This paper presents an integrated theoretical model of self-control as a dynamic process. In situations demanding self-control, the individual experiences one of two types of temptations: Impulsiveness or procrastination, followed by an inner struggle between yielding to and overcoming the temptation. When the individual activates personal resources to overcome temptations, the process of self-control takes place. Individuals vary in their abilities to overcome temptations; some overcome them immediately, while others need to call upon what we define as intrinsic and extrinsic control mechanisms. We suggest that intrinsic control mechanisms are self-actions and thoughts that individuals employ when they need to exact control, whereas extrinsic control mechanisms are actions that address others and seek their help in overcoming the temptation. We present and test the theory with a context-free self-control measure.

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Taking Control: An Integrated Model of Dispositional Self-Control and Measure
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ABSTRACT

This paper presents a theoretical model of self-control as a dynamic process. In situations demanding self-control, the individual experiences one of two types of temptations: Impulsiveness or procrastination, followed by an inner struggle between yielding to and overcoming the temptation. When the individual activates personal resources to overcome temptations, the process of self-control takes place. Individuals vary in their abilities to overcome temptations; some overcome them immediately, while others need to call upon what we define as intrinsic and extrinsic control mechanisms. We suggest that intrinsic control mechanisms are self-actions and thoughts that individuals employ when they need to exert control, whereas extrinsic control mechanisms are actions that address others and seek their help in overcoming the temptation. We present and test the theory with a context-free self-control measure in four studies.

INTRODUCTION

Everyday and all day we are faced with temptations; from what to have for breakfast to what dessert to have at dinner, from persisting in a workout to submitting a manuscript on time; temptations are everywhere and self-control takes a fundamental role in over lives.

Thus, it is not surprising that self-control has stimulated much interest in the literature as it contributes to the understanding of a wide range of behaviors such as; criminal behaviors (e.g. Hirschi 2004), health risking behaviors such as smoking and overeating (e.g. Baumeister, F., and Tice 1994; Herman and Polivy 2004), or alcohol and drug consumption (see review in Baumeister et al. 1994; Hull and Slone 2004) and financial behaviors such as credit card use (Mansfield, Pinto, and Parente 2003) or impulsive and non-rational consumption (Baumeister 2002; Vohs and Faber 2003; Wertenbroch 1998).

In this research we suggest a theoretical model of dispositional self-control, and a theory-driven context-free reflective measure. We follow previous work on self-control as a stable dispositional attribute (McCabe, Cunningsgton, and Brooks-Gunn 2004; Mischel, Shoda, and Rodriguez 1989; Turner and Piquero 2002) and contribute to this body of literature by suggesting a more complex investigation of self-control. By integrating the bodies of literature on impulsiveness and procrastination we suggest that the two are mirroring responses to temptations that stand in the way of self-control. Furthermore, the proposed theory focuses not only at extreme levels of self-control (i.e., the tendency to immediately overcome or yield to temptations), but also at the mid-levels of self-control that are characterized by the tendency to apply control mechanisms to overcome temptations. In addition, the distinction between two types of control mechanisms—intrinsic and extrinsic—is proposed, as well as the notion that individuals may have a stable personal inclination to use each one.

We begin by defining self-control as a dynamic process in which the individual faces and deals with temptations and the inner struggle they induce. This process is evoked as a result of two types of temptations: those that arouse impulsiveness, and those that arouse procrastination. Individuals deal with both types in various ways by allocating personal resources to overcome the temptation. The self-control process can either be successful, i.e., when the individual succeeds in overcoming the temptation; or unsuccessful, i.e., when the individual yields to the temptation.

Impulsiveness and Procrastination Temptations

Past research on self-control referred to various temptations that could be classified into one of two types: impulsiveness temptations, when acting upon them promises gratification in the near-future (e.g., enjoying the taste of a cake), yet a negative outcome in the far future (e.g., gaining weight) (Kivetz and Keinan 2006; Trope and Fishbach 2000); and procrastination temptations, yielding to which means postponing taking an action, making a decision, or persisting in a task. Such a delay of action also promises gratification in the near-future (e.g., avoiding the unpleasantness of going to the dentist). However, it also has a negative outcome in the far-future (e.g., future dental problems) (Ferrari 2001; Greenleaf and Lehmann 1995; Kivetz and Keinan 2006; Tice and Baumeister 1997; Trope and Fishbach 2000).

