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Impact of Different Types of Social Support on Adherence and Treatment Outcomes in an Online Behavioral Weight Loss Program

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Online Behavioral Weight Loss Program

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Abstract

This study examined the effects of four subtypes of social support (tangible, positive interaction, emotional-informational, and affectionate) on caloric intake, adherence to reporting calories, weight, and physical activity, as well as weight loss outcomes in a 4-month online behavioral weight loss intervention. Participants completed social support measures before treatment, had their height taken before treatment, and had their weight measured before and after treatment. Baseline affectionate social support and emotional-informational support both significantly predicted mean caloric intake ($p = .008$, $p < .001$, respectively). No baseline types of social support significantly predicted adherence to reporting weight, physical activity minutes or overall adherence to the online program (p's $\geq .50$). None of the assessed types of social support predicted weight loss outcomes or were associated with BMI (p's $\geq .52$). These results suggest that social support types do impact caloric intake and adherence to reporting calories in an online behavioral weight loss program. Further studies are needed to determine the best way to better integrate these social support types into future weight loss interventions.

Introduction

One of the most prevalent health issues in the United States today is obesity. According to the CDC, more than 70% of American adults 20 years or older are overweight or obese, with almost 40% of this group classified as obese (CDC 2020). Obesity is an epidemic that affects millions of people around the world every year and can lead to serious long-term health ailments if left untreated. Individuals who are overweight or obese are at an increased risk for developing a wide variety of physiological problems, such as cardiovascular disease, diabetes, and several types of cancer (CDC 2020). In addition to the serious health implications of obesity, there is also a significant medical cost associated with this diagnosis. In 2008, the CDC estimated that the annual cost of medical care associated with obesity was $147 billion and that annual medical costs for people affected by obesity were $1,429 higher per year than those with normal weight (CDC 2020). Effective, efficient, and cost-effective weight loss interventions are necessary in order to reduce the costs and health risks associated with obesity.

Lifestyle interventions for obesity treatment have been found to be effective for obesity treatment. These interventions involve calorie goals, exercise goals, and a variety of behavior change strategies to help people meet their goals including self-monitoring, stimulus control, problem solving, and relapse prevention (Levy et al. 2010). The National Diabetes Prevention Program, or DPP, is a CDC-recognized weight loss intervention that focuses on combining healthy eating, physical activity, and aforementioned behavior change strategies as a means for weight loss (CDC 2020). Unfortunately, many of these programs require intensive in-person sessions or cost money which excludes a large portion of people needing treatment. Thus, effective and efficient online weight loss interventions are needed.

Online weight loss interventions have been found to be more effective than typical self-care, which commonly includes setting goals and tracking weight loss. In 2015, Watson and colleagues conducted a study with participants who were considered overweight or obese and at risk for cardiovascular disease. These 65 participants were randomly assigned to one of two groups: the web-based component of the weight loss service Imperative Health or a control group. Participants in the web-based group had access to the online service which "supported positive dietary and physical activity changes and assisted in managing weight" (Watson et al. 2015) while those in the control group simply continued their usual self-care. The support received through the online service included self-tracking and monitoring of physical activity, weight loss, and caloric intake as well as automated feedback based on weekly progress. Those who continued their usual self-care were asked to continue any activity or dietary monitoring they did themselves prior to the study such as routine exercise and tracking calories on their own. The results of this study showed that the web-based group had a greater percentage of participants lose more than 5% of their baseline weight compared to the control group at 3 months (34% vs. 3%) and 6 months (41% vs. 18%). Web-based participants lost an average of 3.41 kg at 3 months and 3.47 kg at 6 months, and control group participants lost an average of .52 kg at 3 months and .81 kg at 6 months (p<.001 and p=.047, respectively). In addition to better weight loss, the web-based group temporarily experienced greater health improvements related to obesity versus the control group at the 3 month mark. These improvements were seen in both triglycerides and cholesterol, as well as general dietary and physical activity habits (Watson et al. 2015). This study's results demonstrate that web-based weight loss programs are significantly more effective at improving weight loss behaviors and health outcomes, at least in the short term (6 months) when compared to typical self-care.

