recommendations imply that future interventions may benefit from in-depth, individualized mental health support that helps participants explore and identify their own reasons for change. One possible method for doing so is motivational interviewing, a technique which is based on exploring a person's reasons for change as a way to enhance their motivation (Miller & Rollnick, 2023). This technique has already been applied with success to health behavior change (Rollnick, Miller & Butler, 2023) and physical activity interventions. Arredondo and colleagues (2017) implemented motivational interviewing phone calls as part of a multifaceted physical activity intervention and observed a dose response relationship where each call was associated with a higher likelihood of adhering to physical activity guidelines. Importantly, the research suggests that motivation interviewing is helpful as an *addition* to other evidence-based methods of weight loss and physical activity promotion, not as a standalone treatment (Rollnick, Miller, & Butler, 2023). Therefore, it

seems as if the addition of motivational interviewing may be a viable, effective way to promote adherence to self-monitoring.

Avoid Terms with Negative Connotations. Lastly, the participants reported that it may be helpful to avoid terms that apply a negative connotation to food or weight. This suggestion is supported by extensive research indicating that moralizing obesity or health is detrimental to health promotion (Askegaard et al., 2014; Townend, 2009) and is another possible solution to a self-monitoring barrier identified in the present study regarding avoiding documentation of eating "bad" food. Intentionally avoiding moralized or valanced language and reframing the belief that food choices, health, and/or obesity are moral issues among participants could help women feel less guilt and shame related to eating "unhealthy" foods. In turn, this may help them approach this information (and monitoring) rather than avoid it.

Body Image and Adherence to Diet and Exercise Goals

Barriers

Mental Health. Similar to barriers reported for self-monitoring, the most frequently identified barrier related to body image was that comorbid mental health issues may prevent women with extreme body dissatisfaction from reaching their diet and exercise goals in BWL interventions. For example, they stated that general mental health issues, low-self efficacy, and low self-worth may make it difficult to reach goals, and that cultural attitudes about mental health make it difficult to treat these concerns. Participants also reported resorting to overeating when anxious or depressed, which is quite consistent with previous research conducted with Hispanic/Latina women that found depressive symptoms were negatively associated with both attendance and adherence to BWL interventions (Austin et al., 2017).

Integrating behavioral activation for depression with exercise has been proposed as a method of treating women with comorbid depression and Type II Diabetes (Schneider et al., 2016) and the results presented here indicate that this may be a worthy strategy to explore with Hispanic/Latina women with overweight/obesity.

Negative Self-Talk. With regard to body image specifically, the participants identified that negative self-talk, such as comparing oneself to others or to a younger version of themselves, may make women with poor body image avoid physical activity. This is similar to the results of a recent study which found that the tendency to avoid physical activity mediates the relationship between perceived weight stigma and physical activity levels among Chinese university students (Yi et al., 2014). Similarly, both weight-stigma and weight-bias internalization have been associated with avoidance of physical activity (Bevan et al., 2021).

Lack of Progress Decreases Motivation. Lastly, participants in the current study said that gaining weight or failing to lose weight may decrease motivation and further make it difficult for women with poor body image to reach their diet and exercise goals. This was also identified as a potential barrier to participation in BWL by participants in Leng and colleagues' study (2022).

Facilitators

Incorporate Mental Health Content. Correspondingly to the identified barrier of mental health issues, participants most frequently reported that incorporating mental health content into BWL interventions might benefit women with poor body image. They specifically identified many common features of psychotherapeutic interventions such as building assertiveness, improving cognitive flexibility, identifying rewards, and utilizing

mindfulness. Practices such as self-compassion have indeed been used to improve body image (Toole & Craighead, 2016), and it may be useful to incorporate such practices into BWL interventions to help women with poor body image reach their health and fitness goals.

Provide Multi-Level Programming. The second most identified facilitator was to provide multi-level programming, which primarily consisted of individual mental health care and group-level support. Social support and acceptance appear to promote adaptive eating styles and positive body image (i.e., body acceptance by others; Swami et al., 2020; Tiggeman, 2019), so facilitating a socially supportive environment in BWL interventions may indeed enhance adherence and success.

Increase Positive Body Image. The third most common facilitator reported by participants was to focus on increasing levels of *positive* body image as a potential solution for helping women with extreme body dissatisfaction reach their diet and exercise goals. Specifically, the participants recommended promoting body acceptance, discouraging social comparisons, emphasizing something other than weight or appearance, and teaching media literacy skills, which map directly onto theorized components of positive body image (i.e., body appreciation, broadly conceptualizing beauty, body acceptance, and interpreting information in a body-protective manner; Tylka & Wood-Barcalow, 2015). Indeed, research indicates that those higher in positive body image tend to engage in higher levels of physical activity (Sabiston et al., 2019). Coupled with our results, this indicates that BWL interventions may benefit from the addition of an aspect meant to foster positive body image. This may be more effective than simply trying to reduce body dissatisfaction (i.e., Serier, 2021).

Importantly, participants repeatedly reported that focusing on weight and appearance led to feelings of guilt, shame, and hopelessness. In general, participants suggested focusing on nutrition over calories and on function and well-being over appearance and weight. These suggestions are in line with the aforementioned evidence that dieting for appearance rather than health reasons is linked to body dissatisfaction (Prichard & Tiggeman, 2008; Vartanian et al., 2012) and subsequent calls to cease conducting interventions with a "weight-normative" focus for fear of harming participants (Tylka et al., 2014). Some have reacted to these considerations by developing health-promotion interventions that explicitly take a "weight-neutral" approach such as *Health at Every Size* (Robison, 2005). These interventions *do* seem to lead to improvements in mental well-being and body image, but their impacts on health behaviors and markers appear to be inconsistent. One systematic review of the *Health at Every Size* intervention found that the interventions lead to decreases in cholesterol, body dissatisfaction, and disordered eating behaviors, and to increases in overall well-being (Ulian et al., 2018), but evidence for reductions in BMI, improvements in diet quality, and increases in physical activity and energy expenditure was inconsistent.

