


May 2013

Self-Regulation of Saturated Fat Intake in Blue-Collar Employees: A Randomized Intervention Study

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SELF-REGULATION OF SATURATED FAT INTAKE IN
BLUE-COLLAR EMPLOYEES:
A RANDOMIZED INTERVENTION STUDY

by

Anjali Rameshbabu

A Dissertation Submitted
in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
in Psychology

at

University of Wisconsin-Milwaukee

May 2013

ABSTRACT

SELF-REGULATION OF SATURATED FAT INTAKE IN BLUE-COLLAR EMPLOYEES: A RANDOMIZED INTERVENTION STUDY

by

Anjali Rameshbabu

The University of Wisconsin-Milwaukee, 2013
Under the Supervision of Diane M. Reddy, Ph.D.

Blue-collar employees, compared to white-collar workers, are more vulnerable to developing chronic illness and are less likely to make healthy food choices. Saturated fat intake, an indicator of an unhealthy diet, is a major contributor to disease morbidity, mortality, and health care costs. Interventions directed at increasing *self-regulatory* skills for health behaviors could possibly serve to bolster one's sense of personal control in psychological and socio-economic realms. The current study was a 2 x 3 between-subjects repeated-measures randomized experimental design that examined the efficacy of a *Self-regulation skill + Education* intervention against an *Education Only* condition over a 6-week period, with assessments at baseline, week 4 (end of intervention), and week 6 (post-intervention). Outcome variables included saturated fat intake, self-efficacy for reducing saturated fat intake, and self-regulation for controlled eating. Blue-collar employees ($N=54$) at UWM were randomized to either condition. Participants in both groups had an equal number of individual in-person meetings. Both groups received the saturated fats information booklet, which discussed what saturated fat is, identified items high in saturated fats, and provided information on how to reduce this element in one's diet. *Self-regulation skill +*

Education participants also took part in a 4-week self-regulation skills training that involved selecting saturated fat reduction goals, self-monitoring, identifying barriers and strategies, self-administering rewards, evaluating progress and revising goals. Study procedures followed a carefully designed manual to ensure standardized intervention delivery; all participants were to receive equivalent educational informational with the intervention group receiving additional self-regulatory skills training. Mixed ANOVA analyses showed that significant differences emerged between groups. Specifically, the *Self-regulation skill + Education* group reported significantly lower saturated fat intake and greater self-regulation at the end of the intervention and post-intervention. The intervention group also reported significantly higher self-efficacy for saturated fat intake post-intervention. The present study has extended self-regulation research to saturated fat intake behavior within a low socio-economic status work group. The features of the Self-Regulation + Education intervention point to simple yet meaningful efforts for health behavior change and hold empirical and practical value. Research findings highlight that self-regulation training is an essential component of effective health behavior change and should be an integral component of multi-level illness prevention and health promotion efforts.

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ACKNOWLEDGEMENTS

One of the more challenging things about graduate school is summarizing nearly six years' worth of acknowledgements into one little page. This work is really a culmination of my time at UWM.

Diane Reddy, thank you for your guidance through the years and your unbridled encouragement through the peaks and valleys of my doctoral experience. Thanks to you there have been far more peaks than valleys. Your positivity and "amplified assistance" are truly inspiring and gifts I will take with me always.

I am deeply grateful to my committee members. Ray Fleming, statistically speaking, you are a significantly positive, humor-filled influence in my research design conceptualization and analyses. Katie Mosack, your attention to detail during my proposal was instrumental in building a sound study. Dr. Merritt, thank you for pointing out the importance of thinking ahead and designing a research project worthy of publication. Sue Lima, you have been a source of immense support at several times during my time here; for that I am so very thankful.

Megha Sehgal, thank you for your many skills and help in presenting my data; your eagerness for Microsoft Excel is infectious. Zubair Dhala, without your expertise and incredible patience, I wouldn't have had the Saturated Fats Information Booklet. Jill Robertson, your sheer good will and enthusiasm for my work have made me want to strive harder.

Katie Ports, thank you for being such a wonderful colleague and friend, for reading proofs, discussing research ideas, and sharing experiences. Sam Bilkey, Heidi Aringer, & Michael Schuttke, I greatly appreciate your help in preparing the materials for my study; I'd still be stapling worksheets if not for you.

Julia Syburg, your food models were a great supplement to my study materials. Lori Neighbors, your idea for a specialized food diary was simply brilliant, thank you.

Cedric Humphrey, Mark Bradley, and Cindy Tweedt, I have never had nor will probably ever have as helpful a team as you. Your willingness and prompt action in getting this study off the ground are truly remarkable and I am indebted to you. Jeff Pozorski, Shula Umeseaka, John Hamilton, Bryan White, Keith Jackson, Betty Younger, Ray Courtnage, Stephan Tremblay, Steve Henning, Margaret Robinson, and so many more of you than I can point out, your zeal, generosity, and sincerity are heart-warming and uplifting.

My participants, in addition to giving me such rich data and making my study possible, you have solidified my passion for positive health behavior efforts. I could not have asked for a more responsive and wonderful set of individuals for my doctoral research. I dedicate this work to you.

Lastly, I wouldn't be the person I am without my family. There is no greater blessing than a constant source of love and emotional strength. I owe my passion for health promotion, illness prevention, and holistic wellbeing to you.

SELF-REGULATION OF SATURATED FAT INTAKE IN
BLUE-COLLAR EMPLOYEES:
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The disease burden of preventable illness has increased in recent decades. Specifically, there has been a considerable rise in non-communicable or chronic illnesses such as heart disease, some cancers, stroke, and type II diabetes, many of which may be attributed to risky health behaviors such as unhealthy diet, inadequate physical activity, tobacco use, and excessive alcohol intake (World Health Organization [WHO], 2008). In particular, high fat intake, an indicator of an unhealthy diet, is a major risk factor for a variety of chronic conditions such as elevated cholesterol levels (U.S. Department of Agriculture [USDA], 2005), heart disease, and obesity, which in turn may be a precursor to hypertension, type-II diabetes, cardiovascular disease, cancer, asthma, arthritis, and depression (Leibhart, Wegner, & Pesik, 2008). Over two-thirds of adults are overweight or obese (Ogden & Carroll, 2010) and the United States spends a staggering \$75 billion per year on obesity-related medical costs (Leibhart et al., 2008).

Although overall or total fat intake is a major contributor to increased blood cholesterol and consequently, heart disease, dietary saturated fat remains a major contributor to elevated levels of low-density lipoprotein or “bad” cholesterol in the blood (USDA, 2005). Of concern is the American diet, which includes several foods that are rich in saturated fat such as red meats and convenience foods; consequently, the USDA emphasizes a greater need for Americans to decrease their intake of saturated fat. The American Heart Association (AHA, n.d.) recommends consuming not more than 16 grams of saturated fat per day, or maintaining it at less than 7% of total daily calorie intake (based on a 2000 calorie/day diet). A diet lower in saturated

fat is associated with a lower risk of cardiovascular disease, obesity, and diabetes (Rolls & Shide, 1992; Willet, 1994). Therefore, systematic efforts must be made to encourage lower saturated fat consumption.

Although the importance of a healthy diet pervades all segments of the population, the working population has increasingly become a target for health behavior change. Since adults typically spend at least a quarter of their lives at work (Schulte et al., 2007), it is conceivable that their lifestyles and health behavior choices are partly influenced by their job conditions. For example, Tenkanen, Sjobolm, and Harma (1998) reported that the relative risk for coronary heart disease among employees in high-stress jobs gradually increased with a higher number of adverse lifestyle factors. Specifically, job stress was associated with excessive eating, obesity (Nishitani & Sakakibara, 2006), and smoking in men (Radi, Ostry, & LaMontagne, 2007). According to the American Institute of Stress (2011), business organizations spend nearly \$300 billion annually due to employee absenteeism, employee turnover, diminished productivity, and related costs from stressful work conditions. Therefore, a closer look is warranted into the health behaviors of individuals employed in job sectors that are typically characterized by higher job stress.

The implications of certain occupational factors can extend from health behaviors to employees' health status as well. For example, Tsutsumi, Kayaba, and Ishikawa (2011) showed that men employed in high-demand and low-control jobs were three times more likely to suffer a stroke compared to those in jobs of higher occupational status; further, low job control was related to fewer positive health behaviors (Tsutsumi et al., 2003). In general, job strain has been associated with obesity (Brunner, Chandola, & Marmot, 2007). Thus, consistent patterns emerge between employment conditions and health. Occupational features such as low wage,

high demand and low job control are especially characteristic of the *blue-collar work group*, which constitutes nearly 30% of the United States work force (U.S. Bureau of Labor Statistics [BLS], 2010).

Blue-collar employees are manual workers, usually those employed in custodial services, transportation, factory work, maintenance, and related occupations, and are generally paid by the hour or on an incentive basis (Schwenk, 1997). Custodial workers, for example (who constituted the majority of the participants in the current study), earn a median annual wage of \$22,210 (BLS, 2010), and may be considered low-wage employees.

There are clear differences between the health status of blue-collar and white-collar employees. Blue-collar workers are more likely to be overweight than white-collar workers and demonstrate a greater risk for coronary heart disease (Nourjah, Wagener, Eberhardt, & Horowitz, 1994). Moreover, blue-collar employees show significantly higher frequency of absence due to sickness than do white-collar workers (Ihlebaek & Eriksen, 2003), with the incidence of sick leave being three times higher in blue-collar employees than among white-collar employees (Vahtera, Virtanen, Kivimaki, & Pentti, 1999). The findings suggest that blue-collar employees, whose jobs typically entail low wages, high demands, high stress levels, and low job control, may be especially vulnerable to developing chronic illness.

The higher incidence of negative health outcomes among blue-collar employees is accompanied by greater negative health behaviors (Alexy, 1990; Vasse, Nijhuis, & Kok, 1998). For example, individuals in this work sector are less likely to make healthy food choices (Beydoun & Wang, 2008; Kristal, Glanz, Tilley, & Li, 2000). A number of factors may be responsible for this trend. One such factor is health awareness; blue-collar employees have been shown to demonstrate a general

lack of health awareness (Bagwell & Bush, 2000; Nourjah et al., 1994). A related concern within this work sector is lower educational attainment, which may be associated with a lower likelihood of adopting a healthy diet (Droomers, Schrijvers, & Mackenbach, 2001).

Such findings suggest that interventions targeted at increasing health-related knowledge may improve health behaviors. However, this approach does not explain the lack of healthy behaviors among individuals who may have greater health awareness. Blue-collar employees may often be cognizant of health risk factors (Kolmet, Marino, & Plummer 2006; Vasse et al., 1998) but this health risk awareness may not directly relate to their engagement in healthy behaviors (Naslund, 1997) such as reducing saturated fat in their diet. It is possible that health information, though necessary, may not be sufficient in bringing about behavior change.

A psychosocial construct integral to health behavior change is self-efficacy, or the belief in one's ability to accomplish or execute a course of action and manage situations (Bandura, 1977). Blue-collar employees are less likely than white-collar workers to believe in their ability to avoid illnesses such as stroke or heart attack (Niknian, Linnan, Lasater, & Carleton, 1991); it is possible that such a preconception could translate to a lack of confidence in their ability to achieve positive health thereby not attempting to do so. Indeed, there is significant association between health status and self-efficacy (Weitzel, 1989) as well as between self-efficacy and health behaviors (Peterson, Dubowitz, Stoddard, Troped, Sorenson, & Emmons, 2007) for employees in the blue-collar work group.

According to Weitzel (1989), self-efficacy is strongly linked with persistence, which is vital in positive health behavior maintenance, and integral to preserving tenacity in the face of obstacles (Bandura, 1977). Further, self-efficacy may be an

important determinant of the intention to follow a low-fat diet (Povey, Conner, Sparks, James, & Shepard, 2000); it is accompanied by a more positive attitude and greater perceived control (Nguyen, Otis, & Potvin, 1996). It is possible that blue-collar employees are less likely to believe in their ability to successfully engage in positive health behaviors. According to Ross and Wu (1995), restricted employment opportunity, which is characteristic of blue-collar work, is associated with a lack of control over work life. It is conceivable that this lack of perceived behavioral control may inhibit the adoption of positive health behaviors. Such theoretical findings have been useful in providing a knowledge base for developing behavior modification strategies.

In keeping with the trend in extant literature, most behavior change interventions thus far have addressed traditional theoretical constructs including self-efficacy, intention, knowledge level, attitudes, and social norms, which stem from models such as the Social Cognitive Theory, the Theory of Planned Behavior, the Self-Determination Theory, and the Transtheoretical Model (Ory, Jordan, & Bazzarre, 2002). With regard to the working population, although there has been a greater focus on employee health promotion programs in recent decades, fewer interventions have been developed exclusively for blue-collar employees (Gottlieb, Weinstein, Baun, & Bernacki, 1992). Further complicating this situation is the trend among blue-collar employees of non-participation in workplace health promotion initiatives (Glasgow, McCaul, & Fisher, 1993; Sorenson, Stoddard, Ockene, Hunt, & Youngstrom, 1996).

Nonetheless, there is promise for health behavior interventions within the blue-collar work sector. For example, large-scale interventions such as the “Health Works for Women” (Campbell et al., 2002), “Food at Work” (Lassen et al., 2011),

“Working Well Trial” (Emmons, Marcus, Linnan, Rossi, & Abrams, 1994), and “Working Healthy Projects” (Emmons, Linnan, Shadel, Marcus, & Abrams, 1999) are some programs that have sought to improve multiple health behaviors of blue-collar employees at the worksite, using a variety of individual and organizational strategies.

According to a review by Blue and Black (2005), worksite interventions have demonstrated reasonable success. A possible factor in this outcome may be the incorporation of organizational variables in many workplace interventions. For example, the “Food at Work” program by Lassen and group (2011) addressed individual dietary choices as well as offered healthier nutrition options at the canteen. In addition to providing education and feedback, Campbell and colleagues (2002) trained women to be social support providers at the workplace for the “Health Works for Women” project.

Although addressing ecological factors is highly useful, especially given the positive results of the aforementioned projects, the fact remains that behavior change success is largely dependent on external factors, such as altering cafeteria meal plans, training personnel on site to provide the necessary social support, worksite willingness to invest in employee health, etc. It is possible that once outside the therapeutic control of organizational resources, and without its protective elements (healthy canteen options, workplace social support provider) the employee’s behavior change may not be resistant enough to combat potential barriers outside the work environment. Unfortunately, there is little investigation into whether employees who benefitted from worksite programs continued to show intervention effects after permanently leaving the setting (such as quitting their job). A more compelling approach could be to empower the individual with self-help skills that can be

instrumental in managing and actively controlling his or her own health behavior, regardless of environmental setting.

Another common feature of worksite endeavors is its resource-heavy nature. Large-scale interventions often call for organizational involvement and are labor-intensive, complex, and expensive, which may not constitute a highly pragmatic approach. From an empirical standpoint, such interventions are accompanied by threats to the integrity of intervention delivery (Blue & Black, 2005) with little scope for reliably monitoring the work of several research personnel at each stage of delivery. Moreover, in light of the enduring nationwide economic setback, when extensive spending may be a key concern, it may be more practical to approach health behavior change from a minimal resource standpoint and channel available resources toward person-centered rather than organization-centered solutions.

A growing body of literature suggests that interventions directed at increasing self-management or *self-regulatory* skills may be more effective in initiating and sustaining behavior change. For example, self-regulation has been found to mediate the relationship between intention and behavior (deBruin, Sheeran, Kok, Hiemstra, Prins, Hospers, et al., 2012), which could also help explain the gap between having health awareness and acting on it. Moreover, teaching self-regulation skills serves to involve the individual in making the behavior change rather than passively providing them with the information to do so (Michie, Abraham, Whittington, McAteer, & Gupta, 2009). Allowing the individual to be the principal driver of their behavior change experience could potentially serve to increase motivation and commitment, while enhancing behavior change self-efficacy.

Emerging across Bandura's Social Cognitive Theory (1991), Carver and Scheier's Control Theory (1982), Ewart's Social Action Theory (1991), and health

behavior perspectives of Leventhal, Brissette, and Leventhal (2003) and Karoly (1993), self-regulation broadly refers to a cognitive and emotional motivational system of selecting and setting goals, developing and enacting strategies to achieve those goals, appraising progress, and revising goals and strategies accordingly (Karoly, 1993; Ridder & Wit, 2006). Specifically, self-regulation includes (a) behavioral monitoring, (b) goal specification, (c) barrier identification and strategy implementation, (d) self-rewarding, and (e) self-evaluation and goal-revision (Bandura, 2005; Karoly, 1993).

Behavioral monitoring or self-monitoring involves closely observing one's target behavior in its naturally occurring contexts. Since many dietary behaviors have acquired a degree of automaticity, self-monitoring brings mindful attention toward goal-relevant information regarding the target behavior, thereby enabling a more accurate behavior change plan (Karoly, 1993). Self-monitoring is an integral regulatory skill throughout the behavior change plan; a meta-regression by Michie et al. (2009) shows that interventions which incorporate self-monitoring are significantly more effective than those that do not.

Goal specification involves selecting a realistic yet challenging goal that can be attained through effort and persistence (Schwarzer, 1999). Goal specification is a key component in the tailored behavior change plan and perhaps most emphatic of the active and personal nature of a self-regulation behavior intervention. Selecting a carefully considered and preferred goal encourages the participant to take responsibility and make the commitment to complete the asserted behavior change. Bovend'Eerd, Botell, and Wade (2009) assert that a "SMART" or specific, measureable, achievable, realistic/relevant, and timed goal is important in bringing about successful behavior change. Moreover, actively working toward and achieving

a challenging yet attainable goal are closely tied to one's self-efficacy (Bandura, 2005), which further motivates the individual to persist in making and sustaining the behavior change.

Behavior change is a personal experience as are its accompanying *barriers and facilitators*. Envisioning and identifying the most likely barriers along the way complement one's self-monitoring activity and involves the individual in devising appropriate measures to overcome them. For example, temptation cues for high-fat foods may be barriers to dietary change in response to which, one can devise strategies to exercise dietary restraint (Johnson, Pratt & Wardle, 2011), and replace such cues with goal-directed actions (Kroese, Adriaanse, Evers, & DeRidder, 2011), eg., actively avoiding such cues. Identifying obstacles to health behavior goals and devising strategies have been essential elements of a number of effective interventions (eg., Stadler, Oettingen, & Gollwitzer, 2009; Annesi, 2011a; Annesi, 2011b) and constitute a major component of self-regulation.

Given that self-regulation can be an affective scheme, a vital part of behavior modification is *rewarding oneself*. In addition to setting goals, identifying barriers and problem solving, one plans for rewards to self-administer, contingent on achieving specified goals. Rewards may include positive feedback and self-congratulations (Poddar, Hosig, Anderson, Nickols-Richardson, & Duncan, 2010), or more tangible/material rewards (Clark, Janz, Dodge, & Sharpe, 1992; Christensen, Moran, Wiebe, Ehlers & Lawton, 2002). Self-reinforcement serves to increase self-efficacy and positive affect (Cellar et al., 2011) in a possibly challenging experience, and could bolster emotional and motivational efforts.

Finally, periodically evaluating one's progress in relation to originally specified goals serves to guide further behavior by mobilizing personal resources and

driving remedial efforts toward closing the gap between one's current status and the intended goal (Karoly, 1993). *Self-evaluation* also allows for *goal revision*, where potentially unrealistic goals may be altered to more feasible, achievable ones or successfully mastered goals can make way for more challenging ones (Bovend'Eerd et al., 2009). Goal revision could assuage the disappointment accompanying failure of arduous goal attainment, increase self-efficacy, and underscore the belief that one's health behavior goals can indeed be achieved. Thus, self-evaluation and goal revision are chief elements of self-regulation.

The efficacy of self-regulation has been demonstrated with regard to a number of health behavior targets including weight loss (Finch et al., 2005), cardiovascular risk (Ewart, Elder, & Smyth, 2011), treatment adherence (Christensen, Moran, Wiebe, & Ehlers & Lawton, 2002), physical activity [Annesi, 2011a; Rhodes & Pfaeffli, 2010], and healthy eating (Papies, Stroebe, & Aarts, 2008). Self-regulation research has also been examined in a variety of populations, such as women (Stadler, Oettingen, & Gollwitzer, 2009), college students (Poddar, Hosig, Anderson, Nickols-Richardson, & Duncan, 2010), older adults (Clark, Janz, Dodge, & Sharpe, 1992), overweight individuals (eg., Genugten, Empelen, & Oenema, 2010), and clinical populations (eg., Christensen, Moran, Wiebe, Ehlers, & Lawton, 2002; Luszczynska, Scholz, & Sutton, 2007). Relatively little self-regulation investigation has been made hitherto into saturated fat consumption among blue-collar employees, who were the focus of the current study.

Despite the expanding literature in the area of self-regulation, it has rarely been the sole focus of investigation and more often examined in conjunction with other theoretical constructs such as optimism (Finch et al., 2005) outcome expectancy, social support (eg., Emmons et al., 1994; Poddar et al., 2010), or stage of

change (eg., Campbell et al., 2002). Further, many interventions fail to directly incorporate all of its components (Anderson, Winett, Wojcik, & Williams, 2010; Kroese et al., 2011) and instead apply one or more of them in combination with other theoretical elements. Although such designs may be all-inclusive, it could be difficult to closely focus on and systematically implement the key components of self-regulation. Given that self-regulation is an emerging field, it is especially important to thoroughly and exclusively investigate its components. The current study sought to test an intervention that is exclusively focused on the key components of self-regulation, namely, self-monitoring, goal specification, barrier and strategy identification, self-reward, and self-evaluation with goal revision.

The majority of existing interventions employ a multi-behavioral focus, often combining diet and physical activity (Anderson et al., 2010; Annesi & Gorjala, 2010) or diet, physical activity, and smoking (Oenema, Brug, Dijkstra, Weerdt, & Vries, 2008). Further, diet interventions combine fruit and vegetable intake with fat intake and fiber (eg., Emmons et al., 1999). Although this approach makes sense given that positive or negative health behaviors tend to cluster together (Phillips & Danner, 1995; Schoenborn & Adams, 2008), the determinants of various health behaviors may not be identical to each other. For example, it is possible that one finds it difficult to exercise without a friend (i.e., social support), eats fatty foods because they are readily available (i.e., convenience), and has difficulty breaking the addictive nature of cigarette smoking (i.e., habit and/or addiction). In such a situation, it may be difficult to isolate the underlying factors of each behavior and simultaneously address them within a single intervention effort.

Further, the multi-behavior change experience could potentially become confusing or overwhelming for the participant, who must simultaneously work on

altering multiple factors. This could also possibly increase the risk for failure. Focusing on a single behavior affords the individual greater control and a more precise focus, allowing him or her to thoroughly master the self-regulatory skills for changing that behavior, and be enabled to generalize the skills to a different behavior at another time. The present study centered on dietary fat intake. Furthermore, compared to total fat intake, saturated fat intake is a greater concern with regard to elevated blood cholesterol. Therefore, the focus of the current study was to bring about a reduction in one's saturated fat intake.