Most studies have focused on either impulsiveness or procrastination (exceptions are Ferrari 1993; McCown 1995). We suggest these are two types of temptations that threaten self-control. Yielding to such temptations promises immediate gratification, yet at the same time promotes future negative outcomes (Dhar and Wertenbroch 2000; Fishbach and Trope 2005; Giner-Sorolla 2001; Loewenstein 1996; Trope and Fishbach 2000). As a result, the individual faces an inner struggle between fulfilling gratification now and paying the price later, and between overcoming temptation now and gaining a benefit later (Baumeister and Vohs 2004; Fishbach and Shah 2006; Giner-Sorolla 2001; Loewenstein 1996; Mischel et al. 1989; Thaler and Shefrin 1981). When the individual resolves the inner conflict by trying to overcome the temptation and by investing resources to do so (Baumeister, Muraven, and Tice 2000), the process of self-control is completed.

Intrinsic and extrinsic control mechanisms

Control mechanisms are cognitive, affective and behavioral means individuals use to help themselves overcome temptation. Individuals may employ control mechanisms either to prevent over-controlled behavior, as demonstrated in the work of Kivetz and Simonson (2002); where participants pre-committed themselves to choosing a self-indulgent reward or to avoiding under-controlled behavior, as demonstrated in the work of Ariely and Wertenbroch (2002), where students pre-committed to submission due dates of procrastinated academic tasks.

Several studies have explored various actions for avoiding self-control failure that could be viewed as control mechanisms. Thus, for example, cost-benefit analyses or selective attention are cognitive actions individuals may take to resist temptations whereas physical distancing from the temptation are behavioral actions (Dholakia 2000; Rook and Fisher 1995).

Trope and Fishbach (2000) referred to control mechanisms as “strategies for coping with self-control-demanding situations”. According to their theory of counteractive control actions (CCT), when people anticipate that a short-term outcome might endanger their long-term best interests, they respond with actions designed to counter the short-term outcome(s). O’Donoghue and Rabin (1999), following earlier work (Strotz 1956), offered the differentiation between “sophisticated” and “naïve” individuals: Sophisticated...
individuals tend to anticipate being tempted to experience immediate gratification and act against their long-term best interests; thus they take actions in advance to avoid self-control failure. In contrast, naive individuals do not anticipate self-control problems, and hence take measures in advance to ensure the employment of self-control (O’Donohue and Rabin 1999).

Following these theories, low self-control individuals—i.e., those who immediately yield to temptations without giving them a second thought—are not likely to use control mechanisms (in O’Donohue and Rabin’s terminology, they are naive). Likewise, neither are high self-control individuals likely to rely on control mechanisms, because they do not need to; they have a strong ability to overcome temptations immediately, sometimes even automatically. Control mechanisms are used mainly by individuals who are somewhere in the middle of the self-control continuum: They realize that when encountering temptations, it is in their best interest to overcome them; yet they admit that they may lack sufficient ability to do so, and therefore they apply control mechanisms for ensuring self-control (in O’Donohue and Rabin’s terminology, they are sophisticated).

We distinct between two types of control mechanisms; (1) intrinsic control mechanisms-are self-actions and self-thoughts for ensuring controlled behavior. In other words, one’s “self” is responsible for activating an action (thought) of control and see it through. Examples of intrinsic control mechanisms are self-rewards (or self-penalities) for succeeding (or failing) to stay on a weight loss program, designating interim due dates for completion of an academic task on time, pre-committing actions such as making shopping lists to avoid impulsive shopping. (2) extrinsic control mechanisms-are actions the individual take that seek the help of others and rely on them. In other words, one’s “self” activates the help of others to ensure controlled behavior. Examples of extrinsic control mechanisms are going to a “fat farm” to avoid over eating, committing publicly to deadlines with penalties to avoid procrastination, joining a study group, or asking someone else to supervise their shopping in order to avoid impulsive buying.

