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## Face-to-Face and Online Networks: College Students' Experiences in a Weight-Loss Trial

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### Abstract

This study aimed to understand how college students participating in a 2-year randomized controlled trial (Project SMART: Social and Mobile Approach to Reduce Weight;  $N = 404$ ) engaged their social networks and used social and mobile technologies to try and lose weight. Participants in the present study ( $n = 20$  treatment,  $n = 18$  control) were approached after a measurement visit and administered semi-structured interviews. Interviews were analyzed using principles from grounded theory. Treatment group participants appreciated the timely support provided by the study and the integration of content across multiple technologies. Participants in both groups reported using non-study-designed apps to help them lose weight, and many participants knew one another outside of the study. Individuals talked about weight-loss goals with their friends face to face and felt accountable to follow through with their intentions. Although seeing others' success online motivated many, there was a range of perceived acceptability in

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Supplemental Material

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talking about personal health-related information on social media. The findings from this qualitative study can inform intervention trials using social and mobile technologies to promote weight loss. For example, weight-loss trials should measure participants' use of direct-to-consumer technologies and interconnectivity so that treatment effects can be isolated and cross-contamination accounted for.

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Approximately 40% of young adults living in the United States ages 18–24 years are enrolled in college (U.S. Census Bureau, 2014). While in college most students gain weight and experience an increase in body fat (Fedewa, Das, Evans, & Dishman, 2014) due in part to poor food choices and limited physical activity (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008).

Leveraging social and mobile technologies may be an effective approach to preventing weight gain and promoting weight loss among college students given their widespread use (Anderson, 2015; Duggan, 2015; Perrin, 2015; Smith & Zickuhr, 2011). Although there is some evidence that technology-based interventions are effective among this population (e.g., Allman-Farinelli et al., 2016; Bertz, Pacanowski, & Levitsky, 2015), limited research has tested the impact of using a suite of modalities such as text messaging, social media, and apps (Hutchesson et al., 2015). It is also not well understood how social media and online social networks can be leveraged to help young adults lose weight. This area affords particular promise given that online social network influence has been linked to more positive weight-related outcomes, including increased physical activity and weight loss (Greene, Choudhry, Kilabuk, & Shrank, 2011; Maher et al., 2015; Poncela-Casasnovas et al., 2015; Valle, Tate, Mayer, Allicock, & Cai, 2013), and that the use of online social networking sites is ubiquitous among young adults and college students.

Approximately 84% of U.S. college students use online social networking sites (Smith & Zickuhr, 2011), with Facebook being the most popular (Duggan, 2015). Individuals use Facebook to express their self-identity and affirm their sense of self (Nadkarni & Hofmann, 2012; Toma & Hancock, 2013). While working toward health behavior change, individuals may share their experiences on Facebook and friends may provide support, which could reinforce individuals' healthy identities. For some, however, sharing personal health information is undesirable. Users are selective about the health information they communicate on Facebook depending on the online audience (Newman, Lauterbach, Munson, Resnick, & Morris, 2011) and the identity they wish to cultivate (Lampinen, Tamminen, & Oulasvirta, 2009).

Social networks influence individuals' weight status and weight-related behavior across the life span—from adolescence (e.g., Evans, Onnela, Williams, & Subramanian, 2016) to older adulthood (e.g., Watt et al., 2014). For example, young adults were more likely to report trying to lose weight if their friends were also trying to lose weight (Leahey, Kumar, Weinberg, & Wing, 2012), and this association was mediated by members' approval and encouragement for weight loss and sharing of information about weight loss (Leahey et al., 2012). Norms may also explain why college students gained weight after exposure to peers who ate poorly, were physically inactive, and/or gained weight (Madan, Moturu, Lazer, & Pentland, 2010).