Research also suggests that adding ongoing support to web-based interventions improves outcomes. Tate and colleagues (2003) randomized participants who were overweight and at risk for Type 2 diabetes to one of two internet-based weight loss interventions: a basic online weight loss program (N=46) or the basic online weight loss program plus behavioral e-counseling (N=46). Participants in both conditions received a single in-person intervention session, the same basic internet intervention, and were asked to submit weekly weights. The additional behavioral e-counseling program included submitting caloric intake and physical activity totals and received weekly behavioral supportive counseling and feedback via email through a paired counselor. Results of this study showed that participants in the e-counseling group lost significantly more weight on average than those in the basic internet weight loss group at 12 months (-4.4kg vs. -2.0kg). These results support the idea that ongoing support improves outcomes in web-based programs. Yardley and colleagues (2014) tested the effects of web-based intervention and nurse support in primary care patients with obesity. A total of N=179 participants were randomized to 1 of 4 treatment conditions: usual care as the control, web-based intervention only, web-based intervention with basic nurse support (3 sessions in 3 months), or web-based intervention with regular nurse support (7 sessions in 6 months). Participant weights were assessed at 0, 6, and 12 months. Out of the 4 conditions, group-based intervention with basic nurse support lost more weight by 12 months (4.31 kg) when compared to the other 3 conditions (all between 2.30 kg and 2.50 kg) (Yardley et al. 2014). These results demonstrate a promising trend towards more successful weight loss intervention when using a web-based intervention in combination with social support. Overall, literature has shown that online weight loss interventions are an essential piece to effective treatment of obesity and that social support may improve outcomes in web-based interventions.

According to Vaux, social support consists of 3 facets: support resources, supportive behaviors, and subjective appraisals of support. Support resources are defined as "relationships and involvements that are potential sources of supportive behaviors and of feelings that one is supported" (Heller & Swindle, 1983; Vaux & Harrison, 1985). These are people that one can draw external support from when needed. For example, a potential support resource for someone with weight loss goals would be a physical trainer as their behavior is supportive and gives feelings of support as well. Supportive behaviors are "specific acts such as listening, comforting, loaning money, making suggestions, and helping with chores" (Barrera, Jr., & Ainlay, 1983; Vaux & Stewart, 1982). These are behaviors that an individual does to offer support to someone else. Subjective appraisals of support are an "individual's perception of the amount and quality of support either within specific interactions or within certain relationships. Subjective appraisal measures focus on satisfaction with support received" (Barrera, Jr., 1981; Hirsch, 1979). These are the feelings an individual has with regards to the support they receive or give in specific instances or relationships. All three of these facets (support resources, supportive behaviors, and subjective appraisals of support) help us obtain a better understanding of the different types of social support, allowing us to determine if one type or aspect of social support influences weight loss outcomes more than others.

Only two studies have examined how different types of social support impact weight loss outcomes. Gorin and colleagues (2014) compared the association between weight loss, autonomy support, and directive forms of support. Autonomy support is when someone feels supported by others to be independent and follow their own interests without external pressure (Núñez & León 2015). In contrast, directive support is when someone assumes primary responsibility for someone else's performance and provides prescriptive guidance to that individual to help them

meet goals (Fisher et al. 1997). A total of N=201 participants' weights, autonomy support (AS), and directive support were assessed at baseline (0 months), 6 months, and 18 months. Baseline AS did not predict 18-month weight loss outcomes but 6-month AS positively predicted 18-month weight loss outcomes ($p<.01$). Another finding of the study was that a form of directive support, encouragement of healthy eating which includes eating more fruits and vegetables, at 6 months was negatively related to 18-month weight loss outcomes. These results suggest that AS may be more effective than directive support for weight loss (Gorin et al. 2014).

A study by Cornelius and colleagues in 2018 examined how prescriptive support styles (in this case, pressure such as criticism or restrictions by a significant other to encourage behavior change) affect weight loss. A total of N=130 participants were randomized to either Weight Watchers (WW) or a "self-guided control condition (SG)." The SG condition was used as a control group as participants in this group were asked to guide their own weight loss using a four-page handout containing healthy eating, weight-control, and exercise information. Members of each condition were weighed and completed study measures at baseline, 3 months, and 6 months. In the WW group, high pressure was not associated with change in BMI ($p=.22$) but low pressure was associated with a significant decrease in BMI ($p<.001$). Overall, high levels of indirect social control, such as obligation to spouses or spousal concerns, predicted greater decrease in BMI ($p<.001$) than low levels of indirect social control ($p<.01$) (Cornelius et al. 2018). Indirect social control seemed to get more effective responses to the intervention whereas prescriptive support styles (like pressure) may have had the opposite effect, ultimately undermining goal behavior changes of the intervention. Overall, indirect social support (defined as "a sense of guilt or social responsibility motivating behavior change") was associated with

better weight loss outcomes compared to prescriptive support (defined as social control and directive support) (Cornelius et al. 2018).

