MOTIVATING HEALTH PROTECTION BEHAVIORS: ACCOUNTING FOR INDIVIDUAL DIFFERENCES IN TEMPORAL ORIENTATION

AN ABSTRACT

SUBMITTED ON THE FIFTEENTH DAY OF JULY 2010

TO THE DEPARTMENT OF MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

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OF TULANE UNIVERSITY

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OF

DOCTOR OF PHILOSOPHY

BY

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ABSTRACT

Effective self-regulation is an important ingredient of a healthy lifestyle. Past research has outlined the facilitative effect of consideration of future consequences on self-regulation. We extend this research by examining the underlying mechanism that enables individuals who consider future consequences (high-CFC individuals) to use their distant goals as guides for their current actions. We examine the role of planning in guiding present behavior to reach future outcomes and show that high-CFC individuals are better planners and that propensity to plan facilitates self-regulation in the present. We build on this notion and examine how accounting for individual differences in CFC, which also reflect individual differences in planning aptitudes, can inform the motivation of healthy consumer choices. Our results suggest that health-messages need to be framed along two-dimensions, the outcomes associated with a health behavior and the means individuals can implement to reach these outcomes, and that the effectiveness of message frames depends on the extent to which an individual considers future consequences. We show that self-regulation among the vulnerable population, namely low-CFC individuals, can be increased by designing messages that help these individuals to emulate the decision-making behavior of high-CFC individuals.

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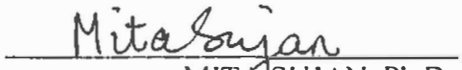

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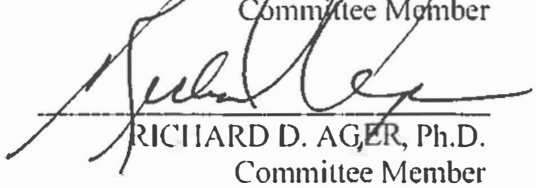

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INTRODUCTION

Compliance with medical advice aimed at improving long-term health is low adversely impacting both the quality of public health and the costs of health care. Carefully designed health communications strategies to inform and influence individuals' health-related decisions are increasingly recognized as a necessary element of efforts to improve personal and public health (e.g., Keller and Lehman 2008). In this research, we examine the role of individual differences in the consideration of future consequences in health-related decision-making and the implications for message framing.

Health-related decisions involve intertemporal choices where the timing of costs and benefits are spread out over time (see Loewenstein, Read and Baumeister 2003 for a review of economic and psychological research on intertemporal choice). That is, many health-related behaviors, such as quitting smoking, following a healthy diet, or regular exercise, entail the adoption of a behavior now in order to secure health benefits in the future. Previous research has documented that individuals differ in their abilities to self-regulate their present behaviors to achieve future benefits (Strathman, Fleicher, Boninger, and Edwards 1994). Accordingly, the tendency to consider future consequences seems to be conducive to self-regulation. Specifically, individuals high in consideration of future consequences (CFC), as opposed to individuals low in CFC,

appear to engage in self-regulation behaviors such as preventive health screening (Dorr, Krueckeberg, Strathman, and Wood 1999), practicing safer sex (Henson, Carey, Carey, and Maisto 2006), low alcohol consumption and cigarette use (e.g., Adams and Nettle 2009; Strathman et al. 1994), and increased physical activity and healthy eating (e.g., Luszczynska, Gibbons, Piko, and Tekozel 2004), and producing better health outcomes for themselves such as lower body mass index (Adams and Nettle 2009).

In an effort to increase health behaviors among the vulnerable population, namely low-CFC individuals, past studies (e.g., Orbell and Hager 2006, Orbell and Kyriakaki 2008) have demonstrated that individual differences in CFC guide the framing of health messages. For example, a study measuring intentions to participate in Type 2 diabetes screening program found that individuals low in CFC were more persuaded when positive consequences were framed as immediate benefits while individuals who were future-oriented were more persuaded when positive consequences were framed as future benefits (Orbell and Hagger 2006). Similarly, in another study, low CFC individuals indicated higher intentions to use sunscreen when positive outcomes of using sunscreen were presented as occurring immediately. In contrast, high-CFC individuals were more persuaded when positive outcomes were presented as occurring in the long-term (Orbell and Kyriakaki 2008).

We seek to extend this research in several ways. First, whereas previous research on the individual difference in CFC (e.g., Strathman et al. 1994) has primarily focused on the extent to which people consider the short- and long-term consequences of their present behavior, we consider the mechanism that allows individuals high in CFC to

self-regulate present behavior to reach these future outcomes. Specifically, we explore differences in planning tendencies among high and low CFC individuals as facilitators of the relationship between CFC and self-regulation. We suggest that high-CFC individuals, as compared to low-CFC individuals, tend to be better planners, which allows them to generate strategies and action steps that are aimed at attaining future outcomes. Based on this conceptualization, we design interventions to increase self-regulation behaviors and health outcomes, especially among the vulnerable population, namely individuals low in CFC. We document that, due to differences in planning among low- and high-CFC individuals, the framing of implementation recommendations, especially with regard to specificity, is equally important for increasing self-regulation among low-CFC individuals.

We developed two studies to support our reasoning. We ran controlled experiments that test the effects of different health messages on actual health behaviors: the number of steps walked in a 10K a Day walking program (Study 1) and weekly calories burned through physical exercise (Study 2). In Study 1, we suggest that the most effective method for the framing of health messages depends on an individual's tendency to consider future consequences. We show that health messages that entail present benefits and specific implementation recommendations increase self-regulation for low-CFC individuals and future benefits and general implementation recommendation increase self-regulation behaviors for high-CFC individuals.

Study 2 supplements Study 1 by providing more direct evidence for our proposition that ability to plan is an important distinction between high- and low-CFC individuals.

Specifically, in Study 2, we directly examined the extent to which low- and how-CFC individuals can generate specific action steps.

The remainder of this paper is organized as follows: We first present an overview of the literature on individual differences in consideration of future consequences and self-regulation, as well as evidence suggestive of different planning aptitudes among high- and low-individuals. We then review research that illustrates how our hypotheses are positioned within the existing literature. We draw empirical support for our framework by running two studies at a private Southern university. We conclude by addressing the implications of our findings for understanding how to motivate healthy consumer choices, acknowledge limitations and give directions for future research.

THEORETICAL DEVELOPMENT AND HYPOTHESES

Consideration of Future Consequences and the Role of Planning in Self-Regulation

Health behaviors such as exercising or following a healthy diet require consumers to self-regulate their behaviors. Effective self-regulation depends on the ability and willingness to forgo pleasure and immediate gratification to obtain future benefits (e.g., Baumeister 2002). Individuals have been shown to differ in their abilities to self-regulate current behaviors to reach future outcomes. The research on self-regulation from which we draw suggests stable individual differences in the extent to which people are successful self-regulators. Specifically, this research posits that individuals differ in their consideration of future consequences (CFC), or the weight they attach to the short-term and long-term consequences of their behaviors (Strathman et al. 1994). Accordingly, at one end of the continuum are high-CFC individuals who consider future outcomes, and more important, place more value on future as compared to present outcomes. They are willing to sacrifice immediate benefits or incur immediate costs in order to achieve desirable future benefits. At the other end are low-CFC individuals who do not consider possible future consequences in their present decision-making, or deem present outcomes as more important than future outcomes. These individuals are

more concerned with obtaining immediate benefits and pleasure despite the probability of future costs or the sacrifice of future goals.

As a result, high-CFC individuals, as compared to low-CFC individuals, seem to be better at regulating their present behaviors and reach more desirable future outcomes. For example, a study linking individual differences in CFC to health-related behaviors among undergraduate students showed that the consideration of future consequences was positively correlated with a general concern for health and negatively with health-risk behaviors such as smoking and alcohol consumption (Strathman et al. 1994; Experiment 2). Luszczynska et al. (2004) demonstrated that the tendency to consider future consequences leads to increased physical activity and healthy eating. Similarly, a study on financial decision making revealed that individuals who expressed higher levels of consideration of future consequences were more likely to participate in retirement investments (Howlett, Kees, and Kemp 2008). Finally, CFC has also been associated with better health behavioral outcomes. For example, Adam and Nettle (2009) reported a negative relationship between CFC and body mass index, suggesting that the consideration of future consequences leads to healthier (lower) weight.

To surmise, research on individual differences in self-regulation has pointed out that people differ in the extent to which they value future over present consequences and how these differences influence self-regulation. Accordingly, whereas placing more value on future benefits seems to facilitate self-regulation, the valuation of present benefits seems to represent an obstacle to effective self-regulation. Although previous research attests to the facilitative effects of considering the future consequences of

current activities on self-regulation, it is still unclear how distant goals inform present behaviors, and more specifically, how individuals who value future consequences cope with obstacles or temptations while striving for future outcomes. We extend this research by examining the underlying mechanism that enables high-CFC individuals to use their distant goals as guides for their current actions. Specifically, we postulate that high-CFC individuals are better planners and that propensity to plan facilitates self-regulation in the present. Thus, we examine the role of planning in guiding present behavior to reach future outcomes.

Consideration of Future Consequences and Planning

Successful self-regulation rests, among other things, on the strategic mobilization and utilization of control strategies (e.g., Vohs and Baumeister 2004). One of these strategies is planning. Planning is a prospective self-regulatory strategy that involves "the predetermination of a course of action aimed at achieving some goal" (Hayes-Roth and Hayes-Roth 1979, p. 275-276). Planning has been conceptualized as generating specific action steps, or implementation intentions, that contain contextual details such as when, where, and how, that are then implemented to reach a goal (e.g., Gollwitzer 1993, 1999).

Several studies have provided evidence for the beneficial effect of planning on health behaviors, including attending cervical cancer screening sessions (Sheeran and Orbell 2000), conducting breast self-examination (Luszczynska and Schwarzer 2003), maintaining a healthy diet (Verplanken and Faes 1999), and engaging in regular physical activities (Milne, Orbell, and Sheeran 2002; Sniehotta, Scholz, and Schwarzer

2006). Sheeran and Orbell (2000), for example, have used planning to increase attendance at cervical cancer screening. Women who were due for a cervical smear test were asked to write down when, where, and how they will make an appointment. These women were more likely to actually attend the screening than equally motivated control participants who did not specify their plans. Verplanken and Faes (1999) demonstrated the beneficial effect of planning on healthy eating. These authors randomly assigned participants to an experimental or control condition. Participants in the experimental condition were asked to select one of the subsequent five days and formulate implementation intentions by writing down what exactly they are planning to eat and drink during specified moments (i.e., breakfast, in-between breakfast etc.) on that day. The results showed that participants who planned in detail one healthy eating day ate healthier during a five-day period than participants who did not outline implementation steps. Thus, planning seems to be an important ingredient of successful self-regulation by virtue of enabling an individual to generate action steps that help them reach their distant goals.

Recent research (Lynch, Netemeyer, Spiller, and Zammit 2010) has demonstrated that individuals do not plan equally. According to this research, individuals differ in their propensity to plan, which reflects, among other things, differences in the extent to which they generate implementation intentions, or concrete action steps that are necessary to reach a goal (cf., Gollzwitzer 1999). According to these authors, individuals with a higher propensity to plan are also more likely to reach better long-term outcomes through the use of self-control strategies such as setting costly deadlines.

For example, higher propensity to plan is related to financial outcomes, such as better credit scores (Lynch et al. 2010). Similarly, Ameriks, Caplan, and Leahy (2003) reported a relationship between propensity to plan and wealth accumulation. These authors assessed propensity to plan by asking wealthy respondents whether they had spent a great deal of time developing a financial action plan and found that this item predicted wealth accumulation.

In this research, we propose that individual differences in CFC also reflect differences in planning aptitude. More specifically, high-CFC individuals are better at self-regulating their present behaviors because they are not only concerned with the long-term consequences of their present actions, but also possess skills that allow them to generate action steps that are necessary to reach long-term goals. Low-CFC individuals, on the other hand, next to valuing present outcomes over future outcomes, lack the skills to generate specific action steps that could help them self-regulate present behaviors.

Support for this reasoning comes from research that uses a conceptually similar instrument to measure an individual's temporal orientation, the Standford Time Perspective Measure (ZTPI; Zimbado and Boyd 1999). In one of their studies, these authors reported, based on interviews with 31 undergraduate students, higher use of planning and efficiency strategies, such as the use of watches and day planners, among people who they categorized as future-oriented. Similarly, Zimbardo and Maslach (1992; as cited in Zimbardo and Boyd 2008) demonstrated that present-oriented individuals, as compared to future-oriented individuals, tended to think less about

strategies for solving a problem. In this study, students were asked to solve a maze as quickly as they could. Whereas present-oriented individuals jumped right out to the lead trying to solve the maze, future-oriented individuals did not start right away. These students sat back and observed the maze, thought about possible solutions and evaluated alternative strategies for attaining the goal.

Thus, a key distinction among individuals who consider future consequences to a different extent may be their propensity (or the lack thereof) to generate specific action plans or action steps during the planning phase of goal pursuit. Given the role of planning in self-regulation, greater planning aptitudes could explain better self-regulation behaviors among high-CFC individuals. In this research, we build on this notion and examine how accounting for individual differences in CFC, which also reflect individual differences in planning aptitudes, can inform the motivation of healthy consumer choices. Specifically, we propose that the differences in the valuation of present versus future outcomes and planning tendencies among low- and high-CFC individuals have implications for the framing of health message that can be used to increase self-regulation, especially among low-CFC individuals.

Consideration of Future Consequences and Message Framing

There is support for the notion that individual differences in temporal orientation, such as CFC, may play a role in the framing of health-promoting messages. For example, research has shown that low-CFC individuals are more persuaded by a message in which positive outcomes occur in the short term, whereas high-CFC people

are more persuaded by a message in which positive outcomes occur in the longer term (Orbell and Hagger 2006; Orbell and Kyriakaki 2009; Orbell, Perugini, and Rakow 2004).

However, self-regulation theories on goal pursuit suggest that both motivation (i.e., why people should pursue a given goal) and implementation (i.e., how people can reach a given goal) are necessary for successful goal pursuit (e.g., Gollwitzer 1990, 1993; Gollwitzer and Oettingen 1998; Gollwitzer, Heckhausen, and Steller 1990). Although the intention to perform a behavior (motivation) is a predictor of behavioral performance (Ajzen 1985, 1991; Fishbein and Ajzen 1975), it accounts for no more than 20 percent -30 percent of the variance in behavior (Conner and Armitage 1998; Sheeran and Orbell 1998; Sheppard, Hartwick, and Warshaw 1988; Sutton 1998). Thus, a number of people, despite their intentions to perform a behavior, do not perform the intended behavior. Gollwitzer's (e.g., 1990, 1993) and Heckhausen's (e.g., Heckhausen and Leppmann 1991) research on goal achievement suggests that, in addition to the motivational phase, during which people form goal intentions or the decision to perform a behavior, there is also the need to pass through a volitional phase during which people form implementation intentions or action plans for performing this behavior to reach their goals. Similarly, fantasy realization theory suggests that merely indulging in positive fantasies about the future is rather maladaptive, and the transformation of these positive wishes into strong goal commitment is necessary for successful goal pursuit (e.g., Oettingen 2000; Oettingen and Wadden 1991).

In this research, we posit that health-related messages need to be framed along two dimensions: the outcomes associated with a health behavior and the means individuals can implement to reach these outcomes. Further, we suggest that effective framing on these dimensions depends on the temporal orientation (CFC) of an individual.

The Framing of Health-Related Benefits

In accordance with previous research (e.g., Orbell and Hagger 2006), we propose that aligning benefits with individuals' temporal orientation can increase self-regulation. Thus, among low-CFC individuals, the motivation to pursue a health behavior can be increased by outlining present benefits, as opposed to future benefits; among high-CFC individuals, future benefits should lead to an increase in self-regulation. In this research, we conceptualize present benefits as behavioral outcomes that can be experienced in a matter of days or weeks (e.g., better mood as a result of exercise). Future benefits, on the other hand, are behavioral outcomes that do not occur for many years (e.g., better bone health as a result of exercise).

Thus, we hypothesize:

> H1a: Individuals high on consideration of future consequences self-regulate better, i.e., walk more steps a day and/or burn more calories, with health messages that focus on distant relative to proximate benefits.
>
> H1b: Individuals low on consideration of future consequences self-regulate better, i.e., walk more steps a day and/or burn more calories, with health messages that focus on proximate benefits relative to distant benefits.

The Framing of Implementation Recommendations

Extending current research, we theorize that the different planning tendencies among low- and high-CFC individuals inform the framing of implementation recommendations, especially with reference to their specificity. Previous research has outlined the facilitative effect of detailed procedure on effective actions (e.g., Bandura 1997; Gollwitzer 1999; Locke and Latham 1990; Sujan, Sujan, and Bettman 1988). Accordingly, people benefit from recommendations that are specific (e.g., "Exercising 20 minutes a day by going down to the park after work") as compared to general ("Exercising regularly"). These specific recommendations are more motivating than general or vague recommendations (Locke and Latham 2002), because they constitute a concrete standard for achievement (Mento, Locke, and Klein 1992) and provide individuals with clearer guidelines on what is and is not acceptable (Wright and Kacmar 1994). Similarly, asking individuals to self-generate specific action steps, or implementation intentions, that specify contextual details such as when, where, and how they want to implement goal-specific actions facilitates goal achievement, as opposed to instructions that encourage the formation of general goal intentions (e.g. Gollwitzer 1999; Gollwitzer and Sheeran 2006). That is, furnishing goals with implementation intentions leads to higher goal attainment than merely acting on the basis of goal intentions (Gollwitzer, Bayer, and McCulloch 2005).

