PROVING IT TO OTHERS OR PROVING IT TO YOU:

MOTIVATING STUDENTS TO INITIATE AND DEVELOP HEALTHY LEVELS OF PHYSICAL ACTIVITY USING EXTRINSIC AND INTRINSIC APPEALS

A DISSERTATION

SUBMITTED ON THE FIRST DAY OF MARCH 2011

TO THE DEPARTMENT OF MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

OF THE A.B. FREEMAN SCHOOL OF BUSINESS

OF TULANE UNIVERSITY

FOR THE DEGREE

OF

DOCTOR OF PHILOSOPHY

BY

SILVIO BORRERO

APPROVED: _____
Harish Sujan, Ph.D., Committee Chair

_____
Mita Sujan, Ph.D., Committee Member

_____
Richard D. Ager, Ph.D., Committee Member

_____
Timothy S. Harlan, M.D., Committee Member

ABSTRACT

Integrating Self-Determination Theory, the Trans-Theoretical Model of Change and extant research on health-related choices, I suggest that persuasive communications aimed at inducing greater physical activity will be more effective if they are tailored to match the target‘s exercise status. Whereas *sedentary* people can be better persuaded to exercise by appealing to *extrinsic* motives, *active* people can be better persuaded to increase physical activity by appealing to *intrinsic* motives. I tested this suggestion by presenting college students with made-up magazine articles framed to prime different types of motivational appeals. In a first study, conducted at a private university in Colombia, I found that while the intrinsic motive of *competence* (proving to yourself that you can do something) is a more powerful motivator for active students than the extrinsic motive of *recognition* (proving to others that you can), as judged by steps walked and self-reported exercise, the reverse is true for sedentary students. In a second study, conducted at a private university in the United States, I replicated this finding and in addition found that the intrinsic motive of *relatedness* (connecting meaningfully with others) has a similar effect as competence. Together, these studies suggest that extrinsic motives appeal more than intrinsic motives to sedentary people, whereas the reverse is true for active people. The implication of this suggestion is that persuasive communications should be tailored to the consumers‘ exercise status to facilitate their initiation or maintenance of an exercise practice.

PROVING IT TO OTHERS OR PROVING IT TO YOU:

MOTIVATING STUDENTS TO INITIATE AND DEVELOP HEALTHY LEVELS OF PHYSICAL ACTIVITY USING EXTRINSIC AND INTRINSIC APPEALS

A DISSERTATION

SUBMITTED ON THE FIRST DAY OF MARCH 2011

TO THE DEPARTMENT OF MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

OF THE A.B. FREEMAN SCHOOL OF BUSINESS

OF TULANE UNIVERSITY

FOR THE DEGREE

OF

DOCTOR OF PHILOSOPHY

BY

SILVIO BORRERO

APPROVED: _____
Harish Sujan, Ph.D., Committee Chair

_____
Mita Sujan, Ph.D., Committee Member

_____
Richard D. Ager, Ph.D., Committee Member

_____
Timothy S. Harlan, M.D., Committee Member

ACKNOWLEDGMENTS

First and foremost, I want to thank my wife and kids. This doctoral endeavor would not have been possible without their encouraging support, and my frequent study trips abroad would have been much harder if it were not for their patience and understanding.

Also, I am extremely grateful for Dr. Harish Sujan‘s guidance. Since our first discussions on the motives behind consumers‘ healthy or unhealthy behaviors, Dr. Sujan‘s creative leaps and sharp insight made of this an enlightening and challenging venture.

I also want to acknowledge the keen feedback and enthusiastic comments received from my Dissertation Committee members. It was a privilege sharing my ideas with such a competent group of scholars, and I gained from their expertise and intuition much more than I could possibly convey in this document.

Many other people contributed to this work, even if their input is not explicitly addressed within the dissertation document. In particular, my professors in the doctoral program and my colleagues at Icesi University have all been a continued source of hints and pieces of knowledge that I have used to fine tune my dissertation.

I want to thank Icesi University for supporting my doctoral education and for making my scholar dream possible. I also want to thank Dr. John Trapani for his support during the empirical portion of my dissertation.

Last, but definitely not least, I want to thank my ―Gefsi” buddies. Our sprit de corps, our fun gatherings, and our mutual, warm friendship fueled my resolution to keep going.

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

Despite awareness that chronic physical inactivity correlates with health problems (Hagger, Wood, Stiff, & Chatzisarantis, 2010) most people do not exercise sufficiently. Physical activity declines during adolescence and college (Boiché & Sarrazin, 2007), so that, by the time they are adults, most Americans are sedentary (Buckworth & Nigg, 2004)[1]. Given that many adult behaviors are established during adolescence and early adulthood, it is a public health priority to identify strategies that effectively motivate young adults to engage in sufficient physical activity to gain durable health benefits (US Department of Health and Human Services, 2000), and to sustain such healthy exercise levels as they age (R. Brennan, Dahl, & Eagle, 2010; Eagle, Bulmer, Kitchen, & Hawkins, 2004).

Persuading young people to exercise can be approached by distinguishing extrinsic from intrinsic motivation (Buckworth, Lee, Regan, Schneider, & DiClemente, 2007), and by identifying how each type of motivation fits interventions aimed at inducing young consumers to healthy physical activities. Whereas a behavior that is inherently pleasant to the consumer will be intrinsically motivating in itself, a behavior perceived as a task might need some external (extrinsic) pressure for an individual to feel motivated to do it (Lepper, Corpus, & Iyengar, 2005; Lepper, Greene, & Nisbett, 1973). Under the assumption that consumers‘ decisions are instrumental for getting something (Choi &

[1] This trend is not exclusive to wealthy economies: in other countries (e.g., Colombia) college students tend to sedentary behaviors, as well (Bustamante, 2004; Prieto, 2003).

Fishbach, in press), marketing communications aimed at influencing choice usually appeal to external motives—such as promises of good looks or threats of health problems—to persuade people to exercise (Payne, Bettman, & Johnson, 1992). As a result, choosing between healthy and unhealthy options is frequently a self-control dilemma (Baumeister, 2002; Fedorikhin & Patrick, 2010; Hong & Lee, 2008; Uskul, Keller, & Oyserman, 2008; Zhang, Huang, & Broniarczyk, 2010). Strategies to promote exercising usually rely on persuading individuals to invest in self-regulatory efforts (e.g., getting up and go out for a run) that conflict with immediately gratifying lower order goals (e.g., staying in bed a little longer), in order to attain future gains associated with higher order goals (e.g., being healthy) (Nickel & Spink, 2010; Spink & Nickel, 2010). Not surprisingly, many interventions aimed at promoting healthy behaviors rely on improving people‘s capacity to self-regulate when confronted by difficult choices (Higgins, 2002; Kees, Burton, & Tangari, 2010).

Even if these extrinsically-motivated strategies tax on a consumer‘s willpower (Keller & Lehmann, 2008), they can be effective in persuading some people to get up from their couches and work out, at least for a while. Indeed, extrinsic motives have been shown to correlate with the earliest stages of a sport practice (Ingledew & Sullivan, 2002; Markland & Ingledew, 2007) or initiation in a healthy regime (Curry, Wagner, & Grothaus, 1990). External motives could thus be effective in persuading sedentary consumers to exercise, but whether such extrinsic motives are actually as effective—or more or less effective—than intrinsic motives is a matter of debate.

A contrasting approach is the suggestion that consumers‘ choices and behaviors serve intrinsic needs (Choi & Fishbach, in press). Self-Determination Theory (SDT), for instance, contends that intrinsic motivation is in general superior to extrinsic motivation

across different domains (Black & Deci, 2000). Per SDT, a person‘s motivation to exercise will be optimal if the exercise behavior satisfies her basic psychological needs for competence, relatedness or autonomy, in which case the exercise activity will be intrinsically motivating in itself (Deci & Ryan, 2000, 2002, 2008a, 2008b). Much of the sports psychology literature has embraced the SDT paradigm, advocating the superiority of intrinsic motivation—relative to extrinsic motivation—in enhancing athletes‘ adherence and performance (Edmunds, Ntoumanis, & Duda, 2006; Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson, 2007; A. Smith, Ntoumanis, & Duda, 2007; Vansteenkiste, Simons, Soenens, & Lens, 2004).

Indeed, intrinsic motivation does seem to be effective in enhancing athletes‘ performance or adherence to an exercise routine but this may not be always the case, specifically at early stages of exercise habit development. Extant evidence is mixed on the relative effectiveness of extrinsic versus intrinsic motivation in inducing people to exercise (more) at different stages of exercise adoption. Most extant empirical research is correlational, aiming at connecting pre-existing reasons to exercise with exercise behavior, and there is very scarce experimental evidence that allows causal inferences (Hagger & Chatzisarantis, 2009). Those studies that actually conduct experiments or perform behavioral interventions tend to focus on athletes‘ performance and the type of (autonomy supportive) coaching they receive, but there is no conclusive evidence on the process that leads a person from a sedentary lifestyle to a sustained physical activity.

The SDT‘s motivational continuum (Deci & Ryan, 2008a, 2008b) sheds some light on the apparent contradiction between marketing‘s extrinsic appeals and sports psychologists‘ intrinsic approaches. Per SDT, from an extreme state of non-motivation, a person‘s motivation advances through different degrees of extrinsic motivation up to an

optimal state of intrinsically motivated behavior. External pressures might succeed in getting a person started along this continuum, but they might not be enough to keep the person motivated for long. Moving consumers from early stages of readiness for exercise into healthy exercising will require intrinsic motivation to continue the change and to prevent lapses (Curry et al., 1990; Ryan & Deci, 2000). In practice, extrinsic pressures might need to be replaced by progressively integrated motives until exercise becomes intrinsically motivating per se and external pressures are no longer necessary.

The psychological mechanisms that facilitate a person‘s progression from non-motivation to extrinsically-motivated initiation, and then to intrinsically-motivated exercise, can be further explained by the Trans Theoretical Model (TTM) of change (Prochaska, DiClemente, Norcross, Salovey, & Rothman, 2003) and theories on people_s choices. Per TTM, behavioral changes occur along successive stages of readiness for change. Although there is little data on how these stages relate with the motivation to engage in physical activities (Sherwood & Jeffery, 2000), extrinsic motives seem to dominate earlier stages and intrinsic motives seem more important for regular activity (Ingledew, Markland, & Medley, 1998; Ingledew & Sullivan, 2002; Markland & Ingledew, 2007). Previous research has shown that people can perceive the same task in different manners depending on their contextual or personal circumstances (Lepper et al., 2005). It follows that the nature of a person‘s motivation to perform such task could vary with time or changing contexts, so that either extrinsic or intrinsic forms of motivation might actually be effective, depending on the circumstances. Cognitively, it is likely that sedentary people find physical activities inherently unpleasant (Cherubini, 2009; Ekelund, Griffin, & Wareham, 2007), so that the mere decision to exercise is a taxing psychological burden, whereas active people might think of exercise as an attractive task. Consistent

with extant research on how people make difficult choices (Botti & lyengar, 2004; Botti, Orfali, & Iyengar, 2009), a sedentary person—who presumably dislikes exercise and is therefore deciding whether to engage in an activity she is not particularly inclined to—will require external pressures to help her make the difficult decision to exercise. In contrast, active people—who presumably find exercise pleasant and are therefore choosing a preferred alternative—will feel intrinsically motivated to exercise, thus making any extrinsic pressures unnecessary.

In sum, there is no consensus on the superiority of intrinsic or extrinsic motivation, across different conditions or individuals. Extant literature is also lacking a prescriptive, evidence-based rationale that helps practitioners advance sedentary consumers to healthier levels of sustained physical activity. Connecting the SDT and TTM paradigms with extant research on motivation and health-related decisions, I propose that sedentary people can be more effectively induced to engage in healthy physical activity by appealing to an extrinsic motivator than by more intrinsic motives and that, once a person is actually engaged in a physical activity, intrinsic motivation is more effective than extrinsic appeals in inducing increased levels of exercise.

I tested these propositions by assessing whether a specific type of extrinsic appeal, such as being recognized by one‘s peers, is initially more motivating for sedentary students than a more intrinsic appeal, such as developing personal competence. Conversely, I assessed whether an intrinsic appeal to exercise based on competence is more motivating than an extrinsic appeal of recognition in persuading regular exercisers to increase their physical activity. Both, recognition and competence can be very similar but for the target of the behavior: whereas under competence the individual does something to prove it to herself, under recognition she does it to prove it to others. I opted

for this approach—contrasting alternative motives between subjects—as an alternative to testing within subjects for those sedentary participants who actually initiate an exercise practice. I also assessed whether the hypothesized superiority of intrinsic motivation in persuading active exercisers to increase their exercise levels, relative to extrinsic motivation, is also true for an alternative form of intrinsic motivation (i.e., relating with others in a meaningful way). In two related experimental studies, participants who had provided information on their prior exercise behavior via custom on-line questionnaires were randomly assigned to different conditions. Depending on the condition they were assigned to, participants were given differently framed persuasion messages prompting them to engage in healthy walking as part of their daily routine. Messages were presented as made-up magazine articles, from a non-existent healthy lifestyle publication, and they differed across conditions in the type of motivational appeal they intended to manipulate. To frame the articles in a convincing manner, I adapted the text from a popular website that promotes healthy fitness walking (Greenfootsteps, 2010).

In the first study, undergraduate students from a private university in Colombia were asked to read a magazine article that elaborated on the reasons that humans have (allegedly) had for walking distances throughout history. Participants under the extrinsic manipulation condition were given an article that emphasized the importance of walking for social *recognition* reasons. Participants under the intrinsic manipulation condition read about the importance of walking to achieve and develop personal *competence*. Individual differences on the participants‘ current exercise status were contrasted with the reasons driving their physical activities and with their subsequent exercise behavior during a five-day period, following the manipulation. Exercise behavior was measured during this follow-up period by means of a custom online exercise log and by the number of steps

recorded with a digital pedometer. In a second experiment, conducted with freshman students from a southern university in the United States, I evaluated the effect of the two motivational manipulations on sedentary and active participants from a different culture and subject to different environmental conditions. I also evaluated the generalizability to intrinsic motives in general by manipulating in addition an appeal to *relatedness*, an alternative form of intrinsic motivation. That is, depending on which condition they were randomly assigned to, participants read made-up magazine articles priming extrinsic recognition, intrinsic competence or intrinsic relatedness. Questionnaires, manipulations and follow-up procedures were otherwise similar to those in the first study.

Taken together, results from both studies provide support for the notion that extrinsic appeals are more effective than intrinsic appeals in inducing sedentary people to exercise, and that intrinsic appeals are more effective in persuading active exercisers to engage in more physical activity. These effects seem independent of the individuals‘ cultural background or specific environment, and they also hold for two different types of intrinsic motives.