Kiernan and colleagues examined how perceived social support and sabotage from friends and family affected weight loss outcomes in a lifestyle intervention. A total of N=267 women with obesity or overweight were randomized to 1 of 2 behavioral weight-loss programs that were group-based. Level of family support and friend support were measured at 0 and 6 months (pre- and post-treatment). A total of 45.7% of women who never experienced family support lost weight, whereas 80.0% of women who never experienced friend support lost weight. A total of 71.6% of women who experienced frequent friend and family support lost weight (Kiernan et al. 2012). These findings illustrate the differences in specific types of social support and their effects on weight loss. For example, family support appears to be more important for weight loss than friend support. This study's results are extremely relevant because they demonstrate how different types of support have different effects on weight. They also speak to the need to ensure that the more effective types of support (in this case, family support) should be integrated into weight loss interventions. Taken together, these studies suggest that autonomy support (AS), high levels of indirect social control (behavior changes motivated by social responsibility or guilt), and family support seem to be positive predictors of weight loss outcomes where directive support and high levels of friend support may be less important or even negative predictors of weight loss outcomes.

Previous studies have examined how different types of social support play a role in weight loss interventions, but no studies have examined (a) a variety of types of social support, (b) which types of social support may be most important for successful weight loss in web-based interventions, and (c) the relationship between a variety of types of social support and level of

engagement in web-based interventions. Thus, this study examined the effects of four different types of social support on weight loss outcomes and engagement in a 4-month web-based intervention: tangible support (provision of behavioral assistance such as a spouse cooking a healthy meal to encourage healthy eating habits), emotional and informational (expressions of positive regard and offering information), affectionate (expressions of love/affection), and positive interaction (having other persons to do fun things with you). Social support measures were administered at baseline and post-treatment (4 months) and weight data were collected. Based on previous research, specific types of social support, such as AS and indirect social control, are related to weight loss outcomes. The four subtypes of social support (tangible, emotional-informational, affectionate, and positive interaction) mentioned herein, however, have not yet been examined in a weight loss study. Therefore, this study explored the impact of these four subtypes of social support (tangible, emotional-informational, affectionate, and positive interaction support) on website engagement, caloric intake, and weight loss outcomes in the web-based intervention.

Methods

This study analyzed data from the Coach-delivered Healthy eating and Activity Management Programs (CHAMPs) clinical trial. CHAMPs includes two phases. During Phase I, all participants receive a 4-month online behavioral weight loss program. After Phase I, participants who achieve a 5% weight loss are then randomized to one of two weight loss maintenance interventions. The study herein focused on participants who completed Phase I only. Participants for Phase I of CHAMPs were recruited through mass mailings, local newspapers, social media (e.g., Facebook and Instagram), Internet and local listservs (e.g., UConn Daily Digest), letters to

local community organizations and businesses, direct email and mail campaigns, postings in public spaces, and current participant word of mouth called "snowball" recruitment. Inclusion criteria for Phase I were age 18-75 years, BMI between 25-50kg/m^2, and able to walk 2 blocks without stopping. Participants were excluded if they were enrolled in another weight loss program, had a history of bariatric surgery, were pregnant or planned to become pregnant in the next two years, had a recent weight loss of ≥5% in last 6 months, did not have Internet access, had a cancer diagnosis in the past 5 years, reported chest pain or loss of consciousness on the Physical Activity Readiness Questionnaire,[1] or reported situations that would make them unlikely to follow the protocol (e.g., planned relocation). Individuals who reported joint problems, hypertension, high cholesterol, medication use, or diabetes were required to obtain physician consent to participate. After being provided with informed consent, a total of 270 participants were given access to the 4-month online behavioral weight loss program.

All participants in Phase I received the 16-week Web-based behavioral weight loss program based on the DPP (Diabetes Prevention Program (DPP) Research Group 2002) where they reported their daily caloric intake, weight, and exercise with weekly videos and automated feedback. The provided videos were about 10 minutes each in length and covered topics such as goal setting, stimulus control, and problem solving. Participants were asked to record their caloric intake in a notebook with a provided calorie reference book or on a smartphone app (MyFitnessPal). The website included a self-monitoring platform. On the self-monitoring platform, participants could enter their daily caloric intake, weight, and exercise. At the end of each week, participants received tailored automated feedback on the platform with tips for weight loss based on their input for that week. For example, a participant not meeting their exercise goal for that week would receive feedback encouraging them to increase their physical

activity. In addition to the feedback, participants had access to other resources on the platform, including healthy recipes and meal plans.