The beneficial effect of implementation intentions has been demonstrated in several domains, including academics (e.g., Gollwitzer and Brandstaetter 1997) and health behaviors (e.g., Orbell, Hodgkins, and Sheeran 1997; Armitage 2004). The idea is that

asking individuals to self-generate implementation intentions increases the accessibility of situational cues and makes the response to that cue more efficient through situation-response linkages (Gollwitzer 1993, 1999; Gollwitzer, Bayer, and McCulloch 2005).

However, the effectiveness of asking individuals to generate implementation intentions on their own seems to vary. Consider the following. Asking individuals to form implementation intentions does not always increase actually behavior and not all individuals seem to be able or willing to self-generate specific action plans. For example, Michie, Dormandy, and Marteau (2004) found that asking pregnant women who intended to undergo screening to make an action plan in an antenatal clinic did not increase screening uptake. Further, 37 percent of these participants did not adhere to planning instructions that required them to self-generate implementation intentions. Similarly, Rutter, Steadman, and Quine (2006) demonstrated that participation rates in a breast cancer-screening program did not differ between women who were asked to form implementation intentions and those who were not asked to form these implementation intentions. In addition, 35 percent of participants who were asked to generate implementation intentions failed to do so. Further, Orbell and Sheeran (2000) asked patients who were about to undergo joint replacement surgery to write down action steps they are planning to engage in after their surgery to resume functional activity. Although individuals who generated implementation intentions on their own regained functional activity sooner, 60 percent of the participants in the study did not form implementation intentions.

This may suggest that there are individual differences in the extent to which people are able to generate specific action steps and/or the specificity people can ascribe to contextual information when generating action steps. As a result, one could reason that providing individuals with specific action steps helps overcome this inability and increases self-regulation. However, research on goal setting, for instance, has shown that if assigned specific goals are perceived as overly easy, they are less effective than general, more difficult goals (Locke and Latham 1990). Research on cognitive responses to message arguments (e.g., Greenwald 1968) further suggests that self-generated thoughts facilitate judgment and decision-making when an individual has a preexisting knowledge structure, or competence, in a given area (e.g. Greenwald 1968; Millar and Tesser 1986). Similarly, participative goal setting, as opposed to assigned goal setting, leads to higher performance when the task is complex, that is, when a person's knowledge rather than their effort is required, and if participation in goal setting increases the probability of finding an appropriate strategy for reaching the goal (Latham, Winter, and Locke 1994; Seijts and Latham 2001). Thus, individuals who have the ability to generate action steps on their own may benefit from general recommendations that still require them to self-generate thoughts (i.e., action steps) and therefore to participate in goal setting. Individuals who lack this ability may benefits from assigned goals.

Indeed, the work by Sternberg on thinking styles (e.g., 1999), a theory that concerns the use of intelligence, suggests that individuals have different preferences for detailed versus general instructions. In this work, Sternberg argues that some people fail at a task

not because they lack the ability, but because the style of instruction was not the preferred one. According to this work, people have different thinking styles, or preferences in the use of their abilities. Sternberg identified several aspects of thinking style, with one of them being the preference for detail. Accordingly, whereas individuals with a local thinking style prefer instructions with specific, concrete details, individuals with a global thinking style prefer instructions that are general in nature and require abstract thinking. Therefore, the right match between thinking style and method of instruction increases success at a task.

In this research, we posit that an individual's ability to generate specific action steps influences the degree to which this person prefers general versus specific recommendations. Specifically, we suggest that high-CFC individuals, who have the ability to self-generate specific action steps (i.e., high planning aptitude), prefer general implementation recommendations. These messages, which lack specific contextual details, allow for the flexibility to self-generate specific action steps. Low-CFC individuals, on the other, will benefit from recommendations that outline specific action steps because they do not have the competence to generate their own specific action steps. Thus, we hypothesize:

> H2a: Individuals high on consideration of future consequences self-regulate better, i.e., walk more steps a day and/or burn more calories, with health messages that focus on general implementation recommendations or no recommendations relative to specific implementation recommendations.
>
> H2b: Individuals low on consideration of future consequences self-regulate better, i.e., walk more steps a day and/or burn more calories, with health messages that focus on specific implementation recommendations relative to general implementation recommendations or no recommendations.

The Interaction between CFC and the Framing of Benefits and Implementation Recommendations

Finally, we hypothesize that the facilitative role of present benefits and specific implementation recommendations among low-CFC individuals and the facilitative role of future benefits and general implementation recommendations among high-CFC individuals will impact self-regulation in the following way:

> H3a: Individuals high on consideration of future consequences regulate best, i.e., walk more steps a day and/or burn more calories, with health messages that focus both on future benefits and general implementation recommendations, relative to messages that focus on present benefits and specific implementation recommendations.
>
> H3b: Individuals low on consideration of future consequences regulate best, i.e., walk more steps a day and/or burn more calories, with health messages that focus both on present benefits and specific implementation recommendations, relative to messages that focus on future benefits and general implementation recommendations.

METHODOLOGY

Pretest

One key assumption in this paper is that the ability to plan is an important distinction between high- and low-CFC individuals. Specifically, we suggest that whereas high-CFC individuals are able to generate specific action steps that are needed to reach a goal, low-CFC individuals lack this ability. The purpose of this pretest was to provide initial evidence for the association between CFC and planning by examining whether self-reported individual differences in CFC (a) are related to self-reported individual differences in the propensity to plan (Lynch et al. 2010) (Sample 1), and (b) predict the extent to which others perceive individuals as likely to plan (Sample 2).

Sample 1

Method

Participants and Procedure. A total of 119 undergraduate business students at a southern university participated in this exploratory lab study in exchange for class credit. Upon entering the behavioral laboratory, participants were seated in front of a personal computer and presented with a survey measuring individual differences in Consideration of Future Consequences (CFC; Strathman et al. 1994), and Propensity to

Plan (PTP; adapted for health from Lynch et al. 2010). We outline the measures we used subsequently in the order they were measured.

Measures. The first part of the questionnaire consisted of the 12-item Consideration of Future Consequences scale (Strathman et al. 1994). Respondents were asked to indicate how much they agree or disagree with each item on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items are "Often I engage in a particular behavior in order to achieve outcomes that may not result for many years," "I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date," and "I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes." People who score high (low) in CFC tend to focus more on their distant (immediate) needs and concerns, and their current actions reflect this focus.

Lynch et al. (2010) recently developed a scale measuring individual differences in propensity to plan (PTP). Specifically, the PTP scale measures individual differences in frequency of goal setting, formulation of subgoals, such as implementation intentions, use of props and reminders, and preference for planning. For the purpose of this pretext, we measured individual differences in propensity to plan using a modified version of this scale. First, according to Lynch et al. (2010), propensity to plan is domain specific. These authors identified individual differences in the propensity to plan with regard to time and money. In the current paper, we measure individual differences in the propensity to plan for health. Second, the original PTP scale consists of two subscales measuring individuals' propensity to plan in the short-run (i.e., matter of days) and the

long-run (i.e., matter of weeks). We modified this scale to measure propensity to plan for health in the short-run (i.e., matter of days; four items) and very long-run (i.e., matter of years; four-items) to stay consistent with the time horizons captured by the CFC scale (present versus distant future).

Respondents were asked to indicate how much they agree or disagree with each item on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items are "I decide beforehand how I take care of my health in the next few days" and "I actively consider the steps I need to take in the years to come to stick to my health goals." A higher score indicates greater propensity to plan. We created measures of propensity to plan for the short-run and the very long run by combining the responses to the respective four items of each scale. Appendix A provides an overview of all scales.

Results and Discussion

We report the descriptive statistics and correlations for the measures in Table 1. The scales had high internal consistencies (Cronbach $\alpha_{CFC} = .85$; Cronbach $\alpha_{PTP\_short} = .89$; Cronbach $\alpha_{PTP\_long} = .91$). In an exploratory factor analysis the CFC scale split into two factors—one comprising the positively worded items and one the negatively worded items. A recent analysis (Hevey, Thomas, Craig, and Chuinneagain 2010) suggests that the two-factor structure of the CFC scale simply arises because of differences in response style to positively and negatively worded items, and thus, is an artifact of method effects. We performed a confirmatory factor analysis (in Mplus) comparing a

one-factor model with correlated errors to a two-factor correlated model. The fit of the one factor model with correlated errors (χ^2 = 17.61, *df* = 24, p > .05, CFI = 1.00, RMSEA < .01) had a superior fit (i.e., the chi-square difference was significant, $\chi^2_{Difference}$ = 63.69, *df* = 28, p < .01) to that of the two-factor correlated model (χ^2 = 81.3, *df* = 52, p < .05, CFI = .94, RMSEA = .07). Thus, the unidimensionality of the 12-item CFC scale received support.

In an exploratory factor analysis the modified overall PTP scale split into two factors—one comprising the items measuring short-term planning and one measuring long-term planning. In addition, a confirmatory factor analysis revealed a superior fit (i.e., the chi-square difference was significant, $\chi^2_{Difference}$ = 139.94, df = 1, p < .01) of a two-order factor correlated model (χ^2 = 133.18, *df* = 48, CFI = .94, RMSEA = .13) compared to a one-factor model (χ^2 = 273.12, *df* = 49, CFI = .83, RMSEA = .20).

To assess the relationship between the CFC factor and the PTP subscales, we performed a confirmatory factor analysis testing a three-factor correlated model (CFC, PTP_{short} and PTP_{long}). The model showed adequate fit with the data (χ^2 = 352.61, *df* = 214, CFI = .93, RMSEA = .075) and had a superior fit (i.e., the chi-square difference was significant, $\chi^2_{Difference}$ = 227.44, *df* = 4, p < .0001) to a one-factor model (χ^2 = 580.05, *df* = 218, CFI = .82, RMSEA = .12). CFC was correlated with both PTP_{short} (.37, p < .01) and PTP_{long} (.33, p < .01). The correlation between the two PTP scales was .55 (p < .01). An additional zero-order correlation analysis provided similar bivariate correlation between the three constructs.

Insert Table 1 about here

The results indicate that individual differences in consideration of future consequences are related to individual differences in the propensity to plan. More specifically, the positive relationship between self-reported CFC and PTP suggests that high-CFC individuals, as compared to low-CFC individuals, are more likely to set goals, generate specific action steps, use props and reminders, and have a preference for planning.

In the following, we examine whether self-reported individual differences in consideration of future consequences predict the extent to which others perceive individuals as likely to plan. Given our focus on health behaviors, we tested this relationship in a health context. Specifically, we examined whether patients' CFC predicts the extent to which their physicians perceive them as likely to plan.

Sample 2

Method

Participants and Procedure. A total of 29 adult patients suffering from chronic conditions and with on-going relationships with their doctors were recruited from two participating clinics to participate. The patient survey was disguised as investigating patient satisfaction with the clinic service. Two physicians (internal medicine) were recruited to participate. While patients waited for the physician, a research assistant

solicited participation. Patients who agreed were asked to sign a consent form and then fill out a first questionnaire that assessed individual differences in CFC. They also provided the purpose of their visit and whether they were first-time or returning patients of the doctor. These data were used to retain only those patients who were returning patients with chronic conditions. The individual difference data were not available to the physician. After the visit, the physician filled out a survey indicating his rating of the patient's likelihood to implement his advice.

Measures. We used a single-item measure for CFC ("I often engage in a particular behavior in order to achieve outcomes that may not result for many years.") to accommodate time limitations while the patient was waiting for the physician and literacy levels as one of the clinics was located in downtown. We based the identification of appropriate items from the CFC scale on reliability analysis from a pretest we conducted as well as a readability assessment (Appendix B). Based on the results from the pretest, we first rank-ordered the items based on their corrected item-total correlation. We then calculated the readability of the scale items using an online readability calculator (www.readabilityformuals.com). We used two indicators of readability: Flesch Reading Ease Test and Flesch-Kincaid Grade Level Test. The Flesch Reading Ease Test rates text on a 100-point scale. The higher the score, the easier it is to understand the text. The Flesch-Kincaid Grade Level Test rates text on a U.S. school grade level. For example, a score of 8.0 means that an eighth grader can understand the text. The item that provided the best tradeoff between readability and reliability was

chosen (i.e., "Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.") The analysis and results are outlined in Appendix B.

Physicians indicated their rating of the patient's likelihood to plan for and implement the medical advice provided ("Between this visit and the next visit, I expect the patient to spend considerable effort and thought trying to implement my suggestions," 1 = *Strongly Agree*, 7 = *Strongly Disagree*).

Results and Discussion

Patients' self-reported CFC was a significant predictor of physicians' ratings of planning and implementation likelihood ($\beta = .36$, $p = .05$) indicating that physicians expected patients high in CFC to spend more time and effort on setting up strategies to implement the medical advice. Thus, extending the findings from Sample 1, the results from Sample 2 suggest that high-CFC individuals not only report higher propensity to plan, but are also perceived by others as more likely and able to plan, that is, turning advice into action steps. This latter finding is especially interesting because it suggests that, even without explicit knowledge about a person's CFC, the characteristics of high-CFC (low-CFC) individuals influence others' perceptions of high-CFC individuals (low-CFC individuals) as more (less) likely to plan.

Overall Discussion

The pretest examined whether individual differences in consideration of future consequences are related to individual differences in planning likelihood. The results

show that the CFC scale was positively correlated with a scale measuring individual differences in propensity to plan for health. Further, scores on an item representative of the CFC scale were a significant predictor of others' perception of an individual as being likely to set up strategies to implement medical advice.

Thus, the pretest provided initial evidence for the association between CFC and planning tendencies. In Study 1 and Study 2, we investigated whether this relationship extends to CFC and the ability to plan and the implications of this association. The purpose of Study 1 was to build on the notion of high-CFC individuals being better planners and to show how accounting for these individual differences can motivate health behaviors. Specifically, Study 1 was to test whether individual differences in CFC can inform message framing. We examined whether messages that match the types of benefits and implementation recommendations to an individual's tendency to consider future consequences can increase self-regulation, especially among low-CFC individuals. The major purpose of Study 2 was to provide more direct evidence for our proposition that ability to plan is an important distinction between high- and low-CFC individuals. Specifically, in Study 2, we directly examine the extent to which low- and high-CFC individuals can generate specific action steps.

Study 1

The purpose of Study 1 is to test whether the effectiveness of framing health outcomes (as future or present) and implementation recommendations (as providing

general or specific implementation instructions) is influenced by individual differences in consideration of future consequences (H1 – H3).

Data from an ongoing study suggests that physicians already use different types of outcomes and implementation recommendations when giving medical advice to their patients. We recorded the 29 physician-patient interviews as part of a larger on-going study on best practices in physician-patient interviews. We transcribed five of the initial physician-patient interviews for each of two physicians (ten protocols) and separated the physician part of the protocols into separate statements. We developed a coding scheme (Appendix C) to code for different types of benefits and implementation recommendations. Specifically, we differentiated between present (e.g., better mood) and future (e.g., reduced risk of heart disease) benefits as well as general (e.g., Exercise.) and specific (e.g., Go down to the river and walk for 30 minutes each day.) recommendations. Two judges, blind to the research questions, used the coding scheme to code the protocols. Only words directly related to the statement were included in the coding. The interjudge agreement was 85 percent. Disagreements were resolved by discussion. Table 2 reports the results of the protocol coding.

Insert Table 2 about here

On average, 5.2 percent of the words spoken by the physicians were related to outcome-related statements; 14.7 percent were related to recommendation statements. Among the outcome-related statements, 45.4 percent referred to future benefits; the

other 54.6 percent were related to present benefits. Further, among recommendation-related statements, 34.5 percent were general in nature and the other 65.5 percent were specific. An analysis of spoken words by each physician revealed interesting differences. Physician A tended to outline more present as opposed to future benefits (66.1 percent versus 33.9 percent, respectively). Physician B, on the other hand, used slightly more future benefits as compared to present benefits (56.9 percent versus 43.1 percent, respectively). In addition, Physician A gave far more specific recommendations as compared to general recommendations (75.3 percent versus 24.7 percent, respectively). This difference was reduced for Physician B (55.8 percent versus 44.2 percent, respectively). Thus, physician advice can be differentiated based on the type of benefits as well as recommendations a physician gives.

The goal of Study 1 was to test whether tailoring these different types of outcomes and recommendations to a person's tendency to consider future consequences can increase self-regulation. In Study 1, we chose daily walking (with the goal of walking 10,000 steps a day) as a health-related self-regulation behavior. Walking 10,000 steps, which equals five miles, is of moderate difficulty and does not require individuals to overcome barriers such as costs or availability.