Another review and meta-analysis comparing weight-neutral approaches to health promotion with traditional weight-loss approaches found them to be comparable for physical health, physical activity, and body dissatisfaction outcomes (Dugmore et al., 2020). However, this review found that the strength of evidence for weight-neutral approaches ranged from strong for weight reductions to weak for blood pressure, quality of life, and physical activity. Thus, the evidence for weight-neutral interventions is promising but inconsistent. Notably, Dugmore and colleagues observed that weight-neutral approaches had lower levels of attrition than weight-loss approaches (8-22% vs. 10-59%, respectively; Dugmore et al., 2020)

which indicates that weight-neutral approaches may be more acceptable to participants. Given that BWL interventions tend to have high rates of attrition and low rates of adherence, any method that facilitates implementation should not be overlooked, especially if the interventions can be shown to lead to comparable health outcomes and are requested by the target populations.

Educate. Interestingly, similar to when discussing self-monitoring, the participants suggested providing education, which in this case was related to benefits of exercise and the dangerous consequences of not making lifestyle changes. The participants also identified providing multi-level programming in the form of both mental health support and instrumental support (i.e., making sure basic needs are met), and strengthening social support as viable solutions.

Summary

The participants identified many barriers to self-monitoring and reaching diet and exercise goals in behavioral weight-loss interventions, but they also offered many useful ideas. The major suggestions relevant to *self-monitoring* were to intervene and educate on multiple levels (which included facilitating social support, especially via other women), to deliver education to women and their communities on *how* and *why* to track, to incorporate mental health programming into BWL interventions, to facilitate food tracking by reducing the burden, and to focus on health rather than weight. Some of these suggestions have been attempted with limited evidence for their success (i.e., utilizing an exercise partner), but some may be helpful for future interventions. For one, the recommendation to provide community-level support may enhance the effects of BWL interventions by familiarizing women with the idea of self-monitoring *and* de-stigmatizing mental health, which were some

of the major barriers reported. Relatedly, BWL interventions do not typically provide formal mental health care. This was frequently requested in the current study and could be a viable addition to future interventions, though it may be difficult to provide this level of support on the individual level. Perhaps the required resources could be minimized by utilizing group therapy rather than individual sessions. In this way, a treatment could still be individualized to each group member but without the additional requirements of one-on-one treatment. This could also function to facilitate cohesive small groups as was frequently requested in this study.

The major suggestions relevant to *body image and reaching diet and exercise goals* were to incorporate mental health care, provide multi-level programming, increase positive body image, and provide education on how and why to make behavior changes. The most novel suggestions from this question were again to build mental health care into BWL interventions to support women with poor body image and also to focus on improving positive body image. The recommendation to promote a positive body image differs from some existing interventions' attempts to ignore the topic of weight in general in the hopes of not contributing to body dissatisfaction. It may be more effective to intentionally and explicitly focus on *improving* body image rather than hoping for it to be impacted indirectly (see Serier, 2021 for an example of focusing on body image in a BWL intervention).

Recommendations

In response to these suggestions, we make the following recommendations. Those with empirical support are indicated with a relevant citation. The remainder are provided as initial suggestions to inform future RCTs. First, implementers of BWL interventions should consider improving tracking apps and/or reducing tracking requirements, for example, by

only requesting that participants track on several days out of the week or track food groups rather than individual foods (Raber et al., 2021; Xu et al., 2023). Secondly, BWL interventions implemented with Hispanic/Latina women might prioritize maximizing group support among participants by partitioning them into small support groups, rather than utilizing either partnerships or larger groups. Although the optimal size of these groups should be identified empirically, the camaraderie displayed by the participants in the current study indicates that groups of around 4-6 participants may be a worthwhile starting point. Third, these interventions should consider incorporating mental health care programming, either via teaching specific skills to the group or by implementing therapy or support groups dependent on the needs of participants. This may also serve to maximize group support. Fourth, implementers and creators of BWL interventions should carefully consider their messaging and advertising surrounding these interventions. For example, implementers may want to use messaging that normalizes self-monitoring and health promotion, while not pathologizing obesity or contributing to weight stigma. Additionally, this messaging may be a chance to destigmatize mental health by presenting mental health care as just one part of an integrated health promotion intervention.

Fifth, BWL interventions could possibly be improved by exploring and building motivation early on, either via motivational interviewing (Arredondo et al., 2017) or by framing health promotion as a way of taking care of one's family. The latter point has been suggested elsewhere (McLaughlin et al., 2017) but apparently has not yet been empirically tested. Finally, researchers and clinicians should strongly consider incorporating methods of helping women feel better about food, their weight, and their bodies. For one, an intervention may be better presented as one focusing on health and nutrition rather than weight or

calories. For another, these interventions may benefit from incorporating evidence-based body image improvement strategies such as those utilized in Serier (2021).