Social networks can also influence individuals' weight-loss efforts through accountability (Hwang et al., 2010; Kiernan et al., 2012; Pagoto et al., 2014). Having a social contact in a weight-loss intervention was associated with greater weight loss, and this association was explained by attendance and self-monitoring (Carson et al., 2013). Individuals may be more likely to follow through on their commitment to change in the presence of others (Mann, 2008), and feeling accountable to others can help weight-loss maintenance (Metzgar, Preston, Miller, & Nickols-Richardson, 2014). Enlisting a friend to join a weight-loss program can be beneficial (Gorin et al., 2005), and weight-loss program participants perceive themselves to be positively influencing friends outside the program (Bishop et al., 2013; Hwang et al., 2010)

The extent to which online social networking sites are effective platforms for health promotion remains unclear (Balatsoukas, Kennedy, Buchan, Powell, & Ainsworth, 2015), in large part because studies have failed to isolate and measure the social media component (Chang, Chopra, Zhang, & Woolford, 2013; Laranjo et al., 2014; Mita, Mhurchu, & Jull, 2016). Yet research to date indicates that young adults accept physical activity promotion (Cavallo et al., 2012; Valle et al., 2013) and weight-loss interventions (Napolitano, Hayes, Bennett, Ives, & Foster, 2013; Valle et al., 2013) that use Facebook. Furthermore, at least one study found that a brief Facebook-based intervention among young adults led to significant weight loss (Valle et al., 2013). However, engagement is highly variable within (Merchant et al., 2014) and across Facebook-based studies and often declines precipitously over time. Low observed engagement is influenced by the high prevalence of lurking, a behavior in which users passively consume content without contributing or interacting (Rafaeli, Ravid, & Soroka, 2004; Sun, Rau, & Ma, 2014).

The present study qualitatively explored how overweight/obese college students participating in a randomized controlled trial (a) used social and mobile technologies for weight-related behavior change and (b) leveraged their social networks online and face to face while working toward their weight-loss goals.

## Methods

### Project SMART

Overweight and obese U.S. college students ( $N = 404$ ) were recruited from three Southern California universities to participate in Project SMART (Social and Mobile Approach to Reduce Weight;  $M$ body mass index = 29, 70% female, 31% Hispanic). Methods, design, implementation, and main outcomes have been described elsewhere (Godino et al., 2016; Merchant et al., 2014; Patrick et al., 2014). The treatment group lost significantly more weight than the control group at 6 and 12 months, but differences did not persist to 18 and 24 months (Godino et al., 2016).

Participants were randomized to either the control ( $n = 202$ ) or treatment ( $n = 202$ ) group. The treatment group tools included a study-specific website that contained a blog and an online library, three study-designed apps (TrendSetter, GoalGetter, BeHealthy), e-mail, a study-specific Facebook page, and text messages. All treatment tools were branded as *ThreeTwoMe*, and a health coach (a registered dietician) posted to the blog and moderated

the Facebook page. The study's Facebook page was open: Non-study participants could view and engage with its content, and, depending on participants' privacy settings, friends could see when they interacted with the page. Treatment group participants were also encouraged to engage with the health coach during brief (<15 minutes) health coaching sessions via phone, e-mail or Skype. Treatment group participants could reach out the health coach up to 10 times over the 2 years (called "Lifesavers"), and the health coach could reach out to them up to 10 times over the 2 years (called "Lifelines") when participants gained weight between measurement visits or failed to engage with at least one of the study's tools in 1 month's time. The control group had access to a static website that contained health information relevant to college students and received quarterly newsletters about healthy living.

### Sample and Data Collection

A convenience sample ( $n = 38$ ) of U.S. college students from the larger SMART trial was interviewed for the present study; this number was estimated to be sufficient to reach theoretical saturation (Starks & Trinidad, 2007). Participants were approached at the end of a measurement visit and asked whether they would participate in this study. We attempted to recruit a balanced sample according to sex, group, and site by tracking these variables as data were collected. However, we did not systematically sample by these variables and instead focused our efforts on obtaining a sufficiently large sample (the goal was 40 interviews). Those who agreed to be interviewed were provided with a \$25 incentive. All interviews were conducted in English (see the supplemental online Appendix for interview questions).