Method

Participants and Design

Undergraduate students enrolled in marketing classes at a southern university were recruited to participate in a study that was presented as evaluating a new wellness

program (10K a Day) the university is considering introducing to the student body. Since we are interested in behavioral change, we screened students before the start of the study and only those students who did not exercise more than six days per week on average were included in the study. A total of 170 students participated in the study. One subject refused to follow instructions during the study and was subsequently removed from the analyses, resulting in a final sample of 169 participants. The design of the study was a 2 (CFC: high versus low) x 2 (Benefits: present versus future) x 2 (Implementation recommendations: provided versus not provided) mixed design, with CFC measured and the other two factors, benefits and recommendations, rated within-subject but manipulated between-subjects.

Procedure

Upon entering the lab, participants were randomly assigned to one of the four conditions. There were seated in front of a personal computer and were told that they would now participate in two studies. The first study purportedly investigating individual differences in life orientation among students but was, in fact, measuring individual differences in CFC and PTP. The second study was portrayed as measuring students' attitudes toward a new wellness program the university considers introducing to the student body, namely the 10K a Day program, a walking program that helps individuals increase their daily walking. In the first part, participants were asked to read a brochure about the program that was purportedly specifically designed for the university. This brochure introduced the program and outlined different benefits that are

associated with increased walking and implementation recommendations that can help individuals increase their walking behavior. The type of benefits and recommendations differed depending on the condition the participant had been assigned to earlier. After participants read the brochure carefully, they were asked to fill out a survey measuring their attitudes towards the brochure and the program overall. For the second part of the study, participants were asked to wear a pedometer for the next three days and to log their daily steps they walked over the period of these three days using an online logging system. After each participant was provided with a pedometer, the experimenter explained how to wear and handle the pedometer and also how to log their daily steps. The participants were then thanked and dismissed. For the next three days, participants received a daily email (around 9pm in the evening) with the link to the step logging system. These emails also reiterated benefits that are associated with walking 10,000 steps a day and the implementation intentions that can help reach the goal of walking 10,000 steps a day, consistent with the condition the participant had been assigned to earlier. After three days, participants returned to the lab to return their pedometers. We outline details pertaining to the measures and manipulations.

Measures and Manipulations

Consideration of Future Consequences and Propensity to Plan. The measures of CFC and PTP were the same as in the pretest (Sample 1). The scales had high internal consistencies ($\alpha_{CFC} = .83$, $\alpha_{PTPshort} = .90$, and $\alpha_{PTPlong} = .85$). Table 3 outlines the descriptive statistics and correlations.

Insert Table 3 about here

Stimulus. The cover and back pages of all brochures were identical. The front page depicted the picture of a group of young people walking, the title "Welcome to 10K a Day," and a short introduction to the 10K a Day walking program. On the back was the picture of a young woman checking her pedometer and the tagline "Log your steps daily." The internal pages contained (a) the descriptions of benefits associated with getting closer to walking 10,000 steps a day as well as (page 2), and (b) implementation recommendations on how to get closer to walking 10,000 steps a day (page 3).

Manipulation of Benefits and Recommendations. The first line in the two benefit conditions started with "As you get closer to walking 10,000 steps (around 5 miles) a day, you can:" The future benefit condition continued with "Decrease the risk of diabetes and increase future blood sugar health; decrease the risk of osteoporosis and increase future bone health; decrease the risk of developing heart disease and increase future cardiac health." The present benefit condition read, "Decrease sleeping problems and increase your energy level; prevent overweight/reduce weight and increase your body appearance; decrease stress levels and increase your mood."

The first line in the two recommendation conditions started with "Follow these steps to get close to walking 10,000 steps (around 5 miles) a day:" The general recommendations condition outlined recommendations in very general terms (e.g.,

Build physical activity into your daily routine. Every time you can, take the long way in preference to the short way.) The specific recommendations condition outlined recommendations in very specific terms by providing contextual details such as when, where, and how (cf., Gollwizter 1999; e.g., Take the stairs, choose a parking spot farther away from where you usually park, and use the bathroom another floor.) The brochures with the manipulations are outlined in Appendix D.

Behavioral Measures. Participants logged their daily steps online each evening over the period of three days. We calculated walking behavior by averaging the number of steps an individual walked over the period of these three days.

Manipulation Checks. We averaged three items to assess the degree to which participants perceived the benefits associated with walking 10,000 steps a day as occurring in the near or distant future: "How near in time do the benefits outlined in the brochure occur?" (1 = *Near Future, i.e., a matter of days,* 7 = *Far Future, i.e., a matter of years*), "How immediate are the benefits outlined in the brochure?" (1 = *Not at all Immediate,* 7 = *Extremely Immediate),* and "Please indicate how close in time the occurrence of these benefits feels to you." (1 = *Feels like tomorrow,* 7 = *Feels very distant*; α = .74). Higher values indicate a perception of benefits occurring in the more distant future. To assess perceived specificity of the implementation intentions, we averaged these three items: "How general or specific were the steps to success recommendations? (1 = *Very General*, 7 = *Very Specific*), "How specific were the steps to success recommendations?" (1 = *Not at all specific*, 7 = *Extremely Specific*), and "The steps to success recommendation provide detailed steps, such as when, where, and

how instructions, for reaching the goal of getting closer to walking 10,000 steps a day." (1 = *Strongly Disagree*, 7 = *Strongly Agree*; α = .83). Higher values indicate perception of the implementation recommendation as more specific. In addition, we measured how believable participants found the information in the brochure using two items: "How believable was the information outlined in the brochure?" (1 = *Not at all Believable*, 7 = *Extremely Believable*) and "How plausible was the information outlined in the brochure?" (1 = *Not at all Plausible*, 7 = *Extremely Plausible*, α = .67).

Results

We ran moderated regression analyses with CFC, health outcomes frame (present versus future benefits), implementation recommendations frame (general versus specific recommendations) and their interactions as predictors. The CFC scores were mean-centered, the future benefit condition was given the value of "-1" and the present benefit condition the value of "1," and the general recommendations condition was given the value "-1" and the specific recommendations condition the value "1." The three two-way interactions and the one three-way interaction were computed without later being mean-centered (Aiken and West 1991; Dawson and Richter 2006; Irwin and McClellan 2003). All analyses are based on the overall three-way regression results with 161 degrees of freedom, unless indicated otherwise, and all comparisons are based on two-tailed t-tests. Table 4 represents an overview of all results.

Insert Table 4 about here

Manipulation Checks

The manipulations had the intended effects. The regression analysis on benefit occurrence revealed only a significant main effect of benefit manipulation ($F = 41.98$, $p < .01$). Future benefits were perceived as occurring in the more distant future, as compared to present benefit ($M_{future} = 5.34$ versus $M_{present} = 4.17$). No other predictors were significant. A regression with specificity as the criterion revealed a significant main effect of recommendations manipulation ($F = 21.25$, $p < .01$). The specific recommendations were perceived as more specific than the general recommendations ($M_{specific} = 4.18$ versus $M_{general} = 3.20$). No other predictors were significant. The regression with believability of the information in the brochure as criterion did not reveal any significant effects.

H1: CFC and Benefit Framing

H1 predicted the effect of benefits frame on self-regulation would depend on an individual's tendency to consider future consequences. Thus, it was predicted that whereas future benefits would increase self-regulation among high-CFC individuals (H1a), present benefits would increase self-regulation among low-CFC individuals (H1b). Regression analysis on average steps walked revealed a significant interaction between CFC and benefits frames ($F = 15.50$, $p < .01$). We followed up this interaction with tests of the simple effect of benefit frame when CFC was low (-1 SD) and high (+1 SD). We used the methods described by Aiken and West (1991), West, Aiken, and

Krull (1996), and Irwin and McClelland (2001) for testing simple effects of a categorical variable at different levels of a continuous variable.

The simple slope analysis showed that high-CFC individuals (+1 SD) walked the most steps when given future benefits as compared to present benefits (8063.40 versus 7381.93, respectively, $t = 2.86$, $p < .01$), supporting hypotheses 1a. This effect was reversed among low-CFC individuals (-1 SD) where present benefits led to more steps walked as compared to future benefits (7582.49 versus 6945.77, respectively, $t = 2.67$, $p < .01$), supporting hypotheses 1b. Thus, H1a and H1b were supported.

H2: CFC and Recommendation Framing

H2 predicted that individual difference in CFC would also influence the effectiveness of different recommendation frames on self-regulation. Thus, it was predicted that high-CFC individuals increase self-regulation when given general relative to specific implementation recommendations as general recommendations would allow them to generate idiosyncratic steps for themselves. For low-CFC individuals, however, specific implementation recommendations, as compared to general implementation recommendations, would compensate for low planning and implementation skills and, therefore, would increase their self-regulation (H2a and H2b, respectively).

Regression analysis on steps walked revealed a significant interaction between CFC and recommendation frame ($F = 9.30$, $p < .01$). The simple slope analysis showed that high-CFC individuals (+1 SD) walked more steps when given general recommendations relative to specific recommendations (8042.02 versus 7403.31, respectively, $t = -2.68$, p

< .01). This effect was reversed for low-CFC individuals (-1 SD) where specific recommendations relative to general recommendations increased the number of daily steps walked (7538.14 versus 6890.12, respectively, $t = 3.14$, $p < .01$). Thus, hypotheses 2a and 2b were supported.

H3: The Interaction between CFC, Benefit Framing, and Recommendation Framing

Following the logic of H1 and H2, H3 predicted that high-CFC individuals would self-regulate best when given messages that match future benefits with general implementation recommendations (H3a). Low-CFC individuals, on the other hand, were expected to self-regulate best when given messages that match present benefits with specific implementation recommendations (H3b).

A regression analysis on average daily steps walked revealed a significant three-way interaction ($F = 7.92$, $p < .01$). The results are outlined in Figure 1. Consistent with our predictions, high-CFC individuals walked more steps when they were given future benefits and general recommendations, as compared to present benefits and specific recommendations (8266.84 vs. 6946.66, $t = -3.63$, $p < .01$). However, for high-CFC individuals there was no difference between future and present benefits when they were given general recommendations (8266.84 vs. 7817.20, $t = -1.45$, n.s.). Also, for high-CFC individuals there was no difference between general and specific recommendations when they were given future benefits (8266.84 vs. 7859.97, $t = -1.20$, n.s.). Thus, there was partial support for hypotheses 3a. Specifically, the walking behavior of high CFC

individuals is disrupted only when they receive both present benefits and specific recommendations.

Low-CFC individuals (-1 SD) walked more steps when they were given present benefits and specific recommendations, as compared to all the three other conditions, supporting H3b. Specifically, low-CFC individuals (-1 SD) walked more steps when they were given present benefits and specific recommendations as compared to present benefits and general recommendations (8320.54 vs. 6844.44, $t = -3.99$, $p < .01$), future benefits and specific recommendations (8320.54 vs. 6955.76, $t = -4.29$, $p < .01$) and future benefits and general recommendations (8320.54 vs. 6935.81, $t = 4.19$, $p < .01$). Thus low CFC individuals, as predicted, needed both present benefits and detailed steps to self-regulate their walking behavior.

Insert Figure 1 about here

Additional Analyses

Although not specifically hypothesized, we conducted an additional analysis to provide evidence that the ability to plan is crucial for turning general recommendations into specific action steps; specific action steps should not require an ability to plan. To estimate the path coefficients in this moderated mediation model (where PTP mediates the impact of CFC on steps walked in the general recommendations conditions but not in the specific recommendations condition), multi-group structural equation modeling (MSEM) rather than multiple linear regression was used because MSEM can test a

theoretical model for its applicability to different groups simultaneously (Bollen 1989; Maruyama 1998; Scott-Lennox and Lennox 1995). This means that with MSEM, an overall fit test can be conducted to determine whether separately estimated samples fit a single theoretical model (Maruyama 1998). We compared two groups: participants who received general recommendation to participants who received specific recommendations. Mplus was used to conduct the MSEM analysis.

We followed the method to test for mediation proposed by Baron and Kenny (1986). We first tested the model with CFC as the sole predictor. Consistent with Scott-Lennox and Lennox (1995), we first estimated the universal model in which the parameter estimates for each group were constrained to be equal to each other. The universal model did not provide an adequate fit for the data ($\chi^2 = 9.646$, $df = 1$, CFI = .60, RMSEA = .32). Consequently, in the second model tested, all parameters were allowed to be freely estimated. The overall fit of the sub-group model provided a superior fit (i.e., the chi-square difference was marginally significant, $\chi^2_{\text{Difference}} = 9.646$, $df = 1$, $p < .01$) for the data ($\chi^2 = 0.00$, $df = 0$, CFI = 1.00, RMSEA = .00) indicating a moderating effect of recommendations condition. As can be seen in Figure 2, CFC predicted the number of steps walked in the general condition ($\beta = .49$, $p < .01$) but not in the specific condition ($\beta = .06$, n.s.).

Insert Figure 2 about here

Mediational Role of Propensity to Plan. We then tested whether propensity to plan for health in the short- and long-term mediates the relationship between CFC and planning in the general condition. The overall fit of this sub-group model indicated that the model provided an adequate fit for the data ($\chi^2 = 0.00$, $df = 0$, CFI = 1.00, RMSEA = .00). Consistent with our assumptions, propensity to plan partially mediated the effect of CFC on steps in the general condition. That is, when including PTP for the short-term as predictor, the effect of CFC on steps was reduced by 14 percent (from .49 to .42). Including PTP for the long-term as predictor (Figure 2) reduced the influence of CFC on steps walked in the general condition by 8 percent (from .49 to .45).

Marsh, Balla, and MacDonald (1988) suggested that parameter estimates in structural equation modeling may be inaccurate in samples smaller than 200. For this reason, as a check of the parameters estimated by the MSEM, traditional regression path analyses were conducted separately for the general and specific recommendations groups. The standardized beta coefficients obtained from the regression path analyses were virtually identical to those obtained from the MSEM.

Discussion

The results of Study 1 demonstrated how individual differences in consideration of future consequences influence the effectiveness of health messages, especially with regard to the framing of health-related benefits and implementation recommendations. Replicating previous research, we showed that low-CFC individuals display increased self-regulation, measured by the number of average steps walked over the period of three days, when they were given benefits associated with increased walking that can be

experienced in the present. High-CFC individuals, on the other hand, walked more steps when they were given benefits of walking that can be expected in the future. Extending previous research, our data showed that low-CFC individuals responded better to specific implementation recommendations as compared to general implementation recommendation as indicated by increased walking behavior. This effect was again reversed for high-CFC individuals, where general recommendations as compared to specific recommendations led to an increase in walking.

Further extending previous research, we demonstrated that low-CFC individuals walked the most steps on average when given messages that contained present benefits and specific recommendations. All other combinations of benefits and implementation recommendations led to lower walking behavior. Thus, as predicted, among low-CFC individuals, the right match between benefit and recommendation type was crucial in increasing self-regulation. High-CFC individuals walked the most steps on average when given future benefits and general implementation recommendations. The other combinations led to a lowered walking behavior. However, whereas the right match between motivation (benefits or why messages) and opportunities (implementation recommendations or how messages) was crucial for self-regulation among low-CFC individuals, high-CFC individuals were able to compensate for partially matched messages. Specifically, given the right motivation (future benefits), these individuals were able to self-regulate even in the presence of specific recommendations. These individuals walked the least amount of steps when they were given present benefits combined with specific recommendations.

The finding that high- and low-CFC individuals value different outcomes is interesting in that it extends current understandings of the mechanism in research on construal level theory (e.g., Trope and Liberman 2003). This research stream suggests that individuals construe future outcomes in more abstract terms and present outcomes in more concrete terms. Accordingly, one could assume that high-CFC individuals are more able to contemplate abstract, future consequences, and hence value them more, as opposed to low CFC-individuals (Strathman et al. 1994). Some of our findings refine this notion by showing that high-CFC individuals not only value abstract future over present outcomes, but also seem to be able to make abstract, future outcomes more concrete.

Consider, for example, some results from Study 2. Although not explicitly hypothesized, we measured perceived concreteness of the benefits ("How abstract or concrete are the benefits outlined in the brochure?"*1 = Very Abstract, 7 = Very Concrete*) and found that in the future benefit condition, high CFC-individuals perceived these future benefits as more concrete than low-CFC individuals ($M_{highCFC}$ = 4.69 versus M_{lowCFC} = 3.45, t = -3.52, p < .01). Further, high-CFC individuals, relative to low-CFC individuals, also reported negative emotions (e.g., "The idea of developing diabetes make me feel:" followed by a list of emotions: uncomfortable, tense, fearful, unhappy, afraid, worried, nervous, and panicky, *1 = not at all, 7 = to a great extent*) to a greater extent when thinking about negative future outcomes associated with sedentary behavior ($M_{highCFC}$ = 5.58 versus M_{lowCFC} = 4.12, t = 5.61, p < .01). These patterns would suggest that high-CFC individuals, as compared to low CFC-individuals,

not only perceive future outcomes as more concrete but also as more tangible. Recent research on intertemporal choice has suggested that future and present outcomes not only differ in their level of abstractness but also in their tangibility (Rick and Loewenstein 2008). Accordingly, whereas future outcomes are abstract and less tangible, present outcomes are concrete and more tangible. Our findings would suggest that one reason why high-CFC individuals deem future outcomes as more important than low CFC-individuals is their ability to make these outcomes more concrete and more tangible in form of emotional reactions. However, future research is warranted to support this assumption.