Strengths and Limitations

This study had several notable limitations. Firstly, the women in this study had not actually participated in a BWL intervention, though some did report participating in commercial weight loss programs such as Jenny Craig or Weight Watchers. It is therefore possible that the identified barriers and facilitators might not generalize to participants in an actual BWL intervention. Moreover, the women oftentimes identified strategies that currently *are* utilized in many BWL interventions. Nevertheless, since they came from the same population that is recruited for these interventions, they presumably are faced with the same barriers and facilitators to making changes to their diet and exercise. Perhaps their unfamiliarity with the content of BWLs is reflective of a need to market these programs and their contents more effectively. Perhaps more importantly, many of them had attempted tracking in the past and most, if not all, had attempted losing weight in general. This lends confidence that these women were familiar with what prevents and helps accomplish these goals. The second notable limitation was low rates of engagement in the focus groups. Unfortunately, low rates of adherence and attendance are characteristic of this population, and indeed were the justification for conducting this study. Nevertheless, this rate is quite low given that the participants were only asked to attend one group session. It is possible that the initial compensation structure (i.e., a body image and weight-loss workshop which was amended to include $30 after low rates of engagement) was an inadequate incentive for drawing women to the focus groups.

A third potential limitation is related to generalizability. These results may not be generalizable to men or Hispanic/Latina women who exclusively speak Spanish. Another possible limitation is the degree of difficulty the participants had staying focused on self-monitoring. They frequently deviated from the narrow focus of the questions and began discussing diet and exercise or weight loss more generally. However, as mentioned above, this may be relevant information that reflects this population's lack of familiarity with the idea of tracking diet and exercise or an unfamiliarity with the practice's utility for successful weight loss and health outcomes.

Another limitation was the inability to report sample characteristics for just the women who completed the focus groups due to the anonymized data. It would have been helpful to more accurately characterize the women in the focus groups and to compare them with the women who did not attend. A final limitation was that an error in electronic survey construction resulted in a missing scale point on two of the questionnaires which reduces the accuracy of any comparisons with other samples.

Nonetheless, this study had several notable strengths, including its qualitative methodology. There is growing recognition of the need for qualitative methods when studying underrepresented communities, especially when the applicability of a given concept to that community is unclear (Cohen, Phillips & Palos, 2001). The method utilized here centered the voices and opinions of members of the population of interest rather than attempting to identify solutions from an outsider's view. This qualitative approach can be used to inform the content of future clinical trials for health promotion. Another strength was the use of focus groups. The participants bonded with each other quickly and built on each other's ideas. Although focus groups run the risk of promoting socially acceptable responses

(Asbury, 1995), many of the women appeared to voice thoughts and feelings that were counter to those of other group members. Additionally, the group members seemed to become quite vulnerable at times, and it did not appear that they were censoring their thoughts and feelings. Also, the use of thematic analysis facilitated a ground-up identification of themes relevant to this population.

Conclusion

The women in the current study identified several potential barriers and many possible facilitators to adherence among Hispanic/Latina women participating in BWL interventions. In general, the women suggested that healthcare professionals should help participants feel better about themselves, reduce the stress and shame related to weight-loss, and teach them according to their current stage of health literacy. Many if not all of the subsequent recommendations identified by this study could be incorporated into BWL interventions or other types of health promotion programs, which conceivably could facilitate their implementation and improve the health of this population.

APPENDICES

Appendix A

Demographic Questionnaire

1) How old are you? ____

2) How many children do you have? _____

3) What is your marital status?
   a) Single/never been married
   b) Unmarried but cohabitating with a partner
   c) Married and living with partner
   d) Separated
   e) Divorced
   f) Widowed

4) What is your highest level of education?
   a) Less than high school
   b) High school/GED
   c) Some college
   d) 2-year degree
   e) 4-year degree
   f) Professional degree
   g) Master's Degree
   h) Doctoral Degree

5) What is your employment status?
   a) Employed full-time
   b) Employed part-time
   c) Unemployed
   d) Retired

6) What is your annual household income?
   a) Less than $25,000
   b) $25,000 – $50,000
   c) $50,000 - $100,000
   d) $100,000 - $200,000
   e) More than $200,000

7) What is your race? (check all that apply)
   a) White/Caucasian
   b) Black/African American
   c) Asian
   d) Hawaiian/Pacific Islander
   e) American Indian/Alaska Native
   f) Other: _____

8) What is your ethnicity? (Check all that apply)
   a) Mexican/Mexican American/Chicana
   b) Puerto Rican
   c) Honduran
   d) Cuban
   e) Ecuadorian
   f) Of another Hispanic/Latino origin: _____

9) How would you describe your racial/ethnic identity in your own words?
   _____

10) If your family migrated to the USA, choose the generation that best applies to you:
   a) 1st generation – you were born in another country
   b) 2nd generation – you were born in the US; at least one parent was born in another country
   c) 3rd generation – you were born in the US; both parents were born in the US; all grandparents were born in another country
   d) 4th generation – you and your parents were born in the US; and at least one grandparent was born in another country with the remainder born in the US
   e) 5th generation – you and your parents were born in the US and all grandparents were born in the US
   f) Other: _____

11) Have you ever or are you currently participating in a weight-loss program?
   a) Never
   b) Currently
   c) Previously

12) If you answered 'currently' or 'previously' to the last question, please describe the weight-loss program you participated in.
   _____

Appendix B

The Physical Activity Readiness Questionnaire for Everyone

Please read the 7 questions below carefully and answer each one honestly: check YES or NO.	YES	NO
1) Has your doctor ever said that you have a heart condition OR high blood pressure?		
2) Do you feel pain in your chest at rest, during your daily activities of living, OR when you do physical activity?		
3) Do you lose balance because of dizziness OR have you lost consciousness in the last 12 months? Please answer NO if your dizziness was associated with over-breathing (including during vigorous exercise).		
4) Have you ever been diagnosed with another chronic medical condition (other than heart disease or high blood pressure)? PLEASE LIST CONDITION(S) HERE:		
5) Are you currently taking prescribed medications for a chronic medical condition? PLEASE LIST CONDITION(S) AND MEDICATIONS HERE:		
6) Do you currently have (or have had within the past 12 months) a bone, joint, or soft tissue (muscle, ligament, or tendon) problem that could be made worse by becoming more physically active? Please answer NO if you had a problem in the past, but it *does not limit your current ability* to be physically active. PLEASE LIST CONDITION(S) HERE:		
7) Has your doctor ever said that you should only do medically supervised physical activity?		

