WOMEN'S PERCEIVED SUPPORT COMPARED WITH WEIGHT LOSS BEHAVIOR CHANGES (DIET AND ACTIVITY)

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In
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by

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San Francisco, California

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CERTIFICATION OF APPROVAL

I certify that I have read *Women's Perceived Support Compared with Weight Loss Behavior Changes (Diet and Activity)* by Alicia Connor, and that in my opinion this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the degree: Master of Arts in Family and Consumer Sciences at San Francisco State University.

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2015

The purpose of this study was to compare San Francisco Bay Area, California women's perceived social support for weight loss behavior changes. Current United States obesity prevalence remains high (34.9%) for all adults, with females of all ethnicities at higher risk (36.5%). Four focus groups were conducted at San Francisco State University between July and September of 2014 to identify themes related to weight loss and perceived support with women (n=15) who had lost or wanted to lose weight. In addition, participants responded to a behavior change questionnaire in a Likert scale based on the Transtheoretical Model stages of change. Seventy three percent of all focus group participants identified "individual" for perceived support (18 tallied responses). Many other themes were identified, but less prevalent overall. Understanding how women seek, find, and perceive support in their endeavors to lose weight is important for registered dietitians to recognize and provide effective individual guidance.

I certify that the abstract is a correct representation of the content of this thesis.

Chair, Thesis Committee

5/13/15
Date

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I would like to dedicate this publication to my mother, Brenda Marie Lucas, for teaching me what good food was and introducing me to healthy foods at a young age.

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CHAPTER I. Introduction

The prevalence of being overweight or obese within the United States adult population, on average, is currently 69%, with 66.5% of all women and 71.6% of all men being overweight or obese (Ogden, Carroll, Kit, & Flegal, 2014). A strong correlation exists between being overweight and obese and having an increased risk for chronic disease such as cardiovascular disease and Type II Diabetes (Lavie, Milani, & Ventura, 2009; Ogden et al., 2014). There are many aspects of life that may impact weight change across one's life-span. When an individual desires weight loss, it is recommended to begin by making simple modifications, also known as behavior changes, to the existing lifestyle including improvements to diet and increasing physical activity to support this goal. Another research-supported tool for weight loss is social support experienced by the individual seeking weight loss or maintenance. Current research about weight loss shows that social support may be provided by the individual (self-support), family, friends, at work, online, in-person support (e.g., support groups), or from the community (Carson et al., 2013; Hwang et al., 2009; Kayman, Bruvold, & Stern, 1990; Mitchell, Dickenson, Kemp, & Tsai, 2011; Moisio & Beruchashvili, 2010). Researchers have looked into what types of support are available and utilized by the weight loss seeker, including commercial and non-profit organizations offering in-person support groups, online support by health promoting websites and social media webpages.

Due to the high prevalence of the overweight and obese population in the United States, particularly in women, it is of interest to understand the many possible approaches

to weight loss. Additionally, it is important to understand women's age, ethnic and regional subgroups for their perceived social support, the supports they implement, and whether these supports are effective for weight maintenance. Interestingly, a gap in the research exists in investigations examining the relationship between the types of social support and the behavior changes women are making for weight loss. As information technology increases in the 21st Century, healthcare providers will need to understand how they can better use the myriad of support options offered by this technology to accompany the treatment of overweight and obese patients.

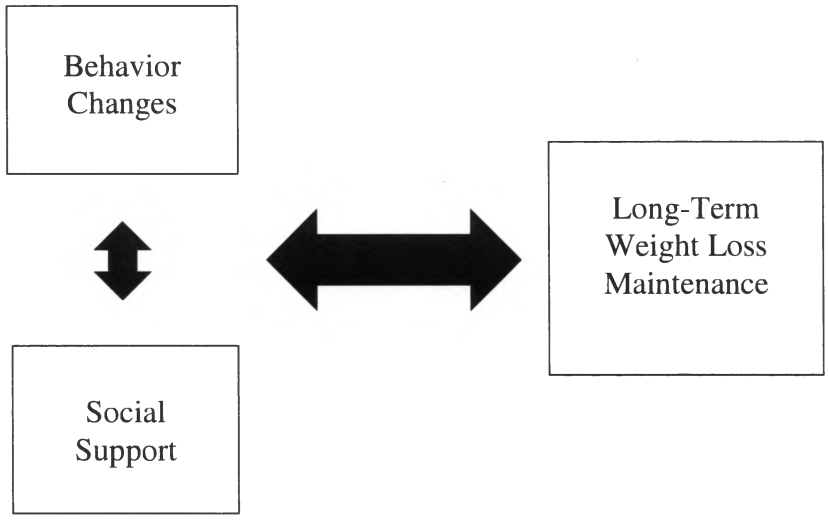
Statement of Purpose

The purpose of this study was to investigate the behavior changes San Francisco Bay Area women are making to achieve identified weight change goals and the support systems contributing to these goals.

Certain behavior changes are noted to aid in weight loss maintenance. Some changes may be more easily facilitated by increased social support in one's environment. These two factors influence each other, and also influence long-term weight loss maintenance (Figure 1).

Figure 1.

Conceptual Framework: Behavior Changes and Social Support for Weight Loss



Hypothesis

Bay Area women who are currently making behavior changes toward weight loss perceive greater social support than women who are not making behavior changes toward desired weight loss.

Definitions of Terms

Overweight is defined as having a body mass index of 25-29.9 kg/m^2.

Obese is defined as having a body mass index greater than 30 kg/m^2.

Body mass index (BMI) is a measurement of one's weight calculated using height and weight, dividing kilograms by meters squared (kg/m^2).

Behavior modification is defined as behavior changes made to elicit desired results either positive or negative.

Autonomous support is support that is a group, in-person or online, which exists to meet the needs of the individual; members of the group have similar goals (Gorin, Powers, Koestner, Wing, & Raynor, 2014).

Perceived support is defined as support one experiences or feels.

Desired support is defined as support that one wants or wishes they had.

Social support is defined as support from people, either in-person, online, groups, at home, at work, or in one's natural environment.

Transtheoretical Model, also called the Stages of Change Model, is defined as a model to determine a person's readiness to change behaviors. The stages include: Precontemplation, Contemplation, Preparation, Action, and Maintenance (Bauer, Liou, & Sokolik, 2012).

Weight maintenance is defined as a less than 3% change in body weight.

CHAPTER II. Review of Literature

According to the National Health and Nutrition Examination Survey (NHANES) the prevalence of obesity has steadily increased since the 1960s and has only recently began to plateau (Ogden et al., 2014). Recent statistics state that 69% of adults are overweight or obese. While men (71.6%) are more likely than women (66.5%) to be overweight or obese, women (36.5%) are more likely to be obese than men (33.7%). Weight differences also exist between adult ethnic groups. Non-Hispanic black women (82.1%) are heavier than non-Hispanic black men (69.1%) and Hispanic men (77.9%) are heavier than Hispanic women (76.2%) (Ogden et al., 2014).

Even though there are only slight differences between men and women (33.7% and 36.5%, respectively) and ethnic groups in the overweight or obese status, there are more substantial differences between which gender seeks out weight loss guidance. As noted by registered dietitians, it is more likely for women to seek out help for weight loss on their own than men (N. Bennett, personal communication, September 19, 2014; Matz, Foster, Faith, & Wadden, 2002; M. Villacorta, personal communication, February 13, 2015); thus it is of great interest to understand how women in particular seek weight loss support. This understanding will contribute to the best evidence-based clinical practice of approaches for weight loss. The following review of literature attempts to identify crucial topics related to weight loss, and how women seek and interpret support for their weight loss.

Weight Control

Control of weight or weight maintenance is defined as the balance of energy intake with energy expenditure (Gropper & Smith, 2013). Multiple social and biological factors contribute to the complexity of weight management: financial status, food access, hormonal changes during aging, percent body fat, metabolic issues related to excess adipose tissue, and individual neurochemistry (Harrington, Martin, Ravussin, & Katzmarzyk, 2013; Lavie et al., 2009). Understanding these factors is important for understanding effective weight loss support.

Along with attempting to understand factors influencing weight, health professionals categorize weight loss into two major categories: intentional or unintentional. Intentional weight loss is when weight loss is desired by the individual and/or health professional. A health care plan (personal or professional) promotes diet and/or activity modifications that promote weight loss. There are multiple reasons for intentional weight loss care plans related to health improvement. Contrastingly, intentional weight loss can also be problematic, for example, in the case of eating disorders such as anorexia or bulimia (Nelms, Sucher, Lacey, & Roth, 2013).

Unintentional weight loss is defined as energy expenditure surpassing energy intake due to unintended circumstances, such as a cancer treatment, an elder living alone unable to grocery shop or cook, or someone living in a food-insecure environment where there is not enough food to meet one's needs (Nelms et al., 2013). The importance of

identifying intentional or unintentional weight loss helps determine accurate care and treatment plans for patients.