Lastly, self-regulation interventions range from multi-session plans (Clark, Janz, Dodge, & Sharpe, 1992) to more parsimonious single-session treatments (Stadler, Oettingen, & Gollwitzer 2009; 2010). Parsimonious interventions such as single-session plans or those that require no direct contact with the participant have been credited for their ease of administration (Armitage & Conner, 2001). However, intervention review studies (Benedict & Arterburn, 2008; Fjeldsoe, Neuhaus, Winkler, & Eakin, 2011) highlight that interventions characterized by greater face-to-face contact and more frequent prompts show greater behavior maintenance. Such a trend may have to do with the basic nature of health behaviors. Specifically, dietary behaviors such as saturated fat intake are often habitually driven (deBruijn, Kroeze, Oenema, & Brug, 2008); thus it may be difficult to reliably disrupt a maladaptive behavioral pattern with only a single session.

Typically, the single session in self-regulation interventions has involved the use of implementation intention (eg., Kroese et al., 2011; Prestwich, Ayres, & Lawton, 2008; Stadler et al., 2009; 2010), an “*If....Then....*” technique characterized by having the participant specify the intention to implement a strategy in response to an envisioned obstacle. An example would be, “*if I get hungry before lunch, I will eat*

an apple instead of chips.” Although this technique is simple, and some implementation intention studies have met with success, it is somewhat difficult to generalize the findings. Such studies have included only women (Stadler et al., 2009; 2010), who tend to engage in fewer negative health behaviors than men (Naslund, 1997), dieters (Kroese et al., 2011) or clinical populations (eg., Luszczynska et al., 2007), who would conceivably be more motivated. Thus, it may be difficult to generalize the findings to blue-collar employees who may be less inclined to engage in healthy behaviors.

A single-session experience in a research setting may afford an augmented sense of motivation that may be temporary and less resistant to barriers introduced by one’s own habitual patterns in the natural setting. Further, it may not be possible to envision all goals, barriers and strategies in one sitting. Instead, sustained contact with the participant as he or she goes through daily routine in the natural environment could better equip the individual with self-regulatory skills and solidify them by promoting active engagement in tackling barriers as they come up, discussing unforeseen obstacles in subsequent sessions and facilitating ongoing problem-solving. The intervention in this dissertation study involved a 4-week sustained contact period during which participants learnt self-regulatory skills concurrently with engaging in behavior change.

Amidst the looming health care spending, it is likely that those lower in socio-economic status are more affected by the repercussions of a concurrent flailing economy. Unfortunately, blue-collar workers, who are often low wage earners, and typically fall in the lower socio-economic category, are susceptible to a number of health and economic difficulties. Thus, prevention of negative health consequences makes eminent sense, a fundamental route for which is health behavior modification.

Further, given that the health literature on blue-collar employees points to low perceived control, inadequate self-efficacy, and limited opportunity, it is imperative that individuals in this work sector be empowered to take action to improve their own health behavior. A plan to increase self-regulation in this group is not only essential, it could potentially serve to emphasize personal health responsibility toward making a lifestyle change and improving future health prospects.

A pertinent step toward a self-regulatory approach would be to address a basic personal behavior -- one's eating habits. A relatively modest albeit important challenge in bringing about dietary behavior change is reducing saturated fat intake, which is often implicated in elevated blood cholesterol levels and heart disease. In addition to possibly altering a major health risk behavior in a vulnerable population, teaching one to regulate one's own saturated fat intake could serve as a gateway to bolster a sense of personal control at a psychological and socio-economic level, and reinforce the belief that positive health can in fact be in one's own hands. To that end, interventions that are simple, specific, tailored, and feasible are more likely to be successful (Blue & Black, 2005). The present study was an effort to test the efficacy of a tailored intervention to reduce saturated fat intake among blue-collar employees.

Study Aims

The aim of the proposed study was to examine the role of self-regulation in reducing saturated fat intake among blue-collar employees. Specifically, the goal was to investigate the efficacy of a tailored self-regulation intervention in comparison with an educational information-only condition. In comparison with simply providing educational information regarding dietary reduction of saturated fat, a self-regulation intervention that also teaches the necessary behavior change skills required to actively manipulate and regulate one's own eating habits was anticipated to be more

successful. Therefore, it was expected that providing educational information along with teaching self-regulatory skills [*Self-regulatory skill + Education*] may be more effective than providing educational information alone [*Education Only*] in reducing saturated fat intake, increasing self-regulation, and enhancing self-efficacy. The 6-week study included assessments at baseline (T0), end of the intervention (T1, end of week 4), and post-intervention (T2, end of week 6). A schematic illustration of the conceptualized study design and outcomes is presented in Figure 1.

Hypotheses

1. At the end of the intervention/T1, significant differences would emerge between *Self-regulatory skill + Education* and *Education Only* groups for saturated fat intake, self-efficacy for reducing saturated fat intake, and self-regulation for controlled eating (outcome measures). Specifically, *Self-regulatory skill + Education* group would indicate significantly lower saturated fat consumption, greater self-efficacy for reducing saturated fat intake and greater self-regulation for controlled eating than *Education Only* group.
2. *Self-regulatory skill + Education* group, but not *Education Only* group, would maintain reduced saturated fat consumption, increased self-efficacy for reducing saturated fat intake and increased self-regulation, and possibly further these outcomes, from the end of intervention (T1) to post-intervention (T2).
3. Interaction effects would emerge for time and condition. Specifically, reduced saturated fat consumption, increased self-efficacy, and increased self-regulation will be greatest for *Self-regulatory skill + Education* group over the course of the study.

Methods

Participants

Sample size for the current study was estimated based on a priori power analysis. Specifically, according to statistics software program, G*Power 3 (Erdfelder, Faul, & Buchner, 1996), to obtain a medium effect size ($f = .25$; Cohen, 1988) for the outcome variables (namely, saturated fat intake, self-efficacy for reducing saturated fat intake, and self-regulation for controlled eating) at an expected power of 95%, a total of 44 participants was required.

The present study consisted of 54 participants, in the age group of 27-69 years ($M=50.86$, $SD=9.79$). The majority was African American (52%), and Caucasian (35%); 9% was Hispanic, and 2% was American Indian. Thirty percent of participants had no dependents and 26% had two dependents. Most participants had completed some college (43%), with 30% having graduated high school or the equivalent. Participants had spent an average of 11.13 years ($SD=8.59$) in their current occupation; most were custodial workers at the University of Wisconsin-Milwaukee (UWM) with the majority of participants (53%) earning within the hourly wage range of \$11.50-\$14.49. Descriptive statistics pertaining to demographic details for the two groups at baseline are provided in Table 1. No significant differences were found on the aforementioned factors between *Self-regulatory skill + Education* and *Education Only* groups.

With regard to participants' responses on the Health and Food Information questionnaire, no significant differences were observed between groups on the following variables; therefore, information for the combined groups is reported. The majority (59%) of participants had not been diagnosed with high cholesterol; those that had been diagnosed had had the condition for several years (over three decades).

Most participants (59%) indicated that they had not been recommended to reduce the amount of fat in their diet, either by their doctor or a loved one. Nonetheless, 67% reported that they had made at least one attempt in the past to reduce their fat intake. Of the participants who had made a prior attempt, 15% reported that they had made more than five attempts, 13% said their attempt was ongoing, few participants indicated fewer than five attempts or made attempts on and off. Thirty three percent of participants felt that they had been somewhat successful in their attempt(s) to reduce fat intake. On average, participants in both groups were overweight at baseline ($M=30.08$, $SD=6.06$) and at the end of the study ($M=29.93$, $SD=5.95$); no differences were observed between groups for BMI at baseline or at the end of the study period.

Next, five “Who” questions tapped into food practices including eating out/eating home-cooked meals, grocery shopping, and cooking. Thirty two percent of participants indicated that they were the ones who always shopped for groceries; another 32% reported it was always their family member (spouse/partner/parent/other). When asked who decided what groceries to get, 39% reported that it was always their family member, 28% said it was always themselves. In response to who did the cooking at home, 32% said it was always themselves, for 20% it was always their family member, 17% said it was mostly their family member or both, themselves and their family member. Thirty three percent reported that it was their family member who always decided what to cook, with 28% indicating “always me.” 52% of the participants indicated that they chose what to get when eating out; 30% indicated that their family member made this decision. Here as well, there were no significant differences on the aforementioned factors between groups.

Forty six percent of participants reported that 16-20 meals during the week were home-cooked while 20% said this was the case for 11-15 of their meals per

week. Sixty one percent of study participants reported that 1-5 meals per week were not home-cooked (take-out, dining out, prepackaged foods, etc.), 17% said this of 6-10 meals per week. Lastly, 65% of participants reported that they snacked 3-5 times a day, 17% snacking more than five times a day; the majority (82%) consumed unhealthy snacks (baked items, fried foods, candy, etc). No significant differences were found between groups on any health or food variable.

Procedure

Individuals aged 18 years and above were recruited from UWM custodial and physical plant services. Flyers announcing the study (Appendix A) were posted at locations where employees punched in and out each day, as well as at break rooms where employees gathered. Sign-up sheets were left behind for interested individuals to be contacted. Potential participants were recruited as long as they were willing to take part in a study to reduce saturated fat intake, the exclusion criteria being concurrent participation in a health behavior program (at UWM or elsewhere) and any ongoing or impending major lifestyle-changing event such as a medical procedure, plans to quit their job, move, etc. The UWM Institutional Review Board approved the study prior to recruitment (Appendix B).

The study was a randomized 2 x 3 between-subjects repeated-measures experimental design comparing two conditions, namely, *Self-regulatory skill + Education* (Intervention) and *Education Only* (Control), over a period of 6 weeks, with assessment at three time points, Baseline (T0), End of intervention at Week 4 (T1), and Post-Intervention at Week 6 (T2). In-person, individual weekly meetings were conducted for participants in both groups over the six-week period. Thus, a total of six meetings were conducted with each participant, three of which included assessments at the indicated time points. All meetings were conducted on campus. For

the first meeting, participants were scheduled for a one-hour meeting on campus, during which time they were first randomly assigned to either group. The following is a brief description of the procedure for each of the three major assessment meetings during the study. Please refer to study framework in the manual (Appendix I) for a more detailed description of events over the course of the study for the two groups. Following randomization, informed consent [Appendices C (*Self-regulatory skill + Education*), D (*Education Only*)] was obtained from the participant prior to beginning study activities.

(a) Time 0/Day 1, Baseline: This initial meeting took approximately one hour for the *Self-regulatory skill + Education* group and 40 minutes for the *Education Only* group. A file [including completed materials, measures, and Participant Activity Tracker forms (Appendices J, K)] was prepared for each participant and maintained throughout the study period. During the initial meeting, the participant was informed that there would be weekly in-person individual meetings over a 4-week period (T1), followed by a 2-week break, and concluding with a final meeting at the end of six weeks (T2) from this initial meeting. Following informed consent, the participant was asked to complete baseline measures for saturated fat intake, (Appendix N), self-efficacy for reducing saturated fat intake (Appendix O), and self-regulation for controlled eating (Appendix P). This was followed by the demographic information questionnaire (Appendix E), the Health & Food Information questionnaire (Appendix F), and saturated fats knowledge questionnaire (Appendix H).

Next, the participant was given the saturated fats information booklet (Appendix G) to study, which contained information from AHA and CDC websites regarding saturated fat intake. Specifically, the booklet described what saturated fat is, its negative health implications, AHA recommendations for saturated fat intake,

information on ways to reduce this element in one's diet, and website links for further information. After studying the booklet, the saturated fats knowledge questionnaire was administered again to assess learning. The participant was given the booklet to keep. Next, participant weight and height were recorded; these details were used to compute Body Mass Index (BMI).

According to Shumaker, Dugan, and Bowen (2000), a way to reduce attrition in intervention research is to be clear about study demands at the outset and to explicitly communicate to the participants the value of their contribution to the study. In consideration of this, study expectations were described and it was conveyed that although their participation was voluntary, participants' sustained involvement during the course of the 6-week study period was vital and highly appreciated. This concluded the meeting for each *Education Only* group participant, after scheduling a meeting for the following week.

Participants in the *Self-regulatory skill + Education* group were next introduced to their first self-regulation activity--self-monitoring. They were informed about monitoring their daily saturated fat intake starting the same day as this initial meeting and continuing on for the duration of the study. Each participant was taught to correctly complete the food diary (Appendix L), which was actually a modified version of the outcome measure for saturated fat intake, MEDFICTS (Appendix N). The rationale for this is elucidated in the Materials section. Along with instructions, the diary included commonly used visual examples from the USDA and AHA websites (n.d.) to illustrate the portion sizes indicated in the diary. A brief training about portion sizes and accurate recording was provided at this time. Finally, a meeting time in the same location was scheduled for a week from the first meeting along with a reminder to bring back their completed food diary.

Week 2, Day 8: To maintain a similar meeting structure for both groups, each *Education Only* participant was also called in for a face-to-face meeting each week. During the second meeting, the participant was asked if s/he had reviewed the saturated fats information booklet and if s/he had any questions about it. If the participant had not done so, the researcher again encouraged him/her to review the booklet and consider reducing their saturated fat intake using the strategies mentioned in the booklet. An appointment was scheduled for Week 3.

The *Self-regulatory skill + Education* participant began the second weekly meeting; any concerns regarding the food diary for the past week were first addressed. Next, the individual was coached on their next self-regulation activities--goal specification, barrier and strategy identification, and self-reward identification; this was also the time in the study where the tailored aspect of the study began. Specifically, the participant was asked to select two goals for saturated fat intake reduction, (a) one to be achieved by the end of week 4/T1 and the other (b) for the current week. Next, the participant engaged in an exercise of anticipating barriers that could emerge in the goal effort and developing strategies to counter these barriers should they come up. This exercise tapped into and incorporated the individual's typical work day and weekend context as well as specific aspects of the person's job (e.g., flexibility on the job, stress, work timings, and meal planning). Finally, the participant was encouraged to select a reward to self-administer contingent on achieving the specified weekly goal. This reward, which could be tangible (eg., watch a movie) or nontangible (eg., pat on the back), could not be a food item rich in saturated fat.

The participant was then coached on accurately recording these activities in the "Record Your Actions" (Appendix M) form. At this time, the "Record Your

Actions” form and the food diary were compiled into the “Activity Booklet” for convenience. An appointment was scheduled for Week 3 along with a reminder to bring back the completed Activity Booklet.

Week 3, Day 15: This week, the *Education Only* participant was first asked if there were any questions about saturated fat. Participants were free to ask questions about specific food items and the amount of saturated fat content. The researcher steered clear of discussing any intervention elements and adhered only to information regarding saturated fat. Further, in order to maintain consistency between groups with regard to content (except intervention components) and duration, the participant in the *Education Only* group was engaged in a discussion of their daily routine. Specifically, they were asked to describe a typical working day and a typical weekend, with special emphasis on their eating patterns. Lastly, an appointment was scheduled for Week 4. Any changes in appointments were noted on Participant Activity Tracker, “A” in their file.

For *Self-regulatory skill + Education* participants, this week comprised the final self-regulation component—self-evaluation and goal revision. After discussing any concerns from the past week, the participant was asked to evaluate his/her progress in relation to the earlier specified overall goal. S/he was then asked to specify a goal for week 3. Activity Booklet for week 2 was exchanged for a fresh one for the current week. The Participant Activity Tracker, “B” was then updated by the researcher and replaced in the file. Finally, an appointment was scheduled for week 4.

Week 4, Day 22: This week, meetings with the *Education Only* participant began as usual by allowing the individual to ask any questions about saturated fat foods, if any. Additionally, they could discuss any topics from the previous weeks including their work, weekends, and eating. The participant was also asked about their

work day, aspects of their job that the individual liked or disliked and if and how it played into their eating habits. This information was elicited for the *Self-regulatory skill + Education* participants as well, and incorporated into the various self-regulation components throughout the intervention period. Lastly, the T1 meeting was confirmed and noted in the participant's file. Day 22, i.e., end of week 4 meeting for *Self-regulatory skill + Education* participants was identical to the Day 15 meeting, i.e., they discussed concerns (if any) from the past week, evaluated progress toward earlier specified overall goal, revised their goal for the current week, and exchanged week 3 Activity Booklet for week 4. Finally, an appointment was scheduled for T1 and noted.

(b) Time 1/Day 29, End of Intervention: This marked the end of the intervention period. Each participant from both groups returned to the lab as previously scheduled. The outcome measures for saturated fat intake, self-efficacy for reduced saturated fat intake, and self-regulation for controlled eating were administered. The final meeting (T2) was scheduled for two weeks from this time at the same location. No contact was made with the participant during the two-week period between T1 and T2.

For *Self-regulatory skill + Education*, in addition to the aforementioned T1 events, the participant returned the completed Activity Booklet from Week 4 and was given Activity Booklets for both, Week 5 and Week 6 along with instructions to carry on the study activities as they had been for the previous weeks and a reminder to return them at T2. At this time, the participant reviewed the goals, barriers and strategies in advance for the following two weeks post-intervention. Any clarifications regarding completion of Activity Booklets were made. For this group as

well, no contact was made with participants during the two-week period between T1 and T2.

(c) Time 2/Day 43, Post-Intervention: This marked the end of the study. The same procedure as T1 was followed at this point. *Self-regulatory skill + Education* participants turned in their completed Activity Booklets from Weeks 5 and 6. After all measures had been completed and all materials had been gathered, each participant in both groups was given the monetary compensation of \$75 at this final meeting. The delayed incentive was intended to minimize attrition, which tends to be greater among blue-collar employees (Jeffrey et al., 1993).

Materials

Demographic information (Appendix E): This questionnaire included basic demographic and employment-related information.

Health and Food Information (Appendix F): The items on this questionnaire briefly touched upon the health status of the participant and gleaned information on general food-related activities within the home. With regard to health status, the participant was asked about elevated cholesterol conditions, medications, and recommendations to alter their diet. This was followed by questions directed at any prior attempts to alter their diet and related success. With regard to food-related activities, questions tapped into food buying, cooking, and eating practices within and outside the home. This information was to serve as a useful background within which to understand the eating patterns of the participant and possibly aid in tailoring the intervention.

Saturated fats information booklet (Appendix G): The booklet was designed for the current study and incorporated information from websites of AHA and CDC. The educational information booklet, common to both study groups, described what

saturated fat is, its negative health implications, AHA recommendations for saturated fat intake, information on how to reduce this element in one's diet, both within the home and when eating out, and website links for further information.

Saturated fats knowledge questionnaire (Appendix H): As a way of assessing learning, 10 multiple-choice items pertaining to the content of the saturated fats information booklet was provided before and after the participant had studied the booklet during the baseline meeting, as well as at T1 and T2. Examples are "Saturated fat can increase the risk for heart disease by increasing bad cholesterol levels in the blood: True or False" and "It is recommended that we limit our saturated fat intake to less than ____% of our daily calories". The number of correct answers was summed up for each participant. A higher score indicated greater knowledge.

Intervention manual (Appendix I): A manual for the intervention was drawn up to outline a clear framework for the study. Development of the intervention manual was guided by an extensive examination of the self-regulation literature. Feedback and guidance were sought from experts in the area of health behavior change and self-regulation, researchers within the department, and fellow lab members. The manual included a description of the study framework, including timeline and order of events. This is followed by a detailed account of weekly activity for participants of both, *Self-regulatory skill + Education* and *Education Only* groups along with scripts used at each meeting. For the *Self-regulatory skill + Education* group, the scripts also contain built-in examples of likely conversations with participants as they proceed through the tailored plan of specifying goals, identifying barriers and strategies, and self-rewards, progress evaluation and goal revision.

The manual also contains a scoring system developed to assess the features of the *Self-regulatory skill + Education* intervention. This scoring component was not

intended for assessment of outcome measures between groups; it was simply intended to provide a deeper understanding of the extent of participant involvement in and adherence to the various self-regulation activities. Scores for each component were assigned based on the data in the Record Your Actions worksheet (Appendix M, described below) and Participant Activity Tracker, Form B (Appendix K, described below), completed by participant and researcher respectively. Two types of scores were obtained, an overall intervention self-regulation score that summed across the five components, and individual scores for each component. Higher score indicated higher adherence to the intervention.

Participant Activity Tracker, Form A (Appendix J): This form pertained to *Education Only* participants. Maintained by the researcher, the form contained study activity information including the participant's contact details, scheduling information, or any concerns that may have arisen.

Participant Activity Tracker, Form B (Appendix K): This form pertained to *Self-regulatory skill + Education* participants. As with Form A, it was maintained by the researcher and contained study activity information including the participant's contact details, scheduling information, or other concerns. In addition, it also contained a record of weekly self-regulation activities, including specified goals (overall and weekly), identified barriers and strategies, and self-rewards, and participant's self-evaluation and goal-revision. Form B also included a weekly record of goal achievement and progress.

Materials for Self-regulatory skill + Education participants:

Food diary (Appendix L): The food diary for this study was based on the outcome measure, MEDFICTS (Appendix N, described below), which was originally developed to assess weekly saturated fat intake. MEDFICTS was modified in the

present study to assess daily saturated fat intake. Instead of recording every food consumed (a typical practice in food diary usage), a “food diary” checklist comprising items from the MEDFICTS measure was provided for the participant to indicate the frequency and portion size of foods high in saturated food content. Examples of portion sizes were provided in the food diary along with instructions. The rationale for using a specialized food diary is driven by multiple factors. Firstly, using the same categories as the MEDFICTS instead of a general food diary would emphasize the task at hand (that of reducing saturated fat intake) and also preserve the relevance of the study for the participant. Next, because the food diary and the MEDFICTS are closely tied, it served to increase consistency. Food diaries are used in dietary behavior research as a more “objective” tool to offset the low reliability and validity observed in the commonly used food frequency questionnaires (Thompson & Subar, 2008). Using a food diary that is consistent with the outcome measure, MEDFICTS could increase reliability of food intake recording. Finally, completing a food diary that consists of checklists for saturated fat items was convenient yet relevant and maintained a low participant burden. A lower burden could also lower the threat of demotivation, incomplete recording, and/or dropout.

Record Your Actions (Appendix M): This worksheet was provided to participants to record their weekly activity. Specifically, while discussing the goals, barriers, strategies, and self-rewards during Week 2, Week 3, and Week 4 appointments with the researcher, this information was simultaneously filled into the worksheet. After the appointment had concluded, the participant took the Record Your Actions worksheet with him or her, and recorded/checked off on the worksheet, whether they engaged in the activity or not.

Outcome Measures:

MEDFICTS (Appendix N): Originally developed for the National Cholesterol Education Program Adult Treatment Panel to inform adherence to a “Therapeutic Lifestyle Changes” diet (Watson, 2001), MEDFICTS has come to be widely used for its convenience and efficiency in administering the measure and detecting high total fat, saturated fat, and cholesterol diets (Kris-Etherton, Eissenstat, Jaax, Srinath, Scott et al., 2001). It has demonstrated validity in identifying a high-fat diet against a variety of populations, including clinical populations (Holmes, Sanderson, Maisiak, Bown, and Bittner, 2005), army personnel (Taylor, Wong, Wish, Carrow, Bell, Bindeman, Watkins et al., 2003), African American women, especially high-fat consumers (Teal, Baham, Gor, & Jones, 2007), and ethnically diverse populations (Mochari, Gao, & Mosca, 2008). Although some studies report low specificity, this measure shares considerable positive correlation with the more commonly used Food Frequency Questionnaire (Taylor et al., 2003). Further, because the use of MEDFICTS in the study was not to categorize participants by fat intake but intended only as a means for specifying a saturated fat reduction goal, it was deemed to be an appropriate measure for this study. An added advantage of the measure is that it clearly identifies the most common sources/categories of saturated fat in the American diet (Thompson & Subar, 2008), specifically, Meat, Eggs, Dairy, Fried foods, (In) baked foods, Convenience foods, Table fats, and Snacks (hence, the acronym, MEDFICTS). The MEDFICTS score was based on weekly consumption (rarely/never, 3 or less servings, and 4 or more servings) times portion size, specifically, in the Group A sub-category. Examples of common food items are provided in each category. The Group B sub-category consists of lower saturated fat

alternatives. In the present study, Cronbach α were 0.77 at T0, 0.65 at T1, and 0.64 at T2.