Measures

All measures were completed before and after the 4 month intervention unless noted otherwise.

Demographics

Demographic information was obtained from participants at pre-treatment only. This includes sex (male, female, or non-binary), age, race, ethnicity, and marital status.

Weight and Height

Weight was measured to the nearest .1 kg using a digital scale in the lab at baseline. Height was measured at baseline with a stadiometer. Baseline BMI was calculated using the formula weight in kg / height in m^2 . Weight loss was calculated by subtracting post-Phase I weight from baseline weight (post-Phase I weight - baseline weight). Percent weight loss was calculated by dividing weight loss by baseline weight and multiplying by 100 ((weight loss / baseline weight) *100). When objective post-Phase I weight was unavailable, last reported weight into the intervention website was used.

Caloric Intake

Daily caloric intake was self-reported by participants and entered into the self-monitoring platform. Daily caloric intake included total calories consumed throughout the entire day. Participants had the option to use the provided caloric reference book or a smartphone app (MyFitnessPal) to calculate daily caloric intake.

Social Support

The following types of social support were examined at study entry using the validated Medical Outcomes Study Social Support Survey: tangible (provision of behavioral assistance), emotional

and informational (expressions of positive affect and offering information), affectionate (expressions of love/affection), and positive interaction (having other persons to do fun things with you).

Adherence

Online intervention adherence was defined as 5 or more days of reporting calories, activity, and weight in a particular week. Participants who reported at least 5 days of all three parameters were assigned a 1 for that week. Those who did not report at least 5 days of all three parameters were assigned a 0 for that week. After reviewing each week and assigning a 1 or 0 to each participant, overall adherence was calculated by adding all the values from each week together. Given that the intervention was 16 weeks in length, the highest possible overall adherence score was 16. The lowest possible overall adherence score was 0. Percent adherence was calculated by dividing total adherence by 16 and multiplying by 100 ((total adherence / 16)) * 100).

Statistical analyses

Baseline analyses

Baseline characteristics were analyzed using basic descriptive statistics. Means and standard deviations were computed for continuous variables and percentages were computed for categorical variables. Correlational analyses were used to examine the relationship between baseline social support subtypes and baseline BMI. Associations between social support and demographic variables (age, marital status, and sex) were explored.

Longitudinal analyses

Analyses were performed to examine whether baseline levels of social support (tangible, emotional-informational, affectionate, and positive interaction support) predicted treatment adherence and percent weight loss. Specifically, through regression analyses, each of the four

types of social support in this study were examined for (a) their predictive ability for adherence to reporting calories, exercise, and weight separately, (b) their predictive ability for weight loss after the 4-month online intervention, and (c) their predictive ability for overall level of engagement in the online weight loss intervention (% adherence).

Results

Participant characteristics

A total of 260 participants completed all measures at baseline and provided weight data. Participants were mostly female (79.2%) and non-Hispanic White (71.9%). At baseline, participants had a mean BMI of 31.7 ± 5.6 kg/m2, a mean age of 50.7 ± 11.9 years, 59.5% (n=154) of participants were married, and 62.7% of participants (n=158) had an annual household income of $75,000 and over. The only demographic variable associated with the different types of social support was marital status. Participants who were married showed significantly higher levels of emotional-informational support (b = -.187, t(257) = -3.052, p = .003) and affectionate support (b = -.265, t(257) = -4.399, p < .001).

Baseline BMI and social support

None of the assessed types of social support (tangible, emotional-informational, affectionate, and positive interaction support) were associated with baseline BMI (p's ≥ .520).

Baseline social support and caloric consumption

Baseline affectionate social support significantly predicted mean caloric intake (b = −.209, t(234) = -3.145, p = .008) with covariate marital status. Higher affectionate support was associated with lower caloric intake during the 4-month intervention. Emotional-informational social support significantly predicted mean caloric intake (b = -.058, t(233) = -.921, p < .001) with marital

status as a covariate. Higher emotional-informational support was associated with lower caloric intake during the online weight loss program. No other baseline types of social support (tangible and positive interaction support) predicted caloric consumption (p's ≥ .062) (see Table 1).