Scale construction
To the best of our knowledge, this is the first attempt to create a context-free scale that measures both high and low extremes of resisting the two types of temptations as well as measures the activation of intrinsic and extrinsic control mechanisms as a stable disposition. To that end, we developed the scale in 3 stages which are described here briefly for they are not the main purpose of the paper. In the first stage we adopted items from Tangen, Baumeister and Boom (2004) self-regulation scale and generated new items to create a more balanced scale between items measuring impulsiveness and procrastination temptations. In the second stage some items were modified or replaced in the attempt to ensure a balance between items measuring overcoming and yielding to temptations. In the third and final stage of the scale construction, items measuring the tendency to activate intrinsic and extrinsic control mechanisms were added. The final self-control scale includes twenty three items: Four items measuring yielding to impulsiveness temptations (e.g. “I do many things on the spur of the moment”); five items measuring overcoming impulsiveness temptations (e.g. “I seldom get carried away by my feelings”); three items measuring yielding to procrastination temptations (e.g. “I sometimes postpone tasks I have to do until it’s almost too late”); five items measuring overcoming procrastination temptations (e.g. “I am able to work effectively toward long-term goals while resisting temptations along the way”); and in addition, six items measuring the tendency to use control mechanisms to overcome temptations, including three items measuring the tendency to use intrinsic mechanisms (e.g., “When I fear I might put off a difficult task, I designate myself interim due dates for completion of various stages of the task”), and three items measuring the tendency to use extrinsic mechanisms (e.g. “Occasionally, I ask a friend or relative to make sure I won’t be tempted by something I really don’t feel like doing”). For the list of all the scale’s items see appendix A.

STUDY 1: TESTING THE SELF-CONTROL STRUCTURE
The purpose of Study 1 was to test the entire structure of the DSC, and test the inter-correlations among the different DSC components. We hypothesized that all items measuring the same component (e.g., items measuring the tendency to use intrinsic mechanisms) should show high inter-correlations and group together on a graphic map. Therefore, six distinct groups of items were expected to emerge on such map. Moreover, these distinct groups of items were expected to resemble an X-like structure.

We expected all items representing immediate yielding to temptation separated into impulsiveness and procrastination items to emerge on one side of the map while on the opposite side all items measuring overcoming temptations, again separated into the two temptations. In between these two poles we expected items representing the tendency to use control mechanisms to appear. Near the low self-control end (i.e. items measuring yielding to temptations) we expected to find items measuring extrinsic mechanisms while near the high self-control end (i.e. items measuring overcoming temptations) we expected to find items measuring intrinsic mechanisms.

Method
Participants
Participants were 247 students who participated in exchange for course credit (Age mean= 31.8).

Measures
Participants received the DSC described above. Internal reliability of the entire DSC scale was .75 and internal reliabilities of indices of the different components ranged from .51 to .80.

Results
To verify the relations among all items, a multi-dimensional scale analysis named Smallest Space Analysis (SSA) was used (see Guttman 1968; Shye, Elizur, and Hoffman 1994). The SSA provides a graphic representation of the relationships among all variables in the measurement. Each item is represented by a dot. The more strongly two items are positively correlated, the closer the two dots representing them appear on the SSA map, thereby allowing for areas of items with similar meanings to emerge and be identified as representing a component or a dimension. The SSA map reflects inter-correlations among all items and provides a spatial representation of the variables from which we could identify the clusters without imposing them. In addition, the SSA does not assume each variable to relate to only one dimension, and hence allows testing a more complex model. Finally, the SSA is a confirmatory technique in the sense that it allows for comparing an observed mapping of items to a hypothesized mapping derived from theory (Shye et al. 1994).

Figure 1 presents the SSA map of study 1, which is consistent with the proposed relationships among the items.