Self-Efficacy for Reducing Saturated Fat Intake (Appendix O): This brief 5-item self-report measure developed by Schwarzer and Renner (2000) is based on the Social Cognitive Theory and was adapted to assess diet self-efficacy in the context of reducing saturated fat intake. An overall statement “*I CAN MANAGE TO STICK TO LOW SATURATED-FAT FOODS.....*” was followed by 5 statements (Eg., “.....Even if I have to rethink my entire way of eating, “....Even if I have to make a detailed plan”). Response options were indicated on a 5-point scale that ranged from 1 (“very certain”) to 5 (“not at all certain”). Despite the brevity of the scale, it was found to be reliable; Cronbach α in the present study were 0.88 at T0, 0.89 at T1, and 0.93 at T2. The measure was suitable for the current study, given its sound psychometric properties and parsimony. Items were reverse coded at analysis, such that higher scores indicated greater self-efficacy for reducing saturated fat intake.

Self-Regulation for Controlled Eating (Appendix P): A self-report measure that was originally developed by Saelens, Gehrman, Sallis, Sarkin, and Caparosa (2000; in Annesi, 2011) to assess self-regulation for physical activity, was adapted by Annesi (2011) for controlled eating. This 10-item scale assessed the use of self-regulatory skills for the task at hand. Samples items included, “I set eating goals” and “I keep a record of my eating”. One item was reworded to fit the current study (“I choose low saturated-fat foods that I like”). Response options were indicated on a 5 point-scale that ranged from 1 (“often”) to 5 (“never”). The measure has demonstrated good reliability; Cronbach α in the present study were 0.83 at T0, 0.89 at T1, and 0.90 at T2. Items were reverse coded at analysis, such that higher scores indicated greater self-regulation for controlled eating.

Data Analysis

The study began with 56 participants, however, two participants dropped out. One participant (*Education Only*) dropped out after the first week, the other (*Self-regulatory skill + Education*) dropped out at the second week. Because of their departure early on in the study, data from these participants were not included in any study analysis. All participants in both groups attended all six meetings during the study period.

Preliminary descriptive analyses, chi-square tests, and t-tests were conducted to determine if there were differences between groups at the outset with regard to the outcome variables and demographic information, namely, age, gender, ethnicity, highest education completed, and diagnosed high cholesterol or other chronic condition. BMI was calculated at baseline and later at post-intervention (T2). Finally, participants' performance on the saturated fats knowledge questionnaire was assessed at four different times—at T0, before and after reading the saturated fats information booklet, at T1, and T2.

A mixed ANOVA was carried out to determine if there were significant differences between the groups on the outcome variables across time. The three time points (T0, T1, & T2) constituted the within-subjects factor and group (*Self-regulatory skill + Education* vs. *Education Only*) was the between-subjects factor. Outcome variables included self-efficacy for reducing saturated fat intake, self-regulation for controlled eating, and saturated fat intake at baseline (T0), end of intervention four weeks later (T1), and post-intervention another two weeks after that (T2). If interaction and main effects emerged for time and condition, follow-up analyses were conducted to pinpoint where the differences lay. Specifically, independent t-tests assessed for differences between the *Self-regulatory skill +*

Education group and *Education Only* group while follow-up Bonferroni pairwise comparisons helped locate the differences at the three time points for the two groups. Multivariate test values are reported for the outcomes due to sphericity violations.

To facilitate a contextual discussion of the results, bivariate correlations were carried out to explore potential relationships of outcome variables with some demographic variables as well as with relevant items on the Health and Food Information.

Intervention Components: For the *Self-regulatory skill + Education* group, statistical analyses further explored the features of the intervention using “intervention self-regulation scores.” Scores for each component of the self-regulation training were assigned based on data from the Participant Activity Tracker (maintained by the researcher) and the Record Your Actions booklet (maintained by the participant). Scoring was guided by the intervention manual (Appendix I). Participants were scored on each component of the self-regulation intervention, namely, Self-Monitoring, Goal Specification, Barrier and Strategy Identification, Self-Evaluation and Goal Revision, and Self-Reward. All scores were summed to yield a Total Intervention Score. Bivariate correlations explored whether significant relationships existed between the individual components of the self-regulation skills intervention, between these components and outcome variables, and between the total intervention score and the outcome variables.

Results

At the outset, there were no significant differences between the *Self-regulatory skill + Education* and *Education Only* groups on age, gender, race, educational attainment, time in occupation, hourly wage, BMI, and diagnosis of cholesterol or other chronic condition. Also, independent t-tests showed no significant differences

between the two groups on self-efficacy, self-regulation, or saturated fat intake at T0. Finally, there was no significant difference between groups on saturated fats knowledge at T0, before they were given the saturated fats information booklet. Participants in both groups had high saturated fat intake at T0 (>70 points on MEDFICTS). Means and standard deviations for the outcome variables at the three time points are presented in Table 2.

Saturated Fat Intake

Mixed model ANOVA (Table 3) showed significant differences between *Self-regulatory skill + Education* and *Education Only* groups for saturated fat consumption at the end of the intervention/T1 as well as post-intervention/T2. Specifically, there was a significant interaction between the groups across the three time periods, Wilks' Lambda= 0.82, $F(2, 51) = 5.54, p < 0.01, \eta^2 = 0.09$. Follow-up pairwise comparisons (Table 4) indicated that the *Self-regulatory skill + Education* group significantly reduced their saturated fat intake from T0 to T1 ($p < 0.01$); this difference from T0 was maintained at T2 ($p < 0.01$). There was no significant difference between T1 and T2. The *Education Only* group also significantly reduced their saturated fat intake from T0 to T1 ($p < 0.05$) and maintained this result at T2 ($p = 0.05$) with no significant difference between T1 and T2. Movement on saturated fat intake for the two groups across the three time points is shown in Figure 2. Independent t-tests revealed that *Self-regulatory skill + Education* had a significantly lower saturated fat intake compared to the *Education Only* group both, at T1, ($t(52) = 3.78, p < 0.01$) and at T2 ($t(52) = 3.87, p < 0.01$). Thus, while both groups significantly reduced their saturated fat intake from baseline to both, T1 and T2, *Self-regulatory skill + Education* showed significantly lower saturated fat intake than *Education Only* group at T1 and T2.

Self-Regulation for Controlled Eating

A 3 x 2 within-between ANOVA (Table 5) revealed a significant time x group interaction effect for self-regulation, Wilks' Lambda= 0.79, $F(2, 51) = 6.85$, $p < 0.01$, $\eta^2 = 0.07$. Follow-up pairwise comparisons (Table 6) indicated that the *Self-regulatory skill + Education* group used significantly greater self-regulation from T0 to T1 ($p < 0.01$) and continued to use significantly greater self-regulation at T2 ($p < 0.01$). Similarly, the *Education Only* group also reported using significantly greater self-regulation from T0 to T1 ($p < 0.01$) and from T0 to T2 ($p < 0.01$). These results are represented in Figure 3. No significant difference in self-regulation was seen between T1 and T2 within either group. Nonetheless, independent t-tests indicated that the *Self-regulatory skill + Education* group showed significantly greater self-regulation compared to the *Education Only* group both, at T1, ($t(52) = -2.89$, $p < 0.01$) and at T2 ($t(52) = 3.88$, $p < 0.01$). Thus, while both groups reported significantly greater self-regulation from baseline to both, T1 and T2, *Self-regulatory skill + Education* indicated significantly greater self-regulation than *Education Only* group at T1 and T2.

Self-Efficacy for Reducing Saturated Fat Intake

The time x group interaction effect (Table 7) for self-efficacy was not significant, Wilks' Lambda= 0.94, $F(2, 51) = 1.73$, $p > 0.05$, $\eta^2 = 0.02$. Similarly, there was no significant main effect for time, Wilks' Lambda= 0.92, $F(2, 51) = 2.32$, $p > 0.05$, $\eta^2 = 0.04$. The only significant result for self-efficacy was a main effect for group, $F(1, 52) = 8.55$, $p < 0.01$, $\eta^2 = 0.16$. Further, these differences appeared at T2. Specifically, *Self-regulatory skill + Education* participants indicated significantly greater self-efficacy for reducing saturated fat intake post-intervention/T2 ($t(52) = -3.43$, $p < 0.01$), with *Education Only* participants dropping back to near baseline levels.

Movement from baseline for the two groups across the time points is presented in Figure 4.

Saturated Fats Knowledge

No significant difference was found in saturated fats knowledge between *Self-regulatory skill + Education* and *Education Only* group participants at any time.

Saturated fats knowledge significantly improved in both, *Self-regulatory skill + Education* ($t(26) = -7.81, p < 0.01$), and *Education Only* ($t(26) = -4.91, p < 0.01$), groups after reading the saturated fats information booklet.

Exploring Relationships between Variables

Outcome Variables: Medium to large correlations were found between the outcome variables at the different time points. For the *Self-regulatory skill + Education* group, self-regulation at T2 was significantly correlated with self-efficacy at both, T1 [$r(25) = -0.41, p < 0.05$] and at T2 [$r(25) = -0.74, p < 0.01$]. Finally, self-efficacy for reducing saturated fat intake at post-intervention/T2 was negatively correlated with saturated fat intake at post-intervention/T2 [$r(25) = -0.50, p < 0.01$].

For the *Education Only* group, self-efficacy at baseline was significantly correlated with saturated fat intake post-intervention/T2 [$r(25) = 0.43, p < 0.05$]. Self-efficacy at post-intervention/T2 was significantly correlated with self-regulation at T1 [$r(25) = 0.43, p < 0.05$] and T2 [$r(25) = 0.55, p < 0.01$]. Lastly, self-regulation at baseline was negatively related to saturated fat intake, both at baseline [$r(25) = -0.58, p < 0.01$] and at T2 [$r(25) = -0.41, p < 0.05$].

Demographics, Health and Food Information Items, and Outcome Variables: A number of moderate-sized correlations were found for the groups between items on the Health and Food Information questionnaire and the outcome variables at the three

time points. Significant correlations between items are presented for *Self-regulatory skill + Education* (Table 8) and for *Education Only* groups (Table 9).

Examining Intervention Components

Overall, the scope for correlation analyses with regard to intervention components was limited because of lack of variability. Specifically, all participants received maximum scores on Self-Monitoring, Goal Specification, Self-Evaluation, and Goal Revision; thus, no analyses were possible for these components. No significant relationship emerged between Barrier and Strategy Identification and the aforementioned variables. Significant correlations emerged for Self-Reward. Rewarding oneself for achieving weekly goals was associated with greater Self-Efficacy at T1 [$r(25)=0.41, p<0.05$] and with lower saturated fat intake at T1 [$r(25)=-0.41, p<0.05$] and T2 [$r(25)=-0.56, p<0.01$]. Maximum scores on the aforementioned self-regulation components indicate high adherence to the intervention.

Discussion

The present study has extended self-regulation research to saturated fat intake behavior within a low-wage work group. A randomized controlled study was conducted to investigate whether providing tailored self-regulation skills training to reduce saturated fat intake in addition to providing educational information is more effective than simply providing educational information. The findings from this research highlight that self-regulation training is an essential component of effective health behavior change and should be an integral part of health behavior change approaches in blue-collar employees.

Saturated Fat Intake

Study findings provide support for the hypotheses that the *Self-regulatory skill + Education* group would show significantly lower saturated fat consumption than the *Education Only* group at the end of the intervention period as well as post-intervention. Although both groups trended toward a reduction in saturated fat intake, it is clear that providing self-regulation skills was significantly more effective in bringing about this change than merely providing information to do so, thereby supporting previous self-regulation research (eg., Annesi, 2011a; Stadler, Oettingen, & Gollwitzer, 2010). The fact that both groups trended toward a lower saturated fat intake also supports previous research emphasizing the need for health-related education (Bagwell & Bush, 2000; Droomers, Schrijvers, & Mackenbach, 2001).

The significant difference between groups highlights that interventions aimed at positive health behavior change will be more efficacious if educational information is accompanied by the essential skills training to bring about the change. In the present study, individuals who were taught to self-monitor, set clear and specific goals, problem-solve, self-evaluate, revise goals accordingly, and self-reward were significantly more successful in reducing their saturated fat intake over the course of the study compared to individuals who were simply given educational information. Further, both, *Self-regulatory skill + Education* and *Education Only* groups showed greater awareness after reading the saturated fats information booklet. The finding of greater saturated fat intake reduction among *Self-regulatory skill + Education* participants emphasizes that providing self-regulation training may enable the individual with skills to carry forward the acquired knowledge toward making a more successful positive health behavior change.

Providing such skills to a blue-collar work group may be especially important given that having educational knowledge may be insufficient to bring about successful health behavior change (Kolmet, Marino, & Plummer 2006; Vasse et al., 1998). The results from this study present evidence for the virtue of providing self-regulation training in addition to educational information, so as to better prepare the individual for behavior change.

Self-Regulation for Controlled Eating

Similar to the results for saturated fat intake, the hypothesis that the *Self-regulatory skill + Education* group would show significantly greater self-regulation than the *Education Only* group at the end of the intervention period and post-intervention was supported. This finding provides support for other studies aimed at increasing self-regulation as a means to successful health behavior change (Annesi, 2011a & b; Annesi & Gorjala, 2010). As with saturated fat intake, although participants in both groups trended toward greater self-regulation, *Self-regulatory skill + Education* participants reported significantly greater self-regulation compared to the *Education Only* group.

In the present study, both groups were given information on saturated fats, what foods contain higher saturated fat content and therefore should be avoided. It is possible that specific information on what saturated fatty food items to reduce was useful as seen by the upward trend in self-regulation in both groups. However, the additional skills training provided to the intervention group participants enabled them to exercise significantly greater self-regulation than the *Education Only* group. Indeed, participants in the *Self-regulatory skill + Education* group expressed that going through the training led them to become more conscious of their eating patterns, enabled them to select realistic goals, and also work toward involving

significant others in their life to support their eating plans, actively work toward getting back on track if they had slipped, pay more attention to meal planning, and consciously work toward achieving their goals.

The finding with regard to self-regulation may hold clinical relevance, especially for *Education Only* group, given that individuals who were recommended by their doctor to reduce dietary fat consumption were more likely to exercise self-regulation. Moreover, individuals in this group with lower self-regulation were also more likely to have high cholesterol and for longer. In light of such trends, it may be especially beneficial to teach self-regulatory skills as a means to prevent long-term negative health conditions.

Self-Efficacy for Reducing Saturated Fat Intake

Hypotheses with regard to self-efficacy were partially supported. No significant time x group interaction or main effect for time within either group was found. The single significant effect was found between *Self-regulatory skill + Education* and *Education Only* groups. Specifically, *Self-regulatory skill + Education* participants showed significantly greater self-efficacy for reducing saturated fat intake post-intervention. An interesting trend was noted here. Both groups reported increased self-efficacy at T1 (albeit not significantly). After this however, *Self-regulatory skill + Education* participants continued the upward trend while self-efficacy scores for *Education Only* group returned to near-baseline at T2, at which point the groups differ significantly. This trend shows much promise for the self-regulation skills intervention in sustaining self-efficacy for health behavior change.

Several researchers (Anderson, Winett, Wojcik, & Williams, 2010; Bandura, 2005) have emphasized the importance of self-efficacy in successful health behavior change, especially with regard to blue-collar employees (Peterson, Dubowitz,

Stoddard, Troped, Sorenson, & Emmons, 2007). That the intervention was successful in increasing self-efficacy in the intervention group highlights that providing education alone may not have been sufficient to bring about successful health behavior change.

Ceiling effects may have been responsible for the lack of significant results with regard to time; participants showed considerably high self-efficacy at all time points (means were 18 and above out of 25) and there was less scope for improvement. A possible explanation could be that participants in both groups could have started out with a highly positive perception and hope regarding their ability for change. Indeed, while filling out the measure at T0, several participants voiced, “Yeah, of course I can do it!” Alternatively, it is possible that the ceiling effect could be attributed to the scale, which had five response options. Perhaps having a wider response scale option could allow participants to indicate more realistic assessments of their self-efficacy over time.

For the *Self-regulatory skill + Education* group, it is possible that participating in the intervention provided the necessary skills required to make systematic changes to their eating patterns, which in turn could have enhanced their self-efficacy for achieving their saturated fat reduction goal. Indeed, most participants in the *Self-regulatory + Education* group considerably surpassed their goal; this in turn could have served to further motivate them.

It is conceivable that individuals who do not have the necessary skills for behavior change are not adequately prepared to deal with barriers in the behavior change process, which may become overwhelming and consequently lower their self-efficacy. The increase in self-efficacy for *Education Only* participants at T1 followed by a return to near-baseline scores at T2 could also have to do with a sense of

temporary confidence that came after studying the saturated fats information booklet and meeting with the researcher each week. It is possible that the lack of contact in the two-week period post-intervention could not sustain the same degree of self-efficacy as T1. For the *Self-regulatory + Education* group, on the other hand, it may be that having the self-regulation skills served to perpetuate the belief that one is capable of behavior change even outside the intervention.

This study demonstrated that self-regulatory training is an integral component of health behavior change as it serves to increase self-efficacy, a chief aid in sustained health behavior change.

Demographics, Health & Food Information, and Outcome Variables

A number of moderate correlations were observed for the two groups between items on the health and food information questionnaire, demographics, and outcome variables. For participants in the *Self-regulatory skill + Education* group, having more dependents was associated with greater self. It is possible that having more dependents encourages one to exercise greater restraint in eating high saturated fat foods and perhaps assume a greater responsibility to stay healthy. This points to research linking social support and dietary adherence (Aggarwal, Liao, Allegrante, & Mosca, 2010).

At baseline, the more frequently one ate out, the more saturated fat foods they were likely to consume. Indeed, conversations with participants revealed that more often than not, eating out entailed fast food restaurants and drive-throughs, where food items are typically cheaper but also rich in saturated fat—another link noted at baseline, specifically, lower hourly wage was associated with higher saturated fat intake, a finding that is echoed in a number of studies (e.g., Beydoun & Wang, 2008, Kristal, Glanz, Tilley, & Li, 2000) and emphasizes the need to educate lower socio-

economic populations on healthier, cost-effective eating practices. Interestingly, both these baseline associations were no longer significant after the study began. Further, there was an association between making food choices oneself (as opposed to others) when eating out and exercising greater self-regulation, both at T1 and at T2. It is possible that the combination of education and self-regulation skills not only encouraged participants to choose healthier foods when eating out, but doing so did not necessarily mean spending more. Such observations underscore the positive implications of a Self-Regulation + Education intervention and may, in addition, suggest a plausible closing of the monetary gap with regard to saturated fat intake during the intervention.

Unexpected correlations were seen for participants' perceived extent of success and previous fat reduction attempts. Specifically, greater perceived prior success with dietary fat reduction was associated with lower self-efficacy at baseline and T2 and higher saturated fat intake at T1 and T2. It is possible that when newly venturing a fat reduction plan, one is overly optimistic and perceives the attempt to be successful when in fact it may not be, i.e., one may consume more fatty foods. It is also possible that prior attempts may not have involved clear, specific, and realistic goals as was emphasized in the present study, thereby resulting in increased fat intake and concurrently, reduced self-efficacy.

In the *Education Only* group, having high cholesterol was related to lower self-efficacy at T1; perhaps studying the booklet and learning about saturated fat may have led those with high cholesterol to believe that they couldn't really effect change in their eating, especially since some of these participants were also on medication. Nonetheless, a recommendation by the doctor to reduce their fat intake would likely lead participants to exercise greater self-regulation throughout the study and reduce

their saturated fat intake. Indeed, by the end of the study, the correlation between having elevated cholesterol and lower self-efficacy no longer existed.

Greater past attempts to reduce fat intake was related to higher self-efficacy at baseline, better self-regulation at all time points, as well as lower saturated fat intake at all three time points. Also, the longer a previously successful attempt had lasted, the greater self-regulation they were likely using at T1 and T2. Thus, having attempted a behavior change before, one may come to believe in their ability to do what it takes to bring about a change and actively try to do so, rather successfully. However, despite the history of fat reduction attempts and improved self-regulation, the *Education Only* group did not make as great improvement as the *Self-regulatory skill + Education* group in saturated fat reduction, which further speaks to the efficacy of the self-regulatory skill training.

As with the intervention group, the more frequently *Education Only* participants ate out, the greater their fatty food consumption was likely to be and lower their self-efficacy was for being able to reduce saturated fat foods. Lower self-efficacy was also associated with lower participation in the cooking decisions in the home for the *Education Only* group. This finding, interestingly, was only observed at baseline. It is possible that after receiving educational information, participants felt more positive about their ability to control and change their saturated fat intake.

Frequency of daily snacking was positively related to saturated fat intake at baseline, which was not unexpected given that most participants reported snacking on unhealthy foods. Finally, consuming healthier snacks was related to greater self-regulation at baseline and lower saturated fat intake at all three time points, which underscores the importance of health-related education.

Intervention Strengths and Implications

The *Self-regulatory skill + Education* intervention showed greater success in reducing saturated fat intake compared to providing educational information only, in a sample of blue-collar workers, thus lending support to the extant research pertaining to self-regulation (e.g., Christensen, Moran, Wiebe, Ehlers & Lawton, 2002; Genugten, Empelen, & Oenema, 2010; Rhodes & Pfaeffli, 2010). Specifically, providing self-regulatory skills training in addition to educational information was a more effective behavior change strategy to sustainably reduce saturated fat intake, increase self-regulation, and enhance self-efficacy for health behavior change.

The current randomized study shows that simple, cost-effective, and evidence-based health behavior change measures are not only possible, they are practical and appropriate strategies toward improving the health behaviors of vulnerable work groups, and enhance their future health prospects. A number of empirical and practical strengths may be observed in the present study.

Empirical significance. In adopting a randomized design and a theoretical basis, the results of this study emerge from what are considered to be the gold standards of experimental research. Further, tailored interventions such as in the current study have consistently demonstrated greater efficacy (Blue & Black, 2005) and therefore hold greater empirical relevance.

The emerging nature of self-regulation research warrants an exclusive and thorough investigation of this behavior change technique. Nonetheless, the majority of studies in this area have often combined self-regulation with other theoretical concepts such as optimism, outcome expectancy, social support, etc., without fully engaging all of the components of self-regulation (e.g., Anderson, Winett, Wojcik, &

Williams, 2010; Kroese et al., 2011). The exclusive focus on self-regulation in the current study allowed the systematic implementation of all its key components. The results from this study may therefore offer greater empirical insight into the area of self-regulation research.