High-CFC individuals' ability to turn abstract information into concrete information seems also advantageous with regard to generating actions steps that are crucial for reaching a goal. Specifically, Study 1 demonstrated that whereas low-CFC individuals are able to self-regulate to achieve desirable outcomes when given specific recommendations to implement, high-CFC individuals are able to self-regulate to achieve desirable outcomes even with general recommendations. In fact, high-CFC individuals self-regulated better with general recommendations that presumably allow for the flexibility to generate their own specific action steps. In addition, CFC was only related to number of steps walked in the general condition and a moderated mediation analysis suggested that propensity to plan partially mediated the effect of CFC on the number of steps walked in the general recommendations conditions. This latter finding is especially interesting as it suggests that a measure which directly measures individual

differences in planning tendencies can be used to explain the effect of CFC on number of steps walked.

The major purpose of Study 2 was to provide more direct evidence for our proposition that ability to plan is an important distinction between high- and low-CFC individuals. Specifically, in Study 2, we directly examined the extent to which low- and high-CFC individuals can generate specific action steps. Thus, we contrasted two conditions; participants were either assigned a goal and asked to generate actions steps they would take to reach the goal they were given or participants were assigned the goal and received specific actions steps they could implement to reach the goal. In both conditions participants were asked to list action steps they would take to reach the given goal. We coded the self-generated action steps according to their specificity. In the absence of externally provided action steps, we expected high-CFC individuals to generate more specific action steps than low-CFC individuals. When action steps are provided, we expected a decrease in this difference. Specifically, we expect provided action steps to serve as cues for low-CFC individuals to reiterate the specific steps provided or generate modified steps. Conversely, for high-CFC individuals, we expected the specific action plans to have no facilitative effects or even interfere with their natural tendency to generate specific steps. Thus, the study also replicated an important result from Study 1; the efficacy of providing specific action plans to facilitate self-regulation among low-CFC individuals and provided direct evidence for the ability of high-CFC individuals to generate specific steps.

Another limitation of Study 1 is the lack of a baseline measure, especially in interpreting the results for low-CFC individuals. Among low-CFC individuals it is unclear whether, given relevant goals (present-oriented benefits), the specific action steps condition compensated for their lack of planning and increased walking (hypothesized) or whether the general action steps condition further obfuscated their minimal plans and decreased walking relative to the baseline. For high-CFC individuals, given relevant goals (future-oriented), the lack of significant findings between the general and specific condition data suggest that neither the general nor specific action steps would have any effect relative to baseline. To provide more clarifying evidence for these effects, we obtain a baseline measure for each individual before the intervention. In addition, we included a condition were participants did not receive an intervention to test whether and how our interventions influence self-regulation overall.

This *no intervention* condition also serves a second purpose. Up to this point, we have shown that high-CFC individuals are "goal-directed planners." That is, these individuals are able to generate specific action plans (i.e., they plan) in the presence of a(n) (assigned) goal. However, we have not yet shown whether these individuals have a chronic tendency, or *propensity* to plan (Lynch et al. 2010); an activity that would allow them to use their future goals as constant guides to their present behaviors. Study 2 investigates this directly. Specifically, we tested to what extent high- and low-CFC individuals are able to portray their daily behaviors as specific action steps. If high-CFC individuals, as compared to low-CFC individuals, have indeed a higher propensity to

plan, they would be able to generate more specific action steps even in the absence of a goal.

To focus on planning as a core distinction between high- and low-CFC individuals we dropped the present versus future benefits factor. We conducted the study among individuals who were already motivated towards a healthy lifestyle. Specifically, we recruited subscribers to a website that provides information on healthful eating.

Study 2

Method

Participants and Design

Ninety subscribers to a website that provides information on healthful eating (www.drgourmet.com) were recruited to participate in an online study on the perception of exercise behaviors. Only participants who completed all surveys and indicated that they did not exercise more than three times a week were included. This resulted in a final sample size of 65 individuals. The study employed a 2 (CFC: high versus low) x 3 (Intervention condition: no intervention versus goal provided versus goal plus recommendations provided) mixed design.

Procedure

Participants responded to an online survey that contained a measure of individual differences in CFC and a measure of current exercise behavior (i.e., number of workout days per week). Participants were then instructed to log their daily exercise behaviors

on the website's online exercise diary for one week. At the end of the week, participants were randomly assigned to one of three conditions. Participants in the two intervention conditions (goal provided and goal plus recommendations provided) were then asked to imagine that they were given the goal of exercising regularly for at least 60 minutes, three to five times a week, during the upcoming week. Participants in the goal condition were asked to write down the action steps they would take to reach this goal. Participants in the goal plus recommendations condition were first presented with a plan that outlined contextual information such as when, where and how to exercise and were then asked to write down action steps they would take to reach this goal. Following this, participants in the intervention conditions responded to manipulation check measures. Participants in the no intervention condition did not receive this intervention and did not complete the manipulation check measures. Subsequently, participants in all conditions completed a scale measuring individual differences in the propensity to plan. They then continued logging their daily exercise behaviors for another week. At the end of the study, participants were debriefed and thanked. Appendix E outlines the initial survey measuring individual differences in CFC and workout frequency (Survey 1). Appendix F outlines the manipulations of the interventions (goal provided versus goal plus recommendations provided), the manipulation check measures and the scale measuring individual differences in propensity to plan (Survey 2).

Manipulation and Measures

CFC and PTP. The measures of CFC and PTP were the same as in Study 1. The scales had high internal consistencies ($\alpha_{CFC} = .84$, $\alpha_{PTPshort} = .89$, $\alpha_{PTPlong} = .93$). The means, standard deviations, Cronbach alphas and correlations are outlined in Table 5.

Insert Table 5 about here

Manipulation. Participants in both intervention conditions (goal and goal plus recommendations) read a paragraph on "Establishing an Exercise Routine" that introduced the need for engaging in physical exercise for at least one hour, three to five times a week. Following this, participants in these two conditions were either assigned the goal and asked to generate actions steps they would take to reach the goal they were given (goal condition), or assigned the goal and received implementation recommendations on how to reach the goal (goal plus recommendations condition). The recommendations in this latter condition outlined contextual details on when (e.g., recommendations to pick a time and days for exercise; e.g., three to four days a week, right after work), what (e.g., recommendations to pick an exercise type), where (i.e., recommendations to identify a specific location; e.g., in a near-by park), and how (i.e., exercise length, and planning tools; e.g., going for a walk, starting with 20 minutes and building up to one hour, keeping exercise clothes at work) to reach the goal. Participants in the no intervention condition did not receive this intervention (see Appendix F).

Coding of Self-Reported Action Steps. In both the goal and goal plus recommendations conditions, participants were asked to list the steps they would take to exercise regularly ("Please take a minute and think about the steps you would take to reach this goal. What do you think you could do to exercise regularly [that is, three to five times a week for one hour]? Please be as specific as you can."). These responses were collected immediately after subjects read the paragraph on "Establishing an Exercise Routine" and before the manipulation check measures. Participants in the no intervention condition were asked to list the steps they usually take to exercise ("Please take a minute and think about the steps you take during a typical week to be active. Please be as specific as you can."). Subjects' responses were separated into individual thoughts and coded by two judges. Both judges coded all responses separately and disagreements were resolved together through discussions. The judges were blind to the hypotheses and to the treatment condition. The interjudge agreement was 87 percent.

Only thoughts that were related to exercise were coded. The development of the coding scheme was guided by Gollwitzer's (e.g., 1999) differentiation between goal and implementation intentions and an examination of the first few responses. According to Gollwitzer, intentions to reach a goal can be separated into goal intentions and implementation intentions. Whereas goal intentions indicate the commitment to pursuing a goal or performing a behavior by defining the overall desired goal or behavior (e.g., I want to exercise regularly), implementation intentions specify the behavior one will perform in the service of goal attainment by spelling out contextual information such as when, where, and how a person plans to reach this goal (e.g., I plan

to go for a run at the local gym Monday, Wednesday, and Friday for 60 minutes right after work). We identified three broad categories of goal-related thoughts: (1) descriptive thoughts, defined to include statements that describe the overall goal (e.g., Exercising 3-5 times a week is not so difficult), (2) intention-related thoughts, defined to include statements that outline commitment to a desired behavior or outcome (e.g., I need to just get up and do something), and (3) implementation-related thoughts, defined to include statements that specify the steps an individual plans to take to reach the assigned goal (intervention conditions) or usually takes to be active (no intervention condition) by mentioning one of the following contextual information of when (time or day), where (location), what (type of exercise, length), how (planning tools, motivation tools), and with whom (friends, family). The number of specific action thoughts (i.e., implementation-related thoughts) for each participant was computed by counting all contextual details mentioned. The coding scheme is outlined in Appendix G.

Behavioral Measure. Participants logged their daily exercises on the website's online exercise diary by indicating type of exercise, duration of exercise (in minutes), and performance level (light, medium, hard). The program automatically converted the reported physical activity into calories burned. For the behavioral measure, we calculated the difference between calories burned during the week before the intervention and during the week after the intervention.

Manipulation Checks. To assess perceived specificity of the information, we averaged these two items: "How general or specific was the information you read on 'Establishing an Exercise Routine'?" (1 = *Very General*, 7 = *Very Specific*), "How

detailed was the information you read on 'Establishing an Exercise Routine'?" (1 = *Not at all detailed*, 7 = *Extremely Detailed,* α = .71). Higher values indicate perception of the information as more specific. In addition, we measured how believable participants found the information using this item: "How believable was the information you read on 'Establishing an Exercise Routine'?" (1 = *Not at all Believable,* 7 = *Extremely Believable*) and "How truthful was the information outlined in the brochure?" (1 = *Not at all Truthful,* 7 = *Extremely Truthful*, α = .83). We averaged two items to assess the extent to which our manipulations in the two experimental conditions rendered the provided goal as important: "How important is the goal of working out three to five times a week for one hour to a person's health?" (1 = *Not at all Important,* 7 = *Extremely Important)*, and "How crucial is the goal of working out three to five times a week for one hour to a person's health?" (1 = *Not at all crucial*, 2 = *Extremely Crucial*, α = .82).

Results

We first report the analyses of the manipulation check measures. Following this, we present analyses showing (a) to what extent high- and low-CFC individuals can generate specific action steps (measured as the number of contextual details included in implementation-related thoughts), and (b) how different types of message types (no intervention condition versus goal condition versus goal plus recommendations condition) influence self-regulation (measured as change in calories burned) among high- and low-CFC individuals. We predicted that high-CFC individuals, as compared

to low-CFC individuals, generate more specific action steps in the absence of messages that provide specific recommendations. We expected the specific recommendations to have no facilitative effects or even interfere with their natural tendency to generate specific steps among high-CFC individuals. As a result, we expected low-CFC individuals to increase their caloric output in the presence of messages that provide specific recommendations, as compared to messages that do not provide these specific recommendations. We expected no facilitative effect of message type among high-CFC individuals. All comparisons are based on two-tailed t-tests. Table 6 provides an overview of all results.

Insert Table 6 about here

Manipulation Checks

In the intervention conditions, the manipulations had the intended effects. We regressed information specificity on the continuous measure of CFC, a dummy variable for intervention condition (goal versus goal plus recommendations) and the interaction of CFC and intervention condition. Only the main effect for intervention condition was significant, $F = 5.51$, $p < .05$. The information material in the goal plus recommendations condition was perceived as more specific than the information material in the goal condition ($M_{Goal\text{-}plus\text{-}recommendations} = 5.02$ versus $M_{Goal} = 4.01$). The regression analysis on goal importance did not reveal any significant effects. Participants in both conditions perceived the given goal as equally important. In

addition, the regression with believability of the information as criterion did not reveal any significant effects. Participants in both conditions perceived the information as equally believable.

Specificity of Generated Action Steps

High-CFC individuals ability to plan, and the inability to plan among low-CFC individuals, would be evident if high-CFC individuals can generate more specific action steps than low-CFC individuals in the absence of externally provided action steps. When action steps are provided, we expected a decrease in this difference. That is what we found, as shown in Figure 3.

Insert Figure 3 about here

We ran moderated regression analyses with the continuous measure of CFC, a dummy variable for intervention condition (no intervention versus provided goal versus provided goal plus recommendations), and their interaction. The regression with total thoughts as criterion did not yield any significant effects. All participants generated thoughts to the same extent. The average number of thoughts produced was 4.31 (SD = 2.42). A moderated regression on proportion of evaluative thoughts did not reveal any significant effect. A moderated regression on proportion of intention-related thoughts did reveal a marginally significant main effect for intervention condition ($F = 2.98$, $p < .10$). Participants in the goal plus recommendations condition generated significantly

fewer intention-related thoughts (M = .05) than participants in the other two conditions (no intervention condition and goal condition) combined ($M_{NoIntervention}$ = .27 and M_{Goal} = .21, t = 2.10, p < .05). A pair wise comparison revealed no difference between the other two conditions (no intervention condition and goal condition, t = 1.52, n.s.).

The regression with proportion of implementation-related thoughts as criterion revealed a main effect for intervention condition (F = 3.80, p < .05). However, this main effect was qualified by a significant interaction between CFC and intervention condition (F = 3.49, p < .05). We followed up this interaction with tests of the simple effect of intervention condition when CFC was low (-1 SD) and high (+1 SD). We used the methods described by Aiken and West (1991), West, Aiken, and Krull (1996), and Irwin and McClelland (2001) for testing simple effects of a categorical variable at different levels of a continuous variable.

The simple slope analysis revealed that low-CFC individuals generated a greater proportion of implementation-related thoughts in the goal plus recommendations condition (M = .95) relative to both the goal condition (M = .41, t = 3.25, p < .01) and the no intervention condition (M = .43, t = 3.01, p < .01). High-CFC individuals, on the other hand, did generate implementation-related thoughts to the same extent in all three conditions (.82, .82, and .83, all t's < 1), supporting the notion that high-CFC individuals are intrinsically detailed planners, irrespective of external planning cues while low-CFC individuals are aided by external plans. Further, as expected, in the goal only condition, high-CFC individuals generated more implementation-related thoughts

than low-CFC individuals (.82 versus .41, respectively, $t = -2.05$, $p < .05$). This pattern also held in the no intervention conditions (.83 versus .43, respectively, $t = -2.06$, $p < .05$). When specific implementation recommendations were provided, there was no difference in thought specificity between high- and low-CFC individuals (.82 versus .95, respectively, $t = .88$, n.s.).

Behavioral Outcome: Change in Calories Burned

If ability to self-generate specific action steps facilitates goal pursuit, high-CFC individuals would be able to self-regulate even in the absence of specific recommendations on how to reach a goal. Conversely, low-CFC individuals would need messages that provide specific recommendations. That is what we found, as shown in Figure 4. We regressed change in calories burned on the dummy variable for intervention condition (no intervention versus goal versus goal plus recommendations), the continuous measure of CFC, and the interaction between intervention condition and CFC. The interaction was significant ($F = 5.42$, $p < .01$). Participants in the two intervention conditions changed their caloric output to a greater extent than participants in the no intervention condition (all t's > 5), indicating that our interventions had an effect on self-regulation overall. For high-CFC individuals (+1 SD), change in caloric output did not depend on providing specific recommendations relative to no recommendations (269.57 versus 241.42, $t = .89$, n.s.); thus because H2a had predicted high-CFC individuals would do better without recommendations the hypothesis was not supported. For low-CFC individuals (-1 SD), change in caloric output was higher when

these individuals received messages that assigned a goal and provided specific recommendations, as compared to messages that only assigned a goal (287.08 versus 118.19, $t = 5.79$, $p < .01$), supporting H2b.

Insert Figure 4 about here

Additional Analyses

Although not specifically hypothesized, we conducted additional analyses to provide more direct evidence that ability to generate specific action steps and an individual's propensity to plan facilitate the relationship between CFC and self-regulation. Specifically, we tested whether the proportion of implementation-related thoughts, propensity to plan for the short-term, and propensity to plan for the long-term mediate change in caloric output when a goal but no recommendations are provided, as compared to situations where a goal plus recommendations are provided. To estimate the path coefficients in these moderated mediation models, multi-group structural equation modeling (MSEM) rather than multiple linear regression was used because MSEM can test a theoretical model for its applicability to different groups simultaneously (Bollen 1989; Maruyama 1998; Scott-Lennox and Lennox 1995). This means that with MSEM, an overall fit test can be conducted to determine whether separately estimated samples fit a single theoretical model (Maruyama 1998). We compared two groups: participants who received a goal to participants who received a goal plus recommendations. Mplus was used to conduct the MSEM analysis.