A large component of weight change is diet. The Merriam-Webster dictionary defines diet as "food and drink regularly provided or consumed, habitual nourishment, the kind and amount of food prescribed for a person or animal for a special reason, a regimen of eating and drinking sparingly so as to reduce one's weight" (Merriam-Webster, 2014). Many diet plans exist claiming weight loss success including healthcare-directed, commercial, non-profit, and online plans. An example of a diet plan claiming weight loss is a restriction diet, which is defined as a low-calorie diet limiting the calories consumed each day to be less than recommended to encourage weight loss. Restriction diets often provide short-term weight loss results only, and rely on the will power of the person following the diet on their own, typically without supervision (Johns, Hartmann-Boyce, Jebb, Aveyard, & Behavioural Weight Management Review Group, 2014). A second example of a diet plan is a medically supported low-calorie diet such as Medifast ("Medifast," 2014). This diet is monitored by healthcare professionals, is often expensive (due to food provisions) and may have limited short-term results because previous lifestyle habits resume upon ending the diet due to the difficulty in maintaining low-calorie intake (<1000 calories) (Li et al., 2014).

Commercial and non-profit diet plans are less individualized. These programs provide weight loss counseling by phone, Internet or in-person support to members; examples are Jenny Craig, Weight Watchers™, Nutrisystem, Take Off Pounds Sensibly,

Inc., and Overeaters Anonymous. Such programs typically provide short term weight loss strategies. Similarly to the individual restrictive or medically supported low-calorie diet plans, commercial and non-profit plans lack long-term weight loss maintenance (Donnelly et al., 2010; Wing et al., 2011). Generally, long-term results do not occur because the goal is to decrease energy intake without making modifications to one's existing everyday lifestyle habits. Short-term weight loss often occurs followed by weight regain (Tsai & Wadden, 2005). Research has identified that long-term weight loss maintenance decreases chronic disease risk factors, but maintenance is often hard to achieve (Donnelly et al., 2010; "The National Weight Control Registry," n.d; Wing et al., 2011).

Clinically Significant Weight Loss

Additional classifications for weight loss and gain exist (National Heart, Lung, and Blood Institute Obesity Education Initiative, 2000; Wing & Phelan, 2005). Clinically significant weight loss (5 to 10% of body weight) positively improves the health of the individual by reducing risk factors (blood pressure, blood glucose, and cholesterol) for chronic diseases such as cardiovascular disease, Type II Diabetes, and hypertension (Danielsen, Svendsen, Maehlum, & Sundgot-Borgen, 2013; Donnelly et al., 2010; Ogden et al., 2014; Simons-Morton et al, 2014; Wing et al., 2011). Notable are the positive changes in health risk which have been identified with even 2-3% of body weight loss; therefore, understanding how much weight loss is needed for health improvements is important for health professionals (Donnelly et al., 2010).

Weight Loss Support

The answer to what is the "best" and "most sustainable" approach to weight loss and the support that promotes this does not exist. Many types of weight loss solutions do exist, and one particular program has yet to solve the obesity epidemic, yet many people chronically search for the ideal weight loss program and support. The general categories of weight loss support that have been studied are clinical (structured and often in healthcare facilities) and social (commercially based, in-person or online) support. Understanding which type is most successful for women is important for future recommendations.

Clinical support. Large clinical weight loss trials have resulted in successful outcomes (Carson et al., 2013; Wing et al., 2011; Womble et al., 2004). Clinically structured weight loss programs often provide detailed guidance, mentorship and sometimes meals in addition to diet education. An example of such research is Look Action for Health in Diabetes (Look AHEAD). Look Ahead is a randomized control trial (n=5145) studying both men and women across the United States for over 13.5 years after a one-year weight loss intervention. In this study, group one, the clinically controlled group, was assigned to lose 10% body weight accompanied with a structured behavior weight control plan (meeting weekly for the first six months and then three times per month for the remaining four months) focusing on decreasing calorie intake and increasing physical activity. Group two, the social support focused group, was not assigned to a specific weight loss goal and only met three times during the study period

(one year) for social support, such as group discussion about diet and activity. Post-intervention participants from both groups reported weight loss, and long-term follow-up identified a maintained loss of 2-5% body weight, improved systolic blood pressure (odds ratio 1.24 [95% CI 1.02-1.50]), glucose (1.75 [1.40-2.19]), hemoglobin A1C (1.80 ([1.44-2.24]), and triglycerides (1.46 [1.14-1.87]). Participants who lost 5-10% and 10-15% respectively had further decreased cardiovascular disease risk ($p<0.0001$) (Wing et al., 2011). Interestingly, both group one and group two resulted in weight loss (2% or more) with no significant differences observed between groups, identifying that social support may be as effective in small, but health-promoting, reductions in weight loss in contrast to clinical approaches (Wing et al., 2011).

Social support. Understanding non-clinical approaches to weight loss is important. Clinical weight loss programs come with a price tag and barriers to maintenance due to the often strict nature of programs. As noted, women are more often inclined to seek weight loss programs and support; therefore, understanding the best non-clinical, effective support programs is essential for health professional recommendations.

Researchers interested in understanding weight loss maintenance from the National Weight Control Registry (NWCR) have followed more than 10,000 participants over the past few decades. The data with the NWCR is participant self-reported information about weight loss, sustained weight maintenance and strategies that have supported these changes. On average, NWCR participants lost 66 pounds and maintained this loss for 5.5 years ("The National Weight Control Registry," n.d.; Wing & Phelan,

2005). Key maintenance strategies identified were high levels of physical activity (on average 1 hour / day), self-monitoring of weight, eating breakfast regularly, eating during a regular eating pattern both during the week and during weekend days, and eating a low calorie/ low-fat diet specific to the individual (Wing & Phelan, 2005). This varied list of strategies for successful weight loss highlights the fact that no one method is best, thus more research is needed to identify and evaluate best strategies and support systems for weight loss.

Structural and Functional Social Support

Within social support there are two subcategories: structural and functional (Verheijden, Bakx, van Weel, Koelen, & van Staveren, 2005). These authors describe structural social support as the actual people in one's natural environment, such as their friends, co-workers, family, and community groups. Verheijden et al. then describe functional support as one's perceived social support. In research, the term "perceived" support is not clearly defined. For the purposes of this thesis, "perceived" support is defined as support one believes is helping them meet their weight loss goals (Verheijden et al., 2005). In weight loss intervention studies, researchers only temporarily provide structural support which may be later evaluated for participant benefit. However, it is the functional (perceived) support that may benefit participants more, due to the relationship between environment and internal individual motivation (Verheijden et al., 2005).

To better understand the relationship between weight-related behavior changes and social support, a weight loss study interviewed three groups of women (n=108):

weight loss maintainers, weight loss relapsers (regained weight), and women who were not overweight (control group) (Kayman, Bruvold, & Stern, 1990). The women answered questions about their weight loss or maintenance strategies as well as provided information about factors they perceived to be supportive, specifically social support. In this study, similar responses were noted about maintenance as identified in the NWCR, such as regular exercise and healthy behavior adoption. People who reported relapse of weight gain identified use of appetite suppressants and restricted eating plans. Interestingly, women who maintained weight loss were more likely to seek out help from family, friends, and professionals in comparison to those who relapsed, who were less likely to seek out support. The study results indicated the maintainers modified their existing lifestyle habits while perceiving greater functional social support. The comparison of these study groups presents evidence that behavior changes and perceived social support may be more valuable than restrictive eating and drug based approaches to weight loss (Kayman et al., 1990). While behavior changes have been shown to aid in weight loss, it is important to examine other types of social support, such as in-person and Internet support, and how they may be helpful for those seeking weight loss guidance.

In-person support includes family, roommates, friends, co-workers, autonomy groups, and in-person support groups. Additional forms of support for weight loss are Internet-based. Internet social support includes paid weight loss programs, free weight loss websites, forums, blogs, and social media. In-person and Internet support groups can also be autonomous. An autonomous support group exists to meet the needs of the

individual. The group members have similar goals, in this case, the common goal of weight loss. Autonomous support is understood to be beneficial for weight loss (Gorin et al., 2014).

In-person support for weight loss. In-person support groups are hosted by commercial and non-profit organizations. These support groups bring people together with similar interests to share their experiences related to weight loss, and by these shared experiences the group members perceive social support. These in-person groups are thought to provide accountability through face-to-face meetings. Members weigh-in at each meeting and share experiences related to weight loss and management. These programs stress behavior modification through diet and exercise and provide in-person as well as online options for support. Examples include Overeaters Anonymous (OA), Take Off Pounds Sensibly (TOPS Club, Inc.), and Weight Watchers™.