Several measures of dietary behaviors have been troubled by low reliability and are vulnerable to recall bias (Thompson & Subar, 2008). The use of a daily saturated fat food checklist in place of a traditional food diary, and which was adapted from the outcome measure, was an attempt to increase consistency, reduce potential for recall bias, diminish participant burden, and emphasize the task at hand. Doing so was probably well-suited to this study; many participants reported that the measure was both easy to complete and informative.

Another strength of this study was perhaps its focus on a single health behavior. As mentioned earlier, given the intensive task of changing a possibly habitual health behavior, it may have served well to allow the participant to attend to the various aspects of a single behavior, while enabling a more informed and focused effort. Successful dietary change with regard to saturated fat intake could potentially motivate the individual to take on additional goals for behavior change, thereby setting the stage for subsequent positive health behavior change efforts.

Attrition was practically non-existent, with only two participants leaving the study early on. The remaining fifty-four participants attended all study sessions. The overall high retention rate in this study is a positive aspect of health behavior intervention research, which is persistently troubled by attrition, especially among blue-collar work groups (Jeffrey et al., 1993; Sorenson, Stoddard, Ockene, Hunt, & Youngstrom, 1996).

Lastly, all study procedures closely followed a carefully designed manual that was developed for the current study, and was based on existing self-regulation research and feedback from expert health behavior researchers. Further, all study sessions were conducted by the same individual. These factors ensured consistent intervention delivery and strong fidelity to study procedures. Such optimal treatment integrity, often a concern in large-scale, labor-intensive interventions (Blue & Black, 2005), is an empirical achievement in the current study.

Practical significance. Given that the intervention was successful with a lower socio-economic work group, a demographic with greater health risks and unhealthy behaviors (e.g., Kristal, Glanz, Tilley, & Li, 2000), there is considerable potential for practical self-regulation interventions in a variety of populations, with varying inclinations for health behavior change. In this study as well, participants' saturated fat consumption was high at baseline; moreover, nearly half the participants in the study had cholesterol concerns with coexisting chronic conditions. *Self-regulatory skill + Education* interventions therefore, could have far-reaching implications for all levels of illness prevention.

The present intervention was designed to be simple, cost-effective, parsimonious, feasible, and tailored, all of which may have contributed to its efficacy. In the context of our current economic setback, the relatively low-cost design and execution of this study combined with its positive results hold special practical significance, and demonstrates the potential for cost-effective interventions for health behavior change.

With regard to subjective experience, it appears that participants enjoyed their involvement in the study, as was also perhaps demonstrated by the high retention rate. Many individuals were enthusiastic about attending the sessions, which they called

“lessons,” and although the focus of the study closely remained on saturated fats, questions sometimes arose for other dietary concerns, such as sugar and salt intake, thus suggesting a potential readiness for altering other health behaviors. Given that healthy as well as unhealthy behaviors tend to cluster together (Schoenborn & Adams, 2008), a likely next step could be to investigate whether participants do indeed generalize self-regulatory skills from the current study to other health behaviors.

Participants’ willingness to engage in self-regulation activities was also reflected in their maximum adherence to most components of the self-regulation intervention. Overall, participants in the intervention group felt that engaging in the behavior change process was challenging but not impossible and that the various skills learned along the way were easy to follow, exciting to learn, highly relevant to their daily routine, and sustainable within the foreseeable future.

An optimistic trend among *Self-regulatory skill + Education* participants involved a perspective change regarding the notion that eating healthy costs more. Specifically, after participating in the intervention, several participants averred that choosing healthy foods was not as expensive as they had hitherto believed. Further, some individuals chose, as part of their weekly self-reward activity, to put away the amount of money that they would have otherwise spent on saturated fatty snacks. By the end of the study period one such participant said he had saved almost \$40. It is conceivable however, that saving money by choosing healthier foods could apply more to reduction behaviors such as saturated fat consumption and less so for increase behaviors such as fruit and vegetable intake. Nonetheless, by potentially altering the rather widespread mindset that altering one’s eating patterns for the better does not necessarily entail higher financial costs, the intervention stands to be beneficial across

the socio-economic realm, especially for low socio-economic work groups such as blue-collar employees.

Perhaps the greatest strength of the intervention is its key focus, namely, self-regulation. Teaching vital skills required for making a health behavior change, such as self-monitoring, goal setting, envisioning pertinent problems, and working to devise solutions could better prepare the individual to generalize the skills to a new behavior or to return to an older unachieved goal, thereby augmenting chances of success, and bolstering self-efficacy. Given the mediatory role of self-regulation between intention and behavior (deBruin, Sheeran, Kok, Hiemstra, Prins, Hospers, et al., 2012), it would be useful to further explore self-regulation within a larger theoretical context and trace the trajectory of behavior change, from intention through action to long-term maintenance.

Limitations

The study has several limitations. Firstly, all outcome measures were self-report. Since the focus of the study was saturated fat reduction, a physiological measure such as a cholesterol test comes to mind. However, since cholesterol is responsive to a combination of factors such as diet, exercise, family history, and medication, and given the relatively short study duration and single behavior focus, it was not thought to be an appropriate outcome measure in this study.

A future step in this direction would be to include a longer assessment period comprising a combination of self-report and physiological measures, especially since no significant differences were seen in participants' BMI between baseline and post-intervention. With regard to self-report, efforts were made in the current study to minimize the effect of inaccurate reporting. Specifically, intervention group participants engaged in discussions with the researcher who elicited as much detail as

possible from the participants regarding plans for reducing saturated fat intake, specific meal and snack alternatives, etc. This could have potentially reduced inaccurate reporting.

The participants in this study were compensated \$75 for completing the study; payment was made once, at the conclusion of the study. This raises the possibility of financial incentive playing a role in the findings. However, the monetary compensation was an attempt to minimize attrition, which tends to be greater among blue-collar employees (Jeffrey et al., 1993). Further, both groups were paid the same amount, which makes it unlikely that the significant group differences were due to this factor.

Another concern is potential lack of generalizability. All participants were employed at UWM where the possibility of exposure to health research and health-related information is higher compared to other traditional blue-collar settings such as construction sites or factories. However, as evidenced by participants' responses on the saturated fats knowledge questionnaire, significant improvement in awareness resulted upon reading the saturated fats information booklet, which suggests that the setting may not have influenced baseline level of knowledge. Moreover, factors responsible for unhealthy food consumption such as easy access to unhealthy foods in vending machines may be common across settings. Thus, study findings may be generalizable to other blue-collar populations.

Next, given the regular weekly contact with the researcher, the classic Hawthorne effect (Roethlisberger & Dickson, 1939) could have played a role for intervention group findings. However, participants in both groups met with the researcher on a weekly basis and consistent emphasis was placed on the value of saturated fat reduction, which possibly lowers the likelihood of group differences due

to this effect. A way to offset this could be to conduct a longer follow-up assessment. Further, a future step to understanding the role of sustained weekly contact in behavior change outcomes could be to carry out a qualitative follow-up study in an effort to elicit greater detail regarding experiences of participants. This opportunity may also be utilized to explore blue-collar employees' perspectives on intervention development for positive health behavior change. Additionally, assessing saturated fat intake, self-efficacy, and self-regulation at a later time would be useful to evaluate maintenance and long-term effects of the intervention.

All participants in the *Self-regulatory skill + Education* group obtained maximum scores on Self-Monitoring, Goal Specification, Self-Evaluation, and Goal Revision; thus it was not possible to fully examine the individual components of the Self-Regulation intervention in the current study. It would be useful to assess performance on the various self-regulation components among individuals who have undergone self-regulatory skill training, either for the same behavior or with regard to a different health behavior change in the future. In the current study, nonetheless, it was found that self-reward was significantly associated with goal achievement (i.e., lower saturated fat intake, both at T1 and T2) as well as self-efficacy at T1. These findings provide support for the affective aspect of the self-regulation experience (Cellar et al., 2011) especially at the start of a behavior change process and speak to the efficacy of interventions that have included this component (e.g., Christensen, Moran, Wiebe, Ehlers & Lawton, 2002; Poddar, Hosig, Anderson, Nickols-Richardson, & Duncan, 2010).

Finally, given that most participants were custodial workers at UWM, working the same shift, there is the possibility of contamination effects. However, efforts were made to request of participants during the first meeting and in the following weeks

that they not discuss the study events with their coworkers. Although this cannot be guaranteed, participants reported that they abided by this request.

Conclusion

In conclusion, the present study has extended self-regulation research to saturated fat intake behavior within a low socio-economic status work group. The features of the *Self-regulatory skill + Education* intervention point to simple yet meaningful efforts for health behavior change and hold empirical and practical value. Research findings highlight that self-regulation is an essential component of effective health behavior change and should be an integral component of multi-level illness prevention and health promotion efforts. The results from the study underscore the impetus behind this dissertation venture-- that teaching self-regulation may empower the individual to be the active change agent in the behavior change process and in doing so, may become the greatest custodian of their own health and well-being.

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Table 1

Descriptive Statistics for Self-Regulatory skills + Education and Education Only Participants at Baseline

	Self-regulation skills + Education	Education Only
Number of Participants	27	27
Gender, <i>n</i>		
Men	14	13
Women	13	14
Age, in years, Mean (<i>SD</i>)	51.16 (8.88)	50.54 (10.85)
Race, %		
African American	55.6	48.1
Caucasian	29.6	40.7
Hispanic	11.1	7.4
American Indian	3.7	--
Other	--	3.7
Highest Education, <i>n</i> (%)		
Some college	11 (42.3)	12 (44.4)
High school/Equivalent	8 (30.8)	8 (29.6)
12 th grade, no diploma	1 (3.8)	5 (18.5)
Associate's degree	2 (7.7)	1 (3.7)
Master's degree	--	1 (3.7)
Bachelor's degree	4 (15.4)	--
Time in Occupation, years, Mean (<i>SD</i>)	11.42 (8.46)	10.83 (8.87)
Hourly Wage Range, in \$, %		
Under 11.50	12	16.7
11.50-14.49	52	54.2
14.50-18.24	16	20.8
18.25-22.74	12	8.3
22.75-28.74	--	--
28.75-35.99	4	--
36.00-45.24	4	--
Cholesterol Diagnosis, %	44.4	37
Other Chronic Condition, %	48.1	48.1

Note: No significant differences were observed between groups on any of the above variables

Table 2

Means and Standard Deviations for Outcome Variables

Variable, <i>M (SD)</i>	Group					
	Self-Regulation + Education			Education Only		
	T0	T1	T2	T0	T1	T2
Saturated Fat Intake	84.52 (37.14)	36.11 ^{a,b} (22.88)	36.56 ^{a,b} (23.58)	79.30 (38.03)	63.07 ^{a,b} (29.18)	63.89 ^{a,b} (28.07)
Self-Regulation for Controlled Eating	24.52 (7.78)	35.96 ^{a,b} (7.80)	37.82 ^{a,b} (6.84)	24.15 (7.74)	29.44 ^{a,b} (8.73)	29.44 ^{a,b} (8.89)
Self-Efficacy for reducing Saturated Fat Intake	19.81 (3.89)	21.07 (3.53)	21.41 ^b (3.30)	18.00 (4.59)	19.48 (3.56)	18.00 ^b (3.97)

Note: ^asignificant difference from T0, ^bsignificant difference between groups, $p < .01$

Table 3

Mixed model ANOVA for Saturated Fat Intake (MEDFICTS score)

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Group	1	6.27	0.10	0.015
Time	2	21.82 ^a	0.33	0.000
Group x Time	2	5.54 ^a	0.09	0.007
Error	51			

Note: ^a Multivariate test values reported

Table 4

Follow-up Comparisons between Time Points for Study Groups for Saturated Fat Intake

Group	Time Comparison (a) vs. (b)	Mean Difference on MEDFICTS scores (a – b)	Standard Error	95% CI	
				Lower Bound	Upper Bound
<i>Self-Regulatory skills + Education</i>	T1 vs. T0	-48.41**	8.08	-69.08	-27.73
	T2 vs. T0	-47.96**	8.17	-68.86	-27.06
	T2 vs. T1	0.44	3.50	-8.51	9.40
<i>Education Only</i>	T1 vs. T0	-16.22*	5.67	-30.74	-1.71
	T2 vs. T0	-15.41*	6.08	-30.97	0.15
	T2 vs. T1	0.82	4.33	-10.27	11.90

Note: **p*=0.05, ***p*<0.01; Bonferroni pairwise comparisons

Table 5

Mixed model ANOVA for Self-Regulation for Controlled Eating

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Group	1	7.16	0.16	0.010
Time	2	42.81 ^a	0.42	0.000
Group x Time	2	6.85 ^a	0.07	0.002
Error	51			

Note: ^a Multivariate test values reported

Table 6

Follow-up Comparisons between Time Points for Study Groups for Self-Regulation for Controlled Eating

Group	Time Comparison (a) vs. (b)	Mean Difference on Self-Regulation scores (a – b)	Standard Error	95% CI	
				Lower Bound	Upper Bound
<i>Self-Regulatory skills + Education</i>	T1 vs. T0	11.44**	1.24	8.26	14.63
	T2 vs. T0	13.30**	1.59	9.23	17.37
	T2 vs. T1	1.85	1.21	-1.25	4.95
<i>Education Only</i>	T1 vs. T0	5.30**	1.37	1.80	8.79
	T2 vs. T0	5.30**	1.50	1.47	9.13
	T2 vs. T1	0.00	0.64	-1.63	1.63

Note: ***p*<0.01; Bonferroni pairwise comparisons

Table 7

Mixed model ANOVA for Self-Efficacy for Reducing Saturated Fat Intake

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Group	1	8.55	0.16	0.005
Time	2	2.32 ^a	0.04	0.108
Group x Time	2	1.73 ^a	0.02	0.188
Error	51			

Note: ^a Multivariate test values reported

Table 8 *Correlations between Demographics, Health and Food Information Items, and Outcome Variables, Self-Regulatory skills + Education*

Variable	Saturated Fat Intake			Self-Regulation			Self-Efficacy		
	T0	T1	T2	T0	T1	T2	T0	T1	T2
Hourly wage	-0.45*	-0.21	-0.27	-0.10	0.01	0.02	0.05	-0.02	0.33
# Dependents	0.13	0.14	-0.06	0.43*	0.43*	0.33	0.01	0.39*	0.18
Time in occupation	-0.07	-0.16	-0.27	-0.15	-0.11	0.02	0.08	-0.02	0.38*
High cholesterol diagnosis	-0.17	-0.03	-0.09	0.27	0.09	0.10	-0.13	-0.13	0.19
Time since cholesterol diagnosis	-0.14	0.36	0.31	-0.27	-0.41*	-0.31	0.11	0.16	-0.04
Doctor's recommendation to reduce fat	-0.20	-0.28	-0.20	0.08	0.00	0.10	0.16	-0.04	0.29
# Fat reduction attempts	0.01	0.06	0.20	-0.19	-0.26	-0.27	0.16	-0.05	0.05
Duration of successful prior fat reduction attempt	-0.07	0.06	-0.02	0.10	-0.06	0.05	0.10	0.05	0.15
Perceived extent of success on prior fat reduction attempt	-0.09	0.56**	0.44*	0.12	-0.02	-0.23	-0.40*	-0.06	-0.45*
Frequency of self grocery shopping	0.16	0.18	0.07	-0.16	-0.05	-0.13	-0.32	-0.04	-0.16
Making food choices, home	0.07	-0.00	-0.03	-0.04	0.06	-0.15	-0.23	-0.00	-0.07
Making food choices, eating out	0.24	0.15	0.11	0.37	0.46*	0.43*	-0.05	0.36	0.17
Frequency of eating out	0.39*	0.08	0.10	-0.09	0.09	-0.13	-0.24	0.09	-0.10
Frequency of daily snacking	0.31	0.13	-0.21	-0.05	0.11	0.33	0.07	0.23	0.27
Healthy snacking	-0.30	-0.20	-0.20	0.30	0.28	0.07	0.05	-0.26	0.03

Note: $n=27$, * $p<0.05$, ** $p<0.01$

Table 9 *Correlations between Demographics, Health and Food Information Items, and Outcome Variables, Education Only*

Variable	Saturated Fat Intake			Self-Regulation			Self-Efficacy		
	T0	T1	T2	T0	T1	T2	T0	T1	T2
Hourly wage	0.19	0.07	-0.04	-0.05	0.05	-0.04	0.06	0.42*	0.18
# Dependents	0.03	0.07	0.22	-0.08	0.23	0.34	-0.36	-0.16	0.22
Time in occupation	-0.08	0.05	0.09	0.05	0.05	-0.06	-0.04	0.38*	0.05
High cholesterol diagnosis	0.06	0.07	0.09	-0.21	-0.09	0.01	-0.19	-0.39*	0.02
Time since cholesterol diagnosis	0.02	-0.00	0.19	-0.19	0.07	0.02	-0.25	-0.06	-0.07
Doctor's recommendation to reduce fat	-0.38	-0.43*	-0.46*	0.41*	0.47*	0.62*	0.31	0.31	0.35
# Fat reduction attempts	-0.52**	-0.55**	-0.39*	0.50**	0.43*	0.42*	0.41*	0.20	0.33
Duration of successful prior fat reduction attempt	-0.27	-0.23	-0.14	0.12	0.39*	0.38*	-0.00	-0.23	0.12
Perceived extent of success on prior fat reduction attempt	-0.36	-0.20	-0.08	0.22	0.29	0.32	0.04	-0.20	0.15
Frequency of self grocery shopping	0.17	0.17	0.22	-0.03	-0.06	-0.04	-0.45*	-0.06	-0.24
Making food choices, home	0.23	0.31	0.21	0.13	0.12	0.12	-0.39*	-0.08	-0.12
Making food choices, eating out	0.10	0.19	0.12	-0.05	-0.14	-0.27	-0.04	-0.10	-0.19
Frequency of eating out	0.51**	0.47*	0.47*	-0.28	-0.16	-0.20	-0.30	-0.25	-0.39*
Frequency of daily snacking	0.47*	0.10	0.09	-0.12	-0.04	-0.05	0.08	0.07	-0.26
Healthy snacking	-0.44*	-0.48*	-0.41*	0.41*	0.22	0.30	0.21	-0.12	0.12

Note: $n=27$, * $p<0.05$, ** $p<0.01$

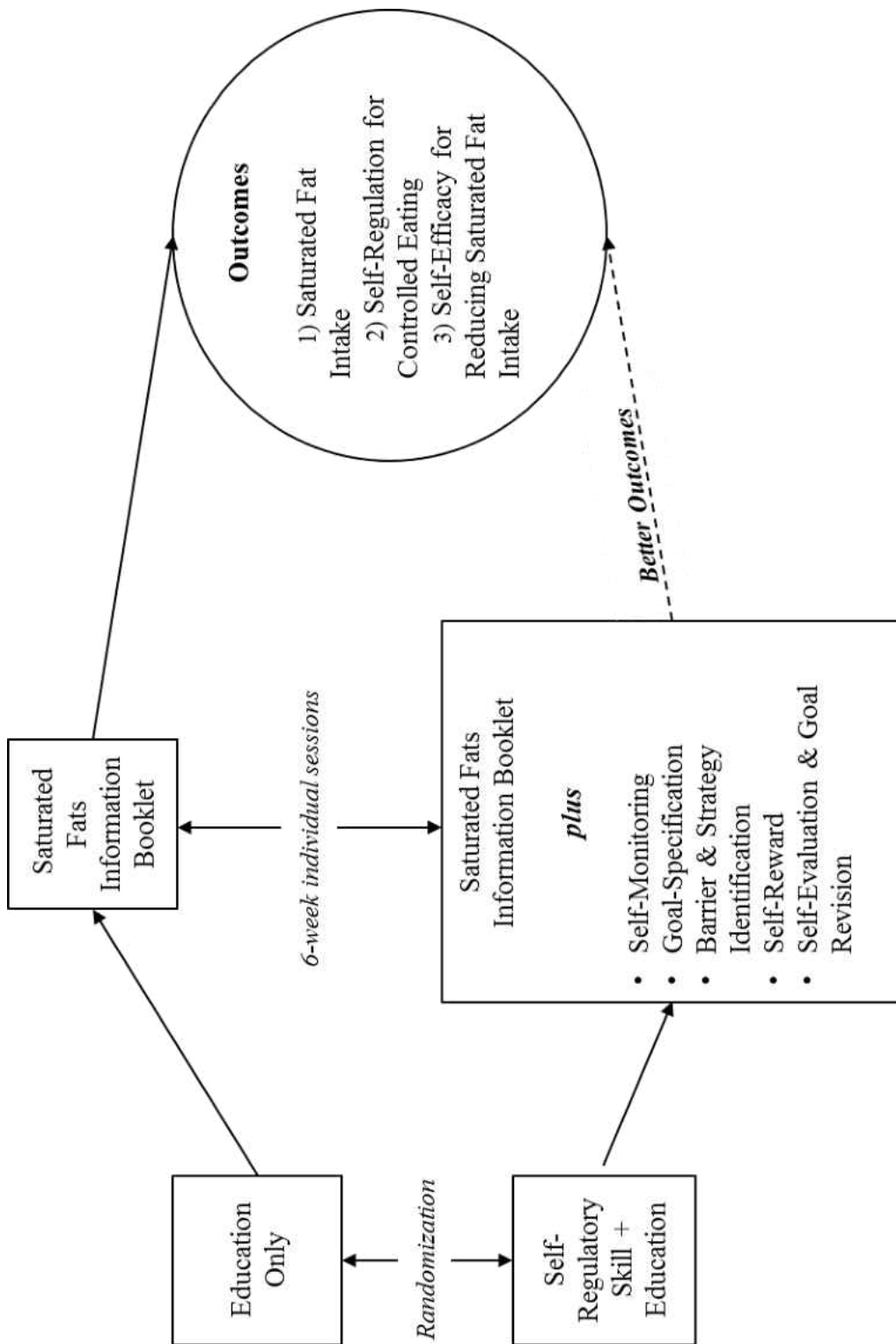


Figure 1. Schematic illustration of conceptualized study design and outcomes.