Appendix C

International Physical Activity Questionnaire

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

Days per week: _____

☐ → No vigorous physical activities ***Skip to question 3***

2. How much time did you usually spend doing **vigorous** physical activities on one of those days?

Hours per day: _____
Minutes per day: _____

☐ Don't know/Not sure

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

Days per week: _____

☐ → No moderate physical activities ***Skip to question 5***

4. How much time did you usually spend doing **moderate** physical activities on one of those days?

Hours per day: _____
Minutes per day: _____

☐ Don't know/Not sure

Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

Days per week: _____

☐ → No walking ***Skip to question 7***

6. How much time did you usually spend **walking** on one of those days?

Hours per day: ____
Minutes per day: ____

☐ Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

Hours per day: ____
Minutes per day: ____

☐ Don't know/Not sure

Appendix D

USDA Economic Research Services' U.S. Household Food Security Survey Module: Six-Item Short Form

1. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
    a. Often true
    b. Sometimes true
    c. Never true
    d. Don't know
    e. Refused

2. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
    a. Often true
    b. Sometimes true
    c. Never true
    d. Don't know
    e. Refused

3. In the last 12 months, since (date 12 months ago) did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?
    a. Yes
    b. No (GO TO 5)
    c. Don't know (GO TO 5)
    d. Refused (GO TO 5)

Optional Screener: If any of the first 3 questions are answered affirmatively (i.e., if either Q1 or Q2 are "often true" or "sometimes true" or Q3 is "yes"), proceed to the next question. Otherwise, skip to end.

4. [Ask only if Q3 = YES] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
    a. Almost every month
    b. Some months but not every month
    c. Only 1 or 2 months
    d. Don't know
    e. Refused

5. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?
    a. Yes
    b. No

c. Don’t know
d. Refused

6. In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?
    a. Yes
    b. No
    c. Don’t know
    d. Refused

Appendix E

Perceived Availability of Healthy Foods Scale

The respondents are asked to think of their neighborhood as the area within a 20-minute walk (approximately 1 mile) from their home and then to indicate the extent to which they agree with the following statements:

1. The fresh fruits and vegetables in my neighborhood are of high quality.
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

2. A large selection of fresh fruits and vegetables is available in my neighborhood.
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

2. A large selection of low-fat products is available in my neighborhood.
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

Appendix F

Scale of Ethnic Experiences

Read each item and indicate how much you agree or disagree with the statement

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Being a member of my ethnic group is an important part of who I am.	1	2	3	4	5
My parents gave me a strong sense of cultural values.	1	2	3	4	5
I believe that it is important to take part in holidays that celebrate my ethnic group.	1	2	3	4	5
Generally speaking, my ethnic group is respected in America.	1	2	3	4	5
My ethnic group has been treated well in American society.	1	2	3	4	5
Discrimination against my ethnic group is not a problem in America.	1	2	3	4	5
I think that friendships work best when people are from	1	2	3	4	5

the same ethnic group.					
I find it easiest to trust people from my own ethnic group.	1	2	3	4	5
I prefer my close friends to be from my own ethnic group.	1	2	3	4	5
I feel like I belong to mainstream American culture.	1	2	3	4	5
I'm what most people think of as a typical American.	1	2	3	4	5
I think of myself as a typical American.	1	2	3	4	5

Appendix G

Self-efficacy For Exercise (SEE) Scale

How confident are you right now that you could exercise three times per week for 20 minutes if:

	Not Confident										**Very Confident**
1. The weather was bothering you	0	1	2	3	4	5	6	7	8	9	10
2. You were bored by the program or activity	0	1	2	3	4	5	6	7	8	9	10
3. You felt pain when exercising	0	1	2	3	4	5	6	7	8	9	10
4. You had to exercise alone	0	1	2	3	4	5	6	7	8	9	10
5. You did not enjoy it	0	1	2	3	4	5	6	7	8	9	10
6. You were too busy with other activities	0	1	2	3	4	5	6	7	8	9	10
7. You felt tired	0	1	2	3	4	5	6	7	8	9	10
8. You felt stressed	0	1	2	3	4	5	6	7	8	9	10
9. You felt depressed	0	1	2	3	4	5	6	7	8	9	10

Appendix H

Weight Efficacy Lifestyle Questionnaire Short-Form (WEL-SF)

Read each situation below and decide how confident (or certain) you are that you will be able to resist overeating in each of the difficult situations. On a scale of 0 (not confident) to 10 (very confident), choose ONE number that reflects how confident you feel now about being able to successfully resist the desire to overeat. Write this number next to each item.

0	1	2	3	4	5	6	7	8	9	10
Not at all confident										**Very** Confident

I AM CONFIDENT THAT:	**Confidence Number**
1. I can resist overeating when I am anxious (or nervous).	
2. I can resist overeating on the weekend.	
3. I can resist overeating when I am tired.	
4. I can resist overeating when I am watching TV (or using the computer).	
5. I can resist overeating when I am depressed (or down).	
6. I can resist overeating when I am in a social setting (or at a party).	
7. I can resist overeating when I am angry (or irritable).	
8. I can resist overeating when others are pressuring me to eat.	