Baseline social support and adherence

Both baseline affectionate social support (r(259) = .135, p = .037) and positive interaction social support (r(259) = .146, p = .024) were associated with adherence to reporting calories into the online program, with higher levels of social support associated with more calorie reporting. No other baseline types of social support (tangible and emotional-informational support) predicted adherence to reporting calories (p's ≥ .547). No baseline types of social support significantly predicted adherence to reporting weight, physical activity minutes or overall adherence to the online program (see Tables 2, 3, and 4).

Baseline social support and weight loss

None of the assessed types of social support predicted weight loss outcomes (p's ≥ .544) (see Table 5).

Table 1

	Caloric intake							
	B (unstand)	B (stand)	t	p	F	R	R2	ΔR
Affectionate SS	-60.85	-0.209	-3.145	0.008*	4.977	0.202	0.033	0.041
Positive Interaction SS	-41.132	-0.124	-1.877	0.062	1.792	0.123	0.007	0.015
Tangible SS	-5.936	-0.02	-0.297	0.767	0.074	0.025	-0.008	0
Emotional-Informational SS	-18.925	-0.058	-0.921	0.000*	11.542	0.36	0.118	0.003

*p<.01

Table 2

	% Adherence Overall							
	B (unstand)	B (stand)	t	p	F	R	R2	ΔR
Affectionate SS	4.109	0.122	1.894	0.059	3.588	0.122	0.011	0.015
Positive Interaction SS	4.86	0.127	1.96	0.05	3.874	0.127	0.012	0.016
Tangible SS	3.059	0.091	1.412	0.159	1.993	0.091	0.004	0.008
Emotional-Informational SS	4.747	0.126	1.955	0.052	3.821	0.126	0.012	0.016

Table 3

	B (unstand)	B (stand)	t	p	F	R	R2	ΔR
				Adherence to reporting physical activity				
Affectionate SS	0.198	0.129	1.933	0.054	2.059	0.131	0.009	0.015
Positive Interaction SS	0.127	0.073	1.102	0.272	0.797	0.082	-0.002	0.005
Tangible SS	0.022	0.014	0.208	0.836	0.21	0.042	-0.007	0
Emotional-Informational SS	0.064	0.075	1.13	0.259	1.88	0.153	0.011	0.013

Table 4

	B (unstand)	B (stand)	t	p	F	R	R2	ΔR
				Adherence to reporting weight				
Affectionate SS	-0.102	-0.198	-1.752	0.084	3.07	0.198	0.027	0.039
Positive Interaction SS	-0.132	-0.224	-1.988	0.05	3.951	0.224	0.037	0.05
Tangible SS	-0.116	-0.224	-1.988	0.05	3.952	0.224	0.037	0.05
Emotional-Informational SS	-0.129	-0.224	-1.987	0.051	3.947	0.224	0.037	0.05

Table 5

	B (unstand)	B (stand)	t	p	F	R	R2	ΔR
				Weight loss				
Affectionate SS	0.223	0.054	0.609	0.544	0.371	0.054	-0.005	0.003
Positive Interaction SS	0.049	0.01	0.117	0.907	0.014	0.01	-0.008	0
Tangible SS	-0.223	-0.053	-0.601	0.549	0.361	0.053	-0.005	0.003
Emotional-Informational SS	-0.096	-0.021	-0.234	0.815	0.055	0.021	-0.007	0

Discussion

Several significant results were found in this study. For caloric consumption, baseline affectionate support and emotional-informational support were significant predictors. Higher affectionate support at baseline predicted lower caloric intake throughout the 4-month intervention. Higher emotional-informational support also predicted lower caloric intake throughout the 4-month intervention. Higher levels of affectionate support and positive interaction support predicted higher levels of adherence to reporting caloric intake. No baseline

social support types significantly predicted adherence to reporting weight, physical activity, or overall adherence to the 4-month intervention. No baseline social support types were associated with baseline BMI or predicted weight loss outcomes.

With over 70% of American adults 20 years or older classified as overweight or obese, the development of an effective weight loss intervention is imperative. Due to the significantly higher annual medical costs associated with obesity, a cost-efficient online weight loss program is an accessible step to tackling the obesity epidemic in the United States. Research has shown that online weight loss interventions are more effective than typical self-care, including setting goals and tracking weight loss (Watson et al. 2015), demonstrating the need for an online intervention. Understanding the most important and influential factors that make online weight loss programs effective is crucial. This was the first study of its kind examining the direct relationship between the various types of social support, adherence, and weight loss outcomes in an online 4-month behavioral weight loss program. Results suggest that adding social support components, particularly affectionate and emotional support, may facilitate health behavior change in such interventions.