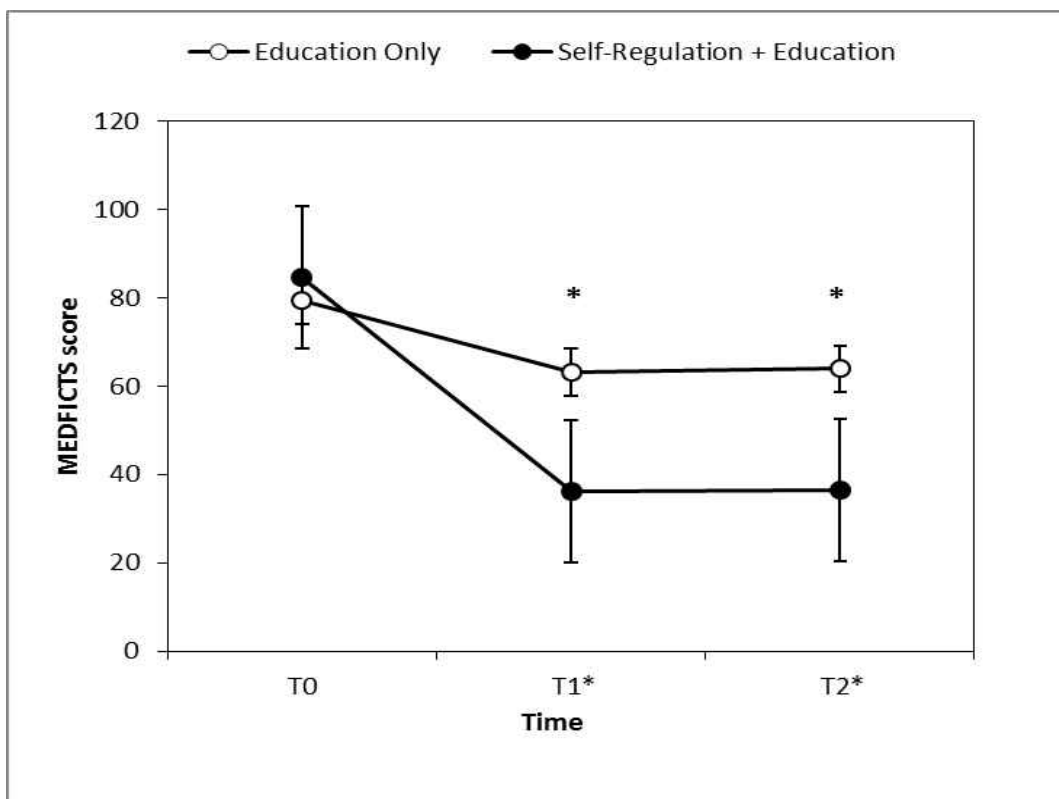


Figure 2. Changes in Saturated Fat Intake (with Standard Error) across the three time points. Significant differences from baseline/T0 are indicated, $*p < 0.01$. Both groups showed significantly lower saturated fat intake at T1 and T2. Self-Regulation + Education group showed significantly lower saturated fat intake than Education Only at T1 and T2.

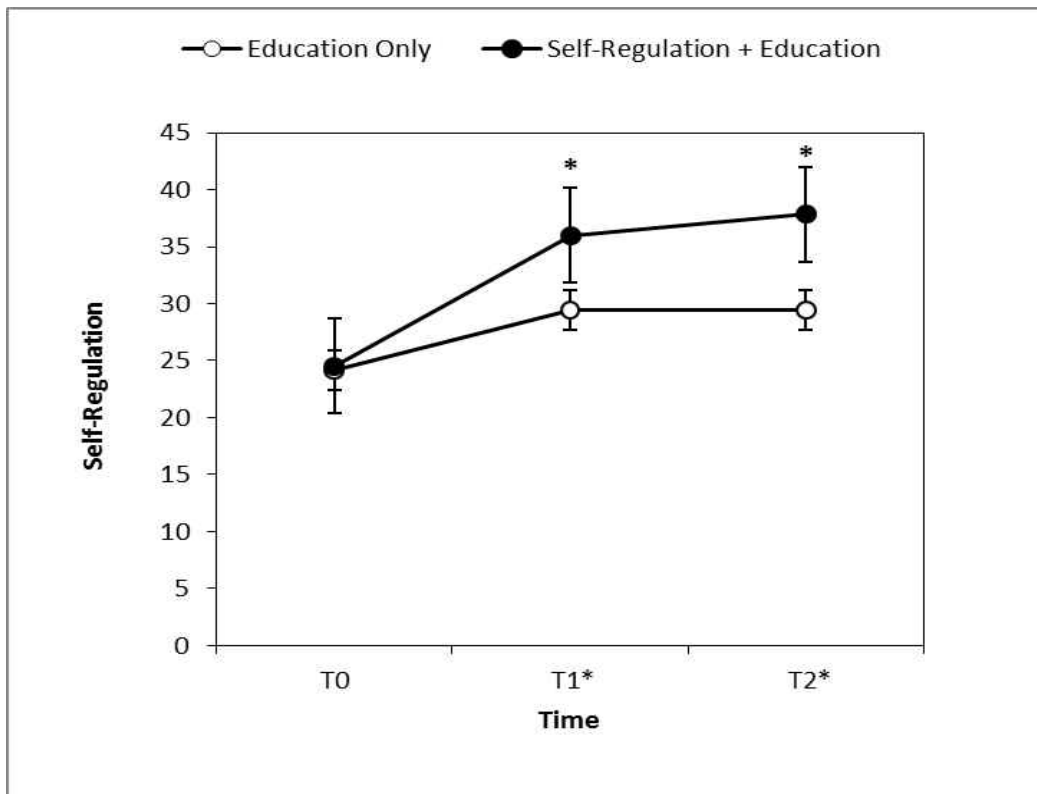


Figure 3. Changes in Self-Regulation for Controlled Eating (with Standard Error) across the three time points. Significant differences from baseline/T0 are indicated, $*p < 0.01$. Both groups showed significantly greater self-regulation at T1 and T2. Self-Regulation + Education group showed significantly greater self-regulation than Education Only at T1 and T2.

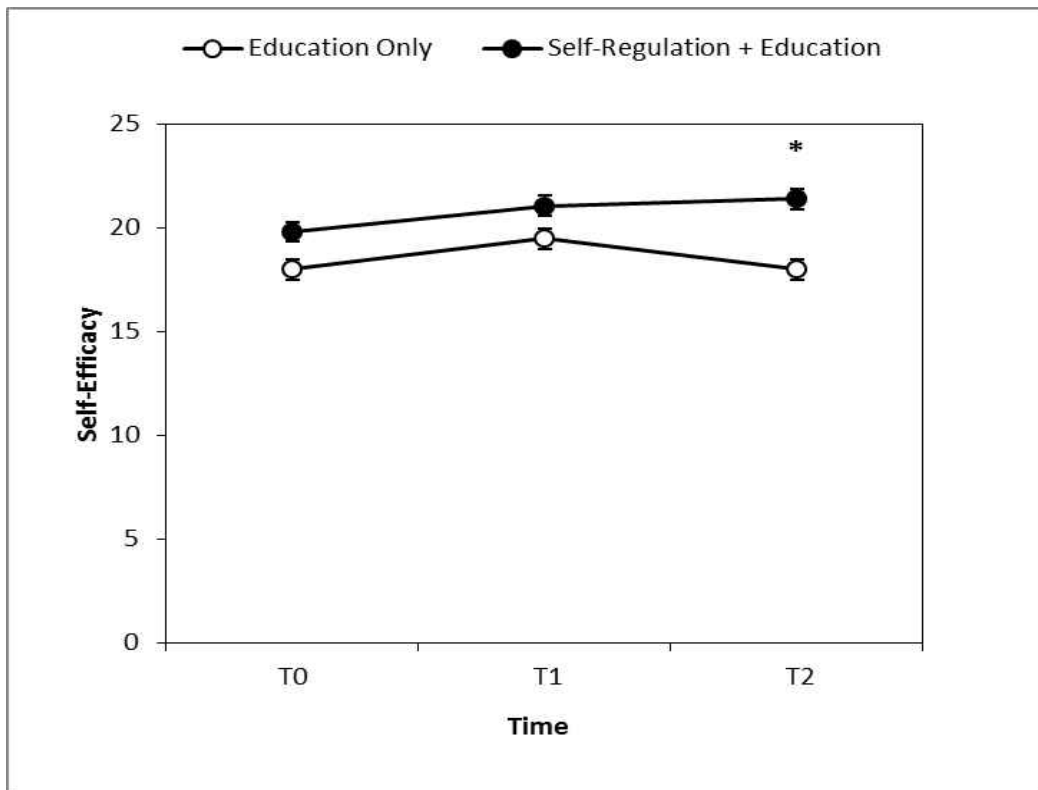


Figure 4. Changes in Self-Efficacy for Reducing Saturated Fat Intake (with Standard Error) across the three time points. Significant differences are indicated, $*p < 0.01$. Self-Regulation + Education group showed significantly greater self-efficacy than Education Only at T2.

Appendix A
Recruitment Flyer



Be a part of

The Saturated Fats Study

Learn more about eating healthy!

By participating in our research study, you will receive ***valuable educational information*** about what foods have high saturated fat along with highly useful recommendations on eating healthy.

There will be meetings at six different times. All meetings will be on campus. No travelling involved!

You will be asked about your saturated fat food intake at each meeting.

Involvement in this study has NO bearing on your employment; your supervisor has approved your participation.

INTERESTED?

Leave your name and contact information on the sign up sheet below
OR contact your supervisor.

Appendix B

UWM IRB Approval



Department of University Safety & Assurances

Melissa Spadanuda
 IRB Administrator
 Institutional Review Board
 Engelmunn 270
 P. O. Box 413
 Milwaukee, WI 53201-0413
 (414) 229-3173 phone
 (414) 229-6729 fax

New Study - Notice of IRB Expedited Approval

<http://www.irb.uwm.edu>
spadanud@uwm.edu

Date: May 4, 2012

To: Diane Reddy, PhD
Dept: Psychology

Cc: Anjali Rameshbabu

IRB#: 12.358

Title: The Saturated Fats Study

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been approved as minimal risk Expedited under **Category 7** as governed by 45 CFR 46.110.

This protocol has been approved on **May 4, 2012** for one year. IRB approval will expire on **May 3, 2013**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, a continuation for IRB approval must be filed by the submission deadline. If the study is closed or completed before the IRB expiration date, please notify the IRB by completing and submitting the Continuing Review form found on the IRB website.

Unless specifically where the change is necessary to eliminate apparent immediate hazards to the subjects, any proposed changes to the protocol must be reviewed by the IRB before implementation. It is the principal investigator's responsibility to adhere to the policies and guidelines set forth by the UWM IRB and maintain proper documentation of its records and promptly report to the IRB any adverse events which require reporting.

It is the principal investigator's responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities: the principal investigator may seek to employ (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.) which are independent of IRB review/approval.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project

Respectfully,

Melissa C. Spadanuda

Melissa C. Spadanuda
 IRB Administrator

Appendix C

Informed Consent, *Self-regulatory skill + Education*

University of Wisconsin – Milwaukee

Consent to Participate in Research

Study Title: The Saturated Fats Study

Person Responsible for Research: Diane M. Reddy, Professor, Department of Psychology, University of Wisconsin-Milwaukee; Anjali Rameshbabu, Department of Psychology, University of Wisconsin-Milwaukee

Study Description: The purpose of this research project is to understand your eating patterns, with special focus on saturated fatty food items. Approximately 50 subjects will participate in this study.

How long will the study last? 6 Weeks

Will I be paid for participating in the study? Yes (please see **Benefits** section below)

Will there be meetings? Yes

Will I have to take off from work for each meeting? Yes, if you would prefer so (Your supervisor has approved this)

Where will the meetings be held? At a designated location on the UWM CAMPUS

How many meetings will be there? Here's an outline of the weekly schedule:

Week	What do I need to do?	How long will it take? (Approximate)
1	Meeting	1 hour
	During the week: --Completing questionnaire on what you eat each day	5 minutes/day
2	Meeting	1 hour
	During the week: --Completing questionnaire on what you eat each day --Completing booklet	5 minutes/day 5 minutes/day
3 and 4	Meeting	20-30 minutes each
	During the week: --Completing questionnaire on what you eat each day --Completing booklet	5 minutes/day 5 minutes/day
End of Week 4	Meeting	30 minutes
5 and 6 (No Meeting)	During the week: --Completing questionnaire on what you eat each day --Completing booklet	5 minutes/day 5 minutes/day
End of Week 6	Meeting	30 minutes

All meetings will be one-on-one, i.e., individual. At each meeting, you will be asked about saturated fat content in the foods you eat each week; additionally, at the First Meeting, End of Week 4, and Final Meeting, you will be required to complete some questionnaires. At the first meeting, your height and weight will be recorded; at the Final meeting, only your weight will be recorded. Although it is not

anticipated that there will be uncomfortable questions, you are free to skip over any questions that you would prefer.

Risks: There are no foreseeable risks to participating. There are also no costs for participating. You are free to stop participating at any time.

Benefits: You will receive a gift card worth \$75 in July 2012 for participating in the entire duration of the study (6 weeks).

On a personal level, it is well known that consuming excessive amounts of saturated fat increases your risk for heart disease. Doctors often say that reducing saturated fat in your food can greatly lower this risk. By participating in this study, you will receive *valuable educational information* about what foods have high saturated fat along with highly useful recommendations on how to avoid such food items. In addition, you will receive *specialized training* on systematically planning and making healthy food choices. Thus, by participating in this study, you could also learn vital skills to achieve better heart health and reduce your risk for disease.

Confidentiality: Your information collected for this study is completely confidential and no individual participant will ever be identified with his/her research information. The information you provide will not be shared with anyone. Your supervisor and fellow employees will never find out anything you said. Data from this study will be saved on a password-protected computer for one year. Only Professor Diane Reddy, Anjali Rameshbabu, and staff in the Department of Psychology, University of Wisconsin-Milwaukee will have access to the information. However, the Institutional Review Board at UW-Milwaukee or appropriate federal agencies like the Office for Human Research Protections may review this study's records.

Voluntary Participation: Your participation in this study is voluntary. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study. You are free to not answer any questions or withdraw at any time. Your decision will not change any present or future relationships with the University of Wisconsin Milwaukee.

Who do I contact for questions about the study: For more information about the study or study procedures, contact Anjali Rameshbabu at rameshb2@uwm.edu

Who do I contact for questions about my rights or complaints towards my treatment as a research subject? Contact the UWM IRB at 414-229-3173 or irbinfo@uwm.edu.

Research Subject's Consent to Participate in Research:

To voluntarily agree to take part in this study, you must be 18 years of age or older. By signing the consent form, you are giving your consent to voluntarily participate in this research project.

Printed Name of Subject/Legally Authorized Representative

Signature of Subject/Legally Authorized Representative

Date

Appendix D

Informed Consent, *Education Only*

University of Wisconsin – Milwaukee
Consent to Participate in Research

Study Title: The Saturated Fats Study

Person Responsible for Research: Diane M. Reddy, Professor, Department of Psychology, University of Wisconsin-Milwaukee; Anjali Rameshbabu, Department of Psychology, University of Wisconsin-Milwaukee

Study Description: The purpose of this research project is to understand your eating patterns, with special focus on saturated fatty food items. Approximately 50 subjects will participate in this study.

How long will the study last? 6 Weeks

Will I be paid for participating in the study? Yes (please see **Benefits** section below)

Will there be meetings? Yes

Will I have to take off from work for each meeting? Yes, if you would prefer so (Your supervisor has approved this)

Where will the meetings be held? At a designated location on the UWM CAMPUS

How many meetings will be there? Here's an outline of the weekly schedule:

Week	What do I need to do?	How long will it take? (Approximate)
1	Meeting	40 minutes
2-4	Meeting	30 minutes each
End of Week 4	Meeting	30 minutes
End of Week 6	Meeting	30 minutes

All meetings will be one-on-one, i.e., individual. At each meeting, you will be asked about saturated fat content in the foods you eat each week; additionally, at the First Meeting, End of Week 4, and Final Meeting, you will be required to complete some questionnaires. At the first meeting, your height and weight will be recorded; at the Final meeting, only your weight will be recorded. Although it is not anticipated that there will be uncomfortable questions, you are free to skip over any questions that you would prefer.

Risks: There are no foreseeable risks to participating. There are also no costs for participating. You are free to stop participating at any time.

Benefits: You will receive a gift card worth \$75 in July 2012 for participating in the entire duration of the study (6 weeks).

On a personal level, it is well known that consuming excessive amounts of saturated fat increases your risk for heart disease. Doctors often say that reducing saturated fat in your food can greatly lower this risk. By participating in this study, you will receive *valuable educational information* about what foods have high saturated fat along with highly useful recommendations on how to avoid such food items. Thus, by participating in this study, you could also learn vital skills to achieve better heart health and reduce your risk for disease.

Confidentiality: Your information collected for this study is completely confidential and no individual participant will ever be identified with his/her research information. The information you provide will not be shared with anyone. Your supervisor and fellow employees will never find out anything you said. Data from this study will be saved on a password-protected computer for one year. Only Professor Diane Reddy, Anjali Rameshbabu, and staff in the Department of Psychology, University of Wisconsin-Milwaukee will have access to the information. However, the Institutional Review Board at UW-

Milwaukee or appropriate federal agencies like the Office for Human Research Protections may review this study's records.

Voluntary Participation: Your participation in this study is voluntary. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study. You are free to not answer any questions or withdraw at any time. Your decision will not change any present or future relationships with the University of Wisconsin Milwaukee.

Who do I contact for questions about the study: For more information about the study or study procedures, contact Anjali Rameshbabu at rameshb2@uwm.edu

Who do I contact for questions about my rights or complaints towards my treatment as a research subject? Contact the UWM IRB at 414-229-3173 or irbinfo@uwm.edu.

Research Subject's Consent to Participate in Research:

To voluntarily agree to take part in this study, you must be 18 years of age or older. By signing the consent form, you are giving your consent to voluntarily participate in this research project.

Printed Name of Subject/Legally Authorized Representative

Signature of Subject/Legally Authorized Representative

Date

Appendix E

Demographic Information

Please answer the following questions. Feel free to skip over any question(s) if you do not wish to answer them. We'd like to assure you that nobody apart from our research team would be able to see it.

Age:

Gender:

What is your race?

-American Indian or Alaska Native
-Asian
-African American
-Native Hawaiian or Other Pacific Islander
-Caucasian
-Hispanic
-Mixed
-Other (Please specify.....)

How many individuals depend on you for financial support? (eg., ex-spouse, current spouse, children, older adults)?

0	1	2	3	4	5 or more
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Who do you live with?

-Alone
-Spouse/Partner only
-Children only
-Parent(s) only
-Spouse/Partner + Children
-Parent(s) + Spouse/Partner
-Parent(s) + Children
-Parent(s) + Spouse/Partner + Children
-Other individual(s)

What is the highest degree or level of school you have completed? If currently enrolled, mark the previous grade or highest degree received.

-No schooling completed
-Grade 1 to 8
-12th grade, no diploma
-High school graduate - high school diploma or the equivalent (for example: GED)
-Some college
-Associate degree (for example: AA, AS)
-Bachelor's degree (for example: BA, AB, BS)
-Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)

.....Professional degree (for example: MD, DDS, DVM, LLB, JD)
Doctorate degree (for example: PhD, EdD)

What occupation are you involved in?

How many years have you worked in your current profession?
Months..... Years

As an employee of UWM, are you:

Full-time employee (35 hours per week or more)	Part-time employee (Less than 35 hours per week)
--	--

If you are a wage earner, what is your average **hourly** wage?

Under \$11.50	\$11.50 to \$14.49	\$14.50 to \$18.24	\$18.25 to \$22.74	\$22.75 to \$28.74	\$28.75 to \$35.99	\$36.00 to \$45.24	45.25 to \$56.99	Over \$57.00
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OR

What is your **annual personal** income?

- Less than \$10,000
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$89,999
- \$90,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 or more

What is your **annual household** income?

- Less than \$10,000
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$89,999
- \$90,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 or more

Appendix F

Health & Food Information

- 1) Have you been diagnosed with high cholesterol?
No (skip to next Q)
Yes
 If yes, please answer the following:
 How long have you have had this condition?(in months)
 Are you taking medication for high cholesterol (Eg., Lipitor, Crestor,
 etc.)YesNo
 During your last cholesterol test, what was your level for:
 LDL:mg/dL
 HDL:mg/dL
 Trigylceride:.....mg/dL

- 2) Have you been diagnosed with any other long-term condition (eg., Diabetes,
 Hypertension, etc.)
No (skip to next Q)
Yes
 If yes, please specify answer the following:
 (1) Name of condition:
 How long have you have had this condition?(in months)
 Are you taking medication for this condition?.....Yes.....No

 (2) Name of condition:
 How long have you have had this condition?(in months)
 Are you taking medication for this condition?.....Yes.....No

- 3) Have you ever been recommended by your doctor to reduce the amount of fat
 in your food?
Yes
No

- 4) Have you ever been recommended by your loved one to reduce the amount of
 fat in your food?
Yes
No

- 5) Have you ever attempted to reduce the amount of fat in your food?
 No (skip to Q 10)
 Yes

- 6) When did you make this attempt?
This Spring
Last Fall
Last Summer
Last Spring
Before Last Spring

- 7) How many such attempts have you made in the past?.....
- 8) In general, to what extent of success have you had in your attempt(s) to reduce the amount of fat in your food?

Definitely unsuccessful	Mostly unsuccessful	Somewhat unsuccessful	Not sure	Somewhat successful	Mostly successful	Very successful
1	2	3	4	5	6	7

- 9) With regard to your most successful attempt, how long were you able to maintain this reduction of fat in your food?
 -Less than 1 week
 -1-2 weeks
 -3-4 weeks
 -5-6 weeks
 -7-8 weeks
 -Longer than 8 weeks

- 10) In general, who does the grocery shopping in your home?
 -Always me
 -Mostly me
 -Always my family member(s)
 -Mostly my family member(s)
 -Both

- 11) In general, who decides what food items to get at the grocery store?
 -Always me
 -Mostly me
 -Always my family member(s)
 -Mostly my family member(s)
 -Both

- 12) In general, who does the cooking in your home?
 -Always me
 -Mostly me
 -Always my family member(s)
 -Mostly my family member(s)
 -Both

- 13) In general, who decides what foods to cook in the home?
 -Always me
 -Mostly me
 -Always my family member(s)
 -Mostly my family member(s)
 -Both

14) In general, who decides what foods to order when you eat out?

-Always me
-Mostly me
-Always my family member(s)
-Mostly my family member(s)
-Both
-I do not eat out

15) On average, how many of your meals during the week are home-cooked?

Keeping in mind that one consumes an average of about 3 meals a day x 7 days = 21 meals in the week

-1-5 meals
-6-10 meals
-11-15 meals
-16-20 meals

16) On average, how many of your meals during the week do you eat out?

Keeping in mind that one consumes an average of about 3 meals a day x 7 days = 21 meals in the week

-1-5 meals
-6-10 meals
-11-15 meals
-16-20 meals
-I do not eat out

17) On average, how often do you snack during the day?

-I don't snack (skip to Q 18)
-1-2 times a day
-3-5 times a day
-More than 5 times a day

18) In general, what food items do you snack on?

-Mostly fried snacks
-Mostly baked snacks
-Mostly vegetables and/or fruit
-Others (please specify.....)

19) How would you categorize yourself?

-Omnivore (eat everything)
-Pescetarian (eat fish, but no other meat)
-Ovo-lacto vegetarian (no meat, but eat dairy and eggs)
-Ovo-vegetarian (no meat or dairy, but eat eggs)
-Lacto-vegetarian (no meat or eggs, but eat dairy)
-Vegan (no animal products)

Appendix G

Saturated Fats Information Booklet

What's the bottom line?

- Saturated fats are bad for your health, they increase your risk of obesity, raise your bad cholesterol and increase your risk for heart disease & stroke
- It's good to eat less of foods that are high in saturated fat such as bakery and fried foods, and full-fat meat and full-fat dairy products. You don't have to avoid them altogether, just start by cutting down
- You can always replace high saturated fat foods with healthier alternatives

Where can I find more information?