Appendix I

Body Shape Questionnaire-34

We should like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:

	Never	Rarely	Sometimes	Often	Very often	Always
1. Has feeling bored made you brood about your shape?.....	1	2	3	4	5	6
2. Have you been so worried about your shape that you have been feeling you ought to diet?.....	1	2	3	4	5	6
3. Have you thought that your thighs, hips or bottom are too large for the rest of you?.....	1	2	3	4	5	6
4. Have you been afraid that you might become fat (or fatter)?.....	1	2	3	4	5	6
5. Have you worried about your flesh being not firm enough?.....	1	2	3	4	5	6
6. Has feeling full (e.g. after eating a large meal) made you feel fat?.....	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?.....	1	2	3	4	5	6
8. Have you avoided running because your flesh might wobble?.....	1	2	3	4	5	6
9. Has being with thin women made you feel self-conscious about your shape?.....	1	2	3	4	5	6
10. Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6
11. Has eating even a small amount of food made you feel fat?.....	1	2	3	4	5	6
12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?.....	1	2	3	4	5	6
13.						

	Has thinking about your shape interfered with your ability to concentrate (e.g. while watching television, reading, listening to conversations)?.....	1	2	3	4	5	6
14.	Has being naked, such as when taking a bath, made you feel fat?.....	1	2	3	4	5	6
15.	Have you avoided wearing clothes which make you particularly aware of the shape of your body?.....	1	2	3	4	5	6
16.	Have you imagined cutting off fleshy areas of your body?.....	1	2	3	4	5	6
17.	Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18.	Have you not gone out to social occasions (e.g. parties) because you have felt bad about your shape?.....	1	2	3	4	5	6
19.	Have you felt excessively large and rounded?.....	1	2	3	4	5	6
20.	Have you felt ashamed of your body?.....	1	2	3	4	5	6
21.	Has worry about your shape made you diet?.....	1	2	3	4	5	6
22.	Have you felt happiest about your shape when your stomach has been empty (e.g. in the morning)?.....	1	2	3	4	5	6
23.	Have you thought that you are in the shape you are because you lack self-control?..... ...	1	2	3	4	5	6
24.	Have you worried about other people seeing rolls of fat around your waist or stomach?.....	1	2	3	4	5	6
25.	Have you felt that it is not fair that other women are thinner than you?.	1	2	3	4	5	6
26.	Have you vomited in order to feel thinner?.....	1	2	3	4	5	6
27.	When in company have your worried about taking up too much room (e.g. sitting on a sofa, or a bus seat)?.....	1	2	3	4	5	6
28.	Have you worried about your flesh being dimply?.....	1	2	3	4	5	6
29.	Has seeing your reflection (e.g. in a mirror or shop window) made you feel bad about your shape?.....	1	2	3	4	5	6
30.	Have you pinched areas of your body to see how much fat there is?.....	1	2	3	4	5	6

31. Have you avoided situations where people could see your body (e.g. communal changing rooms or swimming baths)?.....	1	2	3	4	5	6
32. Have you taken laxatives in order to feel thinner?.....	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?.....	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?.....	1	2	3	4	5	6

Appendix J

Full list of themes, codes, definitions, and example quotations of barriers and facilitators to self-monitoring

Theme		Theme Definition	Code	Code Definition	*Example Quotation*
Barriers					
	Avoidance	Participant wants to avoid a perceived aversive consequence of SM	Avoidance due to guilt/shame	Participant does not want to track due to associated feelings of guilt or shame, or associated feelings of self-criticism.	*We don't want to see how bad we're eating.*
			Avoidance of criticism by others	participant does not want to track because others criticize her for what she ate.	*We get scared because we're like, oh, they're going to get mad at me. They're going to tell me I'm not eating healthy or they're going to tell me, they're going to make me feel bad.*
			Fear/anxiety	Participant finds some aspect of SM to be scary or anxiety inducing.	*Tracking and everything kind of gets me, makes me anxious and stress me already.*
			Gaining weight/lack of progress decreases motivation	Motivation decreases with weight gain.	*When I started, I wanted results right away. I was writing everything down... I lost motivation... I think I lost it because I wanted it quick... so I think my writing, my exercise just wasn't enough.*
	Cultural feature	Some aspect of Hispanic/Latine culture makes it	Cultural attitudes about mental health	Hispanic/Latine culture does not acknowledge mental health	*I think our parents, or our ancestors made it so clear to us that if we weren't crazy, we*

	difficult to track		which prevents participant from seeking mental health care.	*didn't have to have any professional help.*
		Familism	Participant places family needs over her own which makes it hard to track.	*I feel it's a very self-centered type of approach to care so much for myself versus caring for everybody else*
		Food culture/tradition/habit	SM doesn't fit into traditions or cultural practice regarding food; not in the habit of tracking; not a focus.	*I come from Central America and then I- I noticed this among other cultures that we are not used to writing things down.*
Food choices	Participant does not feel confident or knowledgeable about making food choices	Lack of health/nutrition literacy	Participant does not know enough or is not confident about various aspects of health to track effectively.	*If you're not really educated on how to look those things up, it's going to be really hard.*
		Negative relationship with food	Participant has a negative relationship with food.	*I don't have a good relationship with food.*
Mental health	A comorbid mental health issue makes it difficult to track	Comorbid mental health issues	Comorbid mental health problems prevent participant from tracking.	*I always say if you're mentally in bad shape, or you're going through something, everything's wrong. If you don't fix it, you're not able to eat healthy. You're not able to live your life because you have this problem.*
		Low self-efficacy	Participant does not believe in her ability to track effectively	*I always feel like it's going to be a fail, honestly.*