Overeaters Anonymous, Inc. is a non-profit organization with no dues or fees from members. Members worldwide find meetings to support cessation of compulsive eating. Members can find specific meetings that parallel their experiences of compulsive eating for underweight, normal weight, overweight, obese, and morbidly obese (Overeaters Anonymous, Inc. 2014). According to the 2010 Membership Survey Report, 69% of members lost weight and 51% are maintaining a healthy weight. Membership is 87% female ("2010 Membership Survey Report," 2010). Even though Overeaters Anonymous has a large membership worldwide the Twelve-Step program is not for

everyone. Other non-profit organizations are available to meet individual needs for support.

Take Off Pounds Sensibly (TOPS) hosts support group meetings for members who want to lose weight or maintain weight loss, while Overeaters Anonymous is a Twelve-Step program where the only requirement for membership is the desire to discontinue eating compulsively. Membership includes the spectrum of disordered eating habits ("Media/Professionals," 2014). In contrast, TOPS chapters are led by peer-elected, former member volunteers. The typical TOPS membership consists of more than 95% women (Mitchell et al., 2011). Compared to commercial support group fees, the annual fees at TOPS are affordable to anyone including those with low socioeconomic status (Mitchell et al., 2011). A retrospective cohort analysis of data from TOPS participants and their annual membership renewal showed that those who lose 5.9-6.8% body weight the first year were likely to renew their membership and lose a similar amount of weight the second year (Mitchell et al., 2011).

Another in-person weight loss support group is Weight Watchers™. Weight Watchers™ is a commercial weight loss program and includes higher membership fees than TOPS. Weight Watchers™ facilitators are employees who were former support group members. In 2010, a consumer research study investigated weight loss programs, focusing mostly on Weight Watchers™. The study assessed participant-reported benefits from going to Weight Watchers™ support group meetings. Participants unloaded confessions, heard testimonials, and participated in accountability through being part of a

group (Moisio & Beruchashvili, 2010). Members explained that having food issues is a long-term problem and attending support group meetings after achieving their weight goal is imperative to weight maintenance (Moisio & Beruchashvili, 2010).

An additional study was conducted in 2003 comparing the results of Weight Watchers™ to self-directed weight loss programs (Henshka et al., 2003). The results indicated participants who were part of the commercial weight loss program, Weight Watchers™, lost more weight than the self-directed dieters. Weight loss at one year was 4.3 kg for the commercial group versus 1.3 kg for the self-directed group ($p<0.001$). At 2 years weight loss was 2.9 kg for the commercial group and 0.2 kg for the self-directed group ($p<0.001$) (Henshka et al., 2003).

In 2005, a systematic review of multiple weight loss programs included commercial, medically supported, and self-directed programs. The results of the study indicated that the commercial program, Weight Watchers™, presented with the highest weight loss (5.3% of initial weight) over one year compared to self-help programs that resulted in minimal weight loss. Participants regularly attended meetings and maintained a loss of 3.2% of initial weight at two years (Tsai & Wadden, 2005). A potential reason for these successful scenarios is that Weight Watchers™ support groups add the in-person social support element that the other self-directed programs lacked (Tsai & Wadden, 2005).

The influence of autonomous social support affects group participation (Carson et al., 2013). Carson et al. focused on social influence within an on-going structured weight

loss program. The results of the study revealed that participants who had a social contact in the study, by knowing someone in the study previously or concurrently, lost more weight (5.9 kg versus 3.7 kg, p=0.04) than participants without a social contact (Carson et al., 2013). Researchers did not clearly define a social contact and it is suggested that participants knew each other for the reason that a recruitment method was word of mouth (Carson et al., 2013).

Internet support for weight loss. Internet support is provided by websites with anonymous or non-anonymous forums; both may include health and nutrition information. These types of support are often free and open to the public. Examples of Internet support include social networking and programs with membership fees (Womble et al., 2004). Internet support websites have been developed for families to engage in healthy activities together and for anyone to find diet, nutrition, exercise and fitness information (Baghaei et al., 2011). A few examples of websites include SparkPeople.com, Loseit.com, Myfitnesspal.com, Livestrong.com, and SuperTracker.gov. Due to the increased use and convenience of Internet access and hand-held devices, Internet support will likely play an important role in providing social support to people wanting to change their weight status. To fully utilize the potential benefit of this type of support, more research is needed to identify how to personalize.

Self-directed weight loss tools include print resources, applications, and mobile devices. A systematic review compared Internet, mobile devices, print media, as well as combinations of these tools for weight loss. The study concluded that all of these support

weight loss, but it is not clear exactly how they provide support (Tang, Abraham, Greaves, & Yates, 2014). It is noted that these tools may be most effective when used in combination or with other methods. Further research is necessary for those developing programs and self-directed weight loss tools to understand the effectiveness of Internet mobile devices and print material alone and their influence on weight loss or maintenance (Tang et al., 2014). For health care professionals to recommend resources to patients and clients, it is important for the tools and resources studied to meet individuals' needs.

To understand the perceived benefits of Internet social support, the experiences of members of SparkPeople.com, a large Internet-based weight management community, have been studied. Participants were primarily Caucasian women, mean age of 37.3 years-old and self-reported income of middle class. Researchers hypothesized the social support members experienced while utilizing the website would be similar to in-person social support. Themes of support experienced by members were collected through study questionnaires and interviews (Hwang et al., 2009). The information collected was about sharing and advice, encouragement and motivation, and mutual experiences of participants. Members experienced shared testimonials, encouragement and motivation, recognition of success, accountability, individual and team competition, and humor. Characteristics of interactions members valued included anonymity and non-judgmental, convenient, supportive, and empathetic interactions (Hwang et al., 2009). Members utilized forums, friend feeds, blogs, challenge central, and a variety of other activities and resources available on the Spark People website. Members of SparkPeople.com

benefited from social support for weight loss and support to cope with being overweight while online only (Hwang et al., 2009). This study illustrates that social support through an interactive website can be a valuable tool for weight loss and may be described as similar to in-person support which matches today's computer focused society (Hwang et al., 2009).

Within the topic of Internet support is the area of social networking. In a six-month, randomized trial comparing two study groups (n=96), group one received weekly podcasts and group two received podcasts plus mobile applications (Turner-McGrievy & Tate, 2013). Researchers were able to monitor the social support reciprocation in social networking forums and identify themes of support versus perceived support. The weekly podcasts provided diet and activity information to both groups. Participants in group two were required to use a diet and physical activity tracking application, as well as Twitter™, a social networking website. A weight loss counselor posted on Twitter™ twice daily to provide additional support. Participants were to check their Twitter™ accounts daily to receive information from the counselor and to post to other participants (Turner-McGrievy & Tate, 2013). Though no differences in weight loss occurred between the two study groups, the podcast plus application group (n=47) exhibited interesting changes. This group's Twitter™ activity was analyzed and it was found that increased postings positively correlated to increased weight loss at six months. Specifically it was found that with each ten Twitter™ postings there was an approximate 0.5% weight loss ($p<0.001$) (Turner-McGrievy & Tate, 2013). The researchers concluded their findings

with recommending further research to determine who would benefit most from online social support. Today, communicating with hand-held devices is commonplace and to fully utilize the potential social support of hand-held technology research could provide more insight into how Tweets™ can motivate people with a weight goal.

Summary

The literature reviewed identifies the potential importance of social support as a tool for long-term weight loss maintenance. Strong evidence supports the recommendation of structural support (in one's natural environment) and functional (perceived) support for weight loss. More research is necessary to investigate what specific types of social support are most effective and the types of behavior changes these individuals are making for weight loss maintenance.

Since women are more likely to seek out support for weight loss it is important for health care providers to be able to have resources available to them to make appropriate recommendations that meet the needs of the individual. There is a gap in the research in terms of which types of in-person or Internet support are more effective individually or in combination, specifically for women. The purpose of this thesis is to investigate what types of social support San Francisco Bay Area women use to meet their weight loss goals.

CHAPTER III. Methodology

The Office of Research and Sponsored Programs – Human and Animal Protections of San Francisco State University, reviewed and approved the protocol of this study on April 29, 2014; subsequent modifications were approved on June 20, and July 23, 2014. The protocol for this study was exempt from regulatory oversight and further review was not required by the Institutional Review Board (IRB) under the following code: 45 CFR 46.101 (b) (2).

Study Design

In 2014, an observational study utilizing a questionnaire and focus groups was conducted to explore San Francisco Bay Area women's perceptions of social support compared with behavior changes for weight loss or maintenance.

Sample Size

The sample size was 15 female participants total in four different focus groups that were completed between July 2014 and September 2014.