Compared to the overall SMART sample, a larger percentage of participants in the present study were older, male, and Hispanic, and the majority of the sample came from the University of California San Diego. Participants provided written consent prior to each interview and agreed to have their data audio recorded. The institutional review board at the University of California San Diego approved this study. The interviews were semi-structured and lasted between 30 and 60 minutes. All interviews were digitally recorded and transcribed verbatim. Demographic characteristics of those interviewed are described in Table 1.

### Data Analysis

Grounded theory (Glaser & Strauss, 1967) was used because the goal of the present study was to explain social processes. Using the framework advanced by Strauss and Corbin (1990), three coauthors analyzed the data using open, axial, and selective coding (Walker & Myrick, 2006). During open coding, the data were examined line by line and key concepts and their properties were discovered. Axial coding involved identifying the relationships among the data, and selective coding involved fully integrating the data into emergent themes. These processes were documented via memos, which provided a roadmap of analytic decisions (Birks, Chapman, & Francis, 2008).

Audio recordings of the interviews were listened to as needed. Emerging themes and supporting quotes were discussed in bimonthly meetings. Data were constantly compared to

themes and codes were modified as necessary. Transcripts were blinded during analysis, and the final coding framework had 20 codes (see the supplemental online Appendix for the coding framework).

Transcripts were uploaded into the cloud-based software program Dedoose (Version 5.1.29, 2015) a Web application for managing, analyzing, and presenting qualitative and mixed-methods research data. After the transcripts were coded in Dedoose, 429 digital excerpts were created. Transcripts were printed and arranged on a large display to visually interpret the data. The data fit into two broad categories: (a) a process evaluation of the SMART program and (b) how participants leveraged their social networks online and face to face to help with weight loss. Within the SMART process evaluation category there were three themes, and within the social networks category there were two themes. Subthemes were used to group similar data and define key concepts (see Figure 1). Unless otherwise specified, themes reflect the experiences and sentiments of the majority of participants interviewed. Furthermore, in some cases themes and subthemes were not unique to either the control or intervention group and instead reflected the user experience irrespective of randomized condition. In cases in which results pertained to just the treatment group, this is reflected in the theme name beginning with *ThreeTwoMe*.

## Results

### Process Evaluation of the SMART Program

Participants in the treatment group liked the *ThreeTwoMe* experience because it provided them with timely reminders and information that they could access at their leisure. Participants in both groups disengaged with the program over time, and many control group participants knew that they were in the control group. Treatment group participants generally found the Facebook page to be motivating, the challenges fun, the text messaging useful, and the apps difficult to use. Some individuals wanted more interaction with other participants. Approximately half of the participants interviewed used direct-to-consumer apps to help them meet their weight-loss goals.

### Theme 1: The SMART Experience

**Measurement Visit Accountability**—Participants in both groups described how having measurement visits scheduled every 6 months at which they knew they would meet staff in person, take surveys about their diet and exercise, and weigh in was helpful in keeping them on track. Some described how using the surveys as a self-monitoring tool motivated them to want to change their habits. Others noted that knowing that they had a visit coming up made them feel accountable to lose weight:

A little bit ashamed if you haven't completed as much or achieved as much as you were hoping for with weight loss.

**The Program Provides Timely, On-Demand Support**—Participants in the treatment group liked how they could access the tools at their leisure, with many describing how they digested “news” or entered their data during their commute to school or on a regular schedule they set for themselves. Participants also described the timeliness of the support

and messages they received, noting that it would remind them that they were in the study and would reach them while they were going about their daily routine:

I like it, especially when I was in the gym and I got a text like, “Oh, where you at?” “I’m at the gym.” Like, it felt good. Um ... plus the feedback ... just getting, “Thank you. Oh, you’re doing great. Keep up the good work.”

**The Program Is Integrated**—Participants in the treatment group talked about how using one of the study’s tools prompted them to use others:

I accessed it when there was usually a related post on Facebook or something that said there was a new contest or something, “come check out the blog ...” I admit it wasn’t something that I checked regularly on my own, but when I was directed there I would go take a look.