		Low self-worth interferes with tracking	Participant doesn't value her body enough to take care of it	*...when [my kids] left... I just kind of let myself do whatever I wanted to do and, which wasn't healthy for me. And I think… when we're raising the kids... at least we have more structure because we're trying to set an example...We don't pay enough attention to ourselves."*
Negative perception of SM	The participant has a negative perception of some aspect of SM	Negative perception of SM	Participant has a generally negative perception of SM.	*[Tracking] is a positive thing, not a negative thing. I don't want to see it as negative anymore.*
		SM feels restrictive	Participant feels like SM makes them constrict their food intake.	*It's like I don't want to be restrained or restricted, it feels restrictive.*
		SM is not helpful/motivating if only focused on calories	Participant finds it unmotivating or negative to only focus on calories.	*If it's only telling me calories and how much I ate, then it's just kind of a downside, for myself.*
		SM is too time consuming/too much effort/too complicated	Participant feels it takes too much effort or time to SM.	*It's too complicated; I don't have time for that.*
		Tracking apps are inaccessible	Tracking apps are inaccessible.	*A lot of… families… don't have the money to buy an Apple Watch…so that they can get those apps to be tracking.*
		Lack of culturally relevant foods in tracking apps	Tracking apps do not include culturally relevant foods.	*[Those apps] don't have much of our food culture, like pinto beans. They only tend to have a certain type of food and culture.*

					It's not designed for us Latinas.
Facilitators					
	Educate	Provide education on how/why to track	Educate	Participant mentions something about education but does not give more specific information.	*But I think it would have to reeducate ourselves…We have to educate ourselves, cause otherwise we're going to keep falling in the same hole.*
			Educate on the benefits of SM	Participant wants to know more about why SM is helpful.	*Educating women on the importance and the benefits of [self-monitoring]? And not just seeing it as a negative.*
			Educate to help teach future generations	Participant wants to be able to teach future generations healthy habits.	*I think more education, so we can definitely start tracking and start breaking the cycle. And teaching our future generations.*
			Educate the whole family	Educate the participant's entire family rather than just the participant themselves.	*Education to the whole family, not just the mom. Not just the kids. It has to be the whole family.*
			Educate in steps	Provide education in small steps according to where the participant is.	*Start from level one, ABC… Not just giving you the full information at once because you're like, you're not going to get it"*
			Teach how to track	Teach participant how to track.	*Saying food is important for you and then this is how you can start logging your food.*
	Incorporate mental health content	Incorporate content that will help	Encourage self-compassion/ forgiveness	Encourage participant to be patient and	*I will write stuff down, but I'm going to also give myself some*

	participant improve their mental health		forgiving with themselves if they don't reach full adherence to SM.	*forgiveness and some grace and know that I'm going to try to make a better place within my little world.*
		Encourage mindfulness	Encourage participants to participate in mindfulness practice.	*You fix yourself when you can hear yourself. It's that you, we don't get to hear ourselves because we hear the noise of everybody else telling us how we should do things.*
		Emphasize the importance of prioritizing self	Emphasize that it's acceptable to prioritize themselves.	*There's those that thrive and excel, but usually they're focused a little bit more on self. And, they limit what comes into their life. And they're taking care of other pillars that can help them move forward.*
		Help them hold themselves accountable	Help women hold themselves accountable for tracking and reaching goals.	*Accountability for self...if we really want to make change, it comes from self.*
		Provide encouragement/ support	Encourage the participant to make changes.	*Obviously encouragement, that helps.*
Prioritize health rather than weight loss	Utilize SM as a way to improve health rather than lose weight	Emphasize nutrition over calories	Emphasize the nutritional/good aspects of food rather than just calories consumed.	*If we can get more education on what we're eating and what is it for, what's good for us and all that, that will motivate us more on tracking it…if we track and the application tells us… 'oh well these have these nutrients and this and that'...then I'm going to feel, oh,*

				this is good for my body.
		Emphasize something other than appearance or weight	Emphasize other participant qualities rather than bodily appearance.	*When you change for you, you'll be happy inside. And you'll be a better mother, a better person, and you'll like yourself more…like I say, I may have not lost the weight I would have liked to in this [previous wellness] class. But you know what? What I didn't lose in physical weight, I lost in weight up here [points to head]. Because I was like, I just. I'm fat. I'm this. I'm never going to do it… but you lose that weight in your mind, you feel better. "*
		Encourage gradual change	Encourage participants to make small changes over time.	*It's hard to have a lot of changes at one time. It has to be one little thing at a time.*
		Focus on tracking healthy foods	Track healthy foods, not unhealthy foods.	*Track the healthy food that you ate today, only, not the bad food, only the good things, and then maybe that would be an easier way.*
Provide multilevel programming	Provide support on multiple levels (individual, group, community, etc.)	Collaborate with community institutions	Work with community institutions to encourage health behaviors.	*Not only educating families, but also educating schools, hospitals, clinics so they can be on board and everybody can work together.*
		Make sure basic needs including mental health are being met	Participant wants basic needs met	*I feel that finding the meaning of a person's life. What is it make*

			before they worry about self monitoring.	*you happy and concentrate on those things, because if you aren't happy then you're going to do and have energy to do more things, like self-care.*
		Facilitate cohesive small groups	Encourage the development of relationships among women in small groups.	*Maybe having this kind of conversations more often, or a place where we can go and join women that wants to lose weight and we can talk and maybe we can do exercise together.*
		Individualize programs	Tailor program to participant's needs.	*Well, everybody has a different thing, you know, learning that I'm [participant X]. I'm not [participant Y]. So, participant Y's] system is not going to work.*
		One on one consultation	Meet with women individually.	*More one on one.*
		Include more relevant representation		*I think seeing more Hispanic, Latina women actually doing it, and having them as my role model.*
Reduce burden related to tracking	Reduce the amount of time or effort required to track	Improve customizability of food in tracking apps	Participant wants to see more women like her (Hispanic, overweight, etc.) in advertisements or discussions about SM (more diverse trainers,	*It would be nice if we had these little squares and you can just click on them… and then it will calculate how many calories you're eating and stuff.*

		success stories, etc.).	
	Reduce time burden	Reduce amount of time required for tracking.	*[Saying] this is how you can start logging your food. Even just two or three days a week.*
	Tracking apps	Participant says tracking app would facilitate monitoring.	*I needed [an app] for me to…lose the weight… I did great… when I was following that."*