The coefficients of alienation is .12, indicating very good representation of the matrix of inter-correlations (see Guttman 1968). In alliance with our hypothesized self-control structure all items representing yielding to temptations emerged on the right side of the map (the low self-control pole), separated into two groups of impulsiveness (marked as “ih” items) versus procrastination temp-
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FIGURE 1
SSA map of the DSC measure (COA= 0.12)

In this study we used different samples and a total of 753 students and non-students participants to validate the DSC by testing its retaliations with other related constructs, namely; the five factor model (FFM), the procrastination scale (PS), the buying impulsiveness scale (BIS), the general impulsiveness scale (UPPS), the frugality scale (FS) and the self-consciousness scale (CON).

The five factor model scale: The FFM is the leading model of personality traits, presenting five basic trait factors: neuroticism, openness to experience, extraversion, agreeableness, and conscientiousness (Saucier 1994). Most, if not all studies have found conscientiousness to be the trait most related to self-control (Carver 2005; Robins et al. 1996). Conscientious individuals tend to be cautious, thorough, and reliable; they are motivated by their desire to “do the right thing”. Therefore, individuals who are highly conscientious are most likely to invest effort in overcoming temptation in situations demanding self-control. Accordingly, we hypothesized conscientiousness to correlate positively with self-control. In addition, several studies have found neuroticism to be linked to impulsiveness and procrastination (for review see Carver 2005; McCown, Johnson, and Petzel 1989). We therefore expected neuroticism to correlate negatively with self-control.

The procrastination scale: We hypothesize that Lay’s (1986) procrastination trait scale would correlate with the DSC procrastination component. Specifically, the PS was expected to correlate positively with the DSC items measuring yielding to procrastination temptations, and negatively with items measuring overcoming procrastination temptations. Moreover, these correlations were expected to be stronger than the correlations with the DSC items referring to impulsiveness temptations.

The impulsiveness scales: In general, we hypothesized that the DSC impulsiveness component will correlate with two scales of impulsiveness.

Sample 1 tested the relationship with a domain-specific behavior in marketing—impulsive buying—using Rook and Fisher’s (1995) buying impulsiveness scale (BIS).

Sample 2 tested the relationships with a more general measure of the impulsiveness trait using Whiteside and Laynam’s (2001) impulsive behavior scale (UPPS). This scale was generated from ten existing scales measuring various impulsive personality aspects that reveal four general facets of impulsiveness: 1) Premeditation, which is “the tendency to delay action in favor of careful thinking and planning”; 2) Urgency, which is “the tendency to commit rash and regrettable actions as a result of intense negative effect”; 3)
Sensation-seeking, which is "the tendency to seek excitement and adventure"; and 4) Perseverance, which is "the ability to remain with a task until completion and avoid boredom". However, we suggest that perseverance is not an impulsiveness facet, but rather a procrastination facet. Perseverance is the ability to complete a task. Completion of a continuous task demands overcoming the desire to stop performing the task and perhaps returning to it later. This pattern of behavior is more consistent with procrastination, rather than with impulsiveness. Therefore, we hypothesize that with the exception of perseverance, all facets of the UPPS will correlate more strongly with the DSC impulsiveness component than with the DSC procrastination component.

The frugality scale: Frugality as defined by Lastovicka et al. (1999) reflects "short-term sacrifices in buying and using consumer goods to achieve idiosyncratic longer-term goals". Thus frugal consumers will be more careful and calculate at spending their money. Acting in a frugal manner is contradictory to acting in an impulsive manner. We therefore hypothesize that the FS will correlate with the DSC impulsiveness component (reverse coded) and that this correlation will be stronger than with the DSC procrastination component (reverse coded).