**Declining Engagement Over Time**—Participants in both groups described accessing the study’s tools “at the beginning” but less over time. Individuals also talked about becoming disengaged after the first year because of changing interests in technology over time:

It’s really weird because initially I’m very excited. Excited to use the program so I do it every single day and I wear my pedometer. I weigh myself like religiously, obsessively. But then after a few weeks the excitement sort of died down ... when I first, originally, started the study, I was more into Facebook than I am now.

**Non-SMART Weight-Loss Help**—Participants in both groups utilized non-study-specific technologies and programs to help them meet their goals (e.g., joining campus club sports teams). One control participant started acting as a personal trainer for her friends after she successfully lost 40 pounds. Approximately half of the participants interviewed described using apps that were not part of the study. The most frequently mentioned app was MyFitnessPal, which one participant liked best because it had a barcode scanner. Another popular app was the Nike Running app, which participants described liking because of the positive feedback it gave:

I liked Nike because like, at the end of a run they would like do a little cheer song. “Congratulations! You finished your run!”

**“I’m in Group B So ...”**—A number of control group participants interviewed discussed how they knew that they were in the control group and that this frustrated them:

I think I’m in the group that’s not supposed to have any supplements to help me lose weight so it gives me an incentive to almost try and lose weight.

**Has Friend(s) in the Study**—Many participants in both groups stated how they knew others in the study. Some heard about the study through a friend and later joined, one participant and her sister joined together, and others later found out that they had friends in the study. One person knew “at least three other people”:

I do have other friends who are in the study but they're in a different group I guess ... when we found out we were in the same study, we started talking a little bit more ... We just sort of were like, "Okay, maybe we can work out together and hang out or something like that."

### **Theme 2: The ThreeTwoMe Community (Treatment Group Only)**

#### **Participants Were Unsure of Facebook Page Norms or How the Page Worked**

—Facebook displays the posts made by the fans of the page to the side of the main feed, which displays all content generated by page administrators, and this led to some participants thinking that their posts were “hidden” by the study or Facebook. And several participants wished they could better see others’ posts. Relatedly, a number of participants were not sure whether it was acceptable for them to reach out to other participants. Some participants also talked about how interacting with the health coach on the Facebook page may not just help them but the interaction between them and the health coach could “live on” and help others. One participant described interacting at the beginning but then stopping because not that many others were doing it:

I guess no one reached out to me, I didn't reach out to them ... It should happen though ... I mean, we have the space, we have the group, we have the page, everybody is there. And everybody who is there knows they are a participant. So, I don't know.

**Participants Wanted More Interaction on Facebook**—Several participants wondered how others in the study were progressing and liked seeing the success stories from the blog shared on Facebook. Some wanted more of an interactive community so that they could feel more of a “sense of a team with *ThreeTwoMe*, rather than by myself”:

It's nice to see people changed ... I look at them and I'm like, what's my progress? Am I progressing well, as well as them? ... It tells me, okay, I've gotta do this, I gotta do something cuz I haven't been doing things in awhile.

**Participants Wanted More Face-to-Face Interaction**—A number of participants talked about how meeting fellow participants in person would be motivating and how this would provide positive peer pressure. Others said that they knew face-to-face meetups might not be for everyone but that the option should be there:

Maybe if a girl in your building actually is doing it as well, like, and you see her frequently, maybe you can go work out together, you know?

### **Theme 3: ThreeTwoMe Tools (Treatment Group Only)**

**The Facebook Page Is Motivating**—Participants described the Facebook page as motivating and the content as inspirational. Some said it reminded them that they were in the study and helped them learn about resources they had not known about previously. Some described the Facebook campaigns as motivating because they got them to be active with their friends; they felt they brought participants together or that they were motivated to win something:



There was an activity where we would go hiking. And then I was like, ‘Let’s go hiking’ [to my roommates] ... Um so, we did it. We just went hiking that weekend, you know, just like that.