SM = self-monitoring

Appendix K

Full list of themes, codes, definitions, and example quotations of self-efficacy barriers and facilitators to self-monitoring

Theme		Definition	Code	Code Definition	Example Quotation
Barriers					
	Feels helpless	Participant might feel unable to change their behavior	Feels hopeless	Participant does not feel like there's any hope for losing weight and therefore does not track.	*I don't believe I'm enough or I don't believe I can accomplish this. Because I am going to be the same, this, fat, for the rest of my life, and I'm like, like I think we don't see hope.*
			Feels outside of one's control	Participant feels like their weight/health is outside their control.	*It's because of everything outside of our world that it affects us versus recognizing we're the source of what happens to us.*
			Hard to change habits	Changing lifestyle habits is hard.	*It's just hard to change our habits.*
			Negative self-talk leads to avoidance of tracking	Participant talks negatively to herself which makes it hard to track.	*If you're having a day where you don't believe in yourself, you- you've already failed. If the thought is there, you've already failed for the day.*
Facilitators	Avoid terms with negative connotations	Use neutral language that does not assign value to food or weight	Avoid terms with negative connotations	Use neutral language that does not assign value to food or weight.	*When you [say] this is healthy and this is bad, automatically clicks in their head and... they feel bad, and they, they don't do the change. So, I think it's also wording, changing the words and not putting that bad connotation, saying oh, it's bad.*
	Build motivation by identifying consequences	Help participant build motivation for tracking by	Build motivation by identifying personal	Help motivate by identifying how making lifestyle modifications	*Find those reasons why you want to do this, why you want to be healthy… finding that important thing in your life that is going to benefit*

	identifying both positive and negative consequences	values or benefit	will benefit the participant.	*from doing these healthy things.*
		Give real life examples of dangerous consequences of not making lifestyle changes	Give participants negative examples of consequences of not changing their lifestyle.	*If we see a person that is overweight and… is amputating both legs. And they would say, yeah, unfortunately, this person didn't want to stop eating 20 tortillas a day and eating a liter of coke a day. And then if we don't put that in perspective, we're never going to make that click in our head. And I think it's like giving examples of real life.*
Provide individualized support	Provide support that is tailored to each participant's needs	Offer mental health support	help participants with mental health by offering mental health support.	*…in that case you need some kind of professional help? Because when you don't believe in yourself, then that means that there's something going on in your mind.*
		Spend more time in order to understand client	Spend more time getting to know the participant in order to understand their situation.	*If you spend that extra minute, that makes a huge difference... if I spend an extra time with my patients, I get better results. They open up and I kind of have an idea of like OK this- what's going on? Well, this is the direction that I have to go with this patient to help…*

Appendix L

Full list of themes, codes, definitions, and example quotations of body image barriers and facilitators to reaching diet and exercise goals.

Theme		Definition	Code	Code Definition	Example Quotation
Barriers					
	Comorbid mental health issues	A comorbid mental health condition exacerbates the detrimental effects of body dissatisfaction	Comorbid mental health issues	A comorbid mental health problem prevents participant from reaching goals.	*I feel the mental health… I think it's the key. Because we have problems with trauma and we never deal with that first.*
			Cultural attitudes about mental health	Hispanic/Latine culture does not acknowledge mental health which prevents participant from seeking mental health care.	*That's cultural, right? Like we don't, culturally- Hispanic, Latinos don't believe in depression and anxiety?*
			Low self-efficacy	Participant does not believe in her ability to lose weight.	*I think that's why we tend to block ourselves. And say 'oh no… I'm not going to lose weight because I'm never going to accomplish that because I'm going to keep eating whatever I'm eating*
			Low self- worth interferes with diet and exercise	Participant does not value her body enough to take care of it.	*We dislike our bodies because we don't love ourselves, and if we don't love ourselves, how are we going to put exercise and, and good diet into, you know, into an action … How are we going to get that motivation if we don't even love our bodies first.*

Lack of progress decreases motivation	Poor body image and a lack of progress make it difficult for the participant to maintain motivation for behavioral change	Gaining weight/lack of progress decreases motivation	Motivation decreases with weight gain.	*As you gain more weight, you have less motivation.*
		Hard to change habits	Changing lifestyle habits is hard.	*I want to get in a habit because I think it has to become a way of living.*
Negative self-talk	Body dissatisfaction is related to negative self-talk which makes it hard to reach goals	Discouraged by comparison with a younger self	Comparing self with a younger self makes them feel badly about their body.	*I see myself… I'm not getting any younger. I cannot eat, I mean, I can eat a lot, but I'm gaining that weight, you know, before I can eat everything and still skinny.*
		Negative self-talk leads to avoidance of PA	Participant talks negatively to herself which makes it hard to exercise.	*It's our self-talk… if it's negative then we're feeding that and that is creeping into like, oh, I can't walk… I'm just going to stay home. It's too cold… So disliking your body eliminates you from diet and exercise goal because… it's our own self-talk that is limiting us from getting up. How am I going to feel confident to go exercise if my self-talk is negative?*
		Social comparisons of body functionality	Participant does not want to exercise after comparing her body functionality to others'.	*I've disliked my body for many years. And it has kept me enclosed in my apartment when I was a little girl, you know? And I didn't*