MOTIVATION TO EXERCISE

Leisure physical activities are a particular form of consumption and effectively persuading consumers to engage in healthy exercising is a matter of interest to marketing research. Tailored messages, targeted at vulnerable populations, can be an effective way to do this (R. Brennan et al., 2010; Rosen, 2000). Across diverse domains, there is growing realization that persuasive communications need to be tailored to the specific segments they intend to target (Batra, Keller, & Strecher, 2010; Keller & Lehmann, 2008). Tailoring can be approached by means of different tactics, including the manipulation of emotion appeals, content framing and nature of the goals depicted. Tailoring the messages in a manner consistent with the processes underlying the intended change in behavior can effectively activate goal pursuits (Bargh, 2002) and increase the likelihood of the subjects initiating and adhering to the prescribed exercise (DiMatteo et al., 1993; Pelletier & Sharp, 2008). Developing a practical approach to effectively induce people to initiate and maintain healthy physical activity calls for an understanding of the motivation people have to exercise, and how individual conditions affect the relationship between motivation and exercise.

Marketing literature approaches consumers‘ motivation in a utilitarian fashion, assuming that motivation results from a consumer making cost/benefit assessments (Bargh, 2002; J. B. Smith & Colgate, 2007) that are instrumental for getting something external (Choi & Fishbach, in press). The act of consumption is thus the consequence of a consumer assessing whether the benefits obtained from something exceed its costs, so

many marketing efforts strive to convey customer value to motivate specific behaviors. In an exercise setting, as long as they perceive the cost/benefit relationship as favorable, people will be willing to invest effort and resources in exchange for health or pleasure benefits. In this context, motivation to exercise is contingent on what people consider valuable, and persuading consumers to exercise requires an understanding of individual or contextual differences that influence their perception of value (Higgins, 2002).

Motivation to exercise can be approached by distinguishing extrinsic from intrinsic motivation (Buckworth et al., 2007; Deci & Ryan, 2000), and how both relate to a consumers‘ perception of value. Extrinsic motivation results from an individual assigning value to some consumption experience that is instrumental to obtaining something external (Patrick & Canevello, 2011). Extrinsic motivation thus promotes behaviors through external contingent outcomes, and the purpose of doing something is to gain benefits or to avoid negative consequences, which usually results in negative, chore-like experiences (Choi & Fishbach, in press). In contrast, intrinsically motivated behavior is associated with more positive experiences of goal attainment, resulting from an individual assigning value to some consumption experience that becomes an end in itself (Holbrook, 1986; Holbrook & Gardner, 1998). That is, with intrinsic motivation, the purpose of doing something resides in the sheer satisfaction of the behavior in itself. For example, a sedentary consumer running on the treadmill following her physician‘s orders will likely view it as an effortful experience, whereas an active exerciser might complete the same task just for the sake of developing her running skills, and will therefore view it as an enjoyable experience. The latter‘s goal of developing personal competence co-occurs with the running activity and is therefore integrated into the behavior (Choi & Fishbach, in press).

Although both intrinsic and extrinsic motivational strategies are used to induce exercising, literature on sports psychology resembles other fields—such as research in education—in that it considers intrinsic motives more effective in enhancing performance, across all conditions and individuals (Black & Deci, 2000; Buckworth et al., 2007). Extrinsic motives might succeed in inducing some exercise regulation, but a person driven solely by external pressures is likely to experience conflict between her goals and inner self and will require effortful self-regulation to guide her behavior (Deci & Ryan, 2008a) or to persist in it (Baumeister, 2002; Baumeister, Sparks, Stillman, & Vohs, 2008; Hagger et al., 2010). As a result, extrinsic rewards could be detrimental to learning and to a sustained motivation to exercise, and intrinsically motivated exercise is more likely to be developed and maintained in the absence of external reinforcers (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 2000; Frederick & Ryan, 1995), a suggestion consistent with earlier findings on the undermining effect of tangible rewards on an otherwise intrinsically-motivated behavior (Deci, 1971; Ransen, 1980; Sandelands, Ashford, & Dutton, 1983).

Curiously enough, many marketing communications rely on extrinsic reasons to persuade people to exercise, such as the promise of looking good to others or the threat of having future health issues. If intrinsic motivation is indeed more effective than extrinsic motivation, appealing to extrinsic pressures could account for the relatively low effectiveness of many interventions because consumers would conceive an extrinsically motivated task as effortful and resource consuming (Choi & Fishbach, in press). As a result, exercise can be perceived by sedentary people as self-control conflicts between the temptation of indulging in lazy, relaxed behaviors and the goal of being healthier or looking better (Fedorikhin & Patrick, 2010; Hong & Lee, 2008; Zhang et al., 2010). Still, many interventions do succeed in persuading people to exercise by appealing to extrinsic

motives. A possible explanation for these—apparently contradictory—extrinsic successes is that many marketing communications stress the potential outcomes of a certain behavior to make the consumer transcend the immediate situation and consider its long term consequences (Nenkov, Inman, & Hulland, 2008). The rationale behind such strategies is that, by increasing a target‘s elaboration on potential outcomes, they improve her capacity to self-regulate and to act in consequence. Furthermore, making consumers conscious of the importance of healthy exercising and of the adequate manners to approach a sport practice could actually facilitate a process of progressive internalization of external motives, up to a point where these external motives are so integrated into the consumer‘s self that they actually resemble intrinsic motivators (Deci & Ryan, 2008a). As such, integrated extrinsic motives might be very powerful drivers of healthy exercising, provided that the person so fully integrates the value of the behavior that she perceives the locus of causality as originating within herself (Chan & Mukhopadhyay, 2010).

There is another explanation for the apparent contradiction posed by the observation that extrinsically framed marketing communications sometimes succeed in inducing greater exercise. Despite indications that intrinsic motivation is an effective driver of sustained physical activity, some studies indicate a positive relationship between extrinsic motives and intention to engage in healthy behaviors (Hagger & Chatzisarantis, 2009). Especially in the initial stages of a sport practice, or when there is a strong discrepancy between the consumer‘s perception of her physical fitness and socially accepted standards, exercise adoption has been shown to relate with extrinsic motives (Ingledew & Markland, 2008; Ingledew & Sullivan, 2002; Markland & Ingledew, 2007). External motives to exercise could actually be adaptive in facilitating subsequent engagement in exercise (Gillison, Osborn, Standage, & Skevington, 2009; Rose, Parfitt, & Williams,

2005). If sedentary people find physical activities inherently unpleasant (Cherubini, 2009; Ekelund et al., 2007), so that the mere decision to exercise is a psychologically taxing decision, external pressures might facilitate such a difficult decision (Botti & lyengar, 2004; Botti et al., 2009). Furthermore, as long as physical activity is perceived as unpleasant and unappealing, external, controlling forms of motivation could serve a purpose in keeping people‘s resolution to exercise.

Moreover, because sedentary consumers are likely to be more uncertain of their commitment to exercise (Fishbach, Eyal, & Finkelstein, 2010), external pressures might actually strengthen such commitment and thus, not only enhance their willingness to initiate a sport practice, but also facilitate their self-control capacity upon facing such challenge (Zhang et al., 2010). That is, sedentary consumers, who are presumably less committed to physical activity than more active exercisers, might be better induced to self-control by extrinsic motives that emphasize their (scarce) progress towards accomplishing the goal of being healthier, rather than by signals of how long a way they still have to go (Fishbach & Dhar, 2005; Koo & Fishbach, 2008).

In contrast, active people will likely perceive physical activity as a pleasant, preferred alternative, thus making any extrinsic pressures unnecessary. Furthermore, should (already) active people keep focusing only on the progress made, they might feel liberated to pursue alternative goals and quit exercising, which suggests that motivational appeals should switch at some point in time to more intrinsic forms of motivation that do not emphasize progress but rather commitment to the end goal of sustained exercise at a high(er) level (Martin, Ward, Achee, & Wyer Jr, 1993). Once a consumer is actively exercising it can be assumed that she is committed to physical activity, and therefore should respond better to messages that focus on how enjoyable the task at hand is, and

how they can become better at doing it, rather than messages that emphasize the progress they have made (or they can make). This is consistent with extant consumer research that indicates that people who focus on the progress they have already made feel satisfied by their accomplishment but are less motivated to advance to a higher level.

In short, consistent with previous research on other health-related behaviors (Curry et al., 1990), it is likely that initiation in an exercise program can be better achieved through an extrinsic trigger, whereas long-term maintenance of an exercise routine might require a more intrinsic approach (Buckworth et al., 2007). As people change their priorities with time, their perception of physical activity might change as well (Lepper et al., 2005), so that they might be better off with extrinsic or intrinsic motivation to exercise, depending on the circumstances(Lilyquist, 2005). There is no current consensus on this matter, however, and evidence is mixed on the relative effectiveness of each type of motivation in inducing exercise (Checko, 2008; Hagger & Chatzisarantis, 2009; Lilyquist, 2005). In particular, the notion that an extrinsic approach could be more effective for some people than an intrinsic approach is suggested by only a few studies, with only correlational evidence.

THE SELF-DETERMINATION MOTIVATIONAL CONTINUUM

Self-Determination Theory could help explain the process leading from an externally-initiated to an intrinsically-maintained exercise behavior (Deci & Ryan, 2008a). Per SDT, a person‘s motivation progresses along a continuum that extends from non-motivation to intrinsic motivation, passing through successive stages of increasing integration of extrinsic motives (Figure 1). Although previous research has linked both extrinsic and intrinsic motivation with exercise, most SDT-based evidence indicates that the more self-determined (integrated-extrinsic and intrinsic) forms of motivation are more effective in enhancing athletes‘ performance than other, more extrinsic motives. Furthermore, self-determined motivation has been shown to relate with athletes‘ well-being, a fact likely associated to an ongoing satisfaction of their basic psychological needs of competence, relatedness and autonomy (Wilson, Mack, & Grattan, 2008).

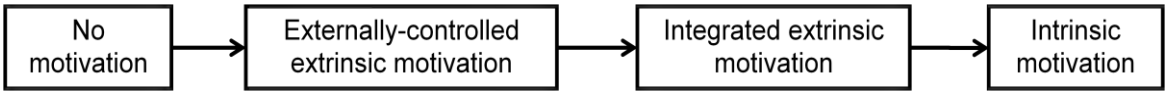

Figure 1. A simplified version of the SDT‘s motivational continuum (Deci & Ryan, 2008a, 2008b).

Traditional strategies to promote exercise appeal to task-contingent rewards or punishments to induce externally-controlled behaviors. Further internalization of such extrinsic motives will advance the individual along the continuum, until a stage where the motives are completely integrated to the person‘s self, so that the motivated behaviors

become truly self-determined. As such, integrated extrinsic motivation is similar to intrinsic motivation, for both are accompanied by a sense of volition and choice, and can be treated as a form of intrinsic motivation for all practical purposes. Self-determined behaviors are particularly relevant to studies within the sports (Chatzisarantis & Hagger, 2009; Edmunds et al., 2006; Edmunds, Ntoumanis, & Duda, 2007; Hagger & Chatzisarantis, 2008; Hagger & Chatzisarantis, 2007; Mata et al., 2009; Patrick & Canevello, 2011; Vansteenkiste, Matos, Lens, & Soenens, 2007; Vansteenkiste, Mouratidis, & Lens, 2010; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Wilson et al., 2008) and health (Burstyn, Jonasi, & Wild, 2010; Deci & Ryan, 2008b; Fortier et al., 2009; Hagger, 2009; Hagger & Chatzisarantis, 2009; Kosmala-Anderson, Wallace, & Turner, 2010; Silva et al., 2008; Silva et al., 2010; Williams et al., 2006; Williams, McGregor, Zeldman, Freedman, & Deci, 2004; Williams et al., 2009) domains. Because SDT specifies both the motivation process that leads to behavioral changes and the contextual conditions that foster further development of the changed behaviors (Wilson et al., 2008), this framework is useful both to induce people into initiating and into persisting in a healthy sport practice. And yet, SDT has been largely ignored by the consumer behavior literature and by studies on healthy exercise marketing. Some notable exceptions on the application of SDT in marketing contexts include studies on quality of consumer decisions (Choi & Fishbach, in press; Moller, Ryan, & Deci, 2006), senior adults‘ well-being (Webster, 2008), and just but a handful of papers on health or physical activity (Horne, 1994; Huang, Hung, Chang, & Chang, 2009; Sharpe et al., 2010).

A STAGED CHANGE APPROACH TO PHYSICAL ACTIVITY

The progression from an extrinsically-initiated to an intrinsically-maintained exercise routine can be further explained by the Transtheoretical Model, that posits that people move through successive stages while making an intentional behavior change (Prochaska et al., 2003). Per TTM, a person‘s exercise status can be categorized along successive stages of precontemplation (inactive with no intention to start exercising), contemplation (inactive, with the intent to start exercising within 6 months), preparation (physical activity below accepted standards), action (participation in regular exercise for less than 6 months), and maintenance (participation in regular exercise for 6 or more months) (Buckworth et al., 2007; Rosen, 2000). Figure 2 illustrates how this readiness-for-exercise scale fits the SDT‘s motivational continuum. Although there is little data on stages of motivational readiness for physical activity (Sherwood & Jeffery, 2000), there is some evidence that controlling extrinsic motives dominate earlier stages of change, while integrated extrinsic and intrinsic motives are more common amongst active exercisers (Ingledew et al., 1998; Ingledew & Sullivan, 2002; Markland & Ingledew, 2007).

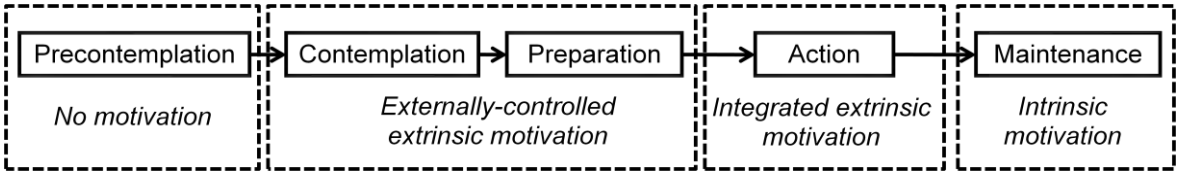

Figure 2. A readiness-for-exercise change model, overlapping the SDT‘s motivational continuum (Deci & Ryan, 2008a, 2008b) and the readiness-for-exercise scale (Buckworth et al., 2007).

The cognitive processes behind people‘s choices might explain why earlier stages of change might need extrinsic controls whereas later stages respond better to intrinsic motives. Making the decision to start an unpleasant exercise practice might be a taxing psychological burden for sedentary people, thus requiring external controls or pressures to help them make such decision (Botti & lyengar, 2004; Botti et al., 2009). Sedentary consumers might thus need an extrinsic ―jolt" to get up and running, whereas more active people probably find the task pleasant and therefore are intrinsically motivated by the exercise behavior per se. If this is the case, extrinsic motives could be adaptive and instrumental in facilitating subsequent engagement in physical activity (Gillison et al., 2009; Rose et al., 2005). It follows that those people who are midway between the sedentary and truly active stages—for instance, the ―weekend warriors" who exercise sporadically but not regularly enough—need to switch at some point from extrinsic to intrinsic motivation to progress along the motivational continuum and be able to maintain a sport routine. It could be that these ambivalent semi-sedentary (or semi-active) consumers require a combination of both extrinsic and intrinsic motives to keep going until they are truly active, an alternative to the gradual integration of extrinsic reasons posited by SDT.