**Facebook Lurking**—As described previously (Merchant et al., 2014), many participants “lurked” (Sun et al., 2014) on Facebook. Some participants accessed the *ThreeTwoMe* content by seeing it in their newsfeed because they marked the page as “favorite.” Most, however, described going to the actual page because it was “easier” than sorting through the “clutter” on their newsfeed:

I think I, I look at 90% of stuff and don’t comment on it ... Unless I really, you know, am moved to comment. And sometimes I’ll even write a comment on people’s stuff and then delete it. Just like, “Oh my God, I don’t want to be part of that conversation.”

**Facebook Frustration**—Some described not being able to easily see the *ThreeTwoMe* content, being tired of having to sort through their newsfeed, or just not liking Facebook anymore:

The newsfeed on Facebook, it’s just gotten to the point where you kind of start filtering it out because there are so many posts. It just kind of turned to background noise more than helpful.

**Challenges Are Fun**—Participants were exposed to challenges through the BeHealthy app, on the blog, and via Facebook. Most participants talked about accessing the challenges via Facebook, describing them as “fun,” and said they were motivated to complete them because they wanted to try new things:

I like the challenges ‘cause they would pop up and I’d be like, “Oh, I can totally do that.”

**Text Messages Are Useful Reminders**—Participants described the text messages they received from *ThreeTwoMe* as “useful” and helpful in reminding them to “keep on top of the program”:

The fact that the text message is there, it’s enough to remind me to keep on top of the program. I like the idea and the consistency, which helps me to keep going and makes me think that I don’t need too much more than a text message.

**Apps Were Difficult to Use**—Although a few participants described liking the graph feature of the TrendSetter app, which showed self-reported weight change, steps, and/or calories consumed over time, most participants described frustration in using study-designed apps. Participants had difficulty with the user interface and talked about not wanting to log information twice: on a direct-to-consumer app they were already using and a study-designed app:

It was just too cluttered. It was slow ... It took a while to open up. Took a while to get it running and then, it got to be too much of a hassle.

## Leveraging Social Networks Online and Face to Face

Participants described how they often made healthy choices with friends and shared their weight-loss goals with friends and family. Participants felt that their friends held them accountable to meet their goals and that the encouragement and reminders they received from their network were helpful. Many individuals shared their goals with others face to face and did not feel that Facebook was the appropriate setting for receiving support or talking about their progress. Many did, however, report being motivated by seeing others' success on Facebook.

### Theme 1: Mutually Beneficial Community

Participants described their social networks as mutually beneficial communities in which social support was exchanged in a nonjudgmental way, and they were encouraged to find that there were others like them from whom they could learn.

**Making Goals Public**—Many participants reported talking openly with their friends about their goals to lose weight, be more active, and eat healthier. Although most described making their goals public face to face with friends, some used online social networking sites to broadcast their intentions and update friends on their goal striving. Participants talked about how making their goals public helped them to be held accountable. One participant described making her goals public as similar to an “oath”:

I put this picture on Facebook so that everyone would see it and now it's like I have to do it because I just published it to the entire Facebook community ... So everybody's been encouraging me and stuff.

**Social Accountability**—Most participants emphasized the importance of face-to-face compared to online accountability. Computer-mediated communication was viewed as less effective because it was easier to not follow through and “just shove it aside and go, whatever”:

Even when I'll come home tired from work and I'll be, “Oh, I really don't ...” One of my roommates will come home and be, “Let's go. I've been waiting for you. Let's go to the gym.” And we'll go.

**Social Comparison**—Participants were influenced by their friends' success, and they learned by observing others. Several talked about how if their friend can do it, “I can do that too.” Participants said that seeing others succeed motivated them to try harder. Some participants emphasized how seeing others online was helpful because it afforded a connection with “people that kind of looked like me.” Online social comparison motivated some to initiate behavior change, but the face-to-face accountability was needed for follow-through. Despite social comparison and influence largely being discussed as positive, some participants talked about how it was demoralizing because they asked themselves, “Why can't I be there?” Other participants described how their friends had bad eating habits and “all my friends are obese,” which made it difficult to make healthy choices:

The success stories on Facebook were really helpful because ... Hey, I'm in this study too ... Why am I not at this point? You know? And it kind of motivates me to, to try to get to that point.