Eligibility

Participant eligibility included residence in the San Francisco Bay Area in California and women who had recently lost weight or who were overweight with a desire to lose weight between the ages of 25-60 years old.

Recruitment

Participants were recruited through the posting of flyers on community and department communication boards at San Francisco State University and on community

boards in the city of San Francisco, and through advertisements online on Craigslist.org in the San Francisco Bay Area. Other recruitment methods included messaging and sharing through a Facebook.com account created for this research study. Interested participants emailed the researcher which was followed up with an email determining eligibility (Appendix 1A, Appendix 1B, Appendix 2, Appendix 3).

Enrollment

Once the participant responded with eligibility, directions to San Francisco State University as well as the date and time of the focus group were emailed. Reminder emails and telephone texts were sent one to three days before each focus group session. No compensation to participate was offered; however, upon completion of the focus group each participant received a gift card for $20 to Trader Joe's grocery store. Study participants signed an informed consent, thereby agreeing to join the study which included completion of a questionnaire and a focus group discussion (Appendix 4, Appendix 5, Appendix 6) (Nagle & Williams, n.d.). After signing the informed consent, participants orally consented to being audio-recorded for the focus group discussion.

Instruments

A two-page questionnaire was developed from an existing validated questionnaire to determine eating and activity behavior changes currently made by participants (Foley, 2009). For this study, 28 eating and activity behavior questions were selected from the original 42 question validated behavior assessment tool and were called the Behavior Change Questionnaire (Appendix 5) (Foley, 2009).

A select number of questions were used from the original questionnaire to keep the questionnaire brief and to maintain relevancy. The original questionnaire included a total of 42 questions with questions about reducing and restricting fat in one's diet based on recommendations from the Dietary Guidelines for Americans 2005. However, the Dietary Guidelines for Americans 2010 does not emphasize this restriction as much as in previous years (Dietary Guidelines for Americans 2005, 2010). Participants check-marked one out of five different options for each question which matched the stages of change within the Transtheoretical Model: Precontemplation (This has not crossed my mind), Contemplation (I should be doing this, but do not), Preparation (I am ready to do this), Action (I do this, but not regularly), and Maintenance (I always do this) (Bauer et al., 2012; Foley, 2009). This particular behavior model analyzes a readiness for change to act on a new behavior, and provides strategies for the individual to move through the stages of change.

In addition to the behavioral questions, the questionnaire asked for ethnicity and participant's self-reported height and weight as well as their goal weight. The researcher then calculated body mass index (BMI). For the purposes of confidentiality in addition to matching data from the questionnaire to the participant's discussion points in the focus group discussion, identification numbers were assigned to participants and their questionnaires. Identification numbers included a 100, 200, 300, and 400 series, representing four different focus groups.

Focus Groups

The study included four focus groups. Participants (n=15) varied from 3-5 in each focus group. After participants filled out the behavior questionnaire, the focus group discussion began with each participant consenting to the audio recording. The focus group discussions were audio recorded using Zoom H2 and the Olympus WS-6005. The researcher offered an array of healthy snacks and beverages.

Open ended focus group questions were developed by the researcher with the intention to inspire a group discussion about weight loss and social support. To better understand the types of weight loss support participants perceived to be helpful in their daily lives in reaching their weight loss goals, participants were asked five questions. These questions, outlined in the focus group script (Appendix 6) (Liamputtong, 2012; Nagle & Williams, n.d.), were read aloud by the researcher and projected in Microsoft Power Point onto a large screen for participants to read. The questions were the following: 1) When you think of the words "support" for weight loss what comes to mind? 2) When you think of the words "social support" for weight loss, what comes to mind? 3) Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal? 4) What types of support do you want or need to achieve or to maintain your goal? 5) Explain how the support that you have experienced has influenced your health (Appendix 6).

Analysis

The 28 questionnaire questions were grouped into four categories and then tested for internal consistency using Cronbach's alpha in Microsoft Excel 2010. The question categories included: avoiding, limiting, and cutting down behaviors, eating behaviors, activity behaviors, and exercise behaviors. Descriptive statistics (mean, standard deviation, and *z* scores) were run on each participant per question category and were conducted using the Statistical Package for Social Sciences (SPSS) version 22 and Microsoft Excel 2010.

A transcriber listened to the focus group recordings and carefully transcribed these conversations while replacing names of participants with participant identification numbers (100-400). Themes from each focus group transcript were manually analyzed using NVivo Qualitative Analysis Software version 8. The researcher, her advisor and a trained research assistant reviewed the transcripts and agreed on common themes repeatedly brought up by participants. Themes were tallied to show how many times the themes came up in the discussion. Behavior change categories from the questionnaire were then compared to question 3 (perceived support) and question 4 (desired support) using a regression analysis in Excel 2010.

Due to the topic sensitivity, participants were given resources to local counseling centers in the city of San Francisco (Appendix 7). With the study design now put in place as described, the results of this study are presented in the following chapter.

CHAPTER IV. Results

Across four focus groups, 53% of participants (n=15) were between the ages of 25-50 and 47% of participants were between the ages of 51-60 (Table 1). Ethnicities of participants included Caucasian (n=8), Asian or Japanese-American (n=4), Hispanic (n=2), and mixed ethnicity (n=1) (Table 1).

Table 1. Participant demographics.

		n=15	%
Age (in years)			
	25-30	3	20.0
	31-35	1	6.7
	36-40	2	13.3
	41-45	1	6.7
	46-50	1	6.7
	51-55	4	26.6
	56-60	3	20.0
	Total	15	100.0
Ethnicity			
	African American	0	0.0
	Asian	3	20.0
	Caucasian	8	53.0
	Hispanic	2	13.0
	Japanese American	1	7.0
	Mixed	1	7.0
	Total	15	100.0

Participant self-reported current weight and goal weight status met study inclusion criteria (Table 2). Body mass index (BMI = weight in kilograms divided by height in meters squared) (Gropper & Smith, 2013) was calculated to determine participant's weight category for actual weight and goal weight (Table 2).

Table 2. Participant current and goal body mass index (BMI) based on self-reported height and weight. Identification numbers used instead of names.

Participant (n=15)	Current BMI	Goal BMI
103	25.9	23.0
104	25.9	22.1
105	31.2	25.5
106	22.1	19.8
107	19.5	19.5
203	30.0	20.0
204	21.5	21.0
206	31.8	23.6
304	23.3	21.0
306	19.5	19.3
307	24.7	23.2
403	24.8	23.1
406	33.7	28.2
407	41.7	25.8
408	29.1	25.8

The mean BMI for current weight was within the overweight category (mean BMI=26.9) while the mean for the goal weight BMI was within the normal weight category (mean BMI=22.7) (Table 3). A distribution of participant BMI categories based on their current and goal BMI is provided in Table 4.

Table 3. Descriptive statistics of participant current vs. goal body mass index (BMI).

	Current BMI	Goal BMI
Mean	26.9	22.7
Median	25.9	22.6
Standard Deviation	6.0	2.7
Coefficient of Variance (%)	22.3	8.9

Table 4. Current vs. goal body mass index (BMI) categories^ of study participants.

BMI Category	Current BMI	Goal BMI
Underweight (< 18.5)	0	0
Normal weight (18.5- 24.9)	7	11
Overweight (25-29.9)	4	4
Obese Class 1 (30-34.9)	3	0
Obese Class 2 (35-39.9)	0	0
Obese Class 3 (>40)	1	0
Total	**15**	**15**

^(Gropper & Smith, 2013)

Behavior Change Questionnaire

The 28 Behavior Change Questionnaire questions were grouped into four question categories: Avoiding/ Limiting/ Cutting Down Behaviors, Eating Behaviors, Activity Behaviors, and Exercise Behaviors. Each category was tested for internal consistency with Cronbach's alpha. The tested question categories worked together except for two questions pertaining to exercise. Question six asked about frequency of exercise and question eighteen related to participation in a supervised exercise program. According to the Cronbach's alpha test for internal consistency, these two questions were not similar enough to group together into a question category and therefore were not combined together (Table 5).

Table 5. Cronbach's alpha (α) statistics: Internal consistency of question categories for Behavior Change Questionnaire.

Question Categories	# of questions	α
Avoiding/ Limiting/ Cutting Down Behaviors	14	0.73
Eating Behaviors	5	0.67
Activity Behaviors	7	0.76
Exercise Behaviors	2	0.16
Total	**28**	

Participant Responses and Question Category Means

The questionnaire provided response options in a Likert scale manner, utilizing the Transtheoretical Model of behavior change (1 through 5, Precontemplation through Maintenance). The overall means for the four question categories were between 3 and 4; respectively, Preparation "I'm ready to do this" and Action "I do this, but not regularly" (Table 6). Behavior Change Questionnaire responses were converted to *z* scores to identify means and standard deviations of these question categories.