In sum, healthy exercise can be initially induced by extrinsic motivators but attempting to move consumers from early stages of motivational readiness for exercise into actual exercising based only on extrinsic reasons, without facilitating the development of intrinsic motivation to sustain the change, could result in lapses and abandonment (Curry et al., 1990; Ryan & Deci, 2000). To maintain an exercise routine, extrinsic controls should be replaced by progressively integrated motives, until the

exercising behavior is intrinsically motivating per se (Choi & Fishbach, in press; Holbrook, 1986; Holbrook & Gardner, 1998). Previous research on self-determined behavior suggests that such intrinsic motivation to exercise will be strongest if the physical activity satisfies a basic psychological need of competence, relatedness, or autonomy (Deci & Ryan, 2000). Moreover, there is substantial evidence that ongoing satisfaction of a person‘s needs of competence, relatedness, and autonomy results in enhanced well-being and increased—intrinsic—motivation to further engage in psychological needs-satisfying behaviors (Sheldon & Niemiec, 2006; Wilson et al., 2008). In other words, an exercise practice that fosters satisfaction of a person‘s need for competence, relatedness, or autonomy, will be more intrinsically motivating than exercising for only external reasons.

THE PRESENT RESEARCH

Self-determination research tends to dismiss the more controlled—extrinsic—forms of motivation as less effective than the higher-order, more self-determined—intrinsic—types of motivation, even for the least motivated (e.g., sedentary) people (Black & Deci, 2000; Patrick & Canevello, 2011). On the other hand, consumer behavior literature and marketing communications aimed at inducing healthy behaviors tend to appeal to external, controlling motives in order to persuade people into regulating their impulses and adopt healthy habits. Evidence on the relative effectiveness of both types of motivation is mixed or not conclusive, and, to the best of my knowledge, extrinsic motivation has not been experimentally contrasted with intrinsic motivation across different stages of exercise.

The apparent contradiction between (extrinsic) marketing practitioners and (intrinsic) sports psychologists might be better understood from a contingent perspective that considers a person‘s exercise status. Connecting SDT, TTM and choice processes, I contend that whereas *sedentary* consumers might respond better to external pressures to initiate a sport practice, inducing *active* exercisers to increase their physical activity requires more intrinsic reasons. Figure 3 illustrates such staged motivation approach to enhancing a progressive adoption of exercise habits.

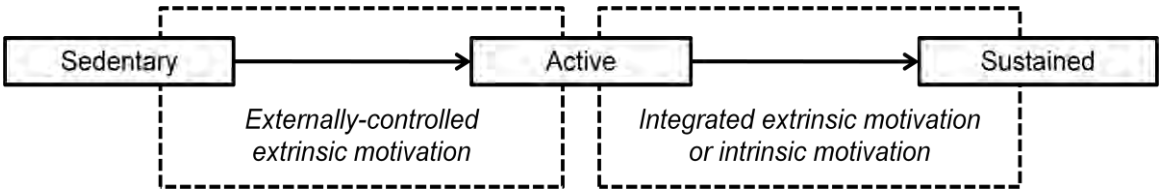

Figure 3. Motivating progress along successive stages of exercise.

Within this framework, consumers might be effectively persuaded to start exercising by extrinsic incentives (e.g., discounts or reimbursement in gym fees), while intrinsic motivation develops, but extrinsic rewards should be faded out during later stages (e.g., by combining tangible rewards with verbal positive feedback) to facilitate development of a routine. Eventually, exercise in itself will be the motivation to maintain an active behavior (Deci & Ryan, 2000).

Marketing messages have been shown to be more effective when they are framed to target a specific group of consumers (Keller & Lehmann, 2008). It follows that exercise persuasion messages should be tailored to prime extrinsic or intrinsic motivation depending on a person‘s current exercise status. More particularly, I expect sedentary people to respond better to extrinsic motives, such as receiving *recognition* from other people, than to more intrinsic motives, such as developing personal *competence* or *relating* to other people in meaningful ways. Recognition is an especially adequate choice for extrinsically motivating sedentary consumers, given that they are more likely to need such type of positive feedback for being able to do something they are not particularly inclined to do. That is, because they are likely to evaluate their physical activity actions in terms of how committed they are to them (Fishbach et al., 2010), that is, whether they are willing enough to do it, external recognition should strengthen such commitment and help them initiate an exercise practice. Therefore,

H_{1a}: *Appeals to recognition (an extrinsic motive), relative to appeals to competence (an intrinsic motive), are positively related to physical activity for sedentary individuals.*

H_{1b}: *Appeals to recognition (an extrinsic motive), relative to appeals to relatedness (an intrinsic motive), are positively related to physical activity for sedentary individuals.*

Conversely, I expect that people who are already active—or who are persuaded into actually initiating an exercise practice—will likely find physical activity inherently pleasant and therefore do it for the sake of it. In this case, the act of exercising will enhance the subject‘s vitality (Frederick & Ryan, 1995; Ryan & Deci, 2008; Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997), making extrinsic incentives not only unnecessary but probably detrimental to motivation. Moreover, should an extrinsic focus on recognizing progress be maintained after an individual has started exercising, she would likely switch to pursue alternative, self-indulgent goals (Fishbach & Dhar, 2005). Motivational appeal should therefore switch to a focus on a task-inherent goal, such as learning or developing one‘s social skills. That is,

H_{2a}: *Appeals to competence, relative to appeals to recognition, are positively related to physical activity for active individuals.*

H_{2b}: *Appeals to relatedness, relative to appeals to recognition, are positively related to physical activity for active individuals.*

Research on self-determined motivation predicts that satisfaction of either competence or relatedness results in intrinsic motivation. Therefore, I expect both motives to be similarly effective in persuading people to exercise, regardless of their exercise status. That is,

H_{3a}: *Appeals to competence and appeals to relatedness do not differ in their relationship with physical activity, for sedentary individuals.*

H_{3b}: *Appeals to competence and appeals to relatedness do not differ in their relationship with physical activity, for active individuals.*

To test these hypotheses, I conducted two experiments aimed at manipulating alternative motives to engage in healthy exercising. Respectively, I labeled these motives *recognition*, *competence* and *relatedness*. I achieved manipulation effects by providing participants with differently framed messages on the benefits of walking regularly. Messages were similar in content, structure and extension, and they differed only in the specific motives that people have for walking. I also assessed participants‘ individual differences in physical activity habits, to connect their current exercise status to their exercise performance throughout the study.

STUDY 1

The first study, conducted in a private university in Colombia, tested the interactive effect of exercise status and type of motivation on exercise behavior. To assess exercise behavior I asked participants to increase their physical activity above their current level and evaluated this for a period of six days through a daily log and—for some participants—by wearing a pedometer.

Method

Undergraduate students from different majors and semesters were invited to participate in this study. To facilitate the experiment‘s logistics, different invitation e-mails were sent every week, for 3 weeks, starting with freshman students and ending with senior students. In exchange for their participation in the study, for each respondent who provided data on her exercise behavior for at least one day, $1.50 were donated to a charitable cause. Students were informed about this contribution during the recruitment process and were notified of the donation being effective upon completion of the study. To begin their participation, respondents logged into an on-line survey that asked them about their individual characteristics and exercise habits. Upon logging in to this survey, before answering any questions, participants were asked to read a consent form that described the particular study and measures taken to protect participants‘ privacy. A total of 349 students logged into the on-line survey; 102 respondents (60.8% female, 39.2%

male) agreed to participate and completed the initial questionnaire; and 64 respondents (57.8% female, 42.2% male) provided one or more days of reports on their physical activity, following the manipulation of motivation. Participants who took part in the experiment were randomly assigned to one of two conditions—respectively labeled recognition (*extrinsic)* and competence (*intrinsic)*—that determined which type of manipulation they received.

After completing the initial questionnaire, respondents were asked to come to the business school‘s offices the following Monday for the next part of the study. There, participants were given instructions on what to do during the rest of the study and an exercise log to record their physical activity every day for six days. The instructions were explicit in that my study investigates participants‘ physical activity, in general. Most participants, randomly, were also issued digital pedometers to record the number of steps they walked every day, as an alternative measure of physical activity. Participants who received a pedometer were asked to fill out the number of steps they walked every day in addition to the data recorded in the exercise log.

On the evening of the day they received their instructions, participants received an e-mail reminding them to record all physical activities, starting the following day. They were also encouraged to walk every day, for exercise or during their regular activities. Each participant was given a custom walking goal, based on her self-reported exercise status, varying from 30 minutes at a brisk pace or 45 minutes at a moderate pace, for the most sedentary, to 1:15 hours at a brisk pace or 2 hours at a moderate pace for the most active. The goal was proportional to each subject‘s baseline exercise status, and I set it to moderately increase physical activity with about the same difficulty for all participants. Walking was chosen both because it is an activity that can be done by all participants,

without disrupting their regular activities and because it directly connects to the magazine articles‘ manipulation. I expected, however, that both walking and overall exercise would increase as a result of the manipulation, given previous findings on the ―spill-over" effect that takes place when engaging in a healthy behavior results in increased motivation to engage in other healthy behaviors (Mata et al., 2009).

On Day 1 (Tuesday), participants received an e-mail with the link for the first on-line log. The information recorded this day served as a benchmark measure for individual physical activity. This e-mail also included a web link to a made-up magazine article from a non-existent publication (Healthy Lifestyle Magazine), written by a fictitious author, that elaborated on the benefits of walking and offered several reasons why humans have always walked, adapting reasons offered by a popular website on healthy fitness walking (Greenfootsteps, 2010). After filling out their benchmark information, participants were prompted to read the article. The article read by each participant depended on the condition she was randomly assigned to on the first day. Participants under the extrinsic condition read an article titled ―Walk up to a sense of pride and tell others how good you are," that presented walking as an effective means to achieving social recognition and thus primed an extrinsic motivation. Participants in the intrinsic condition read an article titled ―Walk up to achieving a challenge and feel good for who you are," that presented walking as a means to developing personal competence and thus primed an intrinsic motivation.

Every evening following manipulation (Day 2, Wednesday, to Day 6, Sunday), participants received an e-mail reminding them to fill out their daily log and providing a link to the appropriate on-line survey. This e-mail also reinforced the manipulation by restating one of the article‘s key manipulation statements (e.g., ―…we walked to prove to others…" for extrinsic recognition or ―…we walked to prove to ourselves…" for intrinsic

competence). At the end of the study, participants were thanked and debriefed, via e-mail. I repeated this procedure for three weeks, so that every Monday a new cohort started their participation. Overall, participants were expected to spend about one hour during the study, over and above time spent exercising.

Measures

The design of the study was *current exercise status* (continuous) x *motivational manipulation* (recognition or competence). Current exercise status (EXE) was measured with the Readiness-for-Exercise Scale (RFES), a version of the Stage of Change Questionnaire adapted to exercise (Buckworth et al., 2007; Marcus, Rakowski, & Rossi, 1992). Per this scale, a respondent‘s readiness for exercise can range from *pre-contemplation*, for those respondents who are not exercising and do not intend to exercise, to *maintenance*, for respondents who have been exercising regularly for more than six months. Regular exercise is defined as exercising three or more times per week, for a minimum of 20 minutes each time (American College of Sports Medicine, 1990). In addition to the 5 basic stages of the RFES, I also included a sixth level to identify dedicated athletes. Participants in the RFES‘ stages of pre-contemplation, contemplation and preparation were categorized as *sedentary*, whereas participants in the action, maintenance and athlete stages were classified as *active*. For statistical analyses, I computed exercise status as a continuous variable with values ranging from 1 to 6.

Exercise behavior as a criterion was measured using a custom on-line exercise log. This log provided daily information on the participant‘s exercise behavior in terms of the intensity of the physical activity and the time spent doing it, during six days. Exercise data

included both walking and other physical activities to have a more comprehensive measure of physical exercise. To provide a standard measure across participants, individual information on exercise time and intensity was converted into metabolic equivalent units (METs) using web-based charts from The Compendium of Physical Activities (University of South Carolina, 2010). The daily log also included *steps* walked each day, as recorded with digital pedometers randomly issued to some participants. Pedometers have been widely used in studies on exercise and health, with varied results (Hospes, Bossenbroek, ten Hacken, van Hengel, & de Greef, 2009; McClain & Tudor-Locke, 2009; Tudor-Locke & Lutes, 2009; Weston, Petosa, & Pate, 1997). I used the pedometer to have an alternative exercise measure, supplementary to the exercise log.

On the last day's survey, participants were also asked what they recalled from the article to check manipulation. Check questions included two items related to extrinsic recognition (i.e., "the magazine article I read communicated the importance of having my effort acknowledged" and "… showing others how good I currently am") and two items related to intrinsic competence (i.e., "… feeling good about my effort" and "… proving to myself how good I currently am"). The manipulation check items showed good internal reliability, with Cronbach's alpha standardized values of .81 for the competence items and .86 for the recognition items (n=55). Extrinsic recognition and intrinsic competence show a high correlation ($r=.70$, $p<.0001$, $n=55$), something that is consistent with recent research on motivational orientation (Lepper et al., 2005). That is, rather than being opposing poles on a single dimension, extrinsic and intrinsic motivation can actually coexist within individuals, without (necessarily) hampering overall motivation. Thus, to check my recognition manipulation, I conducted an analysis of variance (ANOVA) with the average of the recognition check items as the criterion and type of manipulation

(competence or recognition) x exercise status (continuous) as the predictors, using competence scale as a covariate. The ANOVA revealed only a main effect for the recognition manipulation ($F_{(1,50)}$=4.44, p<.05, n=55), with a significantly higher mean score (mean for recognition article=3.15 versus competence=2.48). Similarly, there was a main effect of the competence manipulation ($F_{(1,50)}$=4.13, p<.05, n=55; mean for competence=4.10 versus recognition=3.68), indicating that the manipulation was effective. Notably, although weak, the manipulation check was still significant one week after conducting the manipulation.

Results and Discussion

Seven of the 64 participants reported unrealistically high baseline activity levels so they were excluded from the analyses. To test my hypotheses, I used both steps and METs as criteria and conducted ANOVA analyses with manipulation (competence or recognition) x standardized exercise status (ZEXE, continuous) as predictors. Standardizing exercise status by centering it at its mean and dividing it by its standard deviation (SD) facilitates plotting and interpretation of effects at meaningful values of the continuous variable (Dawson & Richter, 2006; Waller, Williams, Tangari, & Burton, 2010; West, Aiken, & Krull, 1996), such as at the mean—which takes a value of zero—or at specific values of +/- SD from the mean. The ANOVAs thus permit contrasting the relative effects of my manipulation on sedentary and active behaviors by plotting the effects at -1.5 SD and +1.5 SD, respectively, about a standardized mean of ZEXE=0.

The ANOVA revealed a significant interaction between manipulation and exercise status on METs as the criterion, one day after manipulation ($F=8.66_{(1,52)}$, p<.01, n=56).