Previous studies have examined the relationship between social support and weight loss, but none have examined unique types of social support (positive interaction, emotional-informational, affectionate, and tangible social support) in an online weight loss program. In an in-person program, Gorin and colleagues (2014) found that specific types of social support are more effective than others for weight loss outcomes, specifically autonomy support is more effective than directive support. A similar study conducted by Cornelius and colleagues (2018) showed that indirect social support was associated with better weight loss outcomes when compared to prescriptive support. Kiernan and colleagues (2012) found that

family support was more pertinent in weight loss outcomes than friend support. Despite these findings, the results from this study did not show any association between weight loss outcomes in an online program and types of social support. One explanation for these results could be that social support types are more impactful in long-term weight loss outcomes, rather than short-term outcomes such as those in this 4-month program. For example, someone with higher social support could show better weight loss outcomes over a longer period of time due to more stability and consistent support.

This study examined the relationship between tangible, emotional-informational, affectionate, and positive interaction social support with website adherence and caloric intake in a 4-month online behavioral weight loss intervention. Social support types predict caloric intake; specifically, higher emotional-informational support and higher affectionate support both predicted lower caloric intake. Baseline affectionate support and emotional-informational support were significant predictors of caloric intake. Therefore, the hypothesis that social support types impact caloric intake is supported. Social support types were found to predict reporting calories to the online program. One possible explanation for why affectionate and emotional-informational support types are more predictive than tangible and positive interaction support types is because they are passive types of support that allow the participant to keep their independence for their weight loss journey. As Gorin and colleagues (2014) found, autonomy support was more effective for weight loss outcomes than directive support. Cornelius and colleagues (2018) found that indirect support was more effective than prescriptive support. Both autonomy and indirect support are passive forms of support, similarly to emotional-informational and affectionate support, whereas directive support and prescriptive support are direct forms of support, similarly to tangible and positive interaction support. Higher levels of affectionate

support and positive interaction support predicted higher levels of adherence to reporting caloric intake. Therefore, the hypothesis that social support type impacts adherence to reporting calories is supported. No baseline types of social support predicted overall adherence to the online intervention, reporting physical activity minutes, or reporting weight. Therefore, this hypothesis is not supported. Overall, these results indicate that social support type is relevant to online weight loss interventions.

Treatment modality could be related to the impact that social support has on weight loss outcomes. For example, all previously discussed studies had in-person components, whereas this study was fully online. Social support could impact weight loss outcomes differently in in-person interventions due to several factors including accountability, direct supervision and support, as well as separation of weight loss progress from personal support systems (as the program would not be done fully at home).

This study had some limitations. Participants were mostly non-Hispanic White females. In order to get more representative data on the relationship between social support types and weight loss interventions, a more diverse population is needed. Study participants were required to be reasonably close to Hartford, Connecticut which could affect the generalizability of the results to the entire United States population. Despite these limitations, this study had many strengths. The sample size was large, with over 260 participants. Further, all participants completed all social support measures and provided objective weight data at baseline. The study design was longitudinal, which allowed for the examination of whether social support prospectively predicted adherence and outcomes in an online behavioral weight loss program. Further, while other studies have examined how social support affects outcomes in in-person treatment, this is the first study to examine whether various types of social support impacts

adherence and weight loss outcomes in an online program. The online behavioral weight loss

program used was based on the DPP, an empirically-supported, CDC-recognized weight loss

intervention. This platform was consistent across all participants. Another strength of the study

was that it only used validated measures, such as the MOS social support survey, ensuring that

the data collected accurately measured the constructs of interest. Taken together, these results

suggest that specific types of social support are more impactful on caloric intake

(emotional-informational and affectionate support) and caloric adherence (affectionate and

positive interaction support). These results are clinically relevant because they can be used to

modify current and future online weight loss interventions to incorporate more of these specific

types of social support in order to achieve the desired weight loss results. For example,

incorporating lessons that strengthen emotional-informational support from family and friends

could help reduce caloric intake, ultimately leading to better weight loss outcomes. Overall, these

results can help make online weight loss interventions more effective.

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