The self-consciousness scale: Fenigstein, Scheier, and Buss (1975) identified three types of self-consciousness; private self-consciousness, which refers to one’s inner thoughts and feelings; public self-consciousness, which refers to one’s general awareness of the self as a social being; and social anxiety, which refers to one’s discomfort in the presence of others. Many self-control situations take place within a social context. In other words, social norms define situations that demand self-control. Therefore, both private and public self-consciousness are related to self-control and the activation of control mechanisms. However, social anxiety focuses on negative feelings experienced in the presence of others, and is therefore not relevant to testing self-consciousness in a self-control context. We suggest that activation of control mechanisms occurs when individuals suspect that they may not be able to resist temptations. The ability to anticipate self-control problems is dependent on one’s level of self-consciousness. In other words, individuals who are self-aware acknowledge their potentially harmful behaviors, and thus tend to activate control mechanisms in order to avoid self-control failure. Extremely high self-control individuals may succeed in overcoming temptation without self-consciousness, since they are able to do so immediately, perhaps even automatically. Similarly, extremely low self-control individuals yield to temptations without giving it a second thought, and therefore lack self-consciousness. To summarize, we hypothesize that both private and public self-consciousness (CON) would correlate positively with the tendency to activate control mechanisms (both intrinsic and extrinsic), yet not correlate with the DSC components measuring immediately overcoming temptations or immediately yielding to them.

Method

Participants

In samples 1 and 4 (n=143,147; Age mean=33.8, 26; for samples 1, 4 respectively), participants were students who participated in exchange for course credit. In samples 2 (n=373) and 3 (n=90; Age mean=28.4) students and non-students participants entered an online survey, and filled the questionnaire in return for a chance to win a raffle of gift certificates (in sample 2 the prizes were 24 gift certificates of 15$ each, in sample 3 the prize was one gift certificate of 25$).

Measures

The self-control scale: we used the DSC as in study 1. Internal reliabilities ranged from .40 to .82 across all samples.

The five factor model scale: To measure the FFM, Saucier’s (1994) short version of five-factor questionnaire (i.e., the Mini-marker Questionnaire) was used. The measure consists of eight adjectives measuring each of the five factors (a total of 40 adjectives). Internal reliabilities of the five factors ranged from .65 to .80.

The procrastination scale: Lay’s (1986) procrastination scale was used. The measure consisted of 20 items. Internal reliability was .88.

The impulsiveness scales: The Buying impulsiveness scale (BIS): The scale by Rook and Fisher’s (1995) was used. The measure consisted of eight items (one item from the original scale—“Just do it” describes the way I buy things”—was left out).

The general impulsiveness trait (UPPS): A shortened version of Whiteside and Lyon’s (2001) UPPS scale was used. In the shortened version, each of the four facets was measured by three items. Internal reliabilities of all of the scale’s items was .72. Internal reliabilities of the four facets ranged from .69 to .79.

The frugality scale: adopted from Lastovicka et al (1999), the measure included eight items. Internal reliability was .81.

The self-consciousness scale: adopted from Fenigstein et al (1975), the measure included 23 items. Ten items measured private self-consciousness, seven items measured public self-consciousness, and six items measured social anxiety. Internal reliabilities were .71, .65, and .75 for the private, the public, and the social anxiety factors respectively.

In all measures participants were asked to indicate to what extent each item describes them on a five-point scale (range: 1=“does not describe me at all” to 5=“describes me accurately”).

Results

The Five Factor model (FFM): As hypothesized, correlations with conscientiousness were positive and strong (r=.51, p<.01), and with neuroticism negative and weaker (r=-.35, p<.01). Unexpectedly, agreeableness correlated positively with the DSC (r=.17, p=.04). Correlations with the two other traits were, as expected, none significant (r extraversions = .12, r openness = .11, both n.s.).

The procrastination trait: Correlation between the PS and the DSC procrastination component were, as hypothesized, negative and strong (r=-.80, p<.01), while with the DSC impulsiveness component correlations were also negative, yet to a lesser extent (r=-.35, p<.01). The strong correlations between Lay’s scale and the DSC procrastination component may result from the possibility that this construct is less complex than, for example, the impulsiveness construct. If so, measures of different procrastination aspects (e.g., as trait or as a component of self-control) will capture most, if not all, of the concept’s content, resulting in strong correlations among the various measures.

The buying impulsiveness tendency: Correlations with the BIS were, as hypothesized, stronger with the DSC impulsiveness component (r=-.49, p<.01) than with the DSC procrastination component (r=-.25, p<.01).