American Heart Association (AHA):
<http://tinyurl.com/aha-satfat>

Centers for Disease Control and Prevention (CDC):
<http://www.cdc.gov/nutrition/everyone/basics/fat/saturatedfat.html>

[Content retrieved from AHA and CDC websites]

SATURATED KNOW YOUR ^ FATS

Did you know that most Americans consume an excess amount of Saturated Fat?

Did you know that reducing your cholesterol by just 10% can reduce your risk for heart disease, America's #1 killer, by nearly 50%?

*Saturated Fat content based on average serving size

What is SATURATED FAT? How is it different from regular fat?

Saturated fats are fats that tend to be more solid at room temperature (like a stick of butter), while monounsaturated and polyunsaturated fats tend to be more liquid (like liquid vegetable oil).

Why is SATURATED FAT bad for me?

Eating foods high in saturated fat content can raise the level of bad cholesterol (low-density lipids) in your blood. High levels of bad cholesterol clog your arteries and increase your risk of heart disease and stroke. Also, they can increase your risk of weight gain and obesity.

How can I find out how much SATURATED FAT is in the things I eat?

Many foods that are high in saturated fat are commonly available in restaurants, grocery stores, vending machines and fast food joints. For many packaged foods that you buy from convenience stores and vending machines, you can look up information about the item's saturated fat content by looking at the nutrition label on the package that looks like this:

Nutrition Facts	
Serving Size 1/2 cup (115g)	
Servings Per Container About 4	
Amount Per Serving	Calories from Fat 130
Calories 250	% Daily Value*
Total Fat 14g	22%
Saturated Fat 9g	45%
Cholesterol 55mg	18%
Sodium 75mg	3%
Total Carbohydrate 26g	9%
Dietary Fiber 0g	0%
Sugars 26g	
Protein 4g	
Vitamin A 10%	Vitamin C 0%
Calcium 10%	Iron 0%

* Percent Daily Values are based on a 2,000 calorie diet.

Is there **MORE** information on eating less **SATURATED FAT**?

There certainly is!

COOKING AT HOME?

- Are you looking for healthy *appetizer, main dish, & dessert RECIPES*?

<http://tinyurl.com/aha-recipes>

- How about some healthy *snacking* options?

<http://tinyurl.com/aha-snacking>

Feel like **EATING OUT**?

- Here's some information on choosing healthy *restaurant* and *fast food* options:

<http://tinyurl.com/aha-eatingout>

How much SATURATED FAT is OK for me?
Less than 16 gm of saturated fat per day OR less than 7% of total daily calories (around 2000 cal/day) can come from saturated fat.
One gram of fat contains 9 calories.

What foods have high SATURATED FAT content?

The majority of saturated fat comes mainly from **animal sources**, including:

Meat and meat products:

- beef and beef-based products (steak/burger)
- beef fat (tallow)/lard
- lamb
- pork (bacon, cold cuts, ham, hamburgers, hot dogs, and steak, as well as meat in pizza, chili, lasagna, and stew)
- poultry with skin

Whole or reduced-fat dairy products:

- whole-fat milk and cream
- butter/Margarine
- cheese
- ice cream

Many **baked goods and fried foods**, such as:

- doughnuts
- French fries
- fried chicken

Some **plant foods**, also contain primarily saturated fats, but do not contain cholesterol. Some examples:

- palm oil
- palm kernel oil
- coconut oil

How can I reduce SATURATED FAT in my diet?

Whether you eat at home or out, you can always make healthier choices to reduce the amount of saturated fat in your food.

If you're Eating at Home: Cooking and preparing meals at home allows for more control over the healthfulness of foods.

INSTEAD OF.....	TRY THIS.....
Solid animal fats such as butter and lard	Liquid vegetable oil <i>but not</i> coconut or palm oil
Meat, in general	Beans & legumes
Red meat (beef and some pork, including bacon, cold cuts, ham, hamburgers, hot dogs, and steak, as well as meat in pizza, chili, lasagna, and stew)	White meat (poultry)
Chicken, turkey, and other poultry with skin	Without skin
Whole or 2% milk	1% milk, skim/fat-free milk
Whole-milk cheese/cream	Low-fat cheese/cream/low-fat yogurt, low-fat cottage cheese
Whole egg (white + yolk)	Egg white

If you're Eating Out: Many restaurants offer delicious choices low in saturated fats and cholesterol. You CAN eat healthy outside the home too!

- Request smaller portions or share entrees. You'll save money and calories.
- In general, replace fried foods with foods that are steamed, broiled, baked, grilled, poached or roasted

INSTEAD OF.....	TRY THIS.....
Cream-based soups	Broth-based soups with lots of vegetables
Bread, muffins, croissants	Pita bread, whole-grain rolls
Fried chicken	Grilled chicken
Cheeseburgers, hot dogs, and steak, <i>red meat</i> in pizza, chili, lasagna, and stew	Grilled chicken sandwiches, sliced meat sandwiches or even a regular hamburger with lettuce, tomato and onion or veggie burger/pizza, lasagna, chili with <i>white meat</i> and vegetables
Side of french fries	Side of baked potato, brown rice, steamed vegetables, fresh fruit
Creamy coleslaw	Sautéed vegetables, steamed vegetables or tossed salad
Hot fudge sundae or ice cream	Nonfat yogurt, sherbet or fruit ice
Milkshake	Fruit juice, low-fat or fat-free milk

Appendix H

Saturated Fats Knowledge Questionnaire

Please answer the following questions to the best of your knowledge.

1. Most Americans consume an excess amount of saturated fat:
 - a. True
 - b. False

2. Saturated fat can increase the risk for heart disease by increasing bad cholesterol levels in the blood:
 - a. True
 - b. False

3. It's good to replace high saturated food items with low saturated food alternatives:
 - a. True
 - b. False

4. The majority of saturated fat in our food comes from _____ sources:
 - a. Animal
 - b. Plant
 - c. Neither animal nor plant
 - d. Both, animal and plant

5. Which three food items typically contain high amounts of saturated fat?
 - a. Nuts, seeds, vegetable oils
 - b. Bacon, cheeseburger, whole-fat milk
 - c. Fruit juice, non-fat yogurt, fat-free milk
 - d. White meat, egg whites, salads

6. Saturated fats tend to be _____ at room temperature:
 - a. Solid
 - b. Liquid

7. Many foods high in saturated fats are easily available at fast-food restaurants and vending machines:
 - a. True
 - b. False

8. It is recommended that we limit our saturated fat intake to less than ____% of our daily calories:
- 7%
 - 10%
 - 15%
 - 20%
9. How many calories does one gram of fat contain?
- 15
 - 12
 - 4
 - 9
10. It is possible to select low saturated fat food options whether cooking at home or eating out:
- True
 - False

Appendix I

Study Manual

Study Framework (Order of Events)

Note: all meetings are in-person and one-on-one regardless of group

TIME 0 (Baseline)

Day 1

All Participants

- (1) Randomization
- (2) Explain study in brief
- (3) Informed consent
 - Questionnaires: a) Baseline Measures:
 - i) Self-Regulation for controlled eating
 - ii) Self-Efficacy for saturated fat intake
 - iii) MEDFACTS
 - b) Demographics, Health & Food Information
 - c) Saturated fats knowledge questionnaire
- (4) Provide saturated fats information booklet (allowed to keep)
- (5) Re-administer Saturated Fat Knowledge questionnaire
- (6) Record weight

Self-regulatory skill + Education	Education Only
(Estimated Duration: 1 hour)	(Estimated Duration: 40 min)
(7) Self-monitoring/Food diary instructions (8) Schedule Week 2 appointment (9) Reminder to bring back completed food diary	(7) Schedule Week 2 appointment

Week 1 Activity, Days 1-7

Self-regulatory skill + Education	Education Only
Complete food diary	None

Week 2, Days 8-14

Day 8

Self-regulatory skill + Education (Estimated Duration: 1 hour)

- (1) Collect Week 1 food diary
- (2) Review concerns with food diary
- (3) Discuss: a) Goal Specification (overall and for this week)
 b) Barriers and Strategies (1:2)
 c) Self-Rewards
- (4) Instructions to complete “Record Your Actions”
- (5) Give Activity Booklet (Food Diary + “Record Your Actions”) for week 2
- (6) Schedule Week 3 appointment
- (7) Reminder to return completed Activity Booklet

Education Only (Estimated Duration: ~30 minutes)

- (1) Answer questions related to saturated fat intake, encourage discussion
- (2) Reminder to review booklet and consider reducing saturated fat intake
- (3) Schedule Week 3 appointment

Week 2 Activity

Self-regulatory skill + Education	Education Only
(1) Work on weekly goal (2) Complete Activity Booklet	None

Week 3, Days 15-21

Day 15

Self-regulatory skill + Education (Estimated Duration: 20-30 minutes)

- (1) Collect completed Week 2 Activity Booklet
- (2) Review Week 2 concerns
- (3) Self-evaluation: where do you stand in reference to your overall goal?
- (4) Goal-revision/discuss Week 3 goal
- (5) Give Activity Booklet (Food Diary + “Record Your Actions”) for Week 3
- (6) Schedule Week 4 appointment
- (7) Reminder to return completed Activity Booklet

Education Only (Estimated Duration: 20-30 minutes)
<ul style="list-style-type: none"> (1) Answer questions if any regarding saturated fat intake (2) Discuss an average work day and average weekend with emphasis on eating patterns (3) Reminder to review booklet and consider reducing saturated fat intake (4) Schedule Week 4 appointment

Week 3 Activity

Self-regulatory skill + Education	Education Only
<ul style="list-style-type: none"> (1) Work on weekly goal (2) Complete Activity Booklet 	None

Week 4, Days 22-28

Day 22

Self-regulatory skill + Education (Estimated Duration: 20-30 minutes)
<ul style="list-style-type: none"> (1) Collect completed Week 3 Activity Booklet (2) Review Week 3 concerns (3) Self-evaluation: where do you stand in reference to your overall goal? (4) Goal-revision/discuss Week 4 goal (5) Give Activity Booklet (Food Diary + “Record Your Actions”) for Week 4 (6) <u>Schedule T1 appointment</u> (7) Reminder to bring back completed Activity Booklet

Education Only (Estimated Duration: 20-30 minutes)
<ul style="list-style-type: none"> (1) Answer questions if any regarding saturated fat intake (2) Discuss aspects of work (positive, negative) and how this may relate to eating (3) Reminder to review booklet and consider reducing saturated fat intake (4) <u>Schedule T1 appointment</u>

Week 4 Activity

Self-regulatory skill + Education	Education Only
(1) Work on weekly goal (2) Complete Activity Booklet	None

TIME 1

Week 5, Days 29-35

Day 29

All Participants

- (1) T1 Measures: i) Self-Regulation for controlled eating
ii) Self-Efficacy for reducing saturated fat intake
iii) MEDFICTS
Saturated Fat Knowledge questionnaire
- (2) Schedule T2 appointment

Self-regulatory skill + Education (Estimated Duration: 30 minutes)

- (1) Collect completed Week 4 Activity Booklet
- (2) T1 measures (Food diary for Week 4 used to complete MEDFICTS)
- (3) Discuss progress
- (4) Give Activity Booklets for both, Week 5 & Week 6 along with reminder to continue activities and record
- (5) Schedule T2 appointment
- (6) Reminder to return completed Activity Booklets

Education Only (Estimated Duration: 20 minutes)

- (1) As mentioned in “All Participants” section
- (2) Answer questions if any regarding saturated fat intake
- (3) Reminder to review booklet and consider reducing saturated fat intake

Week 6, Days 36-42**Day 36 (phone)**

Note: In most cases, reminders were not required as participants were good at keeping track of appointments by this point in the study.

Self-regulatory skill + Education

Remind and Confirm T2 appointment

Education Only

Remind and Confirm T2 appointment

TIME 2**Day 43 (End of Study)****All Participants**

- (1) T2 Measures: i) Self-Regulation for controlled eating
 ii) Self-Efficacy for reducing saturated fat intake
 iii) MEDFACTS
 Saturated Fat Knowledge questionnaire

- (1) Record weight
 (2) Payment & Thank you!

Self-regulatory skill + Education (Estimated Duration: 20-30 minutes)

- (1) Collect completed Weeks 5 & 6 Activity Booklet
 (2) Discuss progress

Education Only (Estimated Duration: 20-30 minutes)

As mentioned in "All Participants" section

Self-regulatory skill + Education (Experimental Group)

<i>Self-Regulation Component</i>	<i>Materials for Recording Component</i>	<i>Completed by: Participant [P] Researcher [R]</i>
(1) Self-Monitoring	Food Diary (P), + Participant Activity Tracker “B”	P & R
(2) Goal Specification	Participant Activity Tracker “B”	R
(3) Barrier & Strategy Identification	Record Your Actions (P) + Participant Activity Tracker “B”	P & R
(4) Self-Reward	Record Your Actions + Participant Activity Tracker “B”	P & R
(5) Self-Evaluation & Goal Revision	Participant Activity Tracker “B”	R

Note: (a) Activity Booklet starting Week 2 = Food Diary + Record Your Actions

(b) Participant Activity Tracker “B” completed by researcher only

Activity Scripts for each group**WEEK 1, DAYS 1-7****Day 1, Time 0****[Self-regulatory skill + Education]**

(I) Get ready with participant’s file.

(II) Script on arrival:

“First of all, thank you so much for agreeing to participate in this study. My advisor and I are very happy to see you here. By participating in this study, you could possibly improve your diet and you will greatly help us understand the dietary habits of people working in various job settings.

During the course of this study, you will be asked to participate in different activities, like writing down what you eat, making goals for yourself to reduce your saturated fat intake, and working on the goals you set for yourself. I will be contacting you each week and requesting you to come back to this office at various times.

Please know that my advisor and I will be very grateful to you for staying through the entire six weeks of this study. You will be compensated for your contribution at the end of the study. This first meeting today will take about an hour.”

(III) Subsequent activities are carried out in the order presented in the study framework.

(IV) Instructions for each measure provided as printed on the respective questionnaire.

(V) Before presenting Saturated Fats Information Booklet:

“I will now give you some information on saturated fat intake. Although found in many “tasty” foods like desserts and fried foods, and meats, saturated fat has been shown by the medical world to be a harmful ingredient in your diet because it can increase the level of cholesterol in your blood and could potentially cause heart problems. It has been shown time and again that reducing this element in one’s diet can reduce the risk for high cholesterol”.

(VI) Present Food Diary for Week 1

Script for Food Diary:

“This is a food diary. It looks very similar to the questionnaire (show MEDFICTS) that you just filled out. Just like in the questionnaire, there are specific categories of foods on this sheet. (Point) For each category, you have many types. For example, here’s a category for meats. You can see they’ve mentioned all the different kinds of meat people typically eat along with quantities. Here’s another category for snacks of different types, such as candy, chips, pretzels, etc., along with quantities.

It is very important to keep in mind that you will need to complete this questionnaire everyday. I realize that it seems difficult to remember everything we eat and drink during the day. However, I ask that you do the very best you can. You might also find that your food may be the same for most days or can change from one day to another, or you might have trouble remembering what you ate. This is not a problem at all. Just do your best to check off whenever you eat or drink one of the food items mentioned on this list at the earliest chance you get. I understand that your day begins pretty early. It doesn’t matter when during the day you consume each food item; just try your best to check off the items from this list you consume.

As you can see (indicate), this diary has a sheet for each day of the week. So let’s practice. Let’s first enter today’s date in the slot. Next, there are two types of information you would need to enter. One is the number of times you consumed the item, and second, how much of it you consumed. You can begin filling in this diary, starting today. Ok, what can you spot on this list that you have eaten or drunk up to now today? (Enter into diary as participant recalls items and demonstrate) Let’s say

you ate an omelet today with 3 full eggs, i.e., yolk and whites. Under the box, 'how many times today?' check the box for 1 if you eat eggs only once today. Next to it, you'll see the question, 'how much did you eat'. Since your omelet was made with 3 eggs, check the box for 3 or more.

(Indicate) As you can see, when you put down 'how much' for each item, there are small, average, and large servings. Some items are easy to specify, like the 3 whole-egg omelet you mentioned. It might be more difficult for other items, like how much meat you ate. In this case, your diary has examples (indicate) that you can refer to. For example, an average serving of meat is 5oz, which would look like two decks of cards (demonstrate with decks of cards). Let's look at the Dairy category. It says that this category is measured in cups. An average serving is one cup, which looks like this (demonstrate cup measure). If you drank this much, check the box for average, if you drank more or less than this each time, check the box accordingly.

One thing to pay attention to is side items. It's easy not to think of "side" items, such as butter on bread, or coleslaw with your sandwich, or the kind of milk (half-and-half, 2%, or skim) with your coffee. It's important that you remember these too and write it down. Again, I realize this can seem like a difficult task at first but if you keep at it, it will eventually become much easier and won't take long at all.

One last thing. See that there are two groups for each category? Group A and Group B. You can fill in how many times and how much you ate or drank only for items in group A. You can circle items consumed in group B but you don't have to specify how many times and how much you ate. (Note: participants completed Group B as well for comparison)

Do you have any questions?" Clarify if needed.

(VII) Week 2 appointment scheduled and noted on Participant Activity Tracker "B".

(VII) Participant reminded to bring back completed food diary at Week 2 visit.

[Education Only]

(I) Get ready with participant's file.

(II) Script on arrival:

"First of all, thank you so much for agreeing to participate in this study. My advisor and I are very happy to see you here. By participating in this study, you will greatly help us understand the dietary habits of people working in various job settings.

During the course of this study, I will be contacting you and requesting you to come back to this office two more times, four weeks from now and six weeks from now. During each time, you will be asked to complete some questionnaires like today.

Please know that my advisor and I will be very grateful to you for staying through the entire six weeks of this study. You will be compensated for your contribution at the end of the study. This first meeting today will take about 45 minutes.”

(III) Subsequent activities are carried out in the order presented in the study framework.

(IV) Instructions for each measure provided as printed on the respective questionnaire.

(V) Before presenting Information Booklet:

“I will now give you some information on saturated fat intake. Although found in many “tasty” foods like desserts and fried foods, and meats, saturated fat has been shown by the medical world to be a harmful ingredient in your diet because it can increase the level of cholesterol in your blood and could potentially cause heart problems. It has been shown time and again that reducing this element in one’s diet can reduce the risk for high cholesterol”.

(VI) T1 appointment scheduled and noted on Participant Activity Tracker “A”.

Week 1 activity for the groups as indicated in framework.

WEEK 2, DAYS 8-14

[Self-regulatory skill + Education]

Day 8

(I) Get ready with participant’s file.

(II) Subsequent activities are carried out in the order (steps 1-3) presented in the study framework.

(III) Discuss aim of this study at this point.

Script:

“As you remember from last week, this is a study where you will work on reducing your saturated fat intake, i.e., reducing the foods that are high in saturated fat. As you might recall from the informational booklet you read last week, saturated fat is a harmful ingredient in your diet because it can increase the level of cholesterol in your blood and could potentially cause heart problems.

Over the course of this study, I will help you develop and work on a plan to reduce some food items in your diet that are high in saturated fat. Today let’s work on developing this plan.

Did you have any questions before we begin?" (Clarify if any)

(IV) This week, the participant will work on specifying two SMART goals, i.e., a goal that is specific, measurable, attainable, relevant, and timed.

-One overall SMART goal to be achieved by the end of Week 4 and

-One SMART goal for the current week (Week 2)

These goals could be guided by a combination of the participant's score on MEDFACTS (taken at T0) and the food diary (this will be scored at the meeting) from Week 1.

Here's an example of how these could work:

Researcher: *"Let's begin with an overall goal, that's three weeks from now. Usually, when people decide on a goal, it's usually easier to start with a concrete plan. Let's look at your score on the MEDFACTS questionnaire. What do you think of your score of 80? How much would you like to bring this down three weeks from now?"*

Participant:(Based on MEDFACTS score) *"I want to bring down my score from 80 to 30 by the end of Week 4. This will be my overall goal."*

Researcher: *"Great! That sounds like a really good goal. Usually, when people work on a goal, they find that it's easier to tackle the goal by breaking down the bigger task into smaller tasks. So let's just focus on a smaller, starting goal just for this week."*

Now let's look at your food diary from last week. Next, let's look at the groups for each category. Group A items are those that are typically high in saturated fat while group B is less so. So a useful way to begin is to think of ways to swap group A items with group B items. So for example, in the Meats category, instead of eating red meats like beef, you could choose white meats such as chicken. Generally, group B options are healthier than group A. Is there anything you would like to work on?"

Participant: *"It looks like I eat a lot of group A items in the Snacks and Fried foods sections. So I choose to reduce snacks and French fries this week."*

Researcher: *"Excellent!" How do think you can do this? People usually find it much easier to deal with a goal that's specific and clear, and also one's that realistic- not too difficult or too easy. Also, let's work on reducing both, how often you eat these foods, and how much at a time. For example, cutting down from 4 or more times during the week to about 2-3 times, and from a large portion each time to an average portion. Is there something you see that could help you decide on what to work on?"*

Participant: *"I snack a lot on chips in between breakfast and lunch on most days of the week. I am going to replace regular chips with baked chips and may be reduce eating chips from four times last week to only two days this week. Also, I usually order a*

large side of fries on 3 days last week, I will work on bringing this down to just 1 time this week, or I'll order a small side of fries on two days this week."

Researcher: *"Wonderful! Sounds like you have yourself a goal for this week!!"*

In this manner, the participant is guided to specify a goal that is SMART. Typically, the overall goal will simply be a score on the MEDFICTS but the weekly goal will comprise a more extensive plan of what food items to reduce and how to go about it.

(V) Record overall and week goal in Participant Activity Tracker "B".

(VI) Next, the participant engages in envisioning potential barriers that may hinder goal attainment along with strategies to counter them or problem solve. In this study, the participant is encouraged to think of at least two strategies per barrier

(Barrier: Strategy = 1: 2). It is important that these barriers and strategies be tied closely to the individual's routine as well as work and home contexts. Thus, it is possible to incorporate factors such as work schedules & meal plans, stress and coping by eating, upcoming events like parties, short travel plans, etc.

Here's an example of barrier & strategy identification activity:

Researcher: *"Ok, now that you've decided on your goal for this week, let's look at what could possibly come in the way of this goal. Thinking of some problems that could come up will help you prepare for them. So I'd like you to take a little while and imagine some potential problems that could prevent you from achieving your goal. For example, you said (referring to example in goal-specification) that you tend to snack on chips a lot. If you want to cut down on this, could something come in the way?"*

Participant: *"I tend to get very hungry around mid-morning. Especially since I get up so early. When I'm hungry I'm so tempted to go the vending down the hall and get a bag of chips, and then another. Or if it's nearly lunchtime I'll want to get fries with my food."*

Researcher: *"It's really good that you noticed that. Ok, so now that you've just thought of this as a possible problem, is there a solution you can think of? What can you do when you get really tempted to go to the vending machine?"*

Participant: *"Well...I can think of may be bringing a snack with me from home so I don't have to run to the vending machine. Or pick something else instead of a bag of chips."*

Researcher: *"Excellent! So what kind of snack can you bring with you? What is a healthier option in place of chips and fries?"*

Participant: *“May be I can bring a fruit or some carrot sticks that I can munch on so I won’t get so hungry. Or I could replace a side of fries with baked chips on two days of the week and allow myself only one day in the week for fries.”*

Researcher: *“Sounds like a great plan! Ok, how about thinking of another solution? That way if one solution doesn’t work for some reason, you can try something else. Is there anything else you can do?”*

Researcher: *“Remember, if you really do want to eat chips, perhaps you could choose a healthier alternative from group B, like low-fat chips or baked chips instead of regular chips?”*

Here’s another scenario:

Participant: *“Sometimes when I have a fight with my girlfriend or if I have too much going on at work, I tend to get stressed out and eat a lot. Usually, I pick things like cookies or ice cream or chips.”*

Researcher: *“That’s a great point. We all deal with stress in different ways. Let’s see what we can do about this. There may be a couple of ways we could work on dealing with this. For one, are there other foods that you could choose to eat when you get stressed? How about some fruit, or may be even some popsicles (no cream) to cool off? The other possible way of tackling this is may be going out for some fresh air to clear your head or how about taking the dogs out for a walk (if you’re at home)?”*

Participant: *“Yeah...I usually prefer to eat something, it makes me feel better. I can definitely plan on eating popsicles instead or may be some low fat snacks.”*

Researcher: *“Excellent! You really are doing a great job planning ahead!”*

Participant may choose this option or suggest another.