We followed the method to test for mediation proposed by Baron and Kenny (1986). We first tested a model with CFC as sole predictor. Consistent with Scott-Lennox and Lennox (1995), we first estimated the universal model in which the parameter estimates for each group were constrained to be equal to each other. The universal model did not provide an adequate fit for the data ($\chi^2 = 3.44$, $df = 1$, CFI = .885, RMSEA = .18). Consequently, in the second model tested, all parameters were allowed to be freely estimated. The overall fit of this sub-group model provided a slightly better fit (i.e., the chi-square difference was marginally significant, $\chi^2_{Difference} = 3.44$, $df = 1$, $p = .06$) for the data ($\chi^2 = 0.00$, $df = 0$, CFI = 1.00, RMSEA = .00), indicating a moderating effect of condition. As depicted in Figure 5, CFC predicted the amount of change in caloric output in the goal condition ($\beta = .60$, $p < .01$) but not in the goal plus recommendations condition ($\beta = -.12$, n.s.).

Insert Figure 5 about here

Mediational Role of Implementation-Related Thoughts. We then tested whether the proportion of implementation-related thoughts mediated the relationship between CFC and change in caloric output in the goal condition. If mediation were present, the effect of CFC on change in calories burned would not be significant (or would be reduced in case of partial mediation) when including implementation-related thoughts as predictor. The overall fit of this sub-group model provided an adequate fit for the data ($\chi^2 = 0.00$, $df = 3$, CFI = 1.00, RMSEA = .00). The proportion of implementation-related thoughts

partially mediated the effect of CFC on change in caloric output in the goal condition. That is, when including the proportion of implementation-related thoughts, the effect of CFC on change in caloric output was reduced by 11.7 percent, from .60 to .53 (Figure 5).

Mediational Role of Propensity to Plan. We then tested whether propensity to plan for the short-term mediated the relationship between CFC and change in caloric output in the goal condition. The overall fit of this sub-group model provided an adequate fit for the data ($\chi^2 = 0.00$, $df = 0$, CFI = 1.00, RMSEA = .00). As can be seen in Figure 6, propensity to plan for the short-term partially mediated the effect of CFC on change in caloric output in the goal condition. That is, when including propensity to plan for the short-term as a predictor, the effect of CFC on change in caloric output was reduced by 5 percent (from .60 to .57). We did the same procedure to test mediation by propensity to plan for the long-term but did not find a meditational effect. When including propensity to plan for the long-term as a predictor, propensity to plan for the long-term was not a significant predictor of change in calories burned.

Insert Figure 6 about here

Marsh, Balla, and MacDonald (1988) suggested that parameter estimates in structural equation modeling may be inaccurate in samples smaller than 200. For this reason, as a check of the parameters estimated by the MSEM, traditional regression path analyses were conducted separately for the general and specific recommendations

groups. The standardized beta coefficients obtained from the regression path analyses were virtually identical to those obtained from the MSEM.

Discussion

Study 2 provides further evidence for our assumption that ability to plan is an important distinction between high- and low-CFC individuals. Specifically, in Study 2, we directly examined the extent to which high- and low-CFC individuals can generate specific action steps. We show that in the absence of externally provided action plans, high-CFC individuals were able to generate more specific action steps as compared to low-CFC individuals. When action plans were provided, low- and high-CFC individuals generated specific action steps to the same extent.

Interestingly, when being asked to describe their usual routines to be active without being assigned a goal, high-CFC individuals depicted their behaviors in more specific terms than low-CFC individuals, and the specificity of these action steps was equivalent to those generated in the present of a goal. Thus, high-CFC individuals might not only be "goal-directed planners" who plan in the presence of a goal; they seem to possess an inherent *propensity* to plan, which leads them to plan even in the absence of a goal. This is also in tune with our general assumption that chronic planning is one mechanism that allows high-CFC individuals to use their future goals as guides for their present behaviors. That is, even when being occupied with the present demands of a situation, high-CFC individuals seem to plan out their present activities with some future outcome in mind. However, future research is needed to investigate this mechanism.

Further, similar to findings from Study 1, our results showed that low-CFC individuals display increased self-regulation, measured by the change in caloric output over the period of two weeks, when they are provided with specific action steps. Specifically, in Study 2, we showed that providing low-CFC individuals with both a goal and specific action steps has a facilitative effect on self-regulation as compared to providing them with only a goal. High-CFC individuals, however, are able to self-regulate to achieve a provided goal even in the absence of externally provided recommendations.

Similar to Study 1, a mediation analysis could partially explain the mechanisms that account for these effects. A moderated mediation analysis suggested that CFC was only related to change in caloric output in the goal condition, but not in the goal plus recommendations condition, and that planning aptitude, measured as both propensity to plan for the short-term and proportion of implementation-related thoughts, partially mediated the effect of CFC on change in caloric output in the goal condition. Thus, in the absence of externally provided plans, consideration of future consequences seems to facilitate self-regulation abilities and direct measures of differences in planning aptitude among high- and low-CFC individuals could be used to explain this relationship.

Interestingly, when being asked to describe their usual routine to be active high-CFC individuals generated slightly more *total* implementation related thoughts (and an equal proportion of such thoughts to total thoughts) than when given a goal (6.08 versus 4.04, respectively, $t = -1.74$, $p < .10$). Thus, high-CFC individuals seem to possess an inherent *propensity* to plan, which leads them to plan routinely. This is consistent with

our general assumption that chronic planning is one mechanism that allows high-CFC individuals to use their future goals as guides for their present behaviors.

The results in Study 2 also refine findings from Study 1. First, we could show, by including a baseline measure, that specific action steps indeed compensate for the lack of planning among low-CFC individuals and increase self-regulation (as hypothesized), ruling out the alternative explanation that the no-plan or general condition in Study 1 further obfuscated their minimal plans. Specifically, in Study 2, we demonstrated that low-CFC individuals significantly increased their caloric output when they were provided with a desirable goal, and that this change in caloric output was significantly higher when this goal was furnished with specific action steps relative to no action steps. Second, similar to findings in Study 1, where we found no differences between general and specific recommendations among high-CFC individuals given a relevant goal (future outcomes), results from Study 2 show that the presence of externally provided plans does not interfere with the planning aptitude of motivated high-CFC individuals. Thus, in the presence of a desirable goal, high-CFC individuals seem to be able to self-regulate their behavior when specific action steps are both present and absent; low-CFC individuals benefit more from specific action steps.

However, this latter interpretation needs further empirical support for several reasons. First, we did not explicitly measure the extent to which individuals were motivated to achieve the given goal (i.e., exercise for 3-5 times a week). In Study 2, motivation was inferred by the fact that participants were motivated to exercise regularly ($M = 5.36$ on a 7-point scale), were subscribers to a website providing

information on a healthy lifestyle and perceived the goal of exercising regularly as very important (M = 6.12 on a 7-point scale). Further, participants were asked to generate their own plans after they received the intervention, possibly enhancing the sense of flexibility to generate own plans among high-CFC individuals.

Another shortcoming that needs further attention pertains to the meditational role of propensity to plan in the relationship between CFC and self-regulation. Although Study 1 revealed a facilitative role of propensity to plan for both the short-term and the long-term in the relationship between CFC and behavioral outcomes (i.e., number of steps walked over the period of three days) in the absence of specific recommendations, the results of Study 2 only showed a facilitative effect of propensity to plan for the short-term. The greater importance of short-term planning for explaining the relationship between CFC and self-regulation found in Study 2 (which was also evident in Study 1) is not surprising given that we measured a behavior that required planning for the next few days (i.e., behavioral change was measured after one week), as compared to years. Further research is needed to investigate whether the failure to provide evidence for a facilitative effect of propensity to plan for the long-term in the relationship between CFC and self-regulation in Study 2 is due to reduced power that is inherent in our small sample size, the behavior we studied, or another factor that was not considered in the present research.

In sum, our results in Study 2 further suggests that individual differences in consideration of future consequences are accompanied by differences in planning

aptitude, which influence the effectiveness of message framing, supporting the need for a carefully designed, tailored approach to health communication.

GENERAL DISCUSSION

Theoretical Contributions and Limitations

The main motivation for this research was to provide a framework to account for the prevalent self-control problems among certain consumer segments and to suggest a possible mechanism to reduce discrepancies in self-control abilities. The central question focused on the impact of individual differences in temporal orientation on the effectiveness of health message framing. The research from which we draw suggests that individual differences in the extent to which consumer consider future consequences have important implications for health-related judgment and decision-making, as well as health outcomes. In general, individuals who consider future consequences are better at self-regulating their present behaviors and reach better future health outcomes. We contribute to this literature by (1) examining the mechanism that allows individuals who consider future consequences to use their future goals as guides for their current behaviors, and (b) outlining how these individual differences in consideration of future consequences (CFC) impact the effectiveness of health-related message framing. Whereas previous research has mainly focused on the role of individual differences in CFC for behavioral intentions, the present work evaluated this relationship in the context of actual behaviors, namely the number of steps walked over

the period of three days (Study 1) and change in calories burned over the period of two week (Study 2).

A key finding in the present research is that high- and low-CFC individuals differ in their planning abilities and propensities to plan; high-CFC individuals tend to be better and more frequent planners than low-CFC individuals. In a pretest, we reported an association between self-reported consideration of future consequences and propensity to plan. Specifically, we show that high-CFC individuals report a higher propensity to plan for their health than low-CFC individuals. Further, people who consider future consequences, as compared to people who do not consider future consequences, were also perceived as more likely to plan for their health by their physicians. Study 2 provided direct evidence for better planning abilities and increased planning tendencies among high-CFC individuals.

This initial finding is interesting as it not only enhanced our understanding of individual differences in temporal orientation, but also adds to work on individual differences in planning. Lynch and his colleagues (Lynch et al. 2010) recently suggested that planning is domain specific. In their work, the authors distinguished between planning for time versus money, and outlined individual differences in the propensity to plan for either resource. Our work shows that there are also individual differences in the propensity to plan for health.

These differences in planning ability and propensity for health among high- and low-CFC individuals have important consequences for the framing of health-messages. Specifically, our research suggests that health messages need to be tailored to individual

differences in consideration of future consequences along two-dimension: the outcomes associated with a health behavior and the means individuals can implement to reach these outcomes. Previous research has demonstrated the need for temporal framing of health-related benefits. Accordingly, individuals that consider future consequences are more receptive to the same benefits (e.g., peace of mind) occurring in the more distant future as compared to individuals that do not consider future consequences. Our findings from Study 1 show that, next to temporal occurrence of health outcomes, the type of health outcomes does matter as well. Specifically, we find that individuals high in CFC are more receptive to health benefits that occur in the future, such as reduced risk of heart disease. Individuals low in CFC, on the other hand, are more receptive to health outcomes they can experience in the present, such as reduced stress.

Extending previous research, our research also suggests the need to align the framing of means individuals can implement to reach goals with individual differences in consideration of future consequences. In both Study 1 and 2, we outline how to increase procedural competency among motivated individuals that lack the ability to plan (i.e., generate specific action steps), namely, through the provision of specific recommendations to low-CFC individuals. Specifically, our findings from Study 1 suggest that, when given the right motivation, individuals low in CFC respond better to specific action plans as compared to general action plans; motivated high-CFC individuals tend to be able to self-regulate their present behaviors regardless of the type of implementation recommendations. In addition, Study 2 suggests that high-CFC

individuals, as compared to low-CFC individuals, are also able to self-regulate in the presence of messages that only outline a goal but no further recommendations on how to reach this goal, providing additional support for our assumption that high-CFC individuals are better planners.

Our research furthers current understandings of the mechanism in research on construal level theory (e.g., Trope and Liberman 2003). Consistent with construal level theory, our research suggests that high-CFC individuals are motivated by abstract, high-level construals of information. We refine this notion, however, by showing that high-CFC individuals are not motivated by high-level construals because they are abstract, but because these individuals have to ability to convert abstract information to specific idiosyncratic information.

A potential alternative explanation for high-CFC individuals' need to generate idiosyncratic information might be there reduced openness to instructions. Thought in the present research we did not find differences in self-regulation among motivated high-CFC individuals when providing no recommendations or specific recommendations, a future experiment might help shed light by, for example, differentiating between conditions where an action plan for reaching a goal is suggested, assigned, or not provided at all. If motivated high-CFC individuals are indeed not open to instructions, the results should show increased self-regulation in both the suggested and no plan condition, but not in the assigned plan condition. Otherwise, self-regulation should increase in all three conditions, under conditions where high-CFC individuals were motivated to reach the assigned goal.

The present research also extends work on implementation intentions (e.g., Gollwitzer 1993, 1999). Specifically, the present results imply that the facilitative effect of specific action plans, or implementation intentions, reported in the literature may be subject to moderation. In the present research, provided specific recommendations (i.e., implementation intentions) only facilitated self-regulation when the right motivation was present. Low-CFC individuals did only benefit from specific recommendations if they were given present benefits. Although we hypothesized that high-CFC individuals would prefer general recommendations (i.e., general actions steps), as compared to specific recommendations, these individuals were able to self-regulate with specific recommendations when they were given future benefits; specific recommendations seemed to hamper self-regulation efforts among these individuals when they were given present benefits. However, future research is needed to support these propositions.

Our findings also contribute to research on construal levels and self-control. Previous research has argued that self-control involves making decisions and behaving in a manner consistent with high-level construals of a situation (Fujita, Trope, Liberman, and Levin-Sagi 2006). Specifically, these authors have argued that high-level construals lead to decreased preferences for immediate over delayed outcomes, greater physical endurance, stronger intentions to exert self-control, and less positive evaluations of temptations that undermine self-control. Our findings suggest that the effect of construal on self-control may depend on "fit" (cf., Avnet and Higgins 2006; Higgins 2005) between an individual's chronic temporal orientation and construal of a situation. That is, low-CFC individuals seem to be able to exert greater self-control

when low-level construals are activated (e.g., present benefits and specific action steps are provided). High-CFC individuals, on the other, exert greater self-control when high-level construals are activated (e.g., future benefits and general action steps are provided).

One important question that falls from this research and merits future investigation is to whether consideration of future consequences and propensity to plan are indeed the constructs to study. Could these two constructs be influenced by a higher-order factor? Perhaps a broader construct, such as conscientiousness (e.g., Costa and McCrae 1998), encapsulates both consideration of future consequences and propensity to plan, warranting greater empirical focus and understanding. In the present research, we found strong correlations between consideration of future consequences and propensity to plan. Previous research has linked conscientiousness to both consideration of future consequences (e.g., Adams and Nettle 2009) and propensity to plan (Lynch et al. 2010). Personality research suggests that conscientiousness includes features such as high levels of thoughtfulness, good impulsive control and goal-directed behavior. Those high in conscientiousness tend to be organized and mindful of details (e.g., Goldberg 1990; McCrae and Costa 1997). In addition, conscientiousness has been related to better health behaviors such as reduced drug use and preventive health behaviors (Roberts, Chernyshenko, Stark and Goldberg 2005).

It is important to note that the present research may contain a number of general limitations, which future research may have to consider. This study focuses on exercise behaviors; subsequent research should seek to examine the value of tailoring health

benefits and recommendations to individuals' temporal orientation across (a) other health behavioral categories, such as eating behaviors, taking medication as subscripted, or detection behaviors (e.g., diabetes screening), and (b) other behavioral categories in general, such as financial or environmental decision making. Also, in this research, we utilized behaviors many people may be rather knowledgeable about (e.g., walking). Future research needs to examine whether our findings apply to behaviors where people lack prior knowledge. In addition, in this research, we only measured individual differences in temporal orientation. Equally interesting is whether the manipulation of temporal orientation would lead to similar effect. Another caveat is that the present research does not answer the question as to why high-CFC individuals in Study 1 were able to self-regulate in the presence of the right means (general recommendations) but not the right motivation (present benefits). One possible explanation is that the provided present benefits (e.g., more energy, less stress) were of interest to all participants in our sample (college students). Future research is needed to investigate this finding.

Finally, are our findings generalizable across populations? For instance, would our effects persist in cultures were attention to the present is more chronic—for instance Buddhists? Or would the effects we found hold amongst individuals who differ in their general readiness for change (cf, Prochaska, DiClemente, and Norcross 1992). We did not account for these differences in the present research. Similarly, would our effects hold beyond our convenience sample (college students and subscribers to a nutrition website), for example in populations that are chronic sedentary or less educated?

Further investigation into the process underlying the demonstrated effects would illuminate these potential boundary conditions.

Managerial Implications

Despite these limitations, this research has important implications. Consumer decision-making may be rendered more sustainable, especially among the vulnerable population, namely low-CFC individuals, through supplementing the "one size fits all" approach (e.g., information flyers) with communication methods and channels that allow for a more tailored approach and takes into account individual differences in consideration of future consequences. There are several interesting implications of this work for the design of these tailored approaches. For example, health providers, such as primary care physicians, could increase adherence to medical recommendations, and therefore health outcomes, by tailoring their messages to their patients' chronic temporal orientation. Measuring a patient's temporal orientation as part of the check-in process and developing tailored physician advice and brochures could help physician communicate with their patients more effectively. Alternatively, our results from the pretest (Sample 2) revealed that physicians tend to have an intuition about their patients' planning ability. Thus, specifically training primary care providers to recognize their patients' temporal orientation could facilitate a tailored communications approach to physician-patient interaction, furthering a more holistic understanding of a patient and the quest to increase health outcomes and decrease health costs.