					want to go play because when I run, or I can't do a cartwheel because of the weight issue and then seeing my friends that they were just so agile and like they would just do it like nothing. And this whole level of confidence.
			Feels hopeless	Participant does not feel like there is any hope for losing weight and therefore does not try.	*So growing up like that [i.e., with poor body image], it just really, it makes you negative about your whole like how you look. You know, you're never really, I was never really satisfied…*
			Familism	Participant places family needs over her own which makes it difficult to focus on improving body image.	*We need to turn that energy inward and we've never been brought up like that because it's always everybody else and we're at the back of the line. Porque tienes familia [because you have a family], and you have your... significant other. And your mom and your dad and your abuelitos [grandparents]. And it, just, you're the last one.*
Facilitators					
	Educate	Teach participant why and how to make health-promoting lifestyle changes	Educate	Participant mentions something about education but does	*Having places where to go, so they train you how to exercise, how to do that.*

			not give more specific information.	
		Educate - benefits of exercise	Participant wants to know more about why diet/exercise/weight-loss is helpful.	*Try to encourage the person that well, if you lose the weight this is going to benefit you in other ways like as far as your health is concerned. And of course, you'll look better.*
		Give real life examples of dangerous consequences of not making lifestyle changes	Give participants negative examples of consequences of not changing their lifestyle.	*Letting them know that 'well, it would be healthier for you if you're at a healthy weight. Because otherwise you have high blood pressure, you have high blood sugar, you have high cholesterol, you're diabetic. You could have a stroke, have a heart attack because of your weight.'*
Incorporate mental health content	Incorporate content that will help participant improve their mental health	Build assertiveness to set boundaries	Participant wants to learn how to set boundaries regarding outside pressure to fit appearance ideal.	*I want to learn skills like psychologically building my... confidence to build those boundaries with my mom to say, you know what, mom? OK, you might feel that way, but I don't feel that way.*
		Encourage cognitive flexibility of perceived criticism	Encourage participants to think differently about perceived appearance criticism in order to help them respond more adaptively.	*I have to rewrite that script and I know that my mom, my mom is- just she wants me to be healthy. Ultimately is what she wants. And she's trying to be courteous in the way she tells me.*

Encourage self-care	Encourage participants to engage in regular self-care to reduce stress.	*Do always do one thing that will make your stress go out because it's so easy for you to get stressed, but then how am I reflecting it or taking it out of my life? With self-care, I think that is good.*
Encourage mindfulness	Encourage participants to participate in mindfulness practice.	*I've been listening to a lot of mindfulness*
Find non-food rewards	Help participant identify ways to reward herself other than with food.	*If you're sad or if you're happy, you're going to celebrate with food no matter what, you know? And, and that's one of the things that we should be able to change…whenever I feel happy, what am I going to do if it's, it's not going to be related to food... It could be related to something else… like an activity or something that, that it's going to give you a reward, right?*
Help them hold themselves accountable	Help women hold themselves accountable for tracking and reaching goals.	*It will- would have to be accountable to someone… next time you go to the meeting. Accountability, I guess, to someone.*
Provide encouragement/ support	Encourage the participant to make changes.	*Just try to encourage them.*

Increase positive body image	Help participant increase aspects of positive body image	Discourage social comparisons	Help people realize they do not need to compare themselves to others.	*To realize and to learn that I'm [participant X]. I'm not [participant Y]… You know, I'm, I don't have to compare myself with others.*
		Don't focus on weight	Participant would rather focus on something other than weight when tracking.	*If we don't concentrate on, on weight because weight is a very, a very negative connotation. When-when people talk-tells me about my weight… I get hurt.*
		Emphasize something other than appearance	Emphasize other participant qualities rather than bodily appearance.	*Or maybe not put so much of an emphasis on bodies!*
		Promote body acceptance	Promote body acceptance of self and others.	*We have to accept each other. It doesn't matter how, but you're beautiful. Just because you're a human being.*
		Teach media literacy skills	Teach media literacy skills to help alleviate some of the appearance pressures.	*I want to learn skills like psychologically building my confidence to set boundaries, boundaries with social media.*
Provide multi-level programming	Provide support on multiple levels (individual, group, community, etc.)	Provide long term, consistent mental health care	Provide long term mental health care.	*If you can have providers who are consistent, if a psychologist is always changing on me or I have a new clinician, that's not going to help me because it defeats the whole purpose, I'm set back and now I need to start over and*

		tell my story all over again.
Offer mental health support	Help participants with mental health by offering mental health support.	*I think you just have to concentrate more on mental health.*
Make sure basic needs including mental health are being met	Participant wants basic needs met before they worry about SM.	*I feel that wherever you go, people should focus on do you have food? Do you have a place? Or transportation, anything that… you can never educate our community if they're worried about 'where am I going to eat or where am I going to live in the next month or so because I don't have money to pay my rent.'*
Individualize programs	Tailor program to participant's needs.	*You need learn what exercise is good for for… for example, my problem is my [gestures to stomach]…*
Help find motivation by facilitating social support	Help participant find the motivation to engage in health behaviors.	*I have to have someone who motivates, holds my hand.*
Facilitate cohesive small groups	Encourage the development of relationships among women in small groups.	*I think support groups like this helps. You know, talking about it. Because I know like I don't really talk about it with like my husband.*

SM = self-monitoring.

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