Simple slope analysis shows that sedentary individuals exercise more when given a recognition appeal, relative to competence (15.93 versus 2.14 METs, respectively; $t_{(56)}$=2.49, p<.05), whereas active individuals exercise more when given a competence appeal, relative to recognition (19.01 vs. 6.04 METs, respectively; $t_{(56)}$=2.41, p<.05). The ANOVA also revealed a main effect of exercise status on steps the day after reading the magazine article ($F_{(1,40)}$=7.39, p<.01, n=44), qualified by a significant interaction between manipulation and exercise status ($F_{(1,40)}$=5.57, p<.05, n=44). Slope analysis shows that active individuals (ZEXE = +1.5 SD) walk more with a competence appeal, relative to recognition (8,670 vs. 5,581 steps, respectively; $t_{(44)}$=2.53, p<.05). Sedentary individuals (ZEXE = -1.5 SD) showed directionally consistent but not significant results (5,218 vs. 3,510 steps, respectively; $t_{(44)}$=1.42, n.s.). These interactions are shown in Figures 4 and 5.

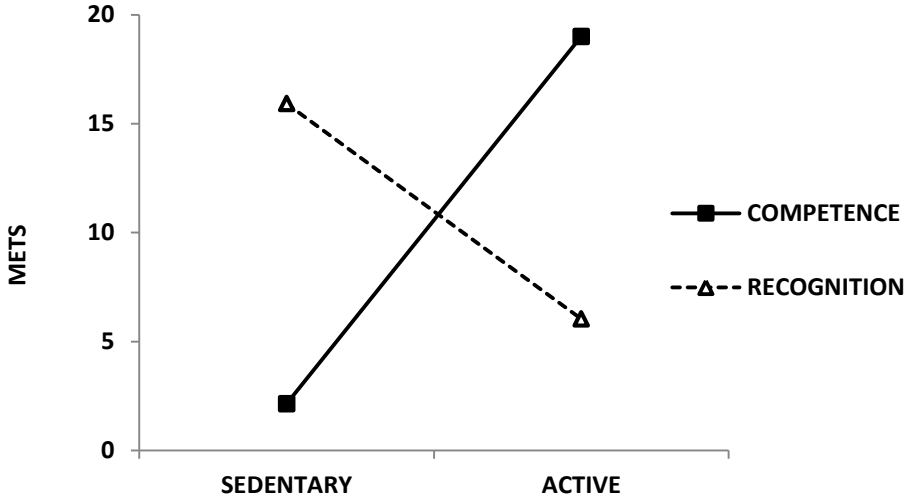

Figure 4. Study 1 – Effect of type of motivation (competence vs. recognition) x exercise status on overall exercise, one day after manipulation.

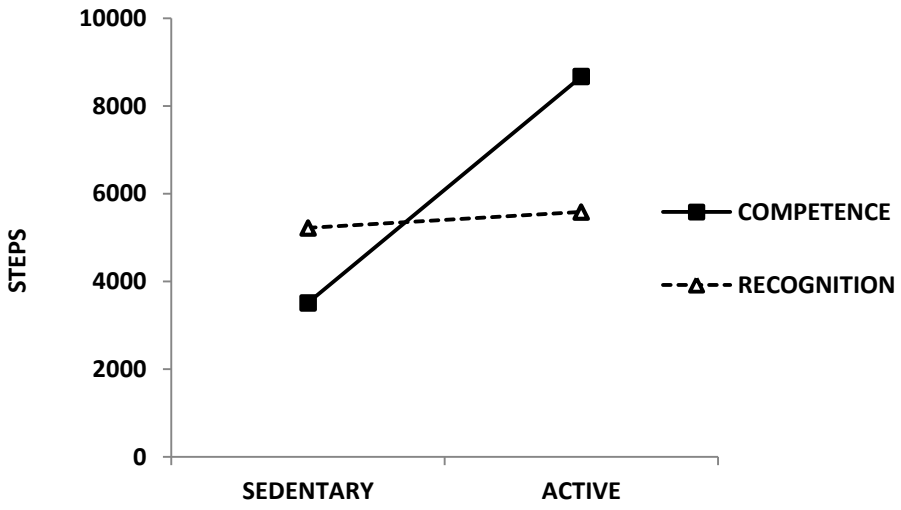

Figure 5. Study 1 – Effect of type of motivation (competence vs. recognition) x exercise status on steps walked, one day after manipulation.

Although weaker than on the first day after manipulation, the interaction effect is still significant when conducting the analysis for the complete 5-day follow-up period, averaging METs exercise measures ($F_{(1,53)}$=6.03, p<.05, n=57). Slope analysis shows that sedentary individuals exercise more after a recognition appeal, relative to a competence appeal (13.97 vs. 4.47 METs, respectively; $t_{(57)}$=2.33, p<.05), whereas active individuals exercise more when given a recognition appeal, relative to a competence appeal (14.26 versus 7.15 METs, respectively; $t_{(57)}$=2.41, p=.08)[2], as shown in Figure 6.

[2] The initial individual differences survey also asked respondents to provide their typical weekly exercise behavior (MET0), computed using similar data as that recorded on the exercise log. MET0 was used to further validate my hypotheses, in addition to the EXE measure. Running the ANOVA using MET0 as baseline exercise status, in lieu of EXE, revealed directionally consistent results both for the interaction ($F_{(1,47)}$=3.79, p=.0576, n=51) and for the slope analysis (competence=17.14 METs vs. recognition=7.21 METs, $t_{(51)}$=1.64, n.s, for active participants; recognition=14.24 METs vs. competence=4.15 METs, $t_{(51)}$=1.61, n.s., for sedentary participants), at Day 1 after manipulation. These effects held very similarly for the entire follow-up period, as well.

Using 5-day average steps as the DV does not show a significant interaction ($F_{(1,41)}$=1.03, n.s., n=45) but the directions are as expected both for active (competence=7,951 vs. recognition=6,271; $t_{(45)}$=1.05, n.s.) and for sedentary (recognition=5,626 vs. competence=4,605; $t_{(45)}$=.65, n.s.), as shown in Figure 7.

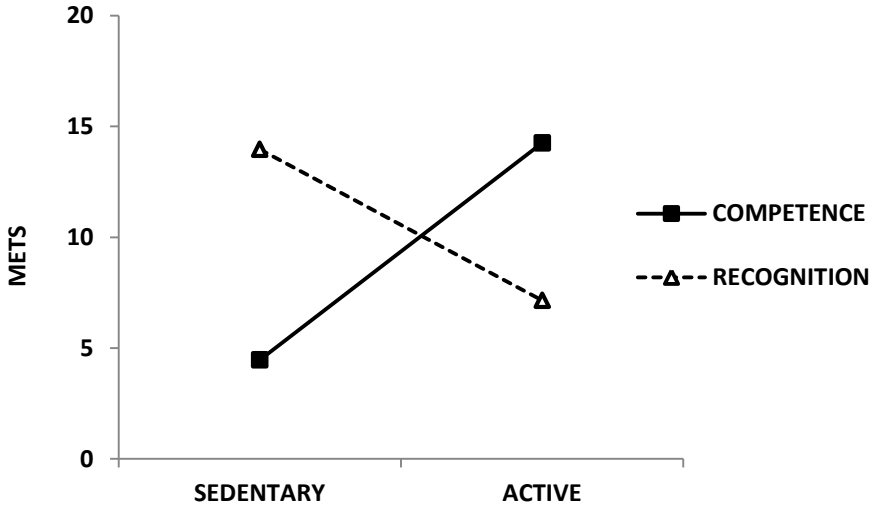

Figure 6. Study 1 – Effect of type of motivation (competence vs. recognition) x exercise status on overall exercise, averaged over follow-up (5 days following manipulation).

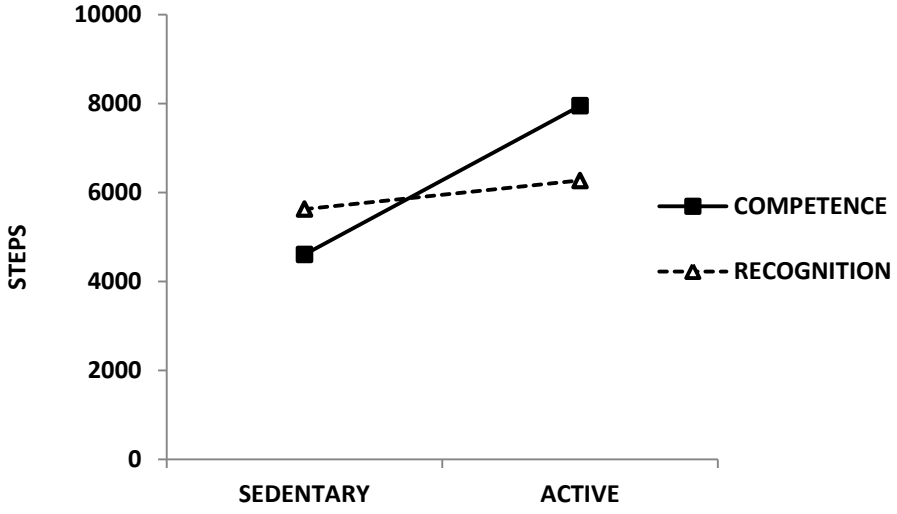

Figure 7. Study 1 – Effect of type of motivation (competence vs. recognition) x exercise status on steps walked, averaged over follow-up (5 days following manipulation).

These results provide support for hypotheses H_{1a}, which predicted that appeals to recognition are more effective than appeals to competence in motivating physical activity for sedentary individuals, and H_{2a}, which predicted that appeals to competence are more effective than appeals to recognition in motivating physical activity for active individuals. The interaction effect is consistently significant for METs during the entire period, and particularly strong for active people. For steps, interaction is only significant the day after the manipulation, although the direction of the effects correspond to the hypothesized relationships. The weaker effect observed with steps as the criterion might suggest that participants—especially sedentary individuals—are not very accurate at estimating their exercise behavior. That is, sedentary participants could be overestimating their actual exercise when filling out their logs, whereas this is not an issue with the (more objective) pedometer count. Another possibility is that sedentary people somehow feel that they have already satisfied their need for exercise by the sheer act of wearing a pedometer, thus being less motivated to actually work out.

STUDY 2

Study 2, conducted at a private university in the United States, increased the confidence in the results by manipulating the participants‘ need for *relatedness* as an alternative form of intrinsic motivation, and by further contrasting it with extrinsic recognition. The addition of recognition increases the generalizability of results to different forms of intrinsic motivation.

Method

Approximately 280 freshman students were recruited to participate in this study, using a web-based procedure hosted by Sona Systems. In exchange for their participation, students were offered 2 percentage point credit towards their final course grade. If they chose not to participate, they were offered the alternative of reading a short article and writing a summary reporting the method described in it as an alternative way to earn the credit. This alternative task was in lieu of study time and should take them between one and two hours to complete, approximately equivalent to the total time estimated to complete all the questionnaires and online surveys.

Participants spent approximately 45 minutes in a lab session, reading an information sheet, completing an on-line survey on their exercise habits, and reading randomly assigned made-up magazine articles about the benefits of exercising. After reading and discussing an information sheet, participants were randomly assigned to one of three

motivational conditions (*recognition*, *competence* or *relatedness*) and then read the magazine article corresponding to their specific manipulation condition. After completing the individual differences questionnaire, participants were asked to read a made-up magazine article on the benefits of exercising. One group read about physical activities (walking) as an effective means to achieving social recognition, thus priming an extrinsic motivation to exercise (i.e., ―Walk proud and tell others how good you are"); a second group read about physical activities being a means to developing personal skills, thus priming an intrinsic motivation to exercise based on competence (i.e., ―Walk up to a challenge and feel good"); and a third group read about physical activities as a means to build social relationships, thus priming an intrinsic motivation to exercise based on relatedness (i.e., ―Walk with your friends and feel good"). All the articles were similar in structure, layout and extension, differing only in the specific type of motivation primed. After reading the article, participants were asked to complete a second online survey to check the specific manipulation. Manipulation check included two items for each manipulation, recognition, competence and relatedness.

At the end of the session, participants were asked to respond to a questionnaire that they would receive by email every evening, during the next six days. This questionnaire asked them about the steps they had walked and other physical activities they had done. At the end of the week, participants were thanked and debriefed. This procedure was repeated for 10 different groups, each one starting on a different day, Monday to Friday, for two weeks.

Measures

The design of the study was *exercise status* (continuous) x *manipulation* (recognition, competence or relatedness). Study design was otherwise similar to the first one. The manipulation check items showed good internal reliability, with Cronbach's alpha standardized values of .93 (r=.87, p<.0001, n=175) for recognition, .89 for competence (r=.80, p<.0001, n=175), and .88 for relatedness (r=.78, p<.0001, n=175). As in Study 1 recognition correlates with competence (r=.29, p<.0001, n=175), but it does not correlate with relatedness (r=.07, n.s., n=175). Competence and relatedness are negatively related (r=.16, p<.05, n=17). Running ANOVA with the average of the manipulation check items as the criteria and manipulation (recognition, competence or relatedness) x exercise status (continuous) as predictors revealed a main effect of each type of manipulation under the corresponding condition. That is, recognition had a main effect on the manipulation check ($F_{(1,133)}$=59.73, p<.0001, n=141), with a significantly higher mean score than the alternative manipulations (mean for recognition article=4.14 versus competence=2.30, $t_{(81)}$=7.89, p<.0001, and relatedness=2.35, $t_{(102)}$=8.19, p<.0001), after covarying the effect of the alternative manipulations out (competence and relatedness, respectively). Results were similar when conducting ANOVA for competence ($F_{(1,133)}$=17.07, p<.0001, n=141; competence article=4.87 versus recognition=3.98, $t_{(81)}$=3.56, p<.001, and relatedness=3.49, $t_{(99)}$=5.79, p<.0001), and for relatedness ($F_{(1,133)}$=50.68, p<.0001, n=141; relatedness article=4.28 versus recognition=3.12, $t_{(102)}$=9.84, p<.0001, and competence=2.29, $t_{(99)}$=9.84, p<.0001), indicating that the manipulation was effective.

Results and Discussion

Of 276 respondents who signed up, 235 completed at least one day of follow-up data, after manipulation. After discarding respondents because of missing data or unrealistically high baseline activity levels, final dataset included 181 respondents. To compare every participant‘s behavior across similar contextual conditions, during the entire follow-up period, I computed average walking and exercise performance Monday to Sunday, rather than Day 1 to Day 6. My first study suggested that exercise behavior could be different and more varied on weekends, so I compared follow-up exercise and walking performance averaged across the entire 6-day follow-up with data averaged only across weekdays (Monday to Friday). Computing ANOVA to contrast an extrinsic appeal to recognition with an intrinsic appeal to competence indicates a main effect of exercise status on exercise performance the day after manipulation ($F_{(1,71)}$=4.56, p<.05, n=75), qualified by a significant interaction between manipulation and exercise status ($F_{(1,71)}$=8.97, p<.01, n=75). Simple slope analysis shows that active individuals exercise more when given a competence appeal, relative to a recognition appeal (13.41 vs. 5.09 METs, respectively; $t_{(75)}$=3.05, p<.01). For sedentary individuals, results were directionally consistent but not significant (recognition=7.06 METs vs. competence=1.63 METs; $t_{(75)}$=1.93, p=.0576). The interaction holds for the entire follow-up period ($F_{(1,78)}$=4.78, p<.05, n=82), with active individuals exercising more when given a competence appeal, relative to a recognition appeal (8.94 vs. 4.62 METs, respectively; $t_{(82)}$=2.42, p<.05). Sedentary individuals show directionally consistent but not significant

results (recognition=5.16 METs vs. competence=2.99 METs; $t_{(82)}$=1.22, n.s.)[3]. These interactions, and their effect on sedentary and active individuals, are shown in Figures 8 and 9. Overall, results replicate those of Study 1, under different contextual conditions, thus providing further support for hypotheses H_{1a} and H_{2a}.