Future Research Directions

The goal of this research was to provide an approach that can (1) account for individual differences in self-regulation and (2) increase self-regulation among the vulnerable population, namely low-CFC individuals. We proposed that an important distinction between individuals who can self-regulate to a different extent, namely high- and low-CFC individuals, is the ability to plan. We showed that a communications approach that aligns the framing of benefits (that are associated with a behavior) and means (that can be implemented to engage in a behavior) with individual differences in consideration of future consequences can be used to increase self-regulation, especially among the vulnerable population.

Several aspects of this research require more attention. First, it is necessary to consider the different ways an individual can focus on the present (Zimbardo and Boyd 1999). According to Zimbardo and colleagues, a present-hedonistic person lives in and for the moment and is a pleasure seeker. A present-fatalistic person, on the other hand, is characterized by the belief that outside forces control one's life, leading to feelings of helplessness and hopelessness. Given these differences, a more complex message framing account might be needed to account for individuals that do not consider future consequences for hedonistic versus fatalistic reasons. As a result, a nuanced portrayal of low-CFC individuals might help in the development of an even more effective approach to increasing self-regulation among this vulnerable population.

An equally important aspect pertains to the fact that sustainable consumption behaviors rely on an individual's ability and tendency to change behavior long-term. In

the current research, we focused on short-term behavioral change (i.e., a matter of days). An important next step would be to test whether the current framework has implications for long-term behavioral change.

In the current framework the goal was to increase self-regulation among low-CFC individuals by creating messages that emulate the planning behavior of high-CFC individuals. Another interesting aspect is the need to examine whether the vulnerable population, namely low-CFC individuals, could (and should) be trained to be more planful and future-oriented. Past research has cautioned against the predominant focus on a future time perspective and advocated for a more balanced time perspective (e.g., Boniwell and Zimbardo 2004). Emerging research has indicated that people with a balanced time perspective are likely to be happier, as indicated by higher well-being (Boniwell, Osin, Linley, and Ivanchenko 2010). Thus, future research has to pose the question as to whether future-oriented individuals (i.e., high-CFC individuals) indeed engage in decision-making that has beneficial outcomes for the very long run.

TABLES

Table 1

Descriptive statistics and correlations for consideration of future consequences and propensity to plan (Sample 1)

Descriptive Statistics			
	Means	STD	Cronbach's α
Consideration of Future Consequences	4.79	.79	.85
Propensity to Plan for Short-Term Health	4.32	1.34	.89
Propensity to Plan for Long-Term Health	4.05	1.38	.91
Bivariate Zero-Order Correlations			
	1.	2.	3.
1. Consideration of Future Consequences	-	.29*	.27*
2. Propensity to Plan for Short-Term Health		-	.63**
3. Propensity to Plan for Long-Term Health			-

Note: * $p < .01$, ** $p < .001$

Table 2

Protocol coding results

	Physician A			*Physician B*		
	Raw	Means	%	Raw	Means	%
Total number of words	10039	2007.8		6391	1278.2	
Total words outcome statements	566	113.2	5.6	299	59.8	4.7
Number of words: future-related outcome statements	192	38.4	33.9	170	34	56.9
Number of words: present-related outcome statements	374	74.8	66.1	129	25.8	43.1
Total words recommendation statements	1950	390	19.4	631	126.2	9.9
Number of words: general recommendation statements	481	96.2	24.7	279	55.8	44.2
Number of words: specific recommendation statements	1469	293.8	75.3	352	70.4	55.8

Table 3

Descriptive statistics for consideration of future consequences scale and propensity to plan scale (Study 1)

Descriptive Statistics			
	Means	STD	Cronbach's α
Consideration of Future Consequences	4.84	.779	.83
Propensity to Plan for Short-Term Health	4.28	1.4	.90
Propensity to Plan for Long-Term Health	3.85	1.36	.92
Bivariate Zero-Order Correlations			
	1.	2.	3.
1. Consideration of Future Consequences	-	.29*	.31*
2. Propensity to Plan for Short-Term Health		-	.52*
3. Propensity to Plan for Long-Term Health			-

Note: * $p < .01$

Table 4

CFC and message framing: Study 1 means for manipulation checks and behavioral outcomes

	Present Benefits				*Future Benefits*			
	General Recommendations		*Specific Recommendations*		*General Recommendations*		*Specific Recommendations*	
	Low-CFC	*High-CFC*	*Low-CFC*	*High-CFC*	*Low-CFC*	*High-CFC*	*Low-CFC*	*High-CFC*
Individual Differences								
CFC	4.27	5.45	4.11	5.44	4.52	5.64	4.21	5.41
Manipulation Checks								
Temporal Occurrence of Benefits	4.35	4.11	4.07	4.15	5.33	5.29	5.29	5.33
Specificity of Recommendations	3.33	2.97	4.11	4.47	3.13	3.37	4.03	4.27
Believability of Information	4.97	5.17	5.08	5.08	5.29	5.17	5.42	5.30
Behavioral Outcomes								
Average # of daily steps walked	6844.44	7817.20	8320.54	6946.66	6935.81	8266.84	6955.76	7859.97
Sample Size	43		42		41		43	

Note. CFC = Consideration of Future Consequences, General = General Implementation Intentions, Specific = Specific Implementation Intentions

Table 5

Descriptive statistics for consideration of future consequences scale and propensity to plan scale (Study 2)

Descriptive Statistics			
	Means	STD	Cronbach's α
Consideration of Future Consequences	5.10	.84	.84
Propensity to Plan for Short-Term Health	5.06	1.20	.89
Propensity to Plan for Long-Term Health	4.67	1.41	.93
Bivariate Zero-Order Correlations			
	1.	2.	3.
1. Consideration of Future Consequences	-	.30*	.35**
2. Propensity to Plan for Short-Term Health		-	.69**
3. Propensity to Plan for Long-Term Health			-

Note: * $p < .05$, ** $p < .01$

Table 6

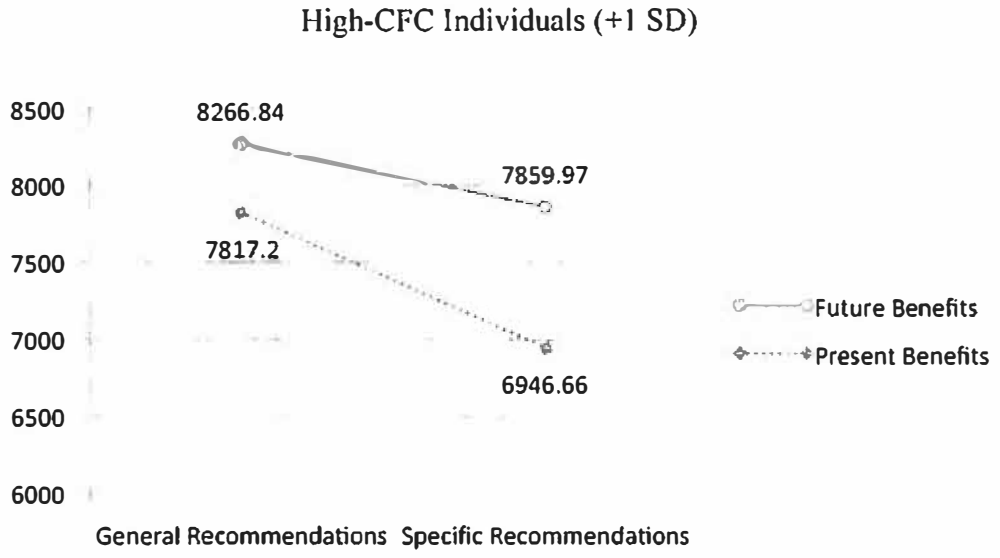
CFC, generated action steps and framing of implementation recommendations: Study 2 means for manipulation checks, thoughts and behavioral outcomes

Condition	No Intervention		Goal provided/no recommendations		Goal provided plus recommendations	
	Low-CFC (-1 SD)	High-CFC (+1 SD)	Low-CFC (-1 SD)	High-CFC (+1 SD)	Low-CFC (-1 SD)	High-CFC (+1 SD)
Manipulation Checks:						
Specificity	-	-	3.68	4.10	5.24	4.70
Importance of Goal	-	-	5.88	6.19	6.38	6.21
Believability	-	-	5.60	5.64	5.56	5.85
Measures:						
Total thoughts	4.01	7.32	4.02	4.93	4.46	3.97
Total number of evaluative thoughts	.72	.59	1.21	.59	0	.44
Proportion of evaluative thoughts	.18	.08	.30	.12	0	.11
Total number of intention-related thoughts	1.56	.67	1.17	.35	.22	.28
Proportion of intention-related thoughts	.39	.09	.29	.07	.05	.07
Total number of implementation-related thoughts	1.72	6.08	1.65	4.04	4.24	3.26
Proportion of implementation-related thoughts	.43	.83	.41	.82	.95	.82
Calories burned Week 1	674.62	890.87	614.63	914.97	718.89	858.86
Calories burned Week 2	649.83	897.01	732.82	1156.39	1005.98	1127.43
Change in Calories Burned	-24.79	6.14	118.19	241.42	287.08	268.57
Sample Size:	22		22		22	

FIGURES

Figure 1

Regression results with average number of steps walked as DV (Study 1)



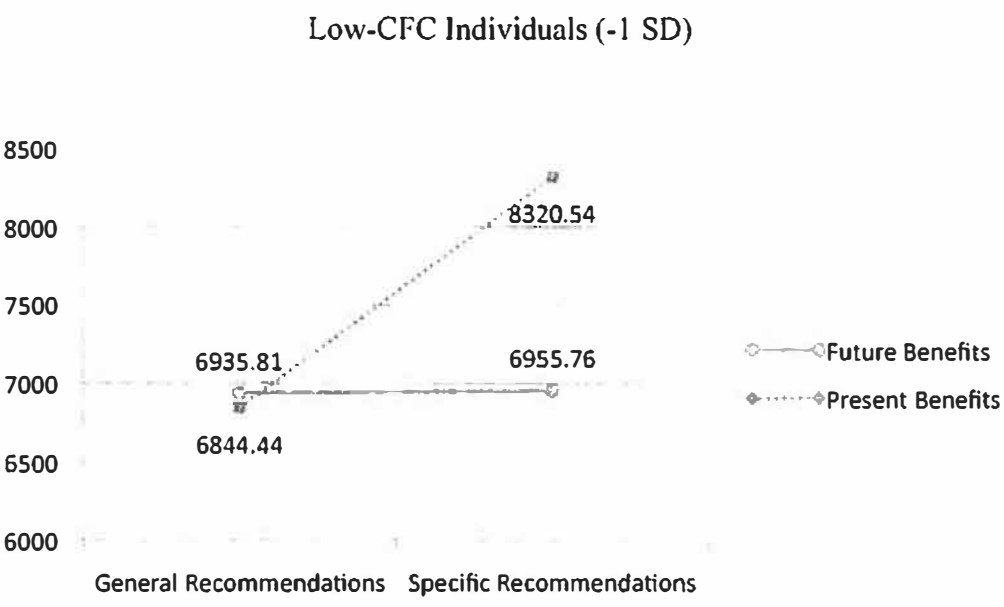
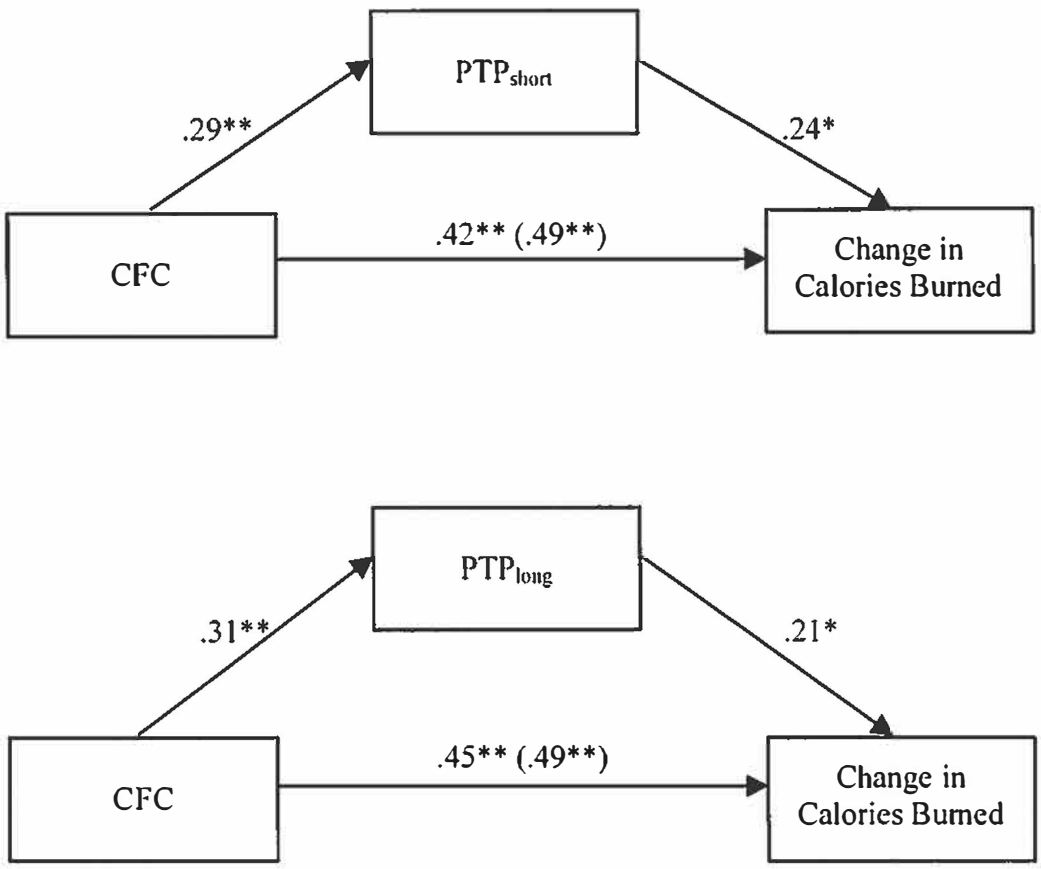


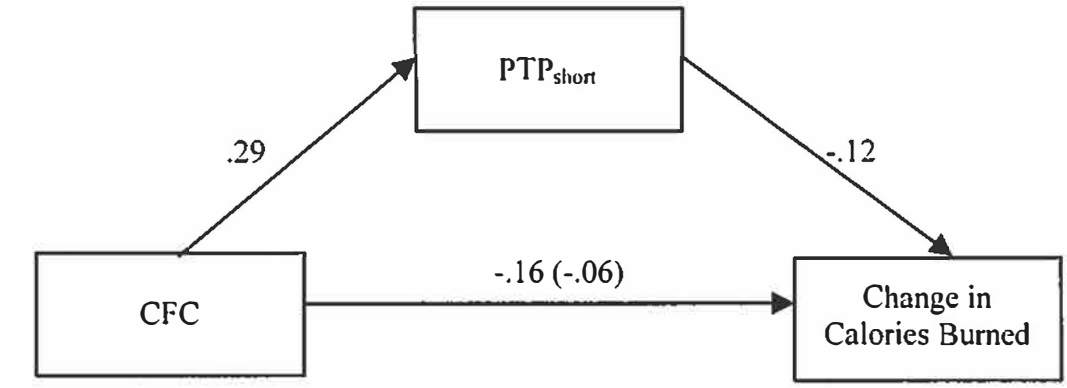
Figure 2

Multi-group path analysis for propensity to plan for the long-term (Study 1)



* p < .05, **p < .01

Specific Condition



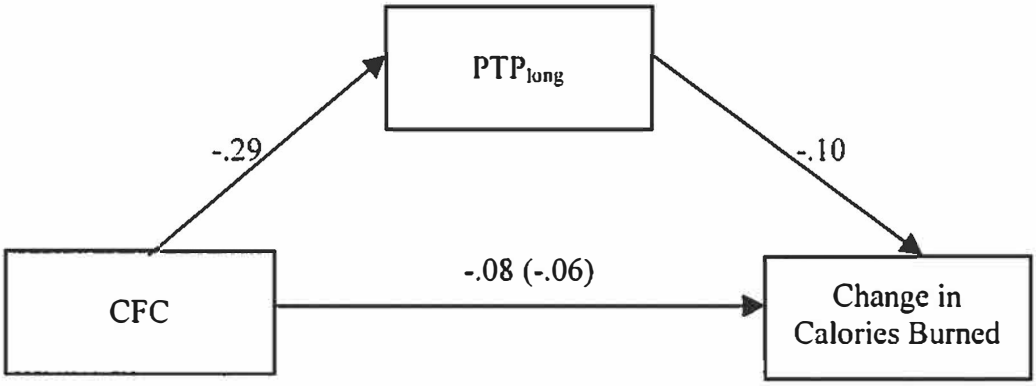


Figure 3

Regression results with proportion of specific contextual information as DV (Study 2)