(VII) Record barriers and strategies in Participant Activity Tracker “B”.

(VIII) Next, the participant is encouraged to think of some rewards that he or she would self-administer contingent on achieving the weekly goal.

Here’s an example of self-reward identification activity:

Researcher: *“Ok, now that you have decided on a goal, and thought of some ways to solve problems if they come up, let’s think of some ways to reward yourself if you achieve your weekly goal.”*

The reason I’d like you to think of a reward is that, well...we all like to get rewards! Also, it’s a way of keeping yourself motivated and giving yourself something to look forward to. That’s why we can think of something that you would especially like. For example, some people like to think of an item they’ve wanted to buy and start a fund for it. So each time they achieve their goal, they’ll put a dollar, or however

much they choose, into a jar. If they continue to do well and accumulate enough money in the jar, they can go ahead and buy the item. So is there something you can think of? It doesn't have to be something to buy. It can also be something that you'd like to do but don't get to do often, like watching a movie or playing a game, for example. Of course, please remember that you cannot pick a reward that has to do with any fatty food item, like the Group A items in your food diary!"

(IX) Record self-rewards in Participant Activity Tracker "B".

(X) Finally, the participant is given Activity Booklet, which contains both, the Food Diary and "Record Your Actions". The participant is informed of this new Activity Booklet.

Script:

(Demonstrate) *"This is a worksheet called, 'Record Your Actions'. As you can see, there are boxes to fill out details of your goal activity during the week. You will need to fill in the problems you faced with regard to your goal and whether you used the solutions you thought of to tackle the problem. If you succeeded in tackling the problem, you would simply put a tick mark against the solution.*

Let's practice this. (Demonstrate) Ok, why don't you write down the problems we talked about earlier? Now let's write down the solutions you came up with. If you face a barrier, just put a tick mark against it, like this (Demonstrate). And if you use the solution, you would do the same.

Now, it is possible that you can use the solution but it still might not take care of the problem. Eg., you got low-fat chips but you also went ahead and ordered an extra side of fries. Please know that this is completely understandable. It's not easy making a change in our eating habits and it's possible to go back and forth. It is also possible that you encountered a new problem that you hadn't thought of today; that's fine too. Just make sure to write it down so we can talk about it next week.

Next, in this box here (Demonstrate) you indicate your rewards. Let's begin by writing down the reward you selected for yourself. As you can see there's a box to indicate if you gave yourself the reward or not. (Use stated self-reward to demonstrate this point) Again, don't worry if you did not do so. You can remind yourself to do it the next time. Try and be as truthful as possible so that we can work on these issues the next time we meet.

Do you have any questions? (Clarify if any).

(XI) Reminder to fill out Food Diary as well.

Script:

“I understand that it seems like a lot, but it really shouldn't take you more than a few minutes each time to note things down in your Activity Booklet. Again, please know that your participation in all these activities really helps us learn about the relevant issues with regard to saturated fat intake. My advisor and I truly appreciate your contribution to this study.”

The basis for this second statement lies in the essay by Shumaker et al., (2000) regarding attrition in intervention studies. According to the authors, it is vital to reaffirm to the participant during the intervention that their contribution is meaningful to the study and valuable to understanding the research topic.

(XII) Subsequent activities are carried out in the order (steps 6-8) presented in the study framework.

Note: The participant is informed of change in Activity Booklet; it will now contain Food Diary + Record Your Actions which they must fill out for Week 2.

[Education Only]

(I) Get ready with participant's file.

“I'd like to thank you again for agreeing to participate in my study. My advisor and I are very grateful for your involvement and I would like to remind you that your continued participation in our study would greatly help us learn about the relevant issues with regard to saturated fat intake. We truly appreciate your contribution to this study.

First of all, do you have questions for me about our meeting last week and about saturated fat foods? I'll be happy to answer any questions or we could discuss something in particular about saturated fats if you'd like.

At this point, I would also like to remind you to please review the information booklet regarding saturated fat intake that you received during our first meeting. As you know saturated fat is a harmful ingredient in your diet because it can increase the level of cholesterol in your blood and could potentially cause heart problems.

I'd like to encourage you to use the suggested information in the booklet to help you work on reducing your consumption of food items that are high in saturated fat. Reducing this element in one's diet has been shown to reduce the risk for high cholesterol. Any degree of reduction in foods high in saturated fat will be a good first step toward reducing your risk for high cholesterol.”

Week 2 activity for the groups as indicated in framework.

WEEK 3, DAYS 15-21[Self-regulatory skill + Education]Day 15

(I) Get ready with participant's file.

(II) Subsequent activities are carried out in the order (steps 1-3) presented in the study framework.

(III) The Self-Evaluation and Goal-Revision (which from this point on is the same as weekly goal-specification) components are introduced this week.

The researcher begins by providing supportive feedback.

Script:

“So how do you think you did last week? Are you satisfied with how things went with your snacking and French fries? Clearly you have made such an effort to keep close tabs on your saturated fat intake. I also like that you've completed the food diary just perfectly! It is very encouraging that you're working toward your goal; I'm sure that you'll achieve your overall goal in no time.”

If participant has not achieved their Week 2 goal:

“I realize it can be quite difficult to change our eating habits; it is one of the hardest things to do and it's completely natural to have setbacks now and then so please don't be discouraged or disappointed if you feel like you have not achieved your goal for the week. This doesn't mean that achieving your goal is impossible. Let's try and figure out what may be making it difficult for you to reduce your saturated fat intake. If we can pinpoint the problem, we can come up with a solution.”

Next, the participant is encouraged to evaluate their progress in relation to their overall and to think of their next step in relation to Week 2 goal.

Script:

“What would you like your goal for this week to be?”

If participant achieved last week's goal:

“Would you like to maintain the same goal for this week or further reduce your saturated fat intake than last week? Last week, you worked on Snacks and Fried Foods. You've accomplished your goal for the week. This week, you can add a new category to work or just continue to maintain last week's goal. If you do pick a new category, keep in mind that you'll still need to maintain your excellent work on Snacks and Fried Foods from last week.”

If participant has not achieved last week's goal:

"Would you like to scale back your goal from last week if you found it too difficult or give the same goal another try this week?"

Next, the participant decides on a goal for Week 3. This also serves as the revised goal. The process of selecting this week's goal is the same as in week 2.

(IV) Record self-evaluation and revised goal in Participant Activity Tracker "B".

(V) Subsequent activities are carried out in the order (steps 6-8) presented in the study framework.

[Education Only]

(I) Get ready with participant's file.

Script:

"It's good to see you again this week! First of all, do you have any questions about saturated fat foods? I'll be happy to go over some specific food items you consume, if you'd prefer. We could discuss how much saturated fat they contain."

If yes, answer questions and discuss food items. If nothing is discussed...

"This week, I was thinking that we could talk a little about your routine. Specifically, I'd like you to describe what a typical working day is like for you and a typical weekend. How about we start with an average working day, from the time you wake up until you go to bed. Also, it would be great if you shared with me what you tend to eat through the day, for meals and snacks."

After the participant has finished discussing typical week and eating patterns:

"Wonderful! Thank you for sharing this information with me. As you know, everything you have told me is completely confidential and will only be used in the context of this study. One more question before we conclude. Have you revisited the booklet? Have you had any thoughts on cutting down on some high saturated fat foods?"

(If yes) *"Great! Have you given any thought to reducing your saturated fat intake? For tips on reducing this, you could simply look at the booklet"*

(If no) *"I highly recommend looking through this information. Cutting down saturated fat foods can greatly reduce your risk for high cholesterol."*

Week 3 activity for the groups as indicated in framework.

WEEK 4, DAYS 22-28[Self-regulatory skill + Education]Day 22

- (I) Get ready with participant's file.
- (II) Subsequent activities are carried out in the order (steps 1-3) presented in the study framework.
- (III) The Self-Evaluation and Goal-Revision: continued this week. Procedure same as mentioned in Week 3.
- (IV) Record self-evaluation and revised goal in Participant Activity Tracker "B".
- (V) Subsequent activities are carried out in the order (steps 6-8) presented in the study framework.

[Education Only]

Same as week 3. Instead of discussing average working day and weekend:

"This week, would you mind talking about your work a little bit? Are there things you like about the work you do? Are there things you wish were different? Do you think that any of this plays into your daily eating habits? Of course, like last week, you're free to talk as little or much about this as you like. It is only for the purpose of this study and your information is not to be used for anything else."

Week 4 activity for the groups as indicated in framework.

WEEK 5, DAYS 29-34**Day 29, Time 1**[Self-regulatory skill + Education]

- (I) All activities as indicated in study framework.
- (II) Discuss progress in relation to the overall goal, providing appropriate feedback.
- (III) From this point on, there is no extended contact with the participants, i.e., the researcher will not discuss the revised goals, barriers, strategies, etc.

Instead:

"Clearly, you have been doing wonderfully so far. If you have achieved the overall goal you had set for yourself, this is simply great news. If you have not, you can certainly continue to work toward it. . We can decide now on a goal that you can

work on over the next two weeks or if you'd like, you can simply continue your work from last week until our final meeting without making any new goals.

At this point, I'd like to encourage you to please continue your fine work for the next two weeks. Please continue to set goals for yourself at the beginning of each week, use your tactics and strategies to solve any problems you might face in trying to achieve your goal, and through it all, please remember to continue to complete the Activity Booklet for this week. I will collect the Activity Booklets you will complete for this week and the next when you visit two weeks from now."

[Education Only]

(I) All activities as indicated in study framework.

(II) A second reminder is made to review the Information Booklet and use it to make changes in one's eating habits.

"Again, I'd like to remind you to please review the information booklet that you received during our first meeting regarding saturated fat intake. As you know saturated fat is a harmful ingredient in your diet because it can increase the level of cholesterol in your blood and could potentially cause heart problems.

I'd like to encourage you to use the suggested information in the booklet to help you work on reducing your consumption of food items that are high in saturated fat. Reducing this element in one's diet has been shown to reduce the risk for high cholesterol. Any degree of reduction in foods high in saturated fat will be a good first step toward reducing your risk for high cholesterol."

WEEK 6, DAYS 35-42

Day 35 (phone contact, optional)

[Self-regulatory skill + Education]

T2 appointment reminder and confirmation.

[Education Only]

T2 appointment reminder and confirmation.

Note: In the present study, no reminders were required during week 6 as participants had become accustomed to the weekly meeting schedule. They were also extremely responsible about keeping appointments by this time and often called ahead of time if they had to reschedule.

Day 43, Time 2, End of Study**[Self-regulatory skill + Education]**

(I) Activities carried out as indicated in study framework.

(II) Final feedback on progress & Thank you:

“I am so happy that you chose to really stick through these last six weeks. It is clear that you can set goals for yourself and you can also achieve these goals and help improve your health. I hope you have enjoyed participating in the various study activities as much as I have liked helping you with them. Your involvement in this study will certainly help us understand how to help people successfully reduce their saturated fat intake. Please feel free to continue working on reducing your saturated fat intake even after this. Thank you so much for all your contribution to my study.”

[Education Only]

(I) Activities carried out as indicated in study framework.

(II) Thank you:

“I am so happy that you chose to really stick through these last six weeks. Your involvement in this study will certainly help us understand how to help people successfully reduce their saturated fat intake. Please feel free to continue working on reducing your saturated fat intake even after this. Thank you so much for all your contribution to my study.”

Scoring for Experimental Condition (Self-regulatory skill + Education)

This scoring system applies only to the intervention group and serves to evaluate the various components of Self-Regulation in this study. Specifically, the purpose of this scoring system is to simply assess the features of the intervention and the participant's adherence to it. The scoring rubric was developed by the researcher.

Component 1: Self-Monitoring (starting week 1)

Based on: Food Diary

Food diary must record daily consumption-- frequency and portion size, 1 point for each.

Thus,

Per day, maximum score = 2

Per week, maximum score = 2 x 7= 14 points

Weekly Scoring:

- 1-3 recordings = 0
 4-6 recordings = 1
 7-9 recordings = 2
 10-14 recordings = 3

Overall score for study will be calculated by summing up weekly scores for 6 weeks.

Component 2: Goal-Specification (starting week 2)

Based on: Participant Activity Tracker “B”

- (a) Specify one **overall** goal to be achieved by the end of week 4. Goal must be Specific, Measureable, Achievable, Realistic/Relevant, and Timed (1 x 5 = 5 points)
 (b) One SMART **weekly** goal for week 2 (1 x 5 = 5 points)
 Thus, maximum possible score for Goal-Specification= 10 points

Same as Goal-Revision:

- (c) One SMART weekly goal for week 3 (1 x 5 = 5 points)
 (d) One SMART weekly goal for week 4 (1 x 5 = 5 points)
 (e) One SMART weekly goal for week 5 (1 x 5 = 5 points)
 (f) One SMART weekly goal for week 6 (1 x 5 = 5 points)

Week 2, maximum points = 10

Weeks 3, 4, 5, 6: maximum points = 5 each

Maximum overall score = 10 + 20 (5 x 4 weeks) = 30

Overall score for study will be calculated by summing up scores for weeks 2, 3, 4, 5, & 6.

Component 3: Barrier and Strategy Identification (starting week 2)(a) Identification:

Based on: Participant Activity Tracker “B”

Barrier: Strategy = 1: 2 (i.e., at least 2 strategies to deal with each barrier)

Score: one point for each barrier and strategy identified in the week

(b) Barrier Encountering & Strategy Utilization:

Based on: Record Your Actions

Score: one point each for recording barrier encountered and strategy utilized in the week

Overall score for study will be calculated by summing up scores for weeks 2, 3, 4, 5, & 6.

Component 4: Self-Reward (starting week 2)

(a) Reward Identification:

Based on: Participant Activity Tracker “B”

Must identify at least 2 tangible rewards (cannot include saturated fat food item)

Score: one point for each reward identified

(b) Reward Administering:

Based on: Record Your Actions

Score: one point for each self-reward recorded

Overall score for study will be calculated by summing up scores for weeks 2, 3, 4, 5, & 6.

Component 5: Self-Evaluation & Goal Revision (weeks 3, 4, 5, 6)

Based on: Record Your Actions & Participant Activity Tracker “B”

(a) Self-Evaluation:

Decision to scale back goal/maintain previous week’s goal/scale up goal

Total Score = 1 point for specifying this decision x 4 weeks = 4

(b) Goal Revision (same as goal specification for week 3, 4, 5, 6):

One SMART goal (1 x 5 = 5 points)

Total Score = 5 points x 4 weeks = 20

Maximum weekly score = 6

Maximum overall score (Self-Evaluation + Goal-Revision) = 24

Overall score for study will be calculated by summing up scores for weeks 3, 4, 5, & 6.

TOTAL SELF-REGULATION SCORE= sum of all components across six weeks.

Interpretation: higher score = greater self-regulation adherence

Appendix J

Participant Activity Tracker, Form A (EDUCATION ONLY)

Case No.: _____ Condition by randomization: **Control** Intervention (use Form B!!)

Participant contact information: Name: _____

Phone: _____ Email: _____

Preferred Mode of Contact: _____

Meeting	Reminder Date	Scheduled Date	Scheduled Time	Rescheduled Date	Rescheduled Time	Rescheduled Reminder Date
T0						
T1						
T2						
Other, Specify						

Participant BMI

Meeting	WEIGHT	EMI
T0		
T2		

STUDY COMPENSATION: DATE _____; In-Person _____; Mail (note address) _____

PAID _____ NOT PAID (Why?) _____

Relevant Notes: (Participant Concerns, Unexpected events, Scheduling problems, Drop-out, etc.):

ISSUE	DATE	SOLUTION

Appendix K

Participant Activity Tracker, Form B (SELF-REGULATORY SKILL + EDUCATION)

Case No.: _____ Condition by randomization: _____ Control (use Form A!!!) _____ Intervention _____

Participant contact information: Name: _____

Phone: _____ Email: _____

Preferred Mode of Contact: _____

Meeting	Reminder Date	Scheduled Date	Scheduled Time	Rescheduled Date	Rescheduled Time	Reschedule Reminder Date
T0						
T1						
T2						
Other, Specify						

Participant BMI:

Meeting	WEIGHT	BMI
T0		
T2		

STUDY COMPENSATION: DATE _____; In-Person _____; Mail (note address) _____

PAID _____; NOT PAID (Why?) _____

Relevant Notes: (Participant Concerns, Unexpected events, Scheduling problems, Drop-out, etc.):

ISSUE	DATE	SOLUTION

WEEK 2

Activity: Goal Specification

<u>OVERALL</u>				
Goal: _____				Score:
S	M	A	R	T

WEEK 2				
Goal: _____				Score:
S	M	A	R	T

Activity: Identification of Barriers & Strategies

BARRIER		STRATEGY	
	Score:		Score:
1)	_____	1(a)	_____ _____
	_____	1(b)	_____ _____
2)	_____	2(a)	_____ _____
	_____	2(b)	_____ _____

Activity: **Identification of Self-Rewards** Score:

1.	_____
2.	_____

WEEK 3

Activity: Self-Evaluation & Goal Revision

Evaluation		WEEK 3 Goal: _____ Score:					
.....	Score:						
Scale back	Same	Scale up	S	M	A	R	T
New Barriers, Strategies, Self-Rewards (if any)							
Barrier	Strategy				Self-Reward		
1)	1(a) _____ 1(b) _____						
2)	2(a) _____ 2(b) _____						

Note: Week 3 form repeated for the Weeks 4-6

Participant Progress Tracker

WEEK	STATUS				Major Reason (if any)
	Yes		No		
	Exact goal/Exceeded	Partial progress	Unchanged	Regressed	
2					
3					
4					
5					
6					

Appendix L

Food Diary

Instructions:

This diary helps you keep track of your eating and drinking at various times during the day. For each day of the week, you will see eight different categories: Meats, Eggs, Dairy, Fried Foods, Baked Foods, Convenience Foods, Table Fats, and Snacks.

These are the major sources of saturated fat in the American diet.

Within each category, you will see specific food items that you grouped into Group A and Group B. You can fill in how many times and how much you ate or drank only for items in group A. You can circle items consumed in group B but you don't have to specify how many times and how much you ate.

It is very important to keep in mind that you will fill out this questionnaire everyday. It might seem difficult at first, but you'll soon see that it'll get quick and easy! So please don't stop keeping track of your food!! Also, **note the date and day!!**

For each category, please enter HOW MANY TIMES you consumed the item, and HOW MUCH of the item you consumed.

Here's an example: Let's say you ate an omelet today with 3 full eggs, i.e., yolk and whites. Under Group A, 'how many times today?' check the box for 1 if you ate eggs only once today. Next to it, you'll see the question, 'how much did you eat'. Since your omelet was made with 3 eggs, check the box for 3 or more.

For HOW MUCH, here's a list of examples to help you estimate how much you eat:

MEAT: average serving is 5oz = 2 decks of cards= 1 regular burger/hot dog

DAIRY: average serving is one cup = 8 fluid oz = small milk carton

--Cheese: average serving is 1 oz = 3 stacked dice= 1 stick/slice

--Frozen desserts: average serving is ½ cup = ½ baseball= half of small milk carton

FRIED FOODS: average serving = ½ cup = ½ baseball= half of small milk carton

--Fried chicken/meat: average serving = 3 oz = 1 deck of cards= 1 piece

BAKED FOODS: average serving is 1 unit of this item at the store

CONVENIENCE FOODS: average serving varies for each item. Refer to the checklist.

TABLE FATS: average serving is 2 tbsp = 1 ping pong ball/ roll of film

SNACKS: average serving varies for each item. Refer to the checklist.

--1 ½ oz = 4 stacked dice

--1 oz = 1 handful/ 1 golf ball

It is completely normal to have changes in your food on different days of the week. For example, your weekends may be more relaxed and you might snack more on these days. Or on some busy days, you might end up eating out. **Please make sure to complete this diary everyday, no matter what, when or where!**

Don't forget side items, such as butter on bread, or coleslaw with your sandwich, or the kind of milk (half-and-half, 2%, or skim) with your coffee.