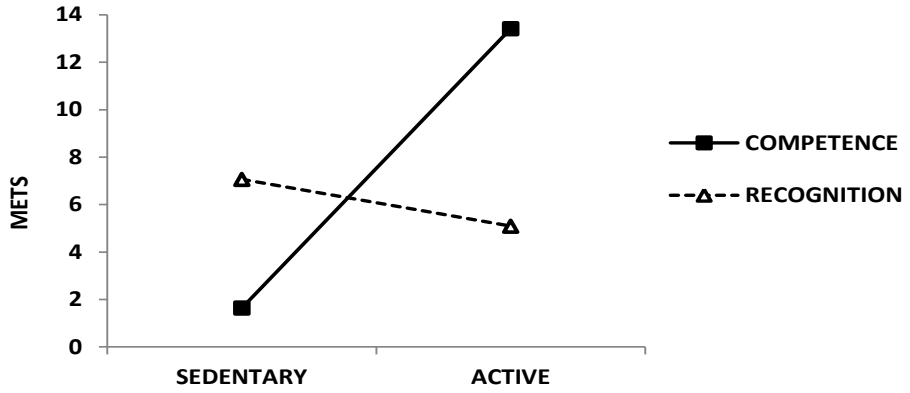

Figure 8. Study 2 – Effect of type of motivation (competence vs. recognition) x exercise status on overall exercise, one day after manipulation.

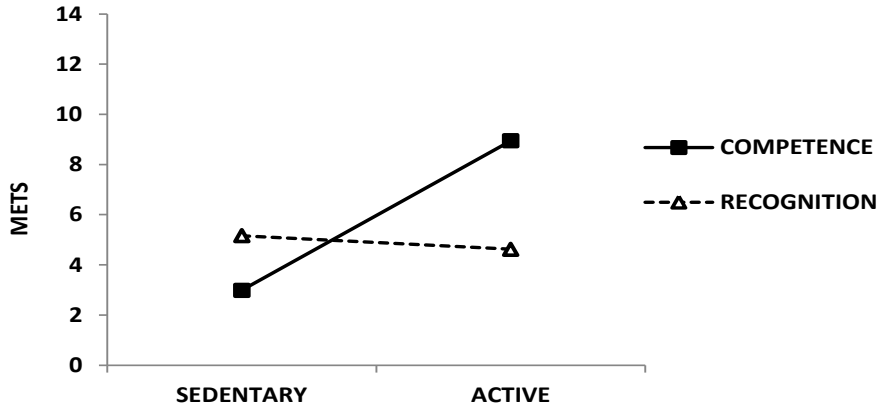

Figure 9. Study 2 – Effect of type of motivation (competence vs. recognition) x exercise status on overall exercise, averaged over follow-up (6 days following manipulation).

[3] As in Study 1, conducting ANOVA using MET0 as baseline exercise status, in lieu of EXE, revealed directionally consistent results both for the interaction ($F_{(1,70)}$=4.60, p<.05, n=74) and for the slope analysis (competence=12.45 METs vs. recognition=5.57 METs, $t_{(74)}$=2.33, p<.05, for active participants; recognition=6.48 METs vs. competence=2.79 METs, $t_{(74)}$=1.26, n.s., for sedentary participants), at Day 1 after manipulation. Effects were also directionally consistent for the entire follow-up period.

Computing ANOVA to contrast an extrinsic appeal to recognition with an intrinsic appeal to relatedness shows a significant interaction between manipulation and exercise status the day after reading the magazine article ($F_{(1,94)}$=4.79, p<.05, n=98). Slope analysis shows that active individuals exercise more when given a relatedness appeal, relative to a recognition appeal (9.71 versus 5.07 METs, respectively; $t_{(98)}$=2.01, p<.05). Results for sedentary individuals were directionally consistent to the hypothesized relationship (recognition=7.20 METs vs. relatedness=3.07 METs; $t_{(98)}$=1.69, n.s.). Although the effects were weaker, results were directionally consistent when using the average METs throughout the entire follow-up period ($F_{(1,99)}$=1.34, n.s., n=103). Simple slope analysis revealed higher scores for active people under a relatedness manipulation (relatedness=7.40 METs versus recognition=4.62 METs; $t_{(103)}$=1.65, n.s.) and for sedentary people under a recognition manipulation (recognition=5.20 METs vs. relatedness=4.61 METs; $t_{(103)}$=.33, n.s.)[4]. These interactions are shown in Figures 10 and 11.

These results provide support for hypotheses H_{1b}, which predicted that appeals to recognition are more effective than appeals to relatedness in motivating physical activity for sedentary individuals, and H_{2b}, which predicted that appeals to relatedness are more effective than appeals to recognition in motivating physical activity for active individuals.

[4] Again, using MET0 as baseline exercise status revealed results that were directionally consistent to using EXE as baseline exercise status.

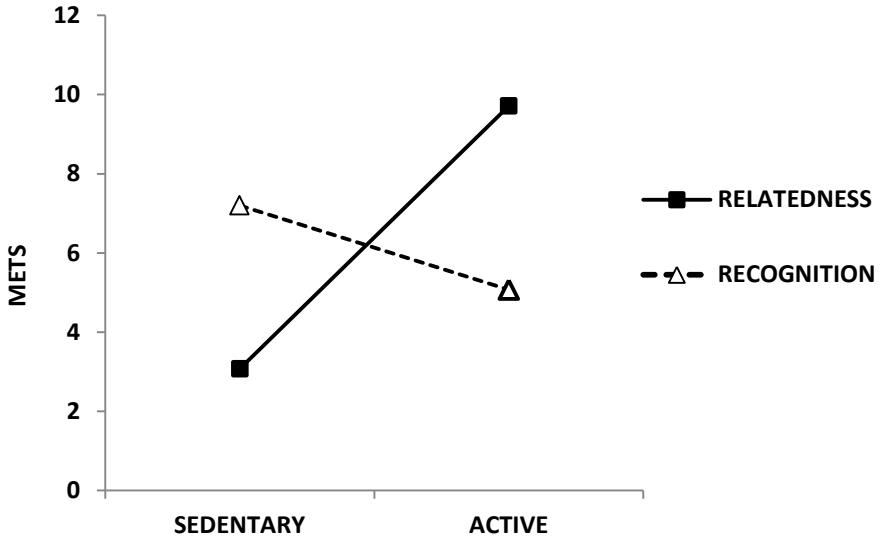

Figure 10. Study 2 – Effect of type of motivation (relatedness vs. recognition) x exercise status on overall exercise, one day after manipulation.

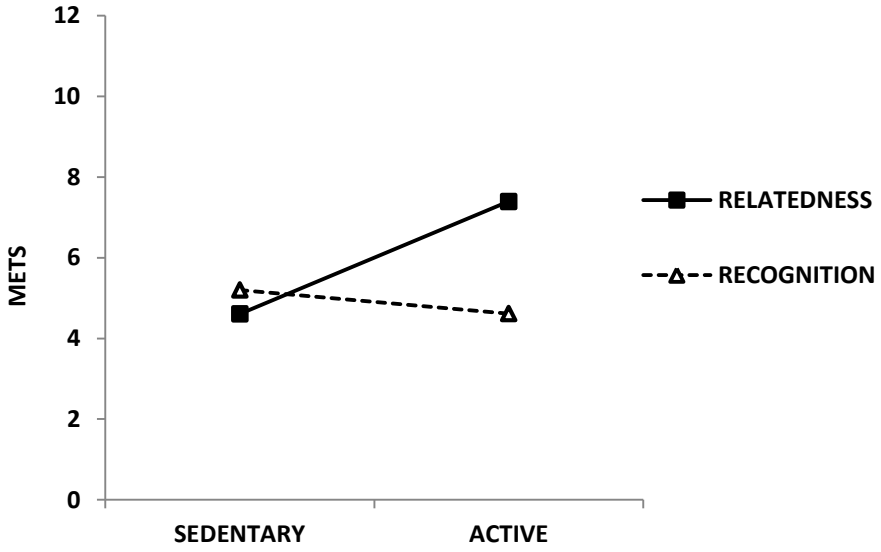

Figure 11. Study 2 – Effect of type of motivation (relatedness vs. recognition) x exercise status on overall exercise, averaged over follow-up (6 days following manipulation).

The literature reviewed did not suggest that either intrinsic motive of competence or relatedness is superior to the other in motivating sedentary or active individuals to exercise. Computing ANOVAs to contrast both intrinsic appeals to relatedness and competence indicates only a main effect of exercise status on exercise performance the day after manipulation ($F_{(1,87)}$=23.94, p<.0001, n=91) and throughout the follow-up period ($F_{(1,97)}$=10.36, p<.01, n=101), with no interaction between the type of manipulation and exercise status. Therefore, results provide support for the null hypotheses H_{3a}, which predicted that there is no difference between intrinsic appeals to competence or to relatedness in motivating physical activity for sedentary individuals, and H_{3b}, which predicted that there is no difference between appeals to competence or to relatedness in motivating physical activity for active individuals. These results are particularly noteworthy given that relatedness is not directly related to the type of exercise goal pursued by the participants. That is, whereas asking people to increase their exercise levels might relate to developing personal skills (i.e., competence), it has no direct relationship with developing social skills (i.e., relatedness), thus providing further support for the contended relationship between different forms of intrinsic (or extrinsic) motivation and an individual‘s exercise status.

GENERAL DISCUSSION

I set out to investigate how persuasive communications aimed at inducing greater physical activity could be made more effective by tailoring them to match the target‘s exercise status. Based on the literature reviewed and empirical antecedents, I proposed a staged approach to induce initiation in a sport practice by extrinsic motivation and to facilitate the adoption of healthier exercise routines through intrinsic motivation.

Summary of Findings

Taken together, results from two studies provide support for the thesis that extrinsic appeals—specifically, appealing to the need for recognition—can be more effective than intrinsic appeals—specifically, appealing to the need for competence or relatedness—in inducing sedentary people to exercise, and that intrinsic appeals to competence or relatedness are more effective than extrinsic appeals to recognition in persuading active exercisers to engage in more physical activity. Furthermore, appeals to either intrinsic appeal of competence or relatedness do not seem to differ in their relative effectiveness in motivating young people to exercise, regardless of their exercise status (sedentary or active). More specifically, the hypothesized relationship between competence—relative to recognition—was supported not only by an objective measure (pedometer) of a particular form of physical activity (walking), but also by a more comprehensive measure of overall exercise (METs). The effect of the manipulation, however, was not as strong using a

pedometer, relative to using an exercise log. Besides the fact that the logs encompass a wider range of physical activities, it might be that sedentary participants tend to overestimate their actual exercising when a subjective measure is used. Another possibility that deserves further investigating is the suggestion that people feel they have accomplished some progress just by using the pedometers, thus feeling that they do not need to effort much more.

These effects hold across different contexts, independent of the individuals‘ cultural background (i.e., American and Colombian students), homogeneity or heterogeneity of the samples (i.e., participants from all semesters and different majors in one study versus only freshman business students in the other), type of incentive to participate (i.e., Study 1 appealed only to an intrinsic motivation of contributing to a social cause and to research, whereas Study 2 appealed to the extrinsic reward of a class grade), and starting day (i.e., all participants in the first study started on Mondays, whereas participants in the second study started on different days of the week). The replication of results across such varied settings, together with the broader look achieved by assessing alternative forms of intrinsic motives, add up to suggest that these findings might generalize to different forms of motivation and other types of health communications.

Theoretical and Practical Contributions

From a theoretical perspective, within a vast body of research that characterizes consumers‘ choices between healthy and unhealthy options as self-control dilemmas (Fedorikhin & Patrick, 2010; Hong & Lee, 2008; Zhang et al., 2010), identifying psychological mechanisms that facilitate initiation and maintenance of healthy physical

activities is important in its own right. Much in line with some authors‘ claims for more comprehensive theories (Steel & König, 2006) and more integrative approaches (Hagger & Chatzisarantis, 2009), I argue that by linking together Self-Determination Theory, the Trans-Theoretical Model of Change and extant research on health-related choices I can contribute to a more general theory of human motivation that advances current consumer behavior knowledge on what moves people to exercise. On the other hand, SDT has been accused of lacking predictive utility, given that it does not chart the process by which a person‘s motivational orientation can be turned into intentions and subsequent behavior, and because of the relative scarcity of empirical data that allow causal inferences (Hagger & Chatzisarantis, 2009). The findings hereby presented add predictive value to the SDT paradigm.

From a practical perspective, my work provides insights on how to persuade consumers to initiate and maintain a healthy exercise routine more effectively, based on a relatively straightforward profiling and effective intrinsic/extrinsic motivation matching strategies. That is, exercise status—sedentary or active—could be prove a useful approach to segment markets and target public health campaigns and interventions based not only on personal traits or pre-existing motives (Ingledew & Markland, 2008) but also on exercise status (Ingledew et al., 1998). Given the current obesity epidemic (R. Brennan et al., 2010), the association between sedentariness and a reduced life span (Kozak et al., 2011; Smeesters, Mussweiler, & Mandel, 2010), and the health and psychological benefits associated with active life styles (Wilson et al., 2008), the need to effectively promote healthy behaviors such as regular physical activity is undisputed (Eagle et al., 2004). Inducing sustainable exercising habits in young adults would likely result in health benefits for these individuals and consequent reduction in health care costs when this

more health-preventive population ages (Chatzisarantis & Hagger, 2009). It is a critical issue to induce healthy exercise habits early, during adolescence and young adulthood, in order to prevent health issues that will likely arise many years ahead (R. Brennan et al., 2010; Kozak et al., 2011). Furthermore, should these young adults adopt more active lifestyles, their later endorsement of vigorous exercise will most likely influence their own children to join a team or participate in some kind of sport, instead of spending their leisure time in front of a TV or computer monitor (Anderson, Hughes, & Fuemmeler, 2009). Although this would undoubtedly be an important contribution to any public health system, it would be particularly interesting in a country like the USA, with the most expensive health care system in the world—both in absolute and per capita terms—and an increasingly aging population (The Economist, 2009).