**Social Support**—A number of participants said they often talked with their friends about healthy eating or going to work out and how friends provided nonjudgmental emotional support. Some described how their friends gave them new ideas for ways to be healthy. Others discussed how their friends were “supportive” and were like a “partner support system” or “buddy”:

Some of my friends, we'll talk about like “Damn, I need to go to the gym.” “All right, let's go this day” or something. It's really positive. It's not like, “Let's cry about my feelings.”

## Theme 2: Feelings About Sharing Personal Health Behavior Information on Facebook

Three groups emerged to describe how participants felt about sharing their healthy active lifestyle goals and activities on social networking sites, which was almost always Facebook.

**Against Sharing on Facebook**—A number of participants expressed distaste for talking about their physical activity exploits and weight-loss goals on Facebook. They said that it was not the right forum because there were too many people in the audience, even “a lot of people that I really don't like and probably don't like me.” Others talked about how everyone has an opinion, and they “didn't want the pressure,” and/or were careful with what they talked about in efforts to manage the impression others may form of them:

It's more like, the fear that it won't work out. And also, I just don't like telling people I'm trying to lose weight. I feel like it affects their perception of me.

**Uncertain/Ambivalent About Sharing on Facebook**—Many participants felt that some sharing was acceptable and that “trying to get healthier is a good message.” Others said that they did not “see the application” and that Facebook is not the right forum. Some said that they would share more if they had better control over who was in the online audience. Others described how they did not feel like they were “at that point yet” and that sharing workouts and the like was reserved for those who were “really fit already” or had reached a major milestone:

I have recently since I've started losing weight to try to like, share what I've been doing. But I'm only doing that because I've been successful.

**Shares Regularly on Facebook**—Some participants regularly shared on Facebook, posting about their workouts, new recipes, and pictures related to their weight-loss goals. One participant described this process as making a “live documentary” that prompted her friends to say, “Hey, can I run with you?” Some participants said that they were motivated by online social support:

I mean, we all do it for the likes ... People will be like, “You go girl!” or something because if they previously saw that you didn't really do that, but now you do, they're like, “That's cool.”

## Discussion

This study described how participants used social and mobile technologies and utilized their social networks while striving for weight loss. The results emphasize how individuals engage in social comparison and rely on accountability, highlighting the importance of thinking beyond social support in terms of social network influence (Berkman, Glass, Brissette, & Seeman, 2000).

Most of the existing research examining social network influence on weight loss has focused on social support (Ballantine & Stephenson, 2011; Cavallo et al., 2012; Hwang et al., 2010; Turner-McGrievy & Tate, 2013). Although the present study found that individuals relied on their friends for social support, participants also emphasized how they compared themselves to others in their network and how seeing others succeed motivated them to try harder. Social comparison (Festinger, 1954) may be motivated by individuals' desire to evaluate and/or enhance their sense of self (Gibbons & Buunk, 1999). In cases in which individuals perceive themselves to be underperforming relative to their peers, they may be motivated to improve, and in cases in which they are leading others, they may experience feelings of self-enhancement. Previous research on a large sample of culturally diverse adolescents showed that individuals who compared themselves to their friends engaged in more physical activity and had better dietary habits (Luszczynska, Gibbons, Piko, & Tekozel, 2004).

Yet it is also possible that social comparison is damaging. For example, passive consumption of Facebook feeds has been linked to increased loneliness (Burke, Marlow, & Lento, 2010), and some individuals have reported that social comparison was a barrier to talking about their weight-loss behaviors on Twitter (Pagoto et al., 2014). These examples could reflect the practice of social comparison to others in general online networks where membership is not related to health or shared goals. Social comparison may only be effective when comparing oneself to others working toward similar goals and when the difference between the individual and the network members, in terms of behavior and goal achievement, is relatively small. When comparing themselves to "nearby" others, individuals may be more readily able to envision their desired future selves. Under these conditions, individuals can engage in "mental contrasting" in which they can mentally elaborate on how they can reach their goal state (Oettingen & Schwörer, 2013).