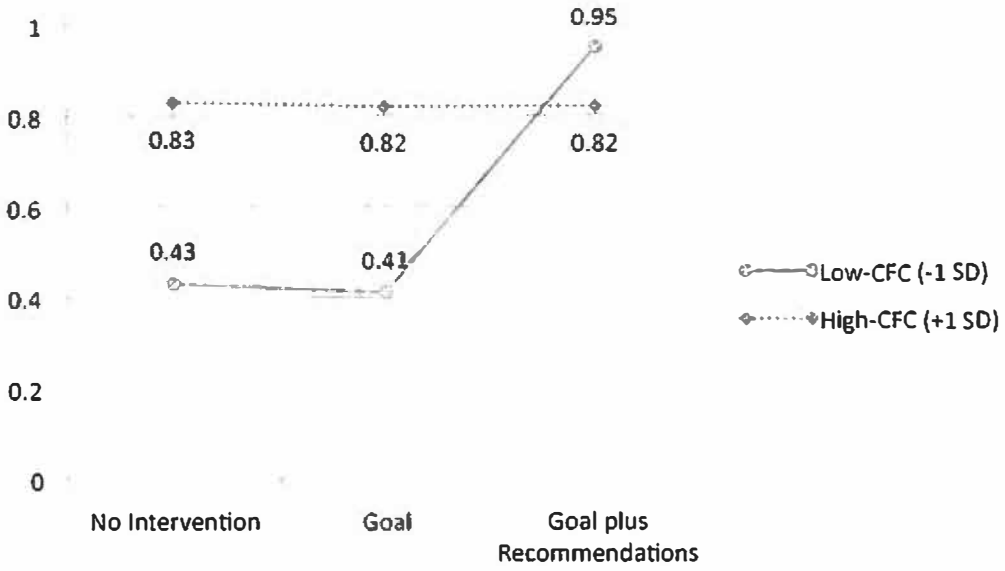


Figure 4

Regression results with change in caloric output as DV (Study 2)

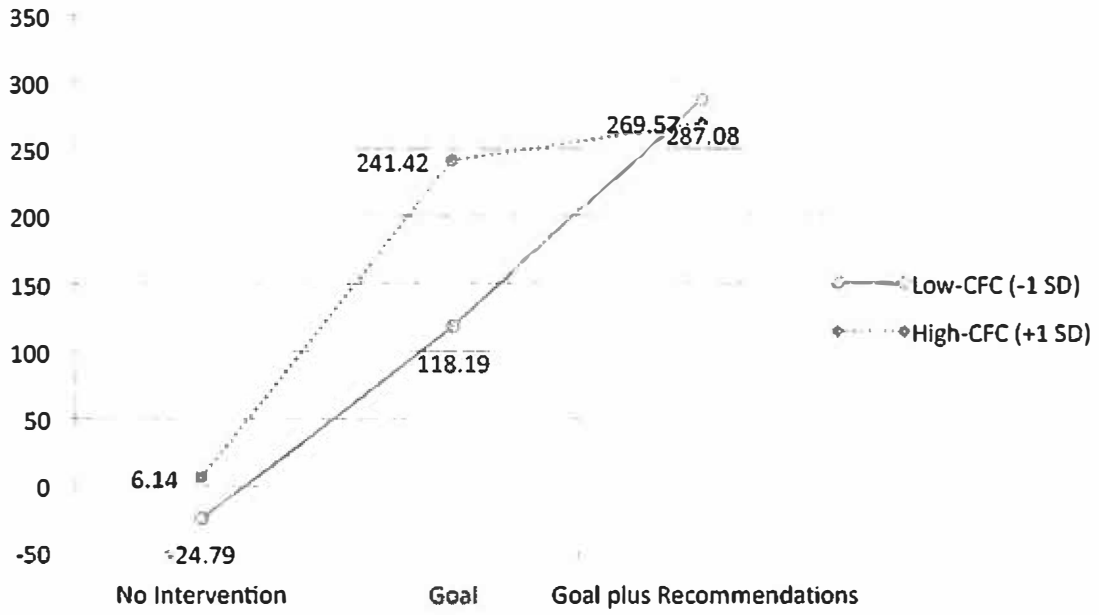
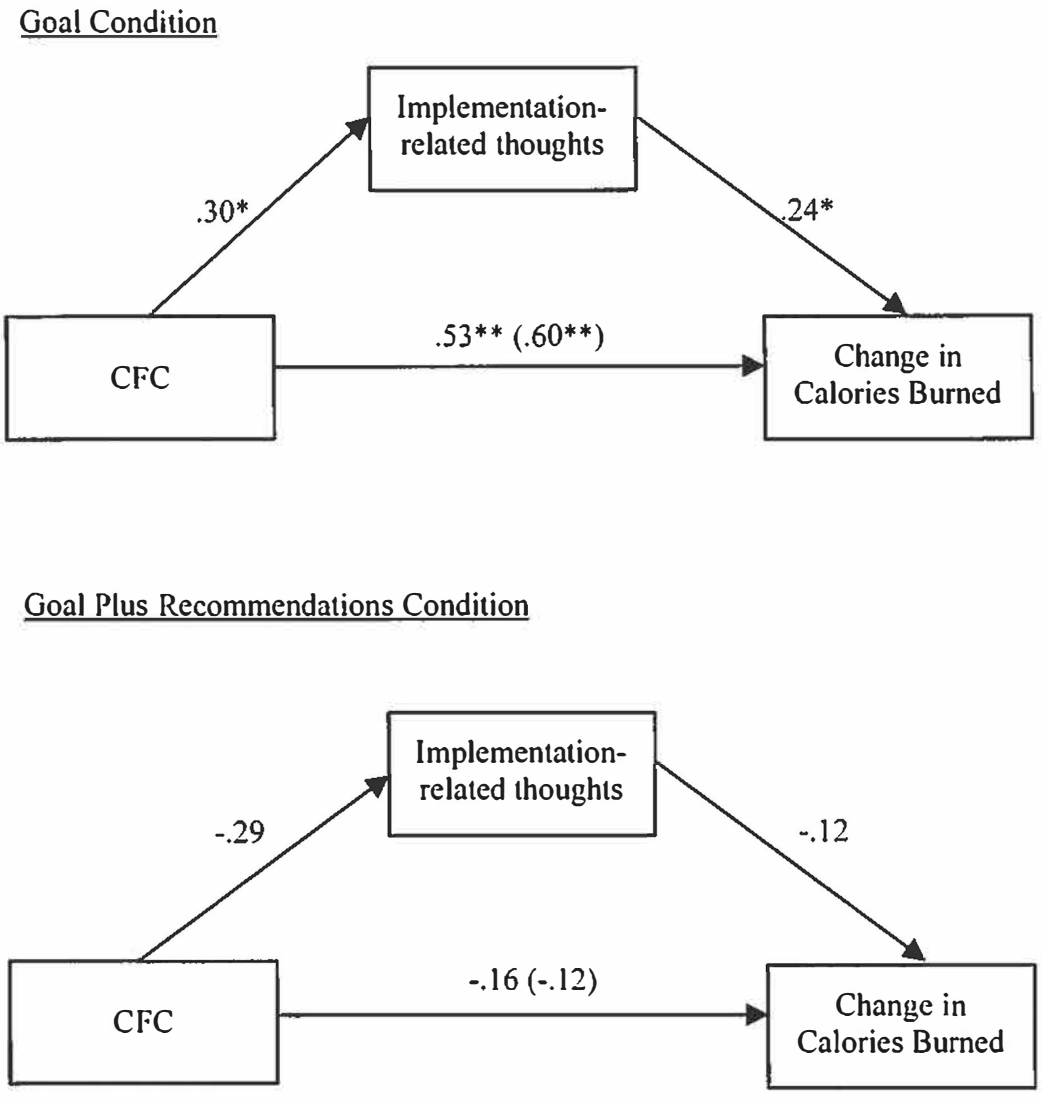


Figure 5

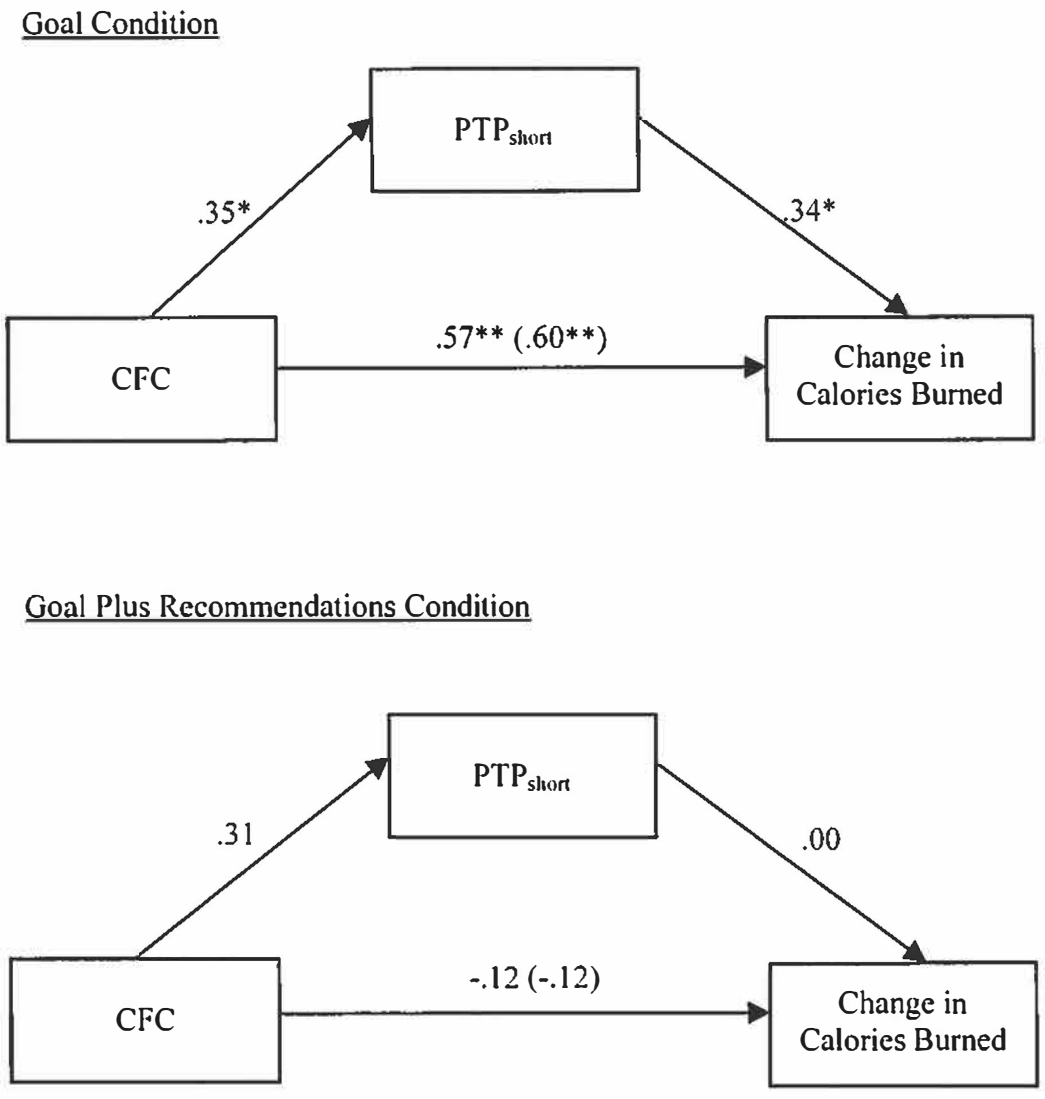
Multi-group path analysis for implementation related thoughts (Study 2)



* p < .05, **p < .01

Figure 6

Multi-group path analysis for propensity to plan for the short-term (Study 2)



* p < .05, **p < .01

Appendices

Appendix A

Consideration of future consequences scale

Please indicate how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I consider how things might be in the future, and try to influence those things with my day-to-day behavior.	1	2	3	4	5	6	7
Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.	1	2	3	4	5	6	7
I only act to satisfy immediate outcomes, figuring the future will take care of itself. (r)	1	2	3	4	5	6	7
My behavior is only influenced by the immediate (e.g., matter of days or weeks) outcomes of my actions. (r)	1	2	3	4	5	6	7
My convenience is a big factor in the decisions I make or the actions I take. (r)	1	2	3	4	5	6	7
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.	1	2	3	4	5	6	7
I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.	1	2	3	4	5	6	7
I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.	1	2	3	4	5	6	7
I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level. (r)	1	2	3	4	5	6	7
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. (r)	1	2	3	4	5	6	7
I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date. (r)	1	2	3	4	5	6	7
Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes. (r)	1	2	3	4	5	6	7

Note: r = reverse-coded

Propensity to plan scale

Please indicate how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I set goals for the next few days for what I want to achieve for my health.	1	2	3	4	5	6	7
I decide beforehand how I take care of my health in the next few days.	1	2	3	4	5	6	7
I actively consider the steps I need to take in the next few days to stick to my health goals.	1	2	3	4	5	6	7
I like set up lists or planners in order to get a better view of managing my health in the next few days.	1	2	3	4	5	6	7
I check my list or planner to see how much more I have to do to reach my health goals for the next few days.	1	2	3	4	5	6	7
It makes me feel better to have my health goals planned out in the next few days.	1	2	3	4	5	6	7
I set goals for the years to come for what I want to achieve for my health.	1	2	3	4	5	6	7
I decide beforehand how I take care of my health in the years to come.	1	2	3	4	5	6	7
I actively consider the steps I need to take in the years to come to stick to my health goals.	1	2	3	4	5	6	7
I like set up lists or planners in order to get a better view of managing my health in the years to come.	1	2	3	4	5	6	7
I check my list or planner to see how much more I have to do to reach my health goals for the years to come.	1	2	3	4	5	6	7
It makes me feel better to have my health goals planned out for the years to come.	1	2	3	4	5	6	7

Appendix B

Consideration of future consequence measure (Pretest, Sample 2)

CFC Scale	Corrected Item-total correlation	Alpha if Item is delete	Flesch Reading Ease	Flesch Grade Level Readability
I consider how things might be in the future, and try to influence those things with my day-to-day behavior.	.43	.81	72.72	8.3
Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.	.52	.80	71.78	7.97
I only act to satisfy immediate outcomes, figuring the future will take care of itself.	.67	.79	67.53	7.56
My behavior is only influenced by the immediate (e.g., matter of days or weeks) outcomes of my actions.	.59	.80	66.4	3.65
My convenience is a big factor in the decisions I make or the actions I take.	.31	.82	74.27	6.88
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.	.39	.81	55.22	9.78
I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.	.46	.80	65.79	9.8
I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.	.33	.82	38.38	13.37
I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.	.51	.80	52.58	11.12
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.	.54	.80	71.78	7.97
I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.	.69	.79	73.14	8.77
Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.	.28	.82	72.72	8.33

Appendix C

Coding scheme for physician-patient interviews

A: Statements of Recommendations

S1 Do or don't that specify concrete steps to be taken right now with no mention of continuing for any extended period by providing contextual details such as When, Where, and How (e.g., Walk for a half hour every morning down to the river after 2 Tylenol).

S2 Do or don't that specify concrete steps to be taken over an intermediate period of time (months, or even years) but with some end (Take this cholesterol drug but I don't think you will have to take it for ever). Start and End information.

S3 Do or don't that specify concrete steps to be habituated over a life-time (Shift to a Mediterranean diet you can find recipes at this website).

G1 General instruction with little or no step-by-step for right now with no mention of continuing for any extended period (e.g., Lose 2 pounds a month).

G2 General instruction with little or no step-by-step to be taken over an intermediate period of time (months, or even years) but with some end (e.g., Lose 2 pounds a months before the next appointment).

G3 General instruction to be habituated over a life-time (e.g., You need to change your lifestyle. You need to eat healthier).

B: Statements of Outcomes

OS1 Concrete measurable or palpable outcomes located in the near future (e.g., Your arthritis pain will improve soon).

OS2 Concrete measurable outcomes or whys located in the intermediate future (e.g., Your cholesterol will go down over the next 3-6 months).

OS3 Concrete measurable outcome or whys located in the distant future (e.g., It will prevent a hip fracture).

OG1 General outcomes located in the near future (e.g., Your cholesterol will get better soon).

OG2 General outcomes or why located in the intermediate future (e.g., Your blood pressure will decrease.)

OG3 General Outcomes (e.g., You'll be well).

APPENDIX D

Information brochure (Study 1)

Front Cover

Welcome to

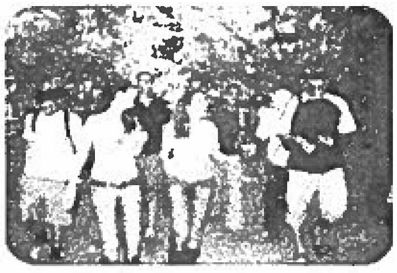
10K-A-Day

Stepping Up to Better Health

The 10K a Day walking program is an exercise program that helps you boost your daily physical activity.

The aim is to walk regularly and to get closer to walking 10,000 steps a day (around 5 miles).