Future Research and Implications

In the particular context of a university interested in forming integral human beings and not only specialized professionals, this dissertation could be the stepping stone to develop a customized sport-promotion program that utilizes state-of-the-art monitoring (McClain & Tudor-Locke, 2009; Tudor-Locke & Lutes, 2009) and information/communication technologies (P. F. Brennan, Casper, Downs, & Aulahk, 2009; P. F. Brennan, Downs, & Casper, 2010; R. Brennan et al., 2010). Such would be the most direct, measurable, and practical value added of the dissertation. Furthermore, implementing such a program would also provide an invaluable opportunity for extended, longitudinal research on motivation, persuasion, and sustainable healthy behavior. Such longitudinal studies should assess the long-term effects of alternative forms of motivation.

There is evidence that satisfying all psychological needs of competence, relatedness and autonomy results in a progressive increase of the consumers‘ self-determined motivation (Pelletier & Sharp, 2008), and that people who exercise regularly report increasing satisfaction of all their basic psychological needs over time (Silva et al., 2008). Future research should assess whether a combined appeal to more than one psychological need is more effective than appealing to a single need in enhancing physical activity among consumers who are already active. That is, studies to follow could extend the sedentary-extrinsic active-intrinsic model to include a third stage of more active-combined intrinsic. Future research should also conduct longitudinal studies that investigate how people progress along different readiness-for-exercise stages, and how to fine tune persuasion messages in order to keep the individual advancing along a motivational continuum towards optimal motivation to exercise.

The type of continued, personalized interventions implicit in the longitudinal studies proposed will also require a better understanding of how chronic dispositions lean consumers towards specific types of motivation. Recent marketing research has started exploring how health marketing could be made more effective by matching or mismatching chronic dispositions with the emotion primed by advertising (Labroo & Rucker, 2010). An interesting venue of research might come from determining how pleasant (or unpleasant) is physical activity for active (or sedentary) consumers (Iyengar & Lepper, 1999; Lepper et al., 2005), and how this can add to the understanding of the psychological mechanisms by which one type of motivation is more effective than the other for each type of consumer.

Future studies should also be alert to possible relapse, and how to prevent it or how to correct it. Per SDT (Black & Deci, 2000; Deci & Ryan, 2008b), replacing extrinsic

motives with intrinsic motivation should reduce the chances of relapse, once an individual has started exercising. Previous research on behavioral change, however, posit that changes tend to follow spiral-like patterns rather than direct linear trajectories (Prochaska et al., 2003). Even if extrinsic rewards are faded out, relapse could occur. That is, an individual who was already active might quit exercising and fall back to a sedentary stage. I anticipate that such individual will need a new extrinsic ―jolt" to get her back in track, something that should be further investigated with longitudinal studies.

Another potentially rich research venue is the realm of sports marketing and its lay theories of motivation. It would be quite interesting to test the validity of such mottos as Nike's ―Just do it," and what type of motives they are appealing to (in the context of the present research). Furthermore, future research could explore how effective these campaigns really are in motivating people to exercising (in addition to motivating them to buy products), and whether they differ in appeal to sedentary and active consumers.

REFERENCES

American College of Sports Medicine. (1990). Position stand: The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness in healthy adults. *Medicine And Science In Sports And Exercise, 22*(2), 265-274.

Anderson, C. B., Hughes, S. O., & Fuemmeler, B. F. (2009). Parent–Child Attitude Congruence on Type and Intensity of Physical Activity: Testing Multiple Mediators of Sedentary Behavior in Older Children. *Health Psychology, 28*(4), 428-438.

Bargh, J. A. (2002). Losing Consciousness: Automatic Influences on Consumer Judgment, Behavior, and Motivation. *Journal of Consumer Research, 29*(2), 280-285.

Batra, R., Keller, A., & Strecher, V. J. (2010). *Leveraging Consumer Psychology for Effective Health Communications: The Obesity Challenge*: M E SHARPE INC.

Baumeister, R. F. (2002). Yielding to Temptation: Self-Control Failure, Impulsive Purchasing, and Consumer Behavior. *Journal of Consumer Research, 28*(4), 670-676.

Baumeister, R. F., Sparks, E. A., Stillman, T. F., & Vohs, K. D. (2008). Free will in consumer behavior: Self-control, ego depletion, and choice. *Journal of Consumer Psychology, 18*(1), 4-13.

Black, A. E., & Deci, E. L. (2000). The Effects of Instructors' Autonomy Support and Students' Autonomous Motivation on Learning. *Science Education, 84*(6), 740.

Boiché, J. C. S., & Sarrazin, P. G. (2007). Self-determination of contextual motivation, inter-context dynamics and adolescents' patterns of sport participation over time. *Psychology of Sport and Exercise, 8*(5), 685-703.

Botti, S., & lyengar, S. S. (2004). The Psychological Pleasure and Pain of Choosing: When People Prefer Choosing at the Cost of Subsequent Outcome Satisfaction. *Journal of Personality and Social Psychology, 87*(3), 312-326.

Botti, S., Orfali, K., & Iyengar, S. S. (2009). Tragic Choices: Autonomy and Emotional Responses to Medical Decisions. *Journal of Consumer Research, 36*(3), 337-352.

Brennan, P. F., Casper, G., Downs, S., & Aulahk, V. (2009). Project HealthDesign: enhancing action through information. *Studies In Health Technology And Informatics, 146*, 214-218.

Brennan, P. F., Downs, S., & Casper, G. (2010). Project HealthDesign: rethinking the power and potential of personal health records. *Journal Of Biomedical Informatics, 43*(5 Suppl), S3-S5.

Brennan, R., Dahl, S., & Eagle, L. (2010). Persuading young consumers to make healthy nutritional decisions. *Journal of Marketing Management, 26*(7/8), 635-655.

Buckworth, J., Lee, R. E., Regan, G., Schneider, L. K., & DiClemente, C. C. (2007). Decomposing intrinsic and extrinsic motivation for exercise: Application to stages of motivational readiness. *Psychology of Sport and Exercise, 8*(4), 441-461.

Buckworth, J., & Nigg, C. (2004). Physical activity, exercise, and sedentary behavior in college students. *Journal of American College Health, 53*(1), 28-34.

Burstyn, I., Jonasi, L., & Wild, T. C. (2010). Obtaining compliance with occupational health and safety regulations: a multilevel study using self-determination theory. *International Journal of Environmental Health Research, 20*(4), 271-287.

Bustamante, L. C. (2004). Obesidad y actividad física en niños y adolescentes, *Viref - Biblioteca virtual de educación física*. Medellín, Colombia: Universidad de Antioquia.

Chan, E., & Mukhopadhyay, A. (2010). When Choosing Makes a Good Thing Better: Temporal Variations in the Valuation of Hedonic Consumption. *Journal of Marketing Research (JMR), 47*(3), 497-507.

Chatzisarantis, N. L. D., & Hagger, M. S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology & Health, 24*(1), 29-48.

Checko, E. R. (2008). *Personal motivation, body image, health behavior and stage of exercising.* ProQuest Information & Learning, US.

Cherubini, J. M. (2009). Intentional Development: A Model to Guide Lifelong Physical Activity. *Physical Educator, 66*(4), 197-208.

Choi, J., & Fishbach, A. (in press). Choice as an End versus a Mean. *Journal of Marketing Research*.

Curry, S., Wagner, E. H., & Grothaus, L. C. (1990). Intrinsic and extrinsic motivation for smoking cessation. *Journal of Consulting and Clinical Psychology, 58*(3), 310-316.

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology, 91*(4), 917-926.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology, 18*(1), 105-115.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627-668.

Deci, E. L., & Ryan, R. M. (2000). The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry, 11*(4), 227.

Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. Rochester, NY US: University of Rochester Press.

Deci, E. L., & Ryan, R. M. (2008a). Facilitating Optimal Motivation and Psychological Well-Being Across Life's Domains. *Canadian Psychology, 49*(1), 14-23.

Deci, E. L., & Ryan, R. M. (2008b). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie canadienne, 49*(3), 182-185.

DiMatteo, M. R., Hays, R. D., Gritz, E. R., Bastani, R., Crane, L., Elashoff, R., et al. (1993). Patient adherence to cancer control regimens: Scale development and initial validation. *Psychological Assessment, 5*(1), 102-112.

Eagle, L., Bulmer, S., Kitchen, P. J., & Hawkins, J. (2004). Complex and controversial causes for the 'obesity epidemic': The role of marketing communications. *International Journal of Medical Marketing, 4*(3), 271-287.

Edmunds, J., Ntoumanis, N., & Duda, J. L. (2006). A Test of Self-Determination Theory in the Exercise Domain. *Journal of Applied Social Psychology, 36*(9), 2240-2265.

Edmunds, J., Ntoumanis, N., & Duda, J. L. (2007). Adherence and well-being in overweight and obese patients referred to an exercise on prescription scheme: A self-determination theory perspective. *Psychology of Sport and Exercise, 8*(5), 722-740.

Ekelund, U., Griffin, S. J., & Wareham, N. J. (2007). Physical activity and metabolic risk in individuals with a family history of type 2 diabetes. *Diabetes Care, 30*(2), 337-342.

Fedorikhin, A., & Patrick, V. M. (2010). Positive mood and resistance to temptation: The interfering influence of elevated arousal. *Journal of Consumer Research, 37*(4), 698-711.

Fishbach, A., & Dhar, R. (2005). Goals as Excuses or Guides: The Liberating Effect of Perceived Goal Progress on Choice. *Journal of Consumer Research, 32*(3), 370-377.

Fishbach, A., Eyal, T., & Finkelstein, S. R. (2010). How positive and negative feedback motivate goal pursuit. *Social and Personality Psychology Compass, 4*(8), 517-530.

Fortier, M. S., Williams, G. C., Sweet, S. N., Patrick, H., DiClemente, R. J., Crosby, R. A., et al. (2009). Self-determination theory: Process models for health behavior change. In *Emerging theories in health promotion practice and research (2nd ed.).* (pp. 157-183). San Francisco, CA US: Jossey-Bass.

Frederick, C. M., & Ryan, R. M. (1995). Self-determination in sport: A review using cognitive evaluation theory. *International Journal of Sport Psychology, 26*(1), 5-23.

Gillison, F., Osborn, M., Standage, M., & Skevington, S. (2009). Exploring the experience of introjected regulation for exercise across gender in adolescence. *Psychology of Sport and Exercise, 10*(3), 309-319.

Greenfootsteps. (2010). The benefits of fitness walking for health and vitality. *Green Health*, 2010, from http://www.greenfootsteps.com/benefits-of-fitness-walking.html

Hagger, M. S. (2009). Theoretical integration in health psychology: Unifying ideas and complementary explanations. *British Journal of Health Psychology, 14*(Pt 2), 189-194.

Hagger, M. S., & Chatzisarantis, N. (2008). Self-Determination Theory and the psychology of exercise. *International Review of Sport and Exercise Psychology, 1*(1), 79-103.

Hagger, M. S., & Chatzisarantis, N. L. (2009). Integrating the theory of planned behaviour and self-determination theory in health behaviour: A meta-analysis. *British Journal of Health Psychology, 14*(Pt 2), 275-302.

Hagger, M. S., & Chatzisarantis, N. L. D. (2007). Advances in self-determination theory research in sport and exercise. *Psychology of Sport and Exercise, 8*(5), 597-599.

Hagger, M. S., Wood, C. W., Stiff, C., & Chatzisarantis, N. L. D. (2010). Self-regulation and self-control in exercise: the strength-energy model. *International Review of Sport & Exercise Psychology, 3*(1), 62-86.

Higgins, E. T. (2002). How Self-Regulation Creates Distinct Values: The Case of Promotion and Prevention Decision Making. *Journal of Consumer Psychology, 12*(3), 177-191.

Holbrook, M. B. (1986). Aims, Concepts, and Methods for the Representation of Individual Differences in Esthetic Responses to Design Features. *Journal of Consumer Research, 13*(3), 337-347.

Holbrook, M. B., & Gardner, M. P. (1998). How motivation moderates the effects of emotions on the duration of consumption. *Journal of Business Research, 42*(3), 241-252.

Hong, J., & Lee, A. Y. (2008). Be Fit and Be Strong: Mastering Self- Regulation through Regulatory Fit. *Journal of Consumer Research, 34*(5), 682-695.

Horne, T. E. (1994). Predictors of physical activity intentions and behaviour for rural homemakers. *Canadian Journal Of Public Health. Revue Canadienne De SantÃ© Publique, 85*(2), 132-135.

Hospes, G., Bossenbroek, L., ten Hacken, N. H. T., van Hengel, P., & de Greef, M. H. G. (2009). Enhancement of daily physical activity increases physical fitness of outclinic COPD patients: Results of an exercise counseling program. *Patient Education & Counseling, 75*, 274-278.

Huang, S.-J., Hung, W.-C., Chang, M., & Chang, J. (2009). The effect of an internet-based, stage-matched message intervention on young Taiwanese women's physical activity. *Journal Of Health Communication, 14*(3), 210-227.

Ingledew, D. K., & Markland, D. (2008). The role of motives in exercise participation. *Psychology & Health, 23*(7), 807-828.

Ingledew, D. K., Markland, D., & Medley, A. R. (1998). Exercise Motives and Stages of Change. *Journal of Health Psychology, 3*(4), 477-489.

Ingledew, D. K., & Sullivan, G. (2002). Effects of body mass and body image on exercise motives in adolescence. *Psychology of Sport and Exercise, 3*(4), 323-338.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76*(3), 349-366.

Kees, J., Burton, S., & Tangari, A. H. (2010). The Impact of Regulatory Focus, Temporal Orientation, and Fit on Consumer Responses to Health-Related Advertising. *Journal of Advertising, 39*(1), 19-34.

Keller, P. A., & Lehmann, D. R. (2008). Designing Effective Health Communications: A Meta-Analysis. *Journal of Public Policy & Marketing, 27*(2), 117-130.

Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un)accomplished goal actions affect motivation. *Journal of Personality and Social Psychology, 94*(2), 183-195.

Kosmala-Anderson, J. P., Wallace, L. M., & Turner, A. (2010). Confidence matters: a Self-Determination Theory study of factors determining engagement in self-management support practices of UK clinicians. *Psychology, Health & Medicine, 15*(4), 478-491.

Kozak, A. T., Daviglus, M. L., Chan, C., Kiefe, C. I., Jacobs, D. R., & Liu, K. (2011). Relationship of body mass index in young adulthood and health-related quality of life two decades later: the Coronary Artery Risk Development in Young Adults study. *International Journal of Obesity, 35*(1), 134-141.

Labroo, A. A., & Rucker, D. D. (2010). The Orientation-Matching Hypothesis: An Emotion-Specificity Approach to Affect Regulation. *Journal of Marketing Research (JMR), 47*(5), 955-966.

Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and Extrinsic Motivational Orientations in the Classroom: Age Differences and Academic Correlates. *Journal of Educational Psychology, 97*(2), 184-196.

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology, 28*(1), 129-137.

Lilyquist, K. A. (2005). *A measure of exercise motivation: Variation among individuals who differ in exercise regularity.* ProQuest Information & Learning, US.

Mallett, C., Kawabata, M., Newcombe, P., Otero-Forero, A., & Jackson, S. (2007). Sport motivation scale-6 (SMS-6): A revised six-factor sport motivation scale. *Psychology of Sport and Exercise, 8*(5), 600-614.