In line with earlier research (Metzgar et al., 2014; Pagoto et al., 2014), individuals in the present study valued social accountability for weight loss. Participants discussed how they felt accountable to the SMART program and their existing networks to follow through on their goals. Treatment participants may also have felt accountable to the *ThreeTwoMe* virtual health coach, a phenomenon found in earlier work (Watson, Bickmore, Cange, Kulshreshtha, & Kvedar, 2012). Participants emphasized how knowing others were relying on them to show up in person and being confronted by a friend face to face were more influential than computer-mediated accountability.

Participants voiced a range of acceptance for sharing personal content via Facebook. Echoing earlier research, individuals regulated those with whom they shared their health behaviors and goals (Lampinen et al., 2009) and balanced self-presentation management and

eliciting social support for their health-related goals (Newman et al., 2011). Given that approximately 75% of college students' Facebook friends are not close connections (Manago, Taylor, & Greenfield, 2012) and that Facebook is used to cultivate a positive sense of self-worth (Toma & Hancock, 2013), it is unsurprising that individuals are hesitant to share information that might alter how they are perceived by others. However, Facebook use is also motivated by a desire to belong (Nadkarni & Hofmann, 2012), and therefore as individuals are exposed to new network norms of regular physical activity and healthy dietary habits they may be more likely to adopt these behaviors (Madan et al., 2010) and talk about them online.

Strengths of the present study include using principles of grounded theory and transparent coding steps to analyze the interview data, which bolsters the trustworthiness of the results. In addition, taking a qualitative approach to understanding the user experience affords critical insights that can be used in the design and interpretation of future digital health interventions. In particular, this study uncovered threats to the validity of the larger SMART randomized controlled trial, including control group participants using weight-loss apps and participants in different groups interacting with one another (this complements our quantitative finding that at least 30% of participants in the control group were Facebook friends with one or more participants in the treatment group; Godino et al., 2016). This contamination threat likely impacts most remotely delivered technology-driven randomized controlled trials given that individuals are increasingly exposed to and influenced by others in online environments.

The present study is limited in that the individuals interviewed constituted a convenience sample, and it is unknown whether these findings reflect the sentiment and experiences of the larger SMART sample. For example, certain demographics of the present study's participants (e.g., more males were interviewed in the treatment than in the control group) may have influenced the findings. On a related note, the extent to which the present study's findings are generalizable to other young adults or demographic groups is unclear. Furthermore, individuals talked about how having measurement visits every 6 months made them feel accountable to lose weight, which could be interpreted as observation bias (Adair, 1984) as opposed to social accountability.