The general impulsiveness scale (UPPS): As hypothesized, premeditation, urgency and sensation-seeking facets correlated more strongly with the DSC impulsiveness component than with the DSC procrastination component (r premeditation = .51, .31, p<.01; .39, p<.01; .38, p<.01; .32, p<.01; .29, p<.01; .27, p<.01; .25, p<.01).

1 Due to a bug in the website’s program, the respondents’ ages were not recorded; however, sample 2 was taken from an existing pool, therefore it is reasonable to assume that the mean age is similar to that of other samples from the same pool, all ranging across mean ages of 34–36.

2 In samples 1 and 2 a preliminary version of the scale was used, accounting for the relatively low internal reliabilities.
The purpose of Study 3 was to further ascertain the distinctiveness between the two types of control mechanisms; namely the intrinsic and the extrinsic control mechanisms. Since use of control mechanisms has not been explored as a stable individual difference, there are no existing scales for measuring this tendency or similar personality constructs. Hence, to validate these components of the scale, domain-specific measures were developed. We propose to examine two domains in which self-control is often threatened; maintaining healthy lifestyle and managing effective study habits. Both domains are clearly important, however, sustaining desired behavior in these domains over time requires self-control. According to our model, we expect individuals who tend, in general, to activate either intrinsic or extrinsic control mechanisms to report conducting specific behaviors (i.e., actions which reflect control mechanisms) in the attempt to fulfill their desired goals in both domains (i.e., maintain healthy lifestyle and study effectively for exams).

Method
Participants
Forty-two students participated in this study in exchange for course credit (Age mean = 24.5, two participants did not indicate age).

Measures
Healthy lifestyle. Participants were asked to assume that they have decided to adopt a healthier lifestyle, which means maintaining a healthy diet, working out on a regular basis, and ensuring physical health (e.g., taking vitamins, going for periodic medical checkups). Participants were then shown a list of nine statements describing various ways of ensuring a healthy lifestyle. Partici-ants were asked to check items that can be perceived as activation of intrinsic mechanisms (e.g., “I will prepare myself a time-table for study, including checkups”). Three items that can be perceived as activation of intrinsic mechanisms (e.g., “I will study for each exam for as many days as I feel necessary”) and, five items measured ways of studying using intrinsic mechanisms (e.g., “I will find a study partner, which will make me study seriously”), five items measured ways of studying using extrinsic mechanisms (e.g., “I will prepare myself a time-table indicating dates of preparations for each exam.”), and five items measured ways of studying without using control mechanisms (e.g., “I will study for exams as many days as I feel like”). Three indices were composed to measure study habits: using intrinsic mechanisms, using extrinsic mechanisms, or without using control mechanisms at all. The index of study habits using intrinsic mechanisms was hypothesized to correlate positively with the DSC tendency to use intrinsic mechanisms index, yet not with the DSC tendency to use extrinsic mechanisms index. Accordingly, it was hypothesized that study habits using extrinsic mechanisms would show the same pattern of results, yet with the DSC tendency to use extrinsic mechanisms.

Results
Healthy lifestyle. The correlations between the healthy lifestyle behaviors and the tendency to use intrinsic or extrinsic control mechanisms supported our hypotheses. The DSC tendency to use extrinsic control mechanisms index correlated positively with the healthy lifestyle behaviors using extrinsic mechanisms (r=.36, p<.02), did not correlate with the healthy lifestyle behaviors using intrinsic mechanisms (r=.22, n.s.) and correlated negatively with the healthy lifestyle behaviors without the use of control mechanisms (r=-.41, p<.01). The DSC tendency to use intrinsic control mechanisms index correlated positively with healthy lifestyle behaviors using intrinsic mechanisms (r=.49, p<.01), and did not correlate with healthy lifestyle behaviors using extrinsic mechanisms or with healthy lifestyle behaviors without the use of mechanisms (r=.16, r=.10, both n.s.).