Marcus, B. H., Rakowski, W., & Rossi, J. S. (1992). Assessing motivational readiness and decision making for exercise. *Health Psychology, 11*(4), 257-261.

Markland, D., & Ingledew, D. K. (2007). The relationships between body mass and body image and relative autonomy for exercise among adolescent males and females. *Psychology of Sport and Exercise, 8*(5), 836-853.

Martin, L. L., Ward, D. W., Achee, J. W., & Wyer Jr, R. S. (1993). Mood as Input: People Have to Interpret the Motivational Implications of Their Moods. *Journal of Personality & Social Psychology, 64*(3), 317-326.

Mata, J., Silva, M. N., Vieira, P. N., Carraca, E. V., Andrade, A. M., Coutinho, S. R., et al. (2009). Motivational "spill-over" during weight control: increased self-determination and exercise intrinsic motivation predict eating self-regulation. *Health Psychology, 28*(6), 709-716.

McClain, J. J., & Tudor-Locke, C. (2009). Objective monitoring of physical activity in children: considerations for instrument selection. *Journal of Science & Medicine in Sport, 12*(5), 526-533.

Moller, A. C., Ryan, R. M., & Deci, E. L. (2006). Self-Determination Theory and Public Policy: Improving the Quality of Consumer Decisions Without Using Coercion. *Journal of Public Policy & Marketing, 25*(1), 104-116.

Nenkov, G., Inman, J. J., & Hulland, J. (2008). Considering the Future: The Conceptualization and Measurement of Elaboration on Potential Outcomes. *The Journal of Consumer Research, 35*(1), 126-141.

Nickel, D., & Spink, K. S. (2010). Attributions and self-regulatory efficacy for health-related physical activity. *Journal of Health Psychology, 15*(1), 53-63.

Patrick, H., & Canevello, A. (2011). Methodological overview of a self-determination theory-based computerized intervention to promote leisure-time physical activity. *Psychology of Sport & Exercise, 12*(1), 13-19.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1992). Behavioral decision research: A constructive processing perspective. *Annual Review of Psychology, 43*, 87-131.

Pelletier, L. G., & Sharp, E. (2008). Persuasive communication and proenvironmental behaviours: How message tailoring and message framing can improve the integration of behaviours through self-determined motivation. *Canadian Psychology/Psychologie canadienne, 49*(3), 210-217.

Prieto, A. (2003). Modelo de Promoción de la Salud, con Énfasis en Actividad Física, para una Comunidad Estudiantil Universitaria. *Revista de Salud Pública, 5*(3), 284-300.

Prochaska, J. O., DiClemente, C. C., Norcross, J. C., Salovey, P., & Rothman, A. J. (2003). In search of how people change: Applications to addictive behaviors. In *Social psychology of health.* (pp. 63-77). New York, NY US: Psychology Press.

Ransen, D. L. (1980). The mediation of reward-induced motivation decrements in early and middle childhood: A template matching approach. *Journal of Personality and Social Psychology, 39*(6), 1088-1100.

Rose, E. A., Parfitt, G., & Williams, S. (2005). Exercise causality orientations, behavioural regulation for exercise and stage of change for exercise: exploring their relationships. *Psychology of Sport & Exercise, 6*(4), 399-414.

Rosen, C. S. (2000). Integrating stage and continuum models to explain processing of exercise messages and exercise initiation among sedentary college students. *Health Psychology: Official Journal Of The Division Of Health Psychology, American Psychological Association, 19*(2), 172-180.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass, 2*(2), 702-717.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. / Motivation intrinseque et adhesion a l'exercice physique. *International Journal of Sport Psychology, 28*(4), 335-354.

Sandelands, L. E., Ashford, S. J., & Dutton, J. E. (1983). Reconceptualizing of the overjustification effect: A template-matching approach. *Motivation and Emotion, 7*(3), 229-255.

Sharpe, P. A., Burroughs, E. L., Granner, M. L., Wilcox, S., Hutto, B. E., Bryant, C. A., et al. (2010). Impact of a community-based prevention marketing intervention to promote physical activity among middle-aged women. *Health Education & Behavior: The Official Publication Of The Society For Public Health Education, 37*(3), 403-423.

Sheldon, K. M., & Niemiec, C. P. (2006). It's not just the amount that counts: balanced need satisfaction also affects well-being. *Journal of Personality and Social Psychology, 91*(2), 331-341.

Sherwood, N. E., & Jeffery, R. W. (2000). The behavioral determinants of exercise: implications for physical activity interventions. *Annual Review Of Nutrition, 20*, 21-44.

Silva, M., Markland, D., Minderico, C., Vieira, P., Castro, M., Coutinho, S., et al. (2008). A randomized controlled trial to evaluate self-determination theory for exercise adherence and weight control: rationale and intervention description. *BMC Public Health, 8*(1), 234-230.

Silva, M., Vieira, P., Coutinho, S., Minderico, C. u., Matos, M., Sardinha, L., et al. (2010). Using self-determination theory to promote physical activity and weight control: a randomized controlled trial in women. *Journal of Behavioral Medicine, 33*(2), 110-122.

Smeesters, D., Mussweiler, T., & Mandel, N. (2010). The Effects of Thin and Heavy Media Images on Overweight and Underweight Consumers: Social Comparison Processes and Behavioral Implications. *Journal of Consumer Research, 36*(6), 930-949.

Smith, A., Ntoumanis, N., & Duda, J. (2007). Goal striving, goal attainment, and well-being: Adapting and testing the self-concordance model in sport. *Journal of Sport & Exercise Psychology, 29*(6), 763-782.

Smith, J. B., & Colgate, M. (2007). Customer Value Creation: A Practical Framework. *Journal of Marketing Theory & Practice, 15*(1), 7-23.

Spink, K. S., & Nickel, D. (2010). Self-regulatory efficacy as a mediator between attributions and intention for health-related physical activity. *Journal of Health Psychology, 15*(1), 75-84.

Steel, P., & König, C. J. (2006). Integrating Theories of Motivation. *Academy of Management Review, 31*(4), 889-913.

The Economist. (2009). Heading for the emergency room. (cover story). *Economist, 392*(8637), 75-77.

Tudor-Locke, C., & Lutes, L. (2009). Why do pedometers work?: A reflection upon the factors related to successfully increasing physical activity. *Sports Medicine, 39*(12), 981-993.

University of South Carolina. (2010). The Compendium of Physical Activities. Retrieved September, 2010, 2010, from http://prevention.sph.sc.edu/tools/compendium.htm

US Department of Health and Human Services. (2000). *Healthy People 2010: Understanding and Improving Health*. Retrieved. from http://libproxy.tulane.edu:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED443794&login.asp&site=ehost-live&scope=site.

Uskul, A., Keller, J., & Oyserman, D. (2008). Regulatory fit and health behavior. *Psychology and Health, 23*(3), 327-346.

Vansteenkiste, M., Matos, L., Lens, W., & Soenens, B. (2007). Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement. *Psychology of Sport and Exercise, 8*(5), 771-794.

Vansteenkiste, M., Mouratidis, A., & Lens, W. (2010). Detaching Reasons From Aims: Fair Play and Well-Being in Soccer as a Function of Pursuing Performance-Approach Goals for Autonomous or Controlling Reasons. *Journal of Sport & Exercise Psychology, 32*(2), 217-242.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating Learning, Performance, and Persistence: The Synergistic Effects of Intrinsic Goal Contents and Autonomy-Supportive Contexts. *Journal of Personality and Social Psychology, 87*(2), 246-260.

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to Become a Persevering Exerciser? Providing a Clear, Future Intrinsic Goal in an Autonomy-Supportive Way. *Journal of Sport & Exercise Psychology, 26*(2), 232-249.

Waller, M., Williams, B., Tangari, A., & Burton, S. (2010). Marketing at the retail shelf: an examination of moderating effects of logistics on SKU market share. *Journal of the Academy of Marketing Science, 38*(1), 105-117.

Webster, C. M. (2008). Intrinsic Motivation and Well-being: Seniors in Community Associations. *Journal of Nonprofit & Public Sector Marketing, 20*(2), 229-244.

West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental Personality Designs: Analyzing Categorical by Continuous Variable Interactions. *Journal of Personality, 64*(1), 1-48.

Weston, A. T., Petosa, R., & Pate, R. R. (1997). Validation of an instrument for measurement of physical activity in youth. *Medicine & Science in Sports & Exercise, 29*(1), 138-143.

Williams, G. C., McGregor, H. A., Sharp, D., Levesque, C., Kouides, R. W., Ryan, R. M., et al. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology, 25*(1), 91-101.

Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a Self-Determination Theory Process Model for Promoting Glycemic Control Through Diabetes Self-Management. *Health Psychology, 23*(1), 58-66.

Williams, G. C., Patrick, H., Niemiec, C. P., Williams, L. K., Divine, G., Lafata, J. E., et al. (2009). Reducing the health risks of diabetes: how self-determination theory may help improve medication adherence and quality of life. *Diabetes Educator, 35*(3), 484-492.

Wilson, P. M., Mack, D. E., & Grattan, K. P. (2008). Understanding motivation for exercise: A self-determination theory perspective. *Canadian Psychology/Psychologie canadienne, 49*(3), 250-256.

Zhang, Y., Huang, S.-C., & Broniarczyk, S. M. (2010). Counteractive Construal in Consumer Goal Pursuit. *Journal of Consumer Research, 37*(1), 129-142.

APPENDIX 1. MAGAZINE ARTICLE: EXTRINSIC RECOGNITION[5]

Walk proud and tell others how good you are

By Mary A. Sheldon

Studies of prehistory and primitive societies show that walking is what we are built for. Throughout the millennia of human development people have walked and walked. We walked to follow herds of wild and domestic animals, we walked to find new lands, we walked to find wives and husbands and to meet with kinsmen from afar, and we walked to prove to others what we were made of. Everywhere we walked!

Why walk when you can ride?

In the modern world, it has become very easy not to walk. Even if we know just how beneficial it is to walk, we think we don't have the time… or the will to do it. We have lost the ability to walk, becoming unfit and flabby, so that walking even a short way becomes a struggle. Small children prepare for a future in their automobiles when their parents strap them into their pushchairs, and bored older children stare out from their cocooned car seats... Meanwhile, signs of developing heart disease can be detected in kids as young as eight, and fewer and fewer people experience the pride of being able to demonstrate stamina or physical prowess; of feeling fit and healthy and being able to show it.

Because of our hectic schedules, we can summon up a dozen different reasons not to walk. But walking is what the human body is designed for and walking delivers up some seriously good benefits. Moreover, walking can be marvelous. The sun on your face, natural sounds and sights, time to breathe, time to think; walking can help restore the equilibrium in our lives, and to tell others how capable we are at being able to manage our lives.

Walking health benefits

Walking regularly will almost certainly help your body to maintain or regain a normal blood pressure. Your risks of heart disease and strokes will be lowered, too. Walking can help with fat metabolism and make you less at risk from high blood cholesterol. If you walk regularly you are far less likely to be overweight. Regular walkers don't tend to have excess body fat. Walking, along with a proper diet, can help overweight people shed the excess fat and return to a trim figure. If weight loss is an issue for you, it may help to know that the calories burned by walking are considerable, especially if you walk briskly. On average we burn around 100 Kilocalories for every mile we walk. That might not sound a lot but if you make a walking program part of your daily life it can certainly stack up as a weight loss method.

"Throughout the millennia of human development … we walked to prove to others what we were made of."

Moreover, load-bearing exercise such as walking improves bone density, making bones stronger and less prone to fractures. Regular walking also builds up muscle tone and keeps joints and ligaments working smoothly, flexible and supple. Also, walking enhances blood

Healthy Lifestyle Magazine – August 2010

[5] The text on these made-up magazine articles was adapted from the Greenfootsteps website (Greenfootsteps, 2010). The articles were only used within the experiment and were not made available to the general public.

circulation, greatly improving skin tone, and visibly delaying the external signs of ageing.

Walking and your projected self

Research has also shown that walking regularly has a positive effect on a person's mental health. Because of the positive effect that earning other people's respect and admiration has on a person's self-esteem, being able to exercise regularly relates to psychological well-being: the more you can demonstrate to others that you can succeed at difficult tasks, the more likely are they to respect you. If you pick tasks that you are pretty sure you can accomplish, and if you are good about letting those who matter know that you have been successful, you are happy. You think about the good impression you have created on those around you and get energized. You are proud about how well you have shown yourself to the world. You feel a winner. You are admired!

"It's easy to admire and respect someone who can stand up to a challenge (…or walk up to it!)."

After all, there's more than meets the eye in a person's appeal. People are not only attracted by good looks. Most people are also attracted to those who project an image of self-sufficiency and skill. Being able to adhere to a healthy walking program, and making sure your meaningful others notice it, can greatly enhance the image they have about you. It's easy to admire and respect someone who can stand up to a challenge (…or walk up to it!). By conveying to those around you that you can do tough or difficult things, walking will make you look good in the eyes of others. Not to mention the fact that quite soon they might also notice that you actually look fitter.

How should we walk?

So, what are the best way and the right amount of walking for good health, better looks and the respect and admiration of your peers? How much to walk depends upon lots of factors. A good minimum regime is 30 minutes a day of brisk walking, at least three days a week. Beyond that, the limits need only be set by your time constraints, your will to show how far you can go… and some common sense. About how to do it, wear comfortable shoes and protective clothing, appropriate for the weather, spend a few minutes walking slowly to warm up your muscles, increase your pace until you feel warm, and stretch your muscles before walking. To reduce stress on your heart and muscles, end each walking session by walking slowly for about five minutes and stretching again.

"Your peers' recognition of your walking feats will fuel your resolve to keep up with a healthier lifestyle."

The best plan is to find a convenient way to slot walking into your routine. Getting off the bus a few stops short of your school or workplace can be a practical solution. Also, you can start using the stairs more often, rather than riding the elevator. To keep up with your motivation, tell others that you have started a healthy walking regime, and keep them posted of your progress and achievements. Let them know how much you are actually walking, and improving, every day. Your peers' recognition of your walking feats will fuel your resolve to keep up with a healthier lifestyle. After a while, you might find that you are not only walking to improve your health, but also because walking enhances the image that others have about you.

Whatever method you use to increase your walking, you will surely reap the benefits in better health, vitality, respect and appeal, and your friends and family will certainly note it.

APPENDIX 2. MAGAZINE ARTICLE: INTRINSIC COMPETENCE

Walk up to a challenge and feel good

By Mary A. Sheldon

Studies of prehistory and primitive societies show that walking is what we are built for. Throughout the millennia of human development people have walked and walked. We walked to follow herds of wild and domestic animals, we walked to find new lands, we walked to find wives and husbands and to meet with kinsmen from afar, we walked to discover what we were made of, and we walked to grow as human beings. Everywhere we walked!

Why walk when you can ride?