Table 6. Summary statistics of participant responses by questionnaire category.

Questionnaire Question Categories	Mean +/- (SD)
Avoiding/ Limiting/ Cutting Down Behaviors	4.11 +/ (1.11)
Eating Behaviors	3.88 +/ (1.19)
Activity Behaviors	3.76 +/ (1.36)
Exercise Behaviors	2.97 +/ (1.42)
Question #6	3.73 +/ (1.28)
Question #18	2.20+/ (1.15)

Q#6: "Exercising regularly 3 or more times per week"
Q#18: "Participating in a supervised exercise program"

Focus Group Discussion: Social Support for Weight Loss, Questions and Themes

The multiple themes derived from the focus group questions provided valuable qualitative information about the people, locations, and methods of support utilized for weight loss in adult females living in the San Francisco Bay Area (Table 7).

Focus group question 3 focused on perceptions of support: "Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal?" The most common theme for question 3: Perceived Support was "individual," which indicated that participants thought of themselves as their primary support. The second

most common themes for question 3: Perceived Support were "family" and "online." Participants indicated that "family" included parents, husbands, brothers, daughters, and boyfriends. Online examples included Facebook, e-newsletters from health websites, and various health apps. A less common theme was "healthcare providers," which included doctors, chiropractors, and dietitians (Table 7). Question 4 focused on what participants desired for support: "What types of support do you want or need to achieve or maintain your goal?" The most common themes for question 4: Desired Support included "friends," "work," and "group support" which were described as people with common goals such as weight loss, healthy eating, and exercise activities. Less common themes for Desired Support included: "individual," "personal trainer/ health coach," "family," "corporate," and lastly "community support." Questions asked by the researcher during the focus group discussion and emerging themes are listed in Table 7.

Table 7. Focus group questions and general themes, 4 total focus groups.

Question 1 (Q1): "When you think of the word "support" for weight loss, what comes to mind?"	
Q1 Themes	**Tallies**
Friends	6
Corporate	5
Family	5
Online	3
Individual	2
Personal Trainer/Health Coach	2
Healthcare Provider/Registered Dietitian	1
Work	1
Question 2 (Q2): "When you think of the words "social support" for weight loss, what comes to mind?"	
Q2 Themes	**Tallies**
Corporate	5
Online	4
Family	2
Friends	1
Individual	1
Community	1
Work	1

Table 7. Focus group questions and general themes, 4 total focus groups, continued.

Question 3 (Q3): "Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal?"

Q3 Themes	**Tallies**
Individual	18
Family	12
Online	12
Friends	6
Healthcare Provider/Registered Dietitian	5
Gym	2
Work	2

Question 4 (Q4): "What types of support do you want or need to achieve or maintain your goal?"

Q4 Themes	**Tallies**
Friends	12
Work	10
Group	8
Individual	7
Personal Trainer/Health Coach	6
Family	5
Corporate	4
Community	2

Question 5 (Q5): "Explain how the support that you have experienced has influenced your health?"

Q5 Themes	**Tallies**
Eating Healthier	7
Better Health	5
Exercise More	4
Feel Better	3
Improved Mood	2
Increased Family Health	1

Focus Group Quotes

Specific and supportive quotes from the focus group discussions are noted in Table 8, along with questionnaire category means for each quoted participant. These quotes represent what participants said to inspire themes. The emphasis of this particular focus group discussion was to tease out whether participants perceive social support currently and what types of support they desire or need to meet their weight loss goal from the discussion questions 3 and 4 in Table 7.

Table 8. Participant quotes from focus group questions 3 and 4, by theme.

Question #3, Perceived Support: "Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal?"

Healthcare Provider/Registered Dietitian

103: "I already see a Dietitian on a regular basis and have been doing that for the past two years and she keeps me focused. You know, and I don't think I could have lost and I changed the way I eat, and now, without her help."
Questionnaire Means: ALB (4.71), EB (5.00), AB (4.29), EXB (3.00)

Family

106: "It's kind of more like reward and punishment, uh, my friends and my family: 'you're never going to find a husband like that,' that kind of scares you back into losing, you know, I wouldn't call it support per se, but that's the kind of people around me and friends also."
Questionnaire Means: ALB (4.00), EB (4.00), AB (3.14), EXB (3.00)

206: "I feel like my husband is a really good supporter because whenever I have a craving, I talk to him instead of just going for it."
Questionnaire Means: ALB (4.21), EB (3.80), AB (4.71), EXB (3.50)

Friends

105: "So that's when I started the awareness thing of my environment, so my girlfriend, she's 71 years old, she works out six days a week, and eats right, and on and on and she's not, um, a preacher but she is if the physical activity is not doing it, 'if you want to hang out, I'd love to hang out' and she's a good influence or good support, she's a good support and we've talked about that."
Questionnaire Means: ALB (3.71), EB (2.40), AB (2.86), EXB (2.00)

307: "It really helps to have support of a friend or somebody that you have both the same goals I guess. She was trying to lose weight, I was trying to lose weight, we were both on the same path, so I thought that helped. To have somebody."
Questionnaire Means: ALB (4.86), EB (4.00), AB (3.14), EXB (3.50)

Gym

306: "Well I think at the gym, I just feel like I have energy and all the people, everyone feels like they're on the same uh goals to uh, get in shape and lose weight, maintain it and it's just uh, it's contagious when you get there yeah."
Questionnaire Means: ALB (4.14), EB (4.00), AB (3.57), EXB (2.50)

406: "I happen to go to Stonestown's Y, I like that there's different classes for free, included in your membership but they're classes of different sizes and ages it's not like, no offense a 24-hour Nautilus that I visited once downtown where they're selling you, selling you, selling you and they're young, young, gorgeous people there that are networking and possibly trying to pick up each other, it feels like what it's supposed to be when you're, when you get to the gym."
Questionnaire Means: ALB (3.86), EB (4.00), AB (3.29), EXB (2.50)

Individual

107: "I found that where I feel the most supported is myself, like it comes from within. You have to be your, you have to eventually just become your own support system."
Questionnaire Means: ALB (4.64), EB (5.00), AB (4.57), EXB (3.00)

104: "I agree with 107, today. I think supports myself."
Questionnaire Means: ALB (4.50), EB (4.20), AB (4.71), EXB (2.00)

105: "I just want add to that, it's, it's me or it's ourselves, um listening to everyone and the things that I've shared, I have to agree because everything I said, actually boiled down to, it's me, it's me who chooses my environment, it's me who chooses who's going to be in that circle, who I'm going to influence me, so it is the support really does boil down, whichever RD or whatever, it's all going to be me choosing which method. So you're right, it's, we are our biggest support because we direct the path toward the goal."
Questionnaire Means: ALB (3.71), EB (2.40), AB (2.86), EXB (2.00)

408: "I think in the end that's what you have to be, I mean it's good to have other people…"
Questionnaire Means: ALB (4.75), EB (4.80), AB (4.80), EXB (5.00)

103: "Workers, they do sign up for these things and they'll walk or do exercise for the six to eight weeks and then stop. But, but I go out and walk around the lake or whatever and I've been doing that five days a week because I have to so it's a habit now, so if I don't go walking, then I don't feel right…"
Questionnaire Means: ALB (4.71), EB (5.00), AB (4.29), EXB (3.00)

Online

206: "My brother and I are part of this app called 2grand and it's really helpful because you actually take pictures of your food and post it and you can follow other people, but I mainly just follow him because he's trying to lose weight…"
Questionnaire Means: ALB (4.21), EB (3.80), AB (4.71), EXB (3.50)

307: "Actually I belong to one group, uh on a Meetup and they're all trying to lose weight so, we all, every week someone suggests to go walking or jogging or to talk about what's nutritional and what's good for you, things like that so that's my social support group, I guess. And even though I haven't gone to anything, I read all the comments about what foods to eat so that, that helps."
Questionnaire Means: ALB (4.86), EB (4.00), AB (3.14), EXB (3.50)

Work

106: "I think work is one of these places where I do feel safe…"
Questionnaire Means: ALB (4.00), EB (4.00), AB (3.14), EXB (3.00)

107: "They have this thinking oh she's not working she's not being as efficient and so I always kind of like think about my moods or something and so I thought oh I don't want to feel like this again, I want to go back to the good feeling so it's kind of the fuel to kind of keep going and so, in a positive direction and that's incorporation of you know physical movement, you know healthy eating, however you know, reading or whatever works, gardening kind of thing and so I think it's a combination of many tools that influences your health in a good way."
Questionnaire Means: ALB (4.64), EB (5.00), AB (4.57), EXB (3.00)

Question #4, Desired Support: "What types of support do you want or need to achieve or maintain your goal?"