## Conclusion

The present study can inform future work using technology and social and mobile technology to promote weight loss and weight-related behavior change. Recommendations for future research are provided in the supplemental online Appendix.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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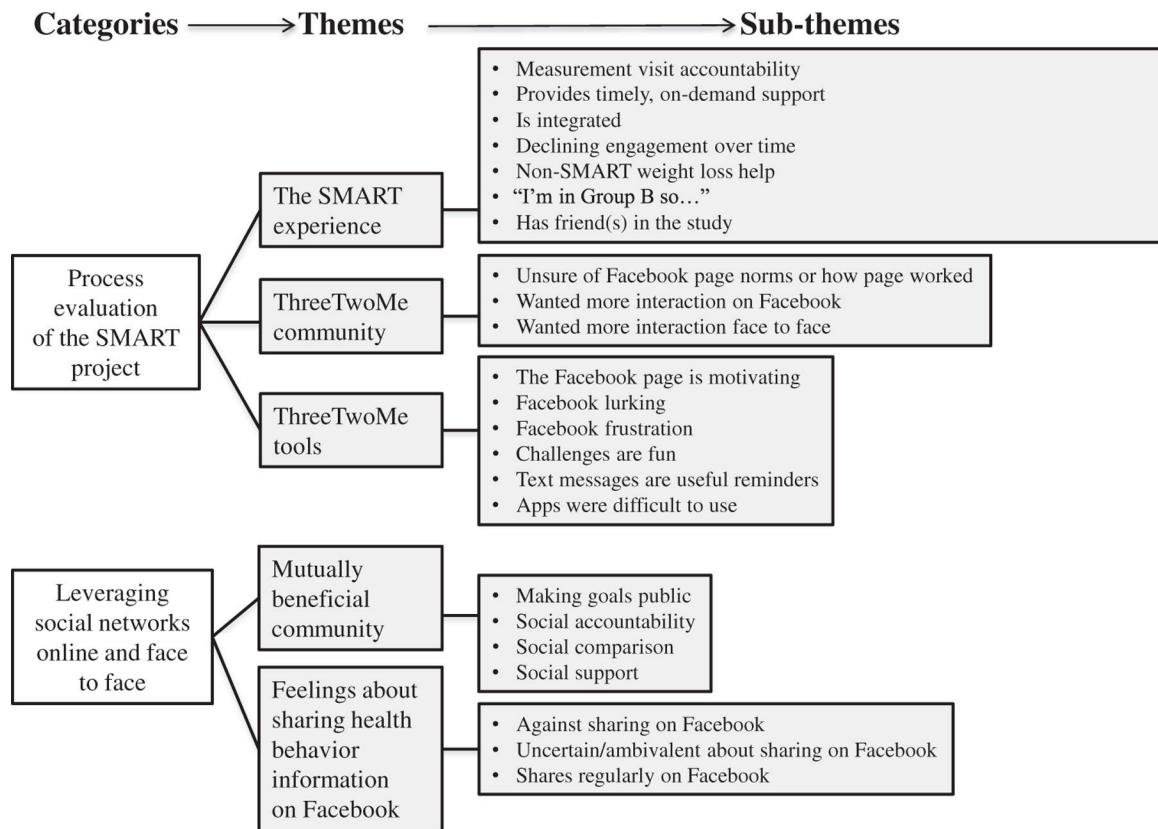
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**Fig. 1.** Categories, themes, and subthemes derived from the interviews. SMART = Social and Mobile Approach to Reduce Weight.

**Table 1.**

Demographic characteristics of SMART interview sample participants

Characteristic	Total	Treatment	Control
Age at baseline (years), <i>M (SD)</i>	25.00 (4.46)	24.55 (4.20)	25.00 (4.86)
Gender, <i>n (%)</i>	17 (45)	11 (55)	6 (33)
Male			
Ethnicity, <i>n (%)</i>	12 (32)	6 (30)	6 (33)
Hispanic			
Race, <i>n (%)</i>			
White	20 (53)	10 (50)	10 (55)
Asian	8 (21)	5 (25)	3 (17)
Black	3 (8)	1 (5)	2 (11)
Other	7 (18)	4 (20)	3 (17)
Undergraduate, <i>n (%)</i>	27 (71)	14 (70)	13 (72)
School, <i>n (%)</i>			
UCSD	27 (71)	15 (75)	12 (67)
SDSU	8 (21)	4 (20)	4 (22)
CSUSM	3 (8)	1 (5)	2 (11)
Visit, <i>n (%)</i>			
Final	16 (42)	8 (40)	8 (44)
18 months	16 (42)	8 (40)	8 (44)
12 months	6 (16)	4 (20)	2 (11)
BMI at baseline, <i>M (SD)</i>	29.77 (2.87)	29.73 (2.90)	29.81 (2.91)

*Note.* SMART = Social and Mobile Approach to Reduce Weight; UCSD = University of California San Diego; SDSU = San Diego State University; CSUSM = California State University, San Marcos; BMI = body mass index.