In the modern world, it has become very easy not to walk. Even if we know just how beneficial it is to walk, we think we don't have the time… or the will to do it. We have lost the ability to walk, becoming unfit and flabby, so that walking even a short way becomes a struggle. Small children prepare for a future in their automobiles when their parents strap them into their pushchairs, and bored older children stare out from their cocooned car seats... Meanwhile, signs of developing heart disease can be detected in kids as young as eight, and fewer and fewer people experience the inner thrill of feeling fit, healthy, and capable of walking strong.

Because of our hectic schedules, we can summon up a dozen different reasons not to walk. But walking is what the human body is designed for and walking delivers up some seriously good benefits. Moreover, walking can be marvelous. The sun on your face, natural sounds and sights, time to breathe, time to think; walking can help restore the equilibrium in our lives, and can help us feel better about our skills and our resolve.

Walking health benefits

Walking regularly will almost certainly help your body to maintain or regain a normal blood pressure. Your risks of heart disease and strokes will be lowered, too. Walking can help with fat metabolism and make you less at risk from high blood cholesterol. If you walk regularly you are far less likely to be overweight. Regular walkers don't tend to have excess body fat. Walking, along with a proper diet, can help overweight people shed the excess and return to a healthy weight. If weight loss is an issue for you, it may help to know that the calories burned by walking are considerable, especially if you walk briskly. On average we burn around 100 Kilocalories for every mile we walk. That might not sound a lot but if you make a walking program part of your daily life it can certainly stack up as a weight loss method.

"Throughout the millennia of human development … we walked to grow as human beings."

Moreover, load-bearing exercise such as walking improves bone density, making bones stronger and less prone to fractures. Regular

walking also builds up muscle tone and keeps joints and ligaments working smoothly, flexible and supple. Also, walking enhances blood circulation, greatly improving well-being, enhancing a person's vitality, and reducing the effects of ageing.

The walking challenge

Research has also shown that walking regularly has a positive effect on a person's mental health. Because of the positive effect that attempting challenging goals has on a person's self-esteem, being able to exercise regularly relates to psychological well-being. The more skillful and persistent you are, the more you enjoy a good challenge. If your tasks are difficult, and if you continually raise your standards as you improve your skills, you are happy. You think of your challenges and get energized and strategic. You are excited to try new solutions, not daunted by errors. You learn from your mistakes and once you get it right, you raise your aspirations even higher and start again. You have fun. You are alive!

"…it feels really good to know that you can rise to a challenge (…or walk up to it!)."

Walking is a great, adaptive challenge that offers a unique opportunity to discover your real potential. Gradually developing your physical skills and increasing the distance walked every day satisfies your personal need to be competent, contributing to a gratifying feeling of mastery. Being able to adhere to a healthy walking program can greatly enhance your self-image. After all, it feels really good to know that you can rise to a challenge (…or walk up to it!). And once you have learned how to achieve a difficult goal you can set yourself another, even more difficult goal, and walk up to it! You can try difficult things and you can keep improving at what you do. Not only are you capable but also you can learn to be even more capable.

How should we walk?

So, what are the best way and the right amount of walking for good health, developing skills and continual improvement? How much to walk depends upon lots of factors. A good minimum regime is 30 minutes a day of brisk walking, at least three days a week. Beyond that, the limits need only be set by your time constraints, your will to improve… and some common sense. About how to do it, wear comfortable shoes and protective clothing, appropriate for the weather, spend a few minutes walking slowly to warm up your muscles, increase your pace until you feel warm, and stretch your muscles before walking. To reduce stress on your heart and muscles, end each walking session by walking slowly for about five minutes and stretching again.

"Being aware of your walking skills, and realizing how these skills improve as you walk more and more, will fuel your resolve to keep up..."

The best plan is to find a convenient way to slot walking into your routine. Getting off the bus a few stops short of your school or workplace can be a practical solution. Also, you can start using the stairs more often, rather than riding the elevator. To keep up with your motivation, give yourself a challenging goal to achieve and a reward when you improve your skill level. And then, when you achieve your goal, set up a new, more challenging goal! Keep a log of your daily performance, in terms of how far or how many steps you walk, and monitor your progress. Being aware of your walking skills, and realizing how these skills improve as you walk more and more, will fuel your resolve to keep up with a healthier lifestyle. After a while, you might find that you are no longer walking to improve your health, but rather because you like it!

Whatever method you use to increase your walking, you will surely reap the benefits in better health and vitality, and you will certainly feel great about it.

APPENDIX 3. MAGAZINE ARTICLE: INTRINSIC RELATEDNESS

Walk with your friends and feel good

By Mary A. Sheldon

Studies of prehistory and primitive societies show that walking is what we are built for. Throughout the millennia of human development people have walked and walked. We walked to follow herds of wild and domestic animals, we walked to find new lands, we walked to find wives and husbands and to meet with kinsmen from afar, and we walked to provide food and shelter for our family. Everywhere we walked!

Why walk when you can ride?

In the modern world, it has become very easy not to walk. Even if we know just how beneficial it is to walk, we think we don't have the time… or the will to do it. We have lost the ability to walk, becoming unfit and flabby, so that walking even a short way becomes a struggle. Small children prepare for a future in their automobiles when their parents strap them into their pushchairs, and bored older children stare out from their cocooned car seats... Meanwhile, signs of developing heart disease can be detected in kids as young as eight, and fewer and fewer people experience the inner thrill of feeling fit, healthy, and being active members of the ever-walking human species.

Because of our hectic schedules, we can summon up a dozen different reasons not to walk. But walking is what the human body is designed for and walking delivers up some seriously good benefits. Moreover, walking can be marvelous. The sun on your face, natural sounds and sights, time to breathe, time to think; walking can help restore the equilibrium in our lives, and can make us fit better among our peers.

Walking health benefits

Walking regularly will almost certainly help your body to maintain or regain a normal blood pressure. Your risks of heart disease and strokes will be lowered, too. Walking can help with fat metabolism and make you less at risk from high blood cholesterol. If you walk regularly you are far less likely to be overweight. Regular walkers don't tend to have excess body fat. Walking, along with a proper diet, can help overweight people shed the excess and return to a healthy weight. If weight loss is an issue for you, it may help to know that the calories burned by walking are considerable, especially if you walk briskly. On average we burn around 100 Kilocalories for every mile we walk. That might not sound a lot but if you make a walking program part of your daily life it can certainly stack up as a weight loss method.

"Throughout the millennia of human development … we walked to find wives and husbands and to meet with kinsmen..."

Moreover, load-bearing exercise such as walking improves bone density, making bones stronger and less prone to fractures. Regular walking also builds up muscle tone and keeps joints and ligaments working smoothly, flexible and supple. Also, walking enhances blood

circulation, greatly improving well-being, enhancing people's vitality, and reducing the effects of ageing.

Walking with others

Research has also shown that walking regularly has a positive effect on a person's mental health, especially if you do it with other people. Because of the positive effect that feeling close to others has on a person's psychological satisfaction, exercising regularly with a group of friends relates to well-being. The more you share experiences with others, the more likely are you to feel that you belong. If you pick tasks that you can accomplish collectively, and if you are good about sharing these tasks with those who matter, you are happy. You think about the opportunity to develop or strengthen the ties with those around you and you get energized. You feel that you can contribute to other's well-being and that they also contribute to your own. You have fun. You are accepted!

"Walking with others can … release phenylethylamine, a natural amphetamine that produces a general feeling of happiness and well-being."

Walking with others can also have some direct benefits on your physical health. Indeed, the health benefits of walking are not only because of reduced body fat or increased blood circulation. Recent studies have shown that both exercising vigorously and having close relationships release phenylethylamine, a natural amphetamine that produces a general feeling of happiness and well-being. That is, the positive, pleasant physiological response of your body to walking with others is twice-fold: because of exercise per se and because of the positive effect of friendship. Furthermore, feeling loved and esteemed also releases norepinephrine, a natural stimulant that enhances adrenaline flow and makes you more sharp and alert, and different types of hormones, that greatly enhance your mood and cognition.

How should we walk?

So, what are the best way and the right amount of walking for good health, feeling great and having the affect of your peers? How much to walk depends upon lots of factors. A good minimum regime is 30 minutes a day of brisk walking, at least three days a week. Beyond that, the limits need only be set by your time constraints, your will to share your walking experience… and some common sense. About how to do it, wear comfortable shoes and protective clothing, appropriate for the weather, spend a few minutes walking slowly to warm up your muscles, increase your pace until you feel warm, and stretch your muscles before walking. To reduce stress on your heart and muscles, end each walking session by walking slowly for about five minutes and stretching again.

"Your peers' participation in your walking regime will fuel your resolve to keep up with a healthier lifestyle."

The best plan is to find a convenient way to slot walking into your routine and that of your friends. A friend and you getting off the bus a few stops short of your school or workplace can be a practical solution. Also, with a friend you can start using the stairs more often, rather than riding the elevator. To keep up with your motivation, tell others that you are starting a healthy walking regime, and talk them into doing the same… together with you. Share with them your walking, and discuss how to make it more fun, every day. Your peers' participation in your walking regime will fuel your resolve to keep up with a healthier lifestyle. After a while, you might find that you are no longer walking to improve your health, but rather because it is a fun part of your social life!

Whatever method you use to increase your walking, you will surely reap the benefits in better health and vitality, and you and your friends will certainly feel great about it.

APPENDIX 4. INDIVIDUAL DIFFERENCES: EXERCISE STATUS[6]

Regular exercise is defined as exercising three or more times per week for at least 20 min each time. Please choose the statement that best describes your current exercise status:

1. I currently do not exercise and I do not intend to start exercising in the next 6 months
2. I currently do not exercise, but I am thinking about starting to exercise in the next 6 months
3. I currently exercise some, but not regularly
4. I currently exercise regularly but I have only begun doing so within the last 6 months
5. I currently exercise regularly and have done so for longer than 6 months
6. I am a dedicated athlete and routinely train and compete in some sport

APPENDIX 5. EXERCISE LOG

IMPROVING STUDENT WELLNESS - EXERCISE LOG

Date: **DAY 1**

Activity	Intensity			Time of day		Total time	
	Mild	Moder	Hard	Begin	End	Hours	Minutes
Walking during normal activities							
Walking, for exercise							
Riding bycicle, during normal activities							
Jogging, outdoors or on the treadmill							
Running, outdoors or on the treadmill							
Bicycling or spinning							
Swimming							
Playing tennis							
Lifting weights							
Gym equipment							
Team sport							
Other sport							
Other physical							

TOTAL STEPS recorded with the *pedometer*, walking for exercise or in normal activities:

AEROBIC STEPS recorded with the *pedometer*, walking for exercise:

[6] Adapted from the Readiness-for-Exercise Scale (RFES) (Buckworth et al., 2007; Marcus et al., 1992).

APPENDIX 6. INDIVIDUAL DIFFERENCES: CHRONIC EXERCISE BASELINE

Please estimate how hard and how many times you practice each one of the following physical activities, on average, every week (check all activities that apply). It doesn't have to be totally accurate but rather a rough estimate.

	How hard you do it?			On average, how many times per week?
	Light	Moderate	Strong	Training sessions/week
Walking, for exercise, outdoors or on the treadmill	◯	◯	◯	☐
Jogging, outdoors or on the treadmill	◯	◯	◯	☐
Running, outdoors or on the treadmill	◯	◯	◯	☐
Bicycling or spinning	◯	◯	◯	☐
Swimming	◯	◯	◯	☐
Playing tennis	◯	◯	◯	☐
Lifting weights	◯	◯	◯	☐
Using an escalator, elliptic, or some other indoors exercise equipment (explain): ___	◯	◯	◯	☐
Playing a team sport (explain): _____	◯	◯	◯	☐
Practicing some other sport (explain): ___	◯	◯	◯	☐
Performing some other physical activity (explain): _____	◯	◯	◯	☐

APPENDIX 7. DAILY LOG: EXERCISE DATA

Please estimate how hard and for how long you practiced each one of the following physical activities, TODAY (check all activities that apply). For each activity, estimate the total time you practiced it, in hours and minutes, as accurately as you can. The exercise log that you received will help you recording this information.

	How hard you do it, on average?			For how long you did it, overall today?	
	Light	Moderate	Strong	Hours	Minutes
I rode bicycle to move around for my regular activities	◯	◯	◯	☐	☐
I jogged outdoors or on the treadmill	◯	◯	◯	☐	☐
I ran outdoors or on the treadmill	◯	◯	◯	☐	☐
I rode bicycle or did spinning for exercise	◯	◯	◯	☐	☐
I swam	◯	◯	◯	☐	☐
I played tennis	◯	◯	◯	☐	☐
I lifted weights	◯	◯	◯	☐	☐
I used an escalator, elliptic, or some other indoors equipment (explain): _____	◯	◯	◯	☐	☐
I played a team sport (explain): _____	◯	◯	◯	☐	☐
I practiced some other sport (explain): _____	◯	◯	◯	☐	☐
I did some other physical activity (explain): _____	◯	◯	◯	☐	☐

BIOGRAPHY

Professional manager with advanced formation in engineering and business, and extensive teaching and entrepreneurial experience. Current position as Director of the Business Management Program at Universidad Icesi in Cali, Colombia, with teaching, research, administrative and consulting responsibilities. Other current responsibilities as member in different boards of directors in Colombia. Previous work experience includes specialized consulting contracts and leading responsibilities in organizational and personal improvement processes, six years managing an engineering company specialized in industrial projects, nine years as owner and manager of a retail business, and two years as process engineer in a multinational tire manufacturing company.

Currently a PHD candidate at the A. B. Freeman School of Business, Tulane University, in New Orleans, he holds a Master of Management from Tulane University, an MBA from Universidad Icesi, in Colombia, and a Graduate Diploma in Engineering Management Systems and a BS in Industrial Engineering from Pontificia Universidad Javeriana, in Colombia.

Publications and working papers:

- The Happiness-to-Consumption Ratio: An Alternative Approach in the Quest for Happiness. in: Estudios Gerenciales. No. 116. Jul.-Sep. 2010. Icesi : Cali, 2010.
- Making do with Less: Increasing The Happiness-To-Consumption Ratio. In: Selected Abstracts and Papers from the Latin American Research Consortium 2009. Tulane/Icesi: Cali, 2009. pp. 65-70
- Meta-Analytic Revision of the Relationship between Charismatic Leadership and Organizational Performance. In: Cuadernos de Administración. No. 39. Jan.-Jun. 2008. Univalle : Cali, Colombia
- Construyamos Ltda. (Case) In: Estudios Gerenciales. No. 103. Apr.-Jun. 2007. Icesi : Cali, 2007. pp. 129-149.
- Application of Choice Sets in the Marketing Strategy. (Coauthor – Main Author: Concha, J.R.) In: Estudios Gerenciales. No. 86. Jan.-Mar. 2003. Icesi : Cali, 2007. pp. 13-38.
- Proposed Marketing Strategy for a Thermal Engineering Company. Dissertation (MBA). Cali, 2002. 300 p. : il. Universidad Icesi. Business School.
- Increase of Productivity in a Fish Farm in the Colombian Pacific Coast. Dissertation (Industrial Engineering). Cali, 1997. 204 p. : il. Pontificia Universidad Javeriana. Engineering School.