Food Diary

Day:

Date:

Meats									
	<u>Beef</u>	<u>Processed Meats</u>	<u>Pork & Others</u>						
	Ribs	Regular hamburger	Pork shoulder						
	Steak	Fast food hamburger	Pork chops, roast						
A	Chuck blade	Bacon	Pork ribs						
	Brisket	Lunchmeat	Ground pork						
	Ground beef	Sausage	Regular ham						
	Meatloaf	Hot Dogs	Lamb steaks, ribs, chop						
	Corned beef	Knockwurst	Organ meats						
DAILY CONSUMPTION: How many times today?									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>				0	1	2	3	4	5 or more
0	1	2	3	4	5 or more				
PORTION SIZE: How much did you eat each time?									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33.33%; text-align: center;">Small</td> <td style="width: 33.33%; text-align: center;">Average</td> <td style="width: 33.33%; text-align: center;">Large</td> </tr> </table>				Small	Average	Large			
Small	Average	Large							
Meats									
	<u>Lean Cuts of Beef</u>	<u>Low-fat Processed Meats</u>	<u>Poultry, Fish, Meat</u>						
	Sirloin tip	Low-fat lunchmeat	Poultry without skin						
	Flank steak	Low-fat hot dogs	Fish, seafood						
B	Round steak	Canadian Bacon	Lamb flank, leg-shank, sirloin, roast						
	Rump Roast		Lean ham cured & fresh						
	Chuck Arm roast		Pork loin chops, tenderloin						
			Veal chops, cutlets, roast						
			Venison						
DAILY CONSUMPTION: How many times today?									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>				0	1	2	3	4	5 or more
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Small	Average	Large							

Dairy									
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>						
	Whole milk	Cream cheese	Ice cream						
	2% milk	Cheddar, Colby, Swiss	Milk shakes						
A	2% buttermilk	Monterey Jack							
	Yogurt (whole milk)	Regular cottage cheese							
		American processed							
		Blue cheese							
		Ricotta (1/2 cup)							
DAILY CONSUMPTION: How many times today?									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>				0	1	2	3	4	5 or more
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Small	Average	Large							
Dairy									
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>						
	Skim Milk	Low-fat & fat-free cheeses	Ice Milk						
	1% Milk	Skim-milk mozzarella	Frozen Yogurt						
B	Skim milk-buttermilk	String Cheese							
	Yogurt (nonfat & low-fat)	Low-fat & fat-free cottage cheeses							
		Skim-milk ricotta (1/2 cup)							
DAILY CONSUMPTION: How many times today?									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>				0	1	2	3	4	5 or more
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Small	Average	Large							

Eggs									
			DAILY CONSUMPTION: How many times today?						
A	Whole eggs, Yolks		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>	0	1	2	3	4	5 or more
			0	1	2	3	4	5 or more	
PORTION SIZE: How many did you eat each time?									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33.33%; text-align: center;">1</td> <td style="width: 33.33%; text-align: center;">2</td> <td style="width: 33.33%; text-align: center;">3 or more</td> </tr> </table>		1	2	3 or more			
1	2	3 or more							
Eggs									
			DAILY CONSUMPTION: How many times today?						
B	Egg whites, Egg substitutes (1/2 cup = 2 eggs)		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 12.5%; text-align: center;">0</td> <td style="width: 12.5%; text-align: center;">1</td> <td style="width: 12.5%; text-align: center;">2</td> <td style="width: 12.5%; text-align: center;">3</td> <td style="width: 12.5%; text-align: center;">4</td> <td style="width: 12.5%; text-align: center;">5 or more</td> </tr> </table>	0	1	2	3	4	5 or more
			0	1	2	3	4	5 or more	
PORTION SIZE: How many did you eat each time?									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33.33%; text-align: center;">1</td> <td style="width: 33.33%; text-align: center;">2</td> <td style="width: 33.33%; text-align: center;">3 or more</td> </tr> </table>		1	2	3 or more			
1	2	3 or more							

Fried Foods	
A	French Fries, Fried vegetable: (1/2 cup), Fried Chicken, fish, and meat (3 oz)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
B	Vegetables, not deep fried (1/2 cup), Meat, poultry, or fish- prepared by baking, broiling, grilling, poaching, roasting, stewing: (3oz)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
Baked Goods	
A	Doughnuts, Biscuits, Butter rolls, Muffins, Croissants, Sweet rolls, Danish, Cakes, Pies, Coffee cakes, Cookies
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
B	Fruit bars, Low-fat cookies/cakes/pastries, Angel food cake, Homemade baked goods with vegetable oils, breads, bagels
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
Convenience Foods	
A	Canned, Packaged, or Frozen dinners; eg, Pizza (1 slice), Macaroni & cheese (about 1 cup), Pot pie (1), Cream soups (1 cup), Potato, rice & pasta dishes with cream /cheese sauces (1/2 cup)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
B	Diet/Reduced calorie or reduced fat dinners (1 dinner), Potato, rice & pasta dishes without cream /cheese sauces (1/2 cup)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
Table Fats	
A	Butter, Stick margarine, Regular salad dressing, Mayonnaise, Sour cream (2 Tbsp)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
B	Diet and tub margarine, Low-fat & fat-free salad dressing, Low-fat, fat-free mayonnaise
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
Snacks	
A	Chips (potato, corn, taco), Cheese puffs, Nuts (1 oz), Snack mix, Regular crackers (1/2 oz), Regular popcorn (3 cups), Candy (milk chocolate, caramel, coconut) (about 1 1/2 oz)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large
B	Pretzels, Fat-free chips (1 oz), Low-fat crackers (1/2 oz), Fruit, Fruit rolls, Licorice, Hard candy (1 med piece), Bread sticks (1-2 pcs), Air-popped or low-fat popcorn (3 cups)
	DAILY CONSUMPTION: How many times today? 0 1 2 3 4 5 or more
	PORTION SIZE: How much did you eat each time? Small Average Large

Appendix M

Record Your Actions**Instructions:**

Once every week, we'll discuss some problems you face while trying to reach your goal of reducing your saturated fat intake. These problems are completely normal. The important thing is there's always a solution to each problem, just like we discussed.

What can really help you is making note of these problems each time you experience them. Also, remember we discussed some ways to tackle the problem? Please make sure to write these down each time you use these solutions too.

If you did face the problem, you will put a tick mark next to "Yes" like this: ✓

If you did not face any problems, you will put a tick mark next to "No" and since you would not need to use a solution, you can just leave the solution section blank.

Please make sure to write down as many problems as you come up with, even if we didn't discuss them.

Here's an example of how to correctly fill out this sheet each week:

Problems & Solutions	
Problem	Solution
<p>1) Forget to bring a healthy snack to work</p> <p><i>Face this problem?</i> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>1(a) will buy a healthy snack at the cafeteria/union on campus, like an apple, banana, small packet of peanuts</p> <p><i>Used this solution?</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>1(b) will make a note on the steering wheel of my car as a reminder the next time</p> <p><i>Used this solution?</i> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>2) I got hungry and was tempted to get some fries</p> <p><i>Face this problem?</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>2(a) pick a healthier alternative, like baked chips instead of fries</p> <p><i>Used this solution?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2(b) get some fries but only eat 5 or fewer fries and leave the rest</p> <p><i>Used this solution?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

Along with your problems and solutions, remember we discussed some ways you can reward yourself during the week?

Give yourself and make note of *one reward ONLY IF YOU ACHIEVE YOUR GOAL FOR THE WEEK.*

Don't forget to reward yourself when you succeed because you deserve it! Also, make sure to mark it on this sheet when you do!!

Please note that it cannot be a fatty food!

If you achieved your weekly goal, you will put a tick mark in the "Yes" box like this: ✓

If you did not achieve your weekly goal, you will put a tick mark in the "No" box.

Please make sure to write down other rewards you identified and gave yourself, even if we didn't discuss them.

Here's an example of how to correctly fill out this section each week.

Rewards for Achieving Weekly Goal	
YES	NO
<p>My Goal This Week: _____</p> <p>1) Watched a movie _____ ✓</p> <p>2) Played an evening game of basketball _____</p>	<p>1) Watched a movie _____</p> <p>2) Played an evening game of basketball _____ ✓</p>

WEEK 2

Problems & Solutions	
Problem	Solution
<p>1) _____ <i>Face this problem?</i> _____ Yes _____ No</p>	<p>1(a) _____ <i>Used this solution?</i> _____ Yes _____ No _____ 1(b) _____ <i>Used this solution?</i> _____ Yes _____ No _____</p>
<p>2) _____ <i>Face this problem?</i> _____ Yes _____ No</p>	<p>2(a) _____ <i>Used this solution?</i> _____ Yes _____ No _____ 2(b) _____ <i>Used this solution?</i> _____ Yes _____ No _____</p>

Rewards for Achieving Weekly Goal	
1) _____ 2) _____	1) _____ 2) _____

Note: For convenience, the Record Your Actions is added into the Activity Booklet, with Food Diary. The participant is provided a weekly Record Your Actions for only one week at a time.

Each weekly Record Your Actions includes the following:

- Instruction page
- Completed sample pages
- Blank Record Your Actions to complete for the week

Appendix N

Saturated Fat Intake (MEDFICTS)

MEDFICTS

Meats						
	<u>Beef</u>	<u>Processed Meats</u>	<u>Pork & Others</u>			
A	Ribs	Regular hamburger	Pork shoulder			
	Steak	Fast food hamburger	Pork chops, roast			
	Chuck blade	Bacon	Pork ribs			
	Brisket	Lunchmeat	Ground pork			
	Ground beef	Sausage	Regular ham			
	Meatloaf	Hot Dogs	Lamb steaks, ribs, chop			
Cornd beef	Knockwurst	Organ meats				
WEEKLY CONSUMPTION:						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
Rarely/Never	3 or less	4 or more				
PORTION SIZE: How much did you eat each time?						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Small</td> <td style="width: 33%;">Average</td> <td style="width: 33%;">Large</td> </tr> </table>				Small	Average	Large
Small	Average	Large				
Dairy						
	<u>Lean Cuts of Beef</u>	<u>Low-fat Processed Meats</u>	<u>Poultry, Fish, Meat</u>			
B	Sirloin tip	Low-fat lunchmeat	Poultry without skin			
	Flank steak	Low-fat hot dogs	Fish, seafood			
	Round steak	Canadian Bacon	Lamb flank, leg-shank, sirloin, roast			
	Rump Roast		Lean ham cured & fresh			
	Chuck Arm roast		Pork loin chops, tenderloin			
			Veal chops, cutlets, roast			
		Venison				
WEEKLY CONSUMPTION:						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
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Small	Average	Large				
Eggs						
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>			
A	Whole milk	Cream cheese	Ice cream			
	2% milk	Cheddar, Colby, Swiss	Milk shakes			
	2% buttermilk	Monterey Jack				
	Yogurt (whole milk)	Regular cottage cheese				
		American processed				
		Blue cheese				
	Ricotta (1/2 cup)					
WEEKLY CONSUMPTION:						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
Rarely/Never	3 or less	4 or more				
PORTION SIZE: How much did you eat each time?						
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Small	Average	Large				
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>			
B	Skim Milk	Low-fat & fat-free cheeses	Ice Milk			
	1% Milk	Skim-milk mozzarella	Frozen Yogurt			
	Skim milk-buttermilk	String Cheese				
	Yogurt (nonfat & low-fat)	Low-fat & fat-free cottage cheeses				
		Skim-milk ricotta (1/2 cup)				
WEEKLY CONSUMPTION:						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
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1	2	3 or more				
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>			
A		Whole eggs, Yolks				
	WEEKLY CONSUMPTION:					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
Rarely/Never	3 or less	4 or more				
PORTION SIZE: How many did you eat each time?						
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1	2	3 or more				
	<u>Milk</u>	<u>Cheese</u>	<u>Frozen Desserts</u>			
B		Egg whites, Egg substitutes (1/2 cup = 2 eggs)				
	WEEKLY CONSUMPTION:					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Rarely/Never</td> <td style="width: 33%;">3 or less</td> <td style="width: 33%;">4 or more</td> </tr> </table>				Rarely/Never	3 or less	4 or more
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1	2	3 or more				

Fried Foods				
A	French Fries, Fried vegetable: (1/2 cup), Fried Chicken, fish, and meat (3 oz)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
B	Vegetables, not deep fried (1/2 cup), Meat, poultry, or fish- prepared by baking, broiling, grilling, poaching, roasting, stewing: (3oz)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
Baked Goods				
A	Doughnuts, Biscuits, Butter rolls, Muffins, Croissants, Sweet rolls, Danish, Cakes, Pies, Coffee cakes, Cookies	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
B	Fruit bars, Low-fat cookies/cakes/pastries, Angel food cake, Homemade baked goods with vegetable oils, breads, bagels	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
Convenience Foods				
A	Canned, Packaged, or Frozen dinners; eg, Pizza (1 slice), Macaroni & cheese (about 1 cup), Pot pie (1), Cream soups (1 cup), Potato, rice & pasta dishes with cream /cheese sauces (1/2 cup)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
B	Diet/Reduced calorie or reduced fat dinners (1 dinner), Potato, rice & pasta dishes without cream /cheese sauces (1/2 cup)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
Table Fats				
A	Butter, Stick margarine, Regular salad dressing, Mayonnaise, Sour cream (2 Tbsp)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
B	Diet and tub margarine, Low-fat & fat-free salad dressing, Low-fat, fat-free mayonnaise	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
Snacks				
A	Chips (potato, corn, taco), Cheese puffs, Nuts (1 oz), Snack mix, Regular crackers (1/2 oz), Regular popcorn (3 cups), Candy (milk chocolate, caramel, coconut) (about 1 1/2 oz)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large
B	Pretzels, Fat-free chips (1 oz), Low-fat crackers (1/2 oz), Fruit, Fruit rolls, Licorice, Hard candy (1 med piece), Bread sticks (1-2 pcs), Air-popped or low-fat popcorn (3 cups)	WEEKLY CONSUMPTION:		
		Rarely/Never	3 or less	4 or more
		PORTION SIZE: How much did you eat each time?		
		Small	Average	Large

Appendix O

Self-Efficacy for Reducing Saturated Fat Intake

I CAN MANAGE TO STICK TO LOW SATURATED-FAT FOODS:

With regard to the statement above, answer the following questions by circling the option that most applies to you.

....Even if I need a long time to develop the necessary routines:

1 2 3 4 5

Very certain

Not at all certain

....Even if I have to try several times until it works:

1 2 3 4 5

Very certain

Not at all certain

....Even if I have to rethink my entire way of eating:

1 2 3 4 5

Very certain

Not at all certain

....Even if I do not receive a great deal of support from others when making my first attempts:

1 2 3 4 5

Very certain

Not at all certain

....Even if I have to make a detailed plan:

1 2 3 4 5

Very certain

Not at all certain

Appendix P

Self-Regulation for Controlled Eating

Please indicate how often you CURRENTLY do each of the following.

Circle the option that most applies to you.

I make formal agreements with myself regarding my eating:

1	2	3	4	5
OFTEN				NEVER

I schedule my times to eat:

1	2	3	4	5
OFTEN				NEVER

I say positive things to myself about eating well:

1	2	3	4	5
OFTEN				NEVER

I set eating goals:

1	2	3	4	5
OFTEN				NEVER

I choose low saturated-fat foods that I like:

1	2	3	4	5
OFTEN				NEVER

I keep a record of my eating:

1	2	3	4	5
OFTEN				NEVER

I try to recruit others to support my eating plans:

1	2	3	4	5
OFTEN				NEVER

I reward myself for eating right:

1	2	3	4	5
OFTEN				NEVER

When I get off-track with my eating plans, I work to quickly get back to my routine:

1	2	3	4	5
OFTEN				NEVER

I actively work on solving problems pertaining to eating right:

1	2	3	4	5
OFTEN				NEVER

curriculum vitae

Anjali Rameshbabu, Ph.D.

EDUCATION

UNIVERSITY OF WISCONSIN-MILWAUKEE (UWM), Milwaukee, WI
 Ph.D., Experimental Psychology (Health & Social Psychology focus), May 2013
 Minors: Psychopathology, Behavior Analysis
Dissertation Title: Self-Regulation of Saturated Fat Intake in Blue-Collar
 Employees: A Randomized Intervention Study

M.S., Health Psychology, GPA: 3.9/4.0, May 2010
 Graduate Certificate: Public Health, Dec 2010

BANGALORE UNIVERSITY, Bangalore, India
 M.Sc., Psychology (Clinical Psychology focus), June 2006
 B.A., Psychology, Journalism, English Literature, April 2004

PUBLICATIONS

- **Rameshbabu, A.**, Reddy, D., Fleming, R. (2013). Correlates of Negative Physical Health among Call Center Shift Workers. *Applied Ergonomics*, 44, 350-354.
- Ports, K.A., **Rameshbabu, A.**, Reddy, D. (in press). Cervical Cancer Prevention in Malawi: A Qualitative Study of Women's Perspectives. *Journal of Health Communication*.
- Jirovec, D. L., Ports, K. A., **Rameshbabu, A.**, Deininger, J. L., & Reddy, D. M. (*under review*) Information Increases HPV Vaccination Intentions among Low Income Mothers.
- Self-regulation Reduces Saturated Fat Intake in Blue-Collar Employees: Results from a Randomized Controlled Study (in progress)
- Health Behavior Perspectives of Blue-Collar Employees: a Qualitative Investigation (in progress)

RESEARCH PRESENTATIONS

- Self-regulation Reduces Saturated Fat Intake in Blue-Collar Employees: A Randomized Intervention Study. *Association of Graduate Students in Psychology Symposium, UWM. Prize Winner.*
- **Rameshbabu, A.**, Reddy, D., Ports, K. (2013). Self-Regulation of Saturated Fat Intake in Blue-Collar Employees: A Randomized Intervention Study. *Association of Psychological Science, 2013*
- Ports, K. A., **Rameshbabu, A.** & Reddy, D. M. (2013). Barriers and Facilitators to HPV Vaccination in Malawi: Perspectives from Malawian

Women. Paper presented at the Association for Women in Psychology Conference, Salt Lake City, Utah.

- Ports, K. A., Reddy, D. M., & **Rameshbabu, A.** (March, 2013). Cervical Cancer Knowledge and Prevention: Perspectives from Women in Malawi. Paper presented at the Third International Conference on Health, Wellness and Society. Sao Paolo, Brazil.
- **Rameshbabu, A.**, Reddy, D., Ports, K. (2012). Self-Regulating Saturated Fat Intake in Blue-Collar Employees. *American Public Health Association Conference 2012*
- Ports, K., Reddy, D., **Rameshbabu, A.** (2012). Identifying the Barriers and Facilitators to Cervical Cancer Prevention and Control in Malawi: A Qualitative Approach. *American Public Health Association Conference 2012.*
- **Rameshbabu, A.**, Reddy, D., Fleming, R. (2012). Correlates of Negative Health in Call Center Shift Workers. *Society of Behavioral Medicine Annual Meeting 2012*
- Reddy, D., Fleming, R., Pedrick, L., Wade, C., Jirovec, D., Deininger, J., Brouwer, A., Ports, K., **Rameshbabu, A.** (2012) U-Pace Instruction Produces Deep Learning in Academically Underprepared Undergraduates. *Innovations Conference 2012*
- **Rameshbabu, A.**, Reddy, D., Fleming, R., Ports, K. (2011). Sleep Inadequacy: A Predictor of Negative Physical Health among Call Center Shift Workers. *American Psychological Association Conference 2011*
- **Rameshbabu, A.**, Ports, K., Menting, A., Tavlaris-Barnack, J., Reddy, D., Fleming, R., (2011). Critical Barriers and Solutions to Baccalaureate Degree Attainment: Perspectives of Students of Color. *American Psychological Association Conference 2011*
- Ports, K., **Rameshbabu, A.**, Tavlaris-Barnack, J., Menting, A., Reddy, D., Fleming, R., (2011). *U-Pace* Instruction: Facilitating Greater Academic Efficacy and Retention among African American Students. *American Psychological Association Conference 2011*
- Eickstedt, A.M., Ports, K.A., Barnack-Tavlaris, J., Klemp, A., **Rameshbabu, A.**, Reddy, D., Fleming, R., Pedrick, L.E., Swain, R.A. (2010). Strategies to increase retention: perspectives of students of color. *Access to Success Conference, University of Wisconsin-Milwaukee, February 2010*
- **Rameshbabu, A.**, Reddy, D., Fleming, R., Wawiora, A., Nettles, S., Voith, L. (2009). Shift work and negative health outcomes. *Midwestern Psychological Association Conference, Chicago, May 2009*

RESEARCH ACTIVITY & EXPERIENCE

Principal Investigator

*Designed behavior change interventions and survey study designs * Procured grant funding through multiple research awards * Supervised team of undergraduate research assistants, assigned, monitored, and co-ordinated research activity including data collection, statistical analysis, and preparation for publication.*

UNIVERSITY OF WISCONSIN-MILWAUKEE [doctoral student with Dr. Diane M. Reddy]:

- Randomized controlled intervention study investigated effects of self-regulation training to reduce saturated fat intake among low-wage employees. ***Intervention found to be effective.***
- Qualitative study identified health behavior perspectives of low-wage employees.
- Study surveyed correlates of physical health among call-center shift workers in India.

BANGALORE UNIVERSITY:

- Study examined judgment of facial expressions among younger and older adults.
- Correlational study explored relationship between pet ownership, well-being, and stress.

Scientific Reviewer

*Reviewed and selected submissions for presentation at peer-reviewed journals and scientific sessions * Rated abstracts on relevance and quality of research*

- Society of Behavioral Medicine, Annual Meeting 2012
Articles pertained to research endeavors in the fields of Clinical and Health psychology.
- American Public Health Association, Annual Conference 2012
Articles pertained to research endeavors in the area of Public Health.
- Manuscript reviewer (Invited): "A Cross-sectional Study on Association of Work Environment, Coping Style, and Other Risk Factors with Depression among Caregivers in Group Homes in Japan" (2013). *Industrial Health*.

Co-investigator & Research Assistant [UNIVERSITY OF WISCONSIN-MILWAUKEE]

*Completed assigned research duties including acquiring study approval, designing data collection materials (for online & in-person completion), and data entry * Co-ordinated research activity with fellow research assistants, under the direction of the principal investigator * Performed a variety of statistical and qualitative analyses * Co-authored several posters for presentation at scientific sessions*

- Barriers and facilitators to Human Papilloma Vaccination: Perspectives from Malawian women
- Role of information in HPV vaccination intentions among low-income mothers.
- Online U-Pace technology-enabled instructional approach: Strategies to promote greater academic learning and student success.

TEACHING [UNIVERSITY OF WISCONSIN-MILWAUKEE]

- **Teaching Assistant**, Introduction to Psychology, Online Instruction [2013]
- **Teaching Assistant**, Introduction to Psychology, *U-Pace* Online Instruction [2011-2012]

*Help design and deliver online instruction and amplified assistance to students * Utilize online format to promote mastery of lesson concepts, enhance self-efficacy for learning, and foster positive learning experience among freshman students * Advise students one-on-one to enable problem-solving, improve study techniques, and enhance class performance*

- **Teaching Assistant**, Experimental Social Psychology [2008-2009]
*Managed upper classman students, in groups of 20 * Effectively fostered critical thinking by initiating and mediating group discussions regarding social psychological phenomena and the scientific process of Psychology * Coached students through study design, execution, and report of Social Psychology research projects*
- **Instructor**, Introduction to Psychology [2011-2012]
*Class of 300 * Introduced the field of Psychology to chiefly freshman students from diverse backgrounds * Designed structure, syllabus, lessons, and exams for large classroom format * Advised students one-on-one to enable problem-solving, enhance study techniques, and improve class performance*

EXTRA CURRICULAR

- **Board Member**, Early Music Now, Since 2012
- **Vice-President, Secretary**, Health Psychology Graduate Students Club, UWM, 2008-2012
- **Editor**, “Perspective”, Department of Psychology magazine, Bangalore University, 2004-2006
- **Editor**, “Writers’ Block”, Department of Journalism magazine, Bangalore University, 2003-2004

SKILLS

- Motivational Interviewing/health coaching techniques
- Quantitative and Qualitative research design
- Statistical analysis (advanced): multivariate analysis, Structural Equation Modeling
- Qualitative analysis: grounded theory approach, content analysis, thematic analysis.
- Data analysis softwares: SPSS, LISREL, AMOS, NVIVO, & MS OFFICE

HONORS

- American Psychological Association Division 38 Graduate Student Research Award, 2013
- Association of Graduate Students in Psychology, UWM; Presenter Award, 2013
- American Psychological Association Dissertation Research Award, 2012
- The Society for the Psychological Study of Social Issues, Grants-in-Aid Program award, 2012
- UWM Graduate School Travel Award, Three time recipient
- Advanced Opportunity Fellowship, UWM [2008-2011]
- Chancellor’s Graduate Student’s Award, UWM [2008-2010]

PROFESSIONAL MEMBERSHIPS

- American Psychological Association, Division 38 (Health Psychology), student affiliate since 2012
- Society of the Psychological Study of Social Issues, student affiliate since 2012
- Society of Behavioral Medicine, student affiliate since 2012
- American Public Health Association, student member since 2011
- American Psychological Association, student affiliate since 2008
- Health Psychology Graduate Students' Club, UWM, member since 2008
- Association of Graduate Students in Psychology, UWM, member since 2007