Family

104: "I want my husband to diet. I think I've mentioned, my husband is very large, he is technically obese and he and I both lost weight…if my husband was dieting, my family member was dieting, I think I could do it because it's, you're doing it with somebody…"
Questionnaire Means: ALB (4.50), EB (4.20), AB (4.71), EXB (2.00)

Friends

204: "This question is actually tough because I just moved to San Francisco and so I'm trying to find a gym and like make friends and so I don't have a huge support system right now."
Questionnaire Means: ALB (4.43), EB (3.80), AB (3.71), EXB (4.50)

406: "If I had more friends or if I met more people maybe that I could have in common to do the gym or weight loss, I think that it would make me a lot better."
Questionnaire Means: ALB (3.86), EB (4.00), AB (3.29), EXB (2.50)

Individual

406: "Sometimes your friend and or your spouse, friends or spouse, can't be the one you need to talk out stuff to, whether it's family dynamics or work dynamics or the world being crazy, um I think emotional, that's a big part of my eating. If I'm happy, I'm eating, if I'm really upset I'm going to be eating."
Questionnaire Means: ALB (3.86), EB (4.00), AB (3.29), EXB (2.50)

Personal Trainer/ Health Coach

304: "I'm making a joke, but really I need a chef because I really, I [laughing], I, I, horrendously get tired of, of cooking for, for myself because I live by myself so it's, it's, it's really daunting to cook, that's why I don't really cook much."
Questionnaire Means: ALB (3.86), EB (2.60), AB (3.00), EXB (3.00)

408: "I would like to have time with a coach where it's like you know doing the three week cleanse but then having three weeks of re-entry and really planning that re-entry back and planning goals about that re-entry back, uh back in, that's what I would like."
Questionnaire Means: ALB (4.75), EB (4.80), AB (4.80), EXB (5.00)

Table Key

ALB: Avoiding / Limiting / Cutting Down Behaviors
EB: Eating Behaviors
EXB: Exercise Behaviors
AB: Activity Behaviors

1 – Precontemplation, **2** – Contemplation, **3** – Preparation, **4** – Action, **5** - Maintenance

Behavior Change Categories Compared to Themes for Perceived Support

Regression analysis was run to identify if a relationship existed or was predictive of one or more of the behavior change categories and the themes brought up by study participants during the focus groups. The relationship between the shared theme family of "perceived support" and the Avoiding/ Limiting/ Cutting Down behavior category was a statistically significant inverse relationship (R^2=.33, F(1,14) = -0.578, p = 0.024*) (Table 9). Two other behavior categories, exercise and eating, had positive correlations with "perceived support" but they were non-significant.

Table 9. Relationships between perceived support and behavior changes.

Theme (Perceived)	Behavior Category	Linear Regression
Family	Avoiding/ Limiting/ Cutting Down	R^2=.33, F(1,14) = -0.578, p = 0.024*
Total Support	Exercise	R^2=.19, F(1,15) = 0.440, p = 0.10
Online	Exercise	R^2=.14, F(1,14) = 0.377, p = 0.17
Healthcare/RD	Eating	R^2=.14, F(1,14) = 0.373, p = 0.17

* p-value (<0.05)

CHAPTER V. Discussion and Conclusion

In this study, support for weight loss was defined by study participants as self-support and in-person support provided by family and friends as well as online support, reflective of the 21st Century reliance on the Internet. The results from this study support research findings that social support is an important component of health and weight loss (Gorin et al., 2014; Hwang et al., 2009; Moisio & Beruchashvili, 2010; Verheijden et al., 2005). Specifically, the results of the behavior change questionnaire indicated that participants were making behavior changes in order to lose or maintain weight.

Behavior Changes

The results from the questionnaire showed that participants, who as part of eligibility criteria had wanted to lose weight or already had lost weight, were ready to make behavior changes. The overall means for the questionnaire categories were between 3, Preparation stage – noted on the survey as "I am ready to do this"; and 4, Action stage – noted on the survey as "I do this, but not regularly." This may indicate that the women need some type of assistance or support to move to the next "stage of change" (Bauer et al., 2012; Toth-Capelli, Brawer, Plumb, & Daskalakis, 2013).

Weight loss studies have identified that structural support (defined as the people in one's natural environment), information support, and community support (which may include in-person, online, or group support), may be helpful in making specific behavior changes (Gorin et al., 2014; Hwang et al., 2009; Moisio & Beruchashvili, 2010;

Verheijden et al., 2005). Structural support is commonly increased during research studies as the researcher provides additional temporary support, which aids in participant weight loss. It is then up to the participant to find ways to keep the self-motivation to continue to lose weight after a study has ended. These post research study stages are essential for understanding what additional support people need to continue their successful behavior changes.

Focus Group Themes

To understand the type of assistance and support women who desire weight loss need to meet their goals, four focus groups were held at San Francisco State University's campus, asking questions about this subject matter. The culmination of the four meetings led to a collection of repeating themes about what exactly is needed for maintaining change, these themes mirrored current research (Gorin et al., 2014; Hwang et al., 2009; Liamputtong, 2012).

Specifically, these focus group discussions concentrated on San Francisco Bay Area women's perceived and desired support. The focus group discussion included five questions 1) When you think of the words "support" for weight loss what comes to mind? 2) When you think of the words "social support" for weight loss, what comes to mind? 3) Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal? 4) What types of support do you want or need to achieve or to maintain your goal? 5) Explain how the support that you have experienced has influenced your health (Appendix 6).

The first two questions of the focus group discussion were intended for participants to define and invoke a discussion about "support" and "social support" among participants with desired weight goals. Analysis is not shared about these two questions in this thesis. The primary focus of analysis was about the support participants perceived in their natural environment and their desired support, questions 3 and 4 respectively. Each participant brought up at least one theme that represented where they felt most supported today for their weight loss goal. Perceived support themes question 3 included, most often to least often: individual (self-support), family, online, friends, healthcare provider, gym, and at or from work. The themes that came up for desired support from question 4 were: friends, work, group, individual, trainer/coach, family, corporate, and community support.

Perceived support. Elaboration on perceived support interestingly identified "individual" as the most common theme, which was explained by participants as "self-support," meaning their main support was themselves. A past study by Kayman et al. compared weight loss maintainers to participants who experienced weight gain relapse (or regain). Maintainers were described as adopting changes to their existing lifestyle that would support behaviors and habits that contributed to their weight loss and also were described as self-reflective. The maintainers noted they were more likely to seek out support than those who regained back the weight lost (Kayman et al.,1990). It could be noteworthy that the women who participated in this focus group study are actively seeking out a type of support for weight loss and/or behavior change.

The next most common theme for question 3 was "family," and interestingly this was explained as both a positive and negative type of support for weight loss. A family member positively supported a participant by cooking healthy meals during a time of stress, thereby eliminating unhealthy choices for this person. A negative example of family support was when family members said the participant would not find a husband if they were not thin. Participants indicated that "family" included parents, husbands, brothers, daughters, and boyfriends. It is important for registered dietitians to be aware of the conflicting effect that family may have on their patients.

In addition to "individual" and "family," "online support" was a common theme. "Online support" was explained to include information from health websites, email subscriptions, Facebook pages exclusive to friends sharing similar weight loss goals, Apps for food journaling and motivation, as well as exercise and healthy eating groups (e.g., Meetup.com). For "online support", one participant shared that while at work she uses a Facebook page which is only for a select group of friends who are trying to motivate each other to lose weight by eating healthy and exercising. It was important to the group that the Facebook page be private. Knowing these small but important details about online resources that aide patients as well as how they are utilizing these resources (e.g., privacy settings, anonymity) is essential for healthcare providers to make appropriate recommendations.

A less common theme was "healthcare providers," which included doctors, chiropractors, and registered dietitians (Table 7). It was noted that regularly seeing a

registered dietitian was described as important to only one participant, who was previously pre-diabetic, to stay motivated and assist her in focusing on her health goals of preventing diabetes. Even though registered dietitians are trained to help people lose weight and create healthy preventative behaviors, they are underutilized.

Desired support. To better understand the differences between existing supports perceived by participants and desired support, question 4 focused on desired support: "What types of support do you want or need to achieve or maintain your goal?" Although the most common themes were "friends" and "work," participants did not clarify what types of support they sought from their friends or at their workplace. For example, when one participant mentioned their employer providing free, healthy food, another participant expressed concern about the potential of overeating when free food is available. Essentially, support at work is an area that needs additional investigation of what employees want (e.g., food options, portions and availability) as workplace wellness continues to develop.

Another common type of support, "group support" included groups of people with common goals such as weight loss, healthy eating, and exercise activities. Participants also noted that they benefited when they had a "personal trainer or health coach" to motivate them and would utilize such services again, though they indicated both were cost prohibitive.