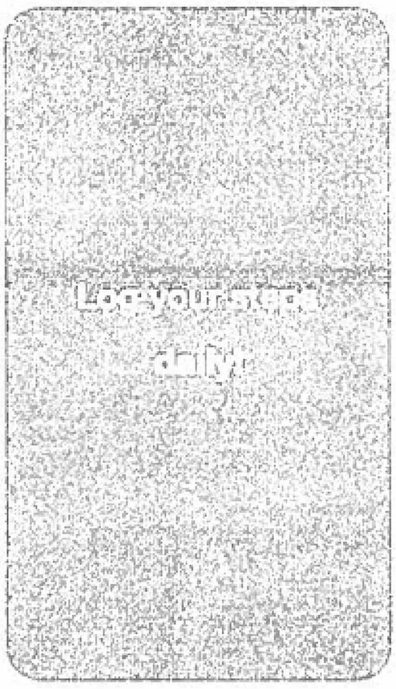
And indeed, the merits of walking regularly are hard to ignore.



Need convincing?
Read on.

CDC Center for Disease Control and Prevention

Back Cover



This information is brought to you by the
Center for Disease Control and Prevention.

Page 2 (Manipulation of Benefits)

Future Benefits

The Benefits of Walking Regularly

As you get closer to walking 10,000 steps (around 5 miles) a day, you can:

- Decrease the risk of diabetes and increase future blood sugar health
- Decrease the risk of osteoporosis and increase future bone health
- Decrease the risk of developing heart disease and increase future cardiac health

Present Benefits

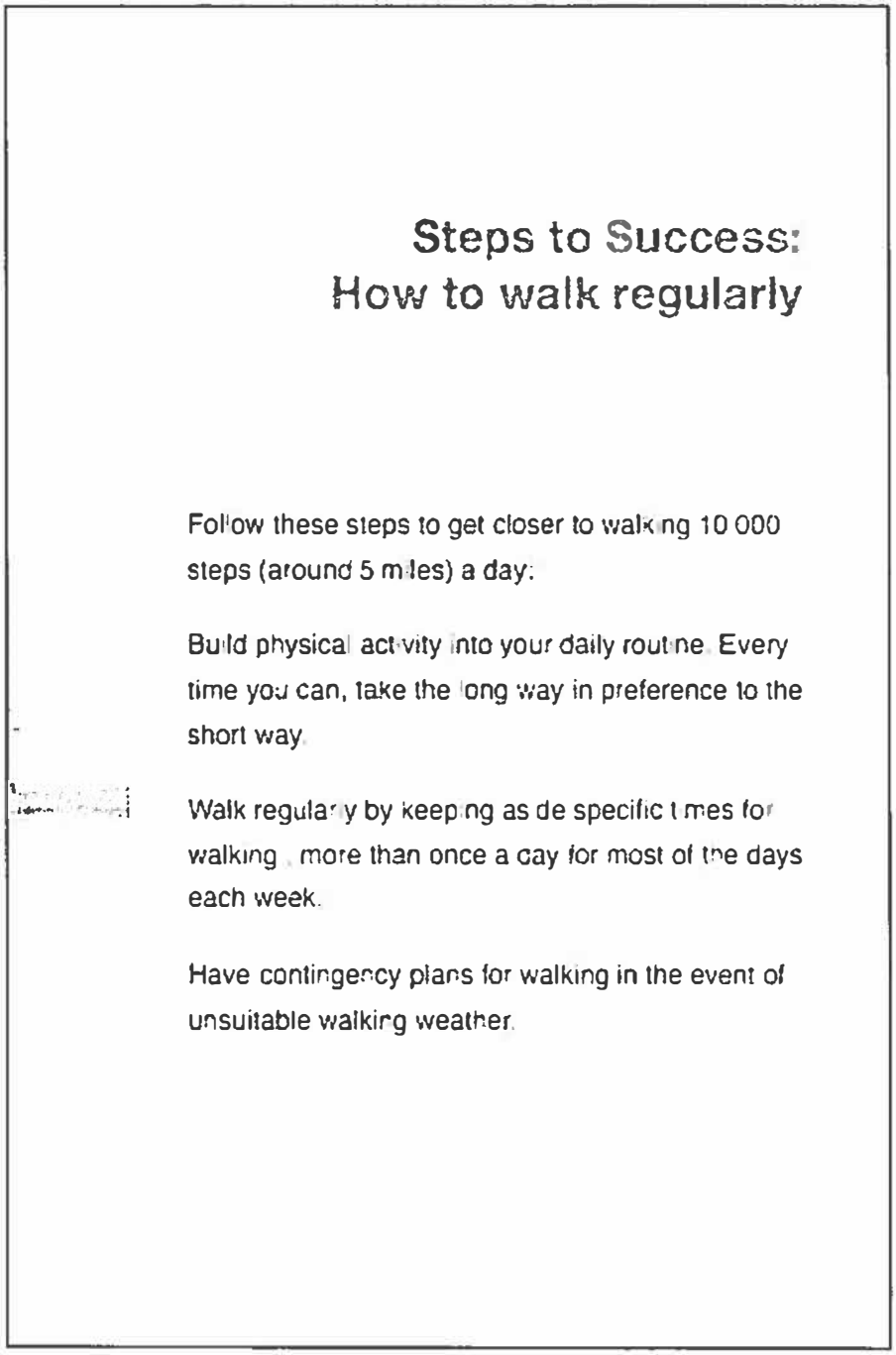
The Benefits of Walking Regularly

As you get closer to walking 10,000 steps (around 5 miles) a day, you can:

- Decrease sleeping problems and increase your energy level
- Prevent overweight/reduce weight and increase your body appearance
- Decrease stress levels and increase your mood

Page 3 (Manipulation of Implementation Recommendations)

General Implementation Recommendations



Steps to Success: How to walk regularly

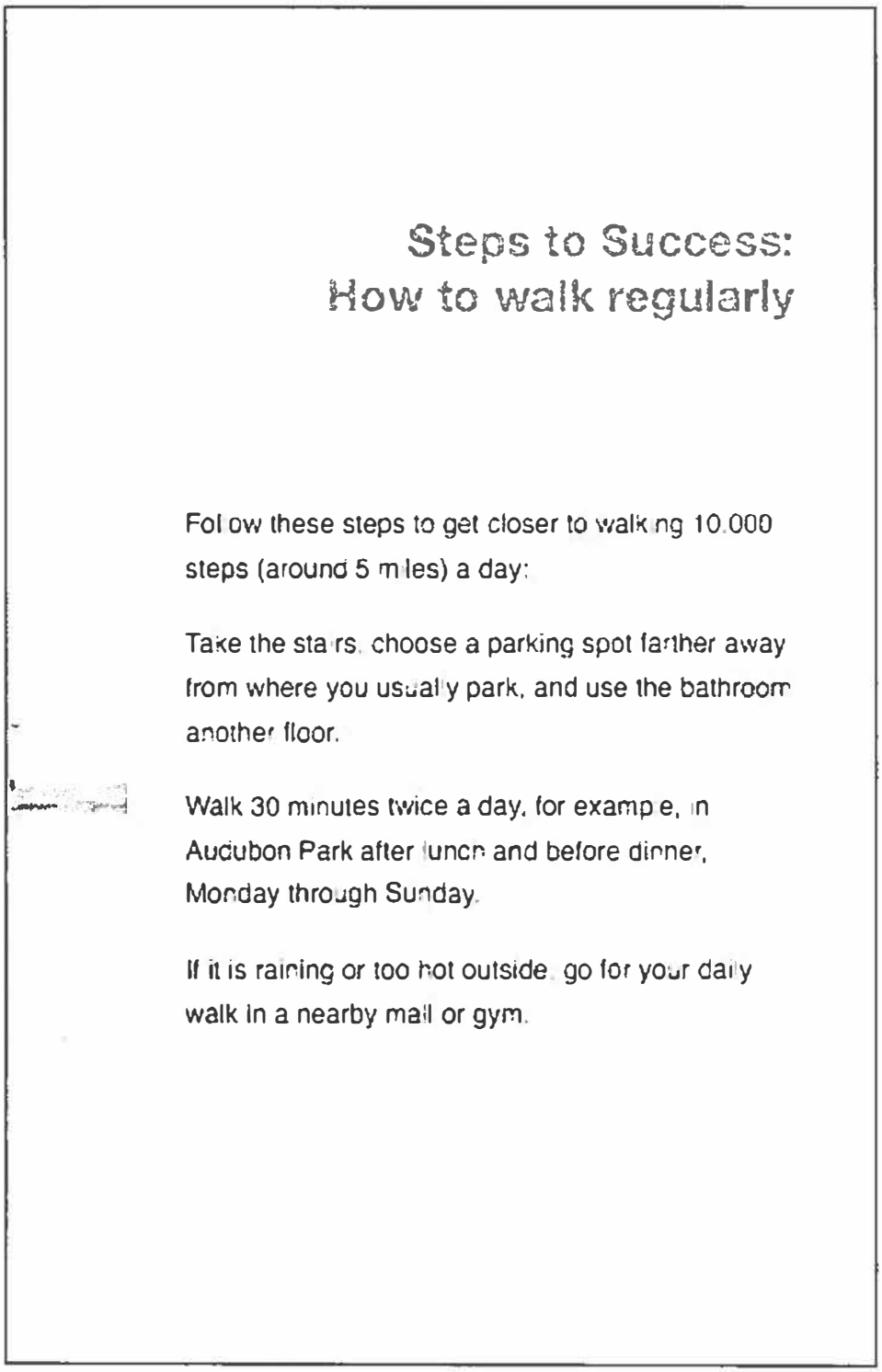
Follow these steps to get closer to walking 10 000 steps (around 5 miles) a day:

Build physical activity into your daily routine. Every time you can, take the long way in preference to the short way.

Walk regularly by keeping as de specific times for walking , more than once a day for most of the days each week.

Have contingency plans for walking in the event of unsuitable walking weather.

Specific Implementation Recommendations



Steps to Success: How to walk regularly

Follow these steps to get closer to walking 10,000 steps (around 5 miles) a day:

Take the stairs, choose a parking spot farther away from where you usually park, and use the bathroom another floor.

Walk 30 minutes twice a day, for example, in Audubon Park after lunch and before dinner, Monday through Sunday.

If it is raining or too hot outside, go for your daily walk in a nearby mall or gym.

APPENDIX E

Survey 1 (Study 2)

Please enter the following code below (this information will just be used to link the two online surveys):

1. First three letters of your mother's first name (e.g., for Sharon, enter SHA)
2. Number of the month you were born in (e.g., for March, enter 03)
3. The first three letters of the town you were born in (e.g., for Houston, enter HOU)

For the **EXAMPLE** above, you would enter: SHA03HOU

Please indicate how much you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I consider how things might be in the future, and try to influence those things with my day-to-day behavior.	1	2	3	4	5	6	7
Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.	1	2	3	4	5	6	7
I only act to satisfy immediate outcomes, figuring the future will take care of itself.	1	2	3	4	5	6	7
My behavior is only influenced by the immediate (e.g., matter of days or weeks) outcomes of my actions.	1	2	3	4	5	6	7
My convenience is a big factor in the decisions I make or the actions I take.	1	2	3	4	5	6	7
I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.	1	2	3	4	5	6	7
I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.	1	2	3	4	5	6	7
I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.	1	2	3	4	5	6	7
I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.	1	2	3	4	5	6	7
I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.	1	2	3	4	5	6	7
I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.	1	2	3	4	5	6	7
Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.	1	2	3	4	5	6	7

How often on average do you work out (i.e., engage in physical activities such as running, walking, or going to the gym) per week?

☐	☐	☐	☐	☐
I do not work out	1-2 days a week	3-4 days a week	5-6 days a week	Every day

Thank you. Please start logging your exercises on the Dr. Gourmet website. You will receive a second survey in one week.

APPENDIX F

Survey 2 (Study 2)

Please enter the following code below (this information will just be used to link the two online surveys):

1. First three letters of your mother's first name (e.g., for Sharon, enter SHA)
2. Number of the month you were born in (e.g., for March, enter 03)
3. The first three letters of the town you were born in (e.g., for Houston, enter HOU)

For the **EXAMPLE** above, you would enter: SHA03HOU

{Goal Condition}

Establishing an Exercise Routine

Regular exercising is an important lifestyle change that you should begin making if you haven't already. Experts agree that you don't have to spend hours at the gym to reap exercise's rewards. Consistency in exercise is everything. **One hour, three to five times a week** is a good start to better health.

Imagine you set yourself the goal of working out three to five times a week for one hour.

Please take a minute and think about the steps you would take to reach the goal of working out three to five times a week for at least one hour. Please be as specific as you can.

_____

_____

_____

_____

{Goal plus Recommendations Condition}

Establishing an Exercise Routine

Regular exercising is an important lifestyle change that you should begin making if you haven't already. Experts agree that you don't have to spend hours at the gym to reap exercise's rewards. Consistency in exercise is everything. **One hour three to five times a week** is a good start to better health.

Here are a few ideas as to how you get closer to exercising one hour, three to five times a week:

PICK A TIME TO EXERCISE: Pick the number of days you would like to exercise. For example, three or four days a week. Pick the days that would work the best for you. For example, Monday, Wednesday, Friday and Saturday. Choose a time that works best for you. For example, right after work.

PICK AN EXERCISE ROUTINE THAT IS EASIEST TO MAINTAIN. Build the routine with the exercise type you feel most comfortable keeping up. For example, you could choose to walk in a near-by park on days you are rushed. For example, you could chose to go to the gym on the days you have some extra time.

CHOOSE TO KEEP YOUR EXERCISE CLOTHES WITH YOU. Put your exercise clothes and shoes into a bag. Have more than one set of easily accessible exercise clothes. For example, leave a bag in your car, another at home an extra set at work.

PICK A COMFORTABLE LENGTH OF TIME TO EXERCISE. If you are working out less than 60 minutes a day, start with a workout length you feel comfortable with. For example, start with 20 minutes. Add 5 minutes to your exercise routine each week.

EXPAND YOUR REPORTOIRE OF EXERCISING. Once you are exercising three or four times a week for at least 60 minutes, add another exercise type to your routine. For example, if you are walking outside and at the gym, trying rowing or the elliptical machine on some days instead of walking.

Imagine you set yourself the goal of working out three to five times a week for one hour.

Please take a minute and think about the steps you would take to reach the goal of working out three to five times a week for at least one hour. Please be as specific as you can.

_____

_____

_____

_____

_____

_____

According to the information on "Establishing an Exercise Routine", on how many days a week should you engage in some type of physical activities?

_____

According to the information on "Establishing an Exercise Routine", for how long should you engage in some type of physical activities on a given day?

_____

How <u>believable</u> the information on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Not believable at all						Extremely believable

How <u>truthful</u> was the information you read on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Not truthful at all						Extremely truthful

How general or specific was the information you read on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Very General						Very Specific

How detailed was the information you read on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Not detailed at all						Extremely detailed

How important is the goal of working out three to five times a week for one hour to a person's health?

1	2	3	4	5	6	7
Not important at all						Extremely Important

How crucial is the goal of working out three to five times a week for one hour to a person's health?

1	2	3	4	5	6	7
Not crucial at all						Extremely crucial

How useful did you find working out three to five times a week for one hour?

1	2	3	4	5	6	7
Not useful at all						Extremely useful

How informative did you find the information on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Not informative at all						Extremely informative

How helpful did you find the information on "Establishing an Exercise Routine"?

1	2	3	4	5	6	7
Not helpful at all						Extremely helpful

{All Conditions}

Please indicate how much you agree to disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I set goals for the next few days for what I want to achieve for my health.	1	2	3	4	5	6	7
I decide beforehand how I take care of my health in the next few days.	1	2	3	4	5	6	7
I actively consider the steps I need to take in the next few days to stick to my health goals.	1	2	3	4	5	6	7
I like set up lists or planners in order to get a better view of managing my health in the next few days.	1	2	3	4	5	6	7
I check my list or planner to see how much more I have to do to reach my health goals for the next few days.	1	2	3	4	5	6	7
It makes me feel better to have my health goals planned out in the next few days.	1	2	3	4	5	6	7
I set goals for the years to come for what I want to achieve for my health.	1	2	3	4	5	6	7
I decide beforehand how I take care of my health in the years to come.	1	2	3	4	5	6	7
I actively consider the steps I need to take in the years to come to stick to my health goals.	1	2	3	4	5	6	7
I like set up lists or planners in order to get a better view of managing my health in the years to come.	1	2	3	4	5	6	7
I check my list or planner to see how much more I have to do to reach my health goals for the years to come.	1	2	3	4	5	6	7
It makes me feel better to have my health goals planned out for the years to come.	1	2	3	4	5	6	7

Thank you! Please keep logging your exercises on the Dr. Gourmet website for another week!

APPENDIX G

Coding scheme for self-generated action steps (Study 2)

Code and Description	Example
A: Descriptive Thoughts	"Exercising 3-5 times a week is not so difficult"
B: Intention-related Thoughts	"I just need to get up and do something"
C: Implementation-related, Specific Thoughts	
- What:	
- Type of Exercise	"I will use the treadmill"
- Length	"for 30 minutes"
- When:	
- Days	"four times a week"
- Time	"right after work"
- Where:	"at my local gym"
- How:	
- planning tools	"Schedule it like an appointment in my outlook"
- motivational tool	"I post before and after pictures around the house"
- With Whom	"I meet with my daughter"

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