Less common themes for question 4: desired support included "community support" which was described as access to free exercise videos provided by the library.

Another theme was "corporate support" which was described as healthier food choices in restaurants and grocery stores provided by corporations. As the food movement moves towards more community supported health practices, it is also important for registered dietitians to be involved in community and corporate initiatives and food policies.

The final focus group question asked: "Explain how the support that you have experienced has influenced your health." Participants noted that the support they experienced aided in reducing their symptoms of pre-diabetes and in developing healthier habits. Other participants stated that the support they experienced helped them make decisions for healthier choices and to exercise. Given the time frame healthcare providers have with people in aiding them to achieve their health goals, it is important to have a tool that can efficiently gather personal information, such as a behavior questionnaire, with a social support component as described in this study.

To understand if this behavior change questionnaire was capable of predicting the themes talked about in the focus group, regression analysis was performed. Results indicated a statistically significant inverse relationship between women who perceived family support and the Avoiding/ Limiting/ Cutting Down Behavior category (R^2 =.33, $F(1,14) = -0.578$, $p = 0.024$*). It could be thought that these women who experience family support may need other types of support to act on these behaviors. Other relationships which are noteworthy and moderately significant include the relationship between participant's total perceived support and an increase in scores within the

Exercise Behavior category; as total perceived support increased there was an increase in the scores for exercise. The other noteworthy relationship was perceived online support and the Exercise Behavior category, which was mentioned by participants as receiving emails and social networking participation. Lastly, women who perceived support from healthcare providers (e.g., chiropractor, registered dietitian and medical doctor) indicated an increase in scores within the Eating Behavior category. These results show a relationship with types of perceived support and behaviors which are influenced by these different types of support.

Although clinical weight loss studies have shown successful results for weight loss through rigorous structural programs, some research also indicates these types of weight loss programs with a social support component present with the same weight loss and behavior change outcomes (Wing et al., 2011). The National Weight Control Registry (NWCR) has been surveying weight maintainers including what they do to keep off the weight for over two decades (Wing et al., 2005). It would be interesting for NWCR to include the aspect of social support in the annual survey to get a better understanding of what maintainers perceive and desire for support systems. Healthcare providers could use this information to make research-supported recommendations for an individual as part of treatment.

Limitations

Limitations of this study included challenges recruiting participants to come to San Francisco State University. Flyers were posted, May 2014 through July 2014, on

community and department communication boards on campus at San Francisco State University and on community boards in the city of San Francisco. The recruitment flyer resulted in zero responses. The most effective method of recruitment was Craigslist and department emails.

For each focus group, 8-11 participants were confirmed but only 3-5 participants showed up – a 50% no-show rate. Participants were reminded by email, telephone, and telephone text according to their preference either the day before or the day of the focus group discussion. Some reasons for not showing up included having to stay late at work, they forgot, or issues with childcare, but most of the time no shows did not respond with reasons.

Due to the challenges of recruiting participants for focus group studies, it would be recommended in the future to host focus groups where the study population regularly visits, such as at the work place, gyms, healthcare clinics, community centers, churches, and grocery stores. Hosting groups in places where the target population visits regularly may increase participant participation and retention.

Future Research and Conclusions

With the surge of information technology, the social environment in America is changing. The Dietary Guidelines for Americans suggests strategies for weight loss, yet the high prevalence of overweight and obesity continues to exist, therefore it is important to understand best methods of support for those desiring weight loss and maintenance for health promotion. These methods to support individuals could be

further elaborated on through brief behavior questionnaires such as the example used in the discussed research project as well as applying the identified themes collected from focus groups to meet the diverse needs of the Bay Area women seeking weight loss and maintenance. Identification of best strategies will also provide evidence based recommendations for registered dietitians to share with their patients.

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Appendix 1A. SFSU Recruitment Email

Dear Department Chair,

I am contacting you as a graduate student of San Francisco State University in the Consumer and Family Studies/ Dietetics Department. I am conducting research on women in the Bay Area regarding their perceptions of social support and behavioral changes for weight-loss. I am asking for your permission to post flyers to recruit participants for my research. I would appreciate it if the flyers could be posted on bulletin boards for students, faculty, and staff members.

If you approve of the posting of these flyers please sign the permission letter, and I will pick it up at your convenience.

Once my research study has been approved and you have approved to posting flyers, I will drop off color copies of the flyers. Recruitment will begin no earlier than May and will end no later than September 2014. The eligibility criteria can be found on the flyer, which is attached.

Thank you for your consideration,

Alicia Connor

aconnor@sfsu.edu

Graduate Student

Consumer and Family Studies/ Dietetics

San Francisco State University

Appendix 1B. Off-Campus Recruitment Email

To Whom It May Concern,

I am contacting you as a graduate student of San Francisco State University in the Consumer and Family Studies/ Dietetics Department. I am conducting research on women in the Bay Area regarding their perceptions of social support and behavioral changes for weight-loss. I am asking for your permission to post flyers to recruit participants for my research. I would appreciate it if the flyers could be posted on bulletin boards for female members and clients.

If you approve to posting flyers, please sign the permission letter and I will pick it up at your convenience.

Once my research study has been approved and you have approved to posting flyers I will drop off color copies of the flyers. Recruitment will begin no earlier than May and will end no later than September 2014. The eligibility criterion is on the flyer, which is attached.

Thank you for your consideration,

Alicia Connor

aconnor@sfsu.edu

Graduate Student

Consumer and Family Studies/ Dietetics

San Francisco State University

Appendix 2. Email Recruitment Response

Thank you for your interest in participating in a Focus Group about Women's Perception of Social Support and Behavior Changes for Weight Loss.

To participate in this Focus Group you must be:

- Bay Area Resident
- Female
- Overweight
- Between the ages of 25-45
- Recently lost weight or Currently trying to lose weight
  There is no minimum or maximum weight loss goal to participate.
- Premenopausal

If you are eligible please respond to this email stating that you are eligible and respond with what your height and weight is currently.

Weight _____lbs.

Height _____feet_____inches

After your response you will receive an email with 3-4 dates and times to choose from. Please respond with the one that is the most convenient for you. After you choose the Focus Group you will be provided with the location.

Thank you!

Alicia Connor, RD

Graduate Student

Consumer and Family Studies/ Dietetics

San Francisco State University

Appendix 3. Recruitment Flyer

Wanted!

San Francisco State University Graduate Student Researcher looking for....

Bay Area Women to participate in a focus group about: Women's desire to lose weight.

Less than 90 minutes long • One time participation only

(All sessions will be audio recorded)

Each Participant will be given a $20 gift card
Snacks will be provided.

If you are interested please contact the student researcher if you are:

✓ **Currently want to lose weight/ Recently lost weight**

✓ **Overweight**

✓ **Lives in the Bay Area**

If interested please contact the student researcher:

Alicia Connor, RD email: aconnor@sfsu.edu
Please put **Focus Group** in the subject line
Research Advisor: Gretchen Lynn George, PhD, RD • Consumer & Family Studies/ Dietetics

Weight loss Focus Group Alicia Connor aconnor@sfsu.edu
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Appendix 4. Informed Consent

San Francisco State University
Informed Consent to Participate in Research
(WOMEN'S PERCEIVED SUPPORT COMPARED WITH WEIGHT LOSS BEHAVIOR CHANGES (DIET AND ACTIVITY))

A. PURPOSE AND BACKGROUND
The purpose of this research is to learn more about the social support Bay Area women perceive along with behavior changes being made for weight loss. The researcher, Alicia Connor, is a graduate student at San Francisco State University conducting research for a master's degree thesis in the Consumer and Family Studies/ Dietetics Department. You are being asked to participate in this study because you are a resident of the Bay Area and are a woman in the age range of 25-45 years old, premenopausal, overweight, and either you have recently lost weight or currently would like to lose weight.

B. PROCEDURES
If you agree to participate in this research, the following will occur:

- The focus group will take place in a designated classroom in Burk Hall at San Francisco State University.
- There will be 6-10 women in each focus group.
- The focus group sessions will take place June 3rd-5th either 12-2pm or 6-8pm, or June 6th from 12-2pm.
- You will be volunteering for one focus group session.
- You will fill out a questionnaire that will take approximately 5-10 minutes about behavior changes you are currently making for weight loss or weight maintenance. The attached questionnaire contains questions about eating and activity behaviors as well as personal information.
- You will participate in a group discussion about social support you have experienced for weight loss or weight maintenance; the discussion will take approximately 60 minutes.
- Halfway through the discussion you will be asked if you want a 5-minute break.
- The researcher's advisor will be taking notes during the discussion.
- The focus group will be audio recorded to ensure accuracy in reporting your statements.
- After the discussion, a raffle drawing will take place for 2 gift cards worth $25 each.
- If you did not win the raffle you will be offered a healthy cooking resource.
- Total time commitment will be no longer than 2 hours.

C. RISKS

- There is a risk of loss of privacy. However, no names or identities will be used in any published reports of the research. Only the researcher and faculty advisor will have access to the research data. There is a risk of discomfort or anxiety due to the nature of the questions asked; however, you may answer only those questions you choose to answer, and may stop participation in the research at any time. The researcher will begin the focus group by asking each participant to verbally agree to the importance of privacy and that the information discussed during the focus group will remain confidential and will not be discussed outside of the room. You will be offered a handout with contact information for counseling services in San Francisco.

D. CONFIDENTIALITY
The research data will be locked safely in the faculty advisor's file cabinet on campus and only the researcher, the researcher's advisor, and the transcriber of the audio recordings will have access to the data Data collected will not include your name, but number identifiers instead. The audio recordings,

Research Title: (WOMEN'S PERCEIVED SUPPORT COMPARED WITH WEIGHT LOSS BEHAVIOR CHANGES (DIET AND ACTIVITY))
Researcher's Name: Alicia Connor

questionnaires, signed consent forms, and other documents will be stored at least three years after the research study has ended. Information related to the research will be stored in encrypted files on a computer at San Francisco State University to further protect the data.

E. DIRECT BENEFITS
There will be no direct benefits to you.
F. COSTS
There will be no cost to you for participating in this research.
G. COMPENSATION
At the end of the focus group session, you will be entered in a raffle. The prizes include two (2) $25 gift cards. At the end of each focus group the names of the participants will be included in a drawing and a third party will be responsible for drawing the two winning names and the gift cards will be handed out before the participants leave. For the rest of the participants that did not get a gift card, they may pick out a healthy cooking resource that was donated.
H. ALTERNATIVES
The alternative is not to participate in the research.
I.. QUESTIONS
You have spoken with Alicia Connor, about this study and have had your questions answered. If you have any further questions about the study, you may contact the researcher by email at aconnor@sfsu.edu or you may contact the researcher's advisor, Professor Gretchen George at glgeorge@sfsu.edu.

Questions about your rights as a study participant, or comments or complaints about the study, may also be addressed to the Human and Animal Protections at (415) 338-1093 or protocol@sfsu.edu.

J. CONSENT
You have been given a copy of this consent form to keep.
PARTICIPATION IN THIS RESEARCH IS VOLUNTARY. You are free to decline to participate in this research, or to withdraw your participation at any point, without penalty. Your decision whether or not to participate in this research will have no influence on your present or future status at San Francisco State University.

Signature _____ Date: _____
Research Participant

Signature _____ Date: _____
Researcher

Appendix 5. Behavior Change Questionnaire

Directions: Please check mark your answer. One answer per question.

How do you feel about doing the following...	This has not crossed my mind	I should be doing this, but do not	I am ready to do this	I do this, but not regularly	I always do this
1. Avoiding processed junk food					
2. Making healthier food selections when eating out					
3. Eating at least 5 servings of fruits and vegetables daily					
4. Removing tempting snack foods from your environment					
5. Eating only when you are hungry					
6. Exercising regularly 3 or more times per week					
7. Limiting snacking in the evening					
8. Eating smaller portion sizes					
9. Writing down what you are eating daily					
10. Eating meals at regular times					
11. Preparing healthy meals to help you lose weight					
12. Reading food labels in order to make healthier food choices					
13. Cutting down your intake of pastries (donuts, pastries, cookies, cake, etc.)					
14. Decreasing your intake of high fat deli meats (salami, sausage, bologna)					
15. Reducing your intake of regular soda					
16. Switching to a lower fat milk					

Directions: Please check mark your answer. One answer per question.

How do you feel about doing the following...	This has not crossed my mind	I should be doing this, but do not	I am ready to do this	I do this, but not regularly	I always do this
17. Cutting back on your use of fats (oil, butter, margarine, etc.)					
18. Participating in a supervised exercise program					
19. Cutting down your intake of candy					
20. Limiting your intake of ice cream					
21. Limiting meat to 6 ounces per day					
22. Managing stressful situations without turning to food for comfort					
23. Balancing food intake throughout day					
24. Baking or broiling instead of frying					
25. Counting calories to lose weight					
26. Involving those close to you to support your weight loss effort					
27. Making healthier snack choices					
28. Limiting your intake of fried foods (French fries, onion rings, etc.)					

Please complete the supporting information below:

1. What is your current weight? _____lbs.
2. What is your height? _____feet _____inches
3. What is your goal weight? _____
4. What is your ethnic background? _____
5. What is your age? _____years old

Appendix 6. Focus Group Script
Tea, Coffee, and healthy snacks will be available to participants

Introduction to the focus group (10 minutes)

Hello, my name is Alicia Connor. I am a graduate student at San Francisco State University, and I am completing a Master's thesis in Family and Consumer Sciences emphasizing in nutrition topics. Today, I would like to have a conversation with you about your thoughts on social support and behavior changes for weight-loss as women. What I am hoping to accomplish before we leave today is to better understand Bay Area women's perceptions of social support and behavior changes for weight loss. Are there any questions?

[Respond to participant questions]

Before we get started I am going to ask each of you to agree to the importance of keeping this discussion private and confidential. Please state that you agree to keep the information discussed here today confidential. *(The facilitator will ask each participant one by one to agree).* Thank you. At any time during our discussion you feel discomfort, you may choose to skip any questions, or you may leave and discontinue your participation. Before we get started with the discussion you will complete a questionnaire about behavior changes. It will take about 10 minutes to fill out.

Please read the informed consent form.

Participants fill out the questionnaire (5-10 minutes)

5 minute break (if necessary)

Let's go over some rules. First, let's all turn off our cell phones so we are not interrupted. So we can keep track of what people are saying, we will only have one person talking at a time. Please do not interrupt someone when they are talking. We will summarize the things you tell us and combine it with other focus groups we are giving. Also, please keep the information discussed in this room today private and confidential. Everything you tell us today will be kept completely confidential. The personal information shared here is only for this research study and not for anyone outside this room. One of my jobs today as the facilitator is to make sure we discuss all of the issues we planned to discuss. If I interrupt while you are talking, I'm not being rude; I'm just making sure everyone has a chance to talk and that we discuss all of the issues.

To protect everyone's privacy, we won't make introductions by name, but by focus group identification number.

Let's begin.

Focus Group Discussion Questions (55-60 minutes)

1. When you think of the words "support" for weight-loss what comes to mind?
    a. Would you mind explaining?
    b. Would you share an example that comes to mind?
    c. Would you please elaborate?

2. When you think of the words "social support" for weight-loss, what comes to mind?
    a. Is there anything you would add?
    b. Would you mind explaining?
    c. Would you share an example that comes to mind?
    d. Would you please elaborate?
3. Today, where do you feel most supported to make decisions that match your weight loss or maintenance goal?
    a. For example: Significant other? Friends? Family? Co-Workers? Work environment? Support groups? Religious community? Co-workers? Internet forums? Interactive website(s)?
        i. Is there anything you would add?
        ii. Would you mind explaining?
        iii. Would you please elaborate?
        iv. Would you share an example that comes to mind?
4. What types of support do you want or need to achieve or maintain your goal?
    a. Is there anything you would add?
    b. Would you mind explaining?
    c. Would you share an example that comes to mind?
    d. Would you please elaborate?
5. Explain how the support that you have experienced has influenced your health?

a. Is there anything you would add?

b. Would you mind explaining?

c. Would you share an example that comes to mind?

d. Would you please elaborate?

Closing Remarks:

Are there any final questions?

Thank you for participating in the focus group and sharing your thoughts. Please keep our discussion confidential and help protect the privacy of your group members by not discussing private information shared today.

The audio recording from this session will be destroyed after the end of the study. Any associated confidential information will also not be released or published. If the information shared today is used in a future research any personal identifiers will be replaced with identifying numbers.

Raffle drawing before participants leave- (The drawing will be done by a third party).For the rest of the participants that did not get a gift card they may pick out a cook book or magazine that was donated. Lastly, participants will be given a handout with the information for counseling services in San Francisco.

Appendix 7. Counseling Resource

San Francisco Counseling Services

San Francisco State University

1. Counseling and Psychological Services Center
(415) 338-2208
http://psyservs.sfsu.edu/

San Francisco

2. San Francisco Counseling Center
(415) 440-0500
http://sfcounselingcenter.com/

3. SF Counseling Services
(415) 857-1669
http://sfcounselingservices.com/

4. Integral Counseling Center
(415) 776-3109
http://www.integralcounseling.org/

5. City Church San Francisco Counseling Center
(415) 346-6994 x122
http://www.citychurchsf.org/Counseling-CenterHome