Study habits. The correlations between the different study habits and the tendency to use each type of control mechanisms indices supported the hypotheses. The DSC tendency to use extrinsic control mechanisms index correlated positively with study habits that use extrinsic mechanisms (r=.41 p<.01), did not correlate with study habits that use intrinsic mechanisms (r=.21, p=n.s.), and correlated negatively with study habits that do not use mechanisms (r=-.36, p<.05). In contrast, the DSC tendency to use intrinsic control mechanisms index correlated positively with study habits that use intrinsic mechanisms (r=.61, p<.01), and did not correlate with study habits that use extrinsic mechanisms or with study habits that do not use mechanisms (r=.02, r=.20, both n.s.).
STUDY 4: HIGH VS. LOW SELF-CONTROL CONSUMERS AND PRODUCT HEALTH-RELATED ATTRIBUTES

Study 4 had a theoretical goal; to test the sensitivity of high verses low self-control individuals to health related product attributes and a methodological goal; to further test the predictive validity of the self-control measure.

The literature has shown that in general high self-control consumers are more health-concerned than low self control consumers; for example, high self-control consumers (low on impulsivity) tend to drink less alcohol and engaged less in binge eating (Kane et al, 2004), high self control individuals (low on procrastination) also tend to engage in general health related behaviors (Sirois 2004; Sirois, Melia-Gordon, and Pychyl 2003). High self-control consumers are more concerned with future goals such as maintaining healthy body and also have the ability to overcome temptations threatening the achievement of such goals. We therefore hypothesize that high self-control consumers will be more sensitive to health cues in products. That is, when a hedonic non-healthy product is improved and becomes healthier, high self-control participants will be responsive and express higher willingness to try it out than low self-control consumers. This and more, if the same improved (i.e. hedonic yet healthier) product is introduced with an added negative (i.e. non-healthy) attribute, high self-control consumers’ willingness to try out the product will decline, while low self control consumers, who are less responsive to such health related cues, will show no change in willingness to try the product.

Method

The study was conducted online. Two hundred and four participants participated in an online study in return for a chance to win a raffle of 25$ amazon.com gift certificate (Age\text{mean}=35.8).

Measures and procedure

Participants were told they are part of a marketing survey testing consumers’ evaluation of potentially new products. Participants were led to believe that in a continuing study the manufacture intends to send samples to interested consumers for a sample tasting study.

Participants filled-out the self-control measure and were then introduced with the product description followed by attitude questions (e.g. whether the product is fun, healthy, will have marketing demand etc.). In the last question participants were asked how many samples they would like to get for trial, ranging from zero to eight. Participants read descriptions of two new and improved hedonic products. The suggested new hedonic products were improved to become healthier (decaffeinated coffee, Trans-fat free ice-cream). We manipulated the products; in the control condition participants received a description of the healthier hedonic product. In the manipulation condition participants received the same description as the control yet we added a sentence mentioning a non-healthy attribute. In the coffee description participants were told the coffee might damage their teeth florid resistance. In the ice cream description participants were told it has relative high amounts of monosodium glutamate. After reading the description, participants were asked to indicate how many samples they would like to get for trial on a scale of 0 (none) to 8 (samples). We hypothesized that when the hedonic-non-healthy product became healthier (control condition), high self-control participants will want more samples then low self-control participants. However, when a negative attribute is added (negative value condition) high self-control participants will want less samples then in the control condition. Among low self-control participants there will be no difference between the control and the manipulation condition.

Results

Decaffeinated coffee. Participants’ self-control levels were computed and each participant was classified as either high or low in self-control based on a median split (the scale’s internal reliability was .79). We ran a 2(self-control) X 2(product attribute condition) ANOVA (see figure 2). Results show a significant main effect for the product condition (F(1,201)=8.5, p<.01), such that the merely improved coffee (control condition) was preferred over the improved coffee with the additional negative attribute (manipulation condition). In addition results show no significant main effect for self-control (F(1,201)=.69, p>.05) and as hypothesized, a significant interaction (F=1.201)=6.65, p<.01). In the control condition, where the description was of an improved decaffeinated coffee, high self-control participants requested more samples (m=5.53) than high self-control participants in the manipulation condition, where the description included a none-healthy attribute (i.e. damage to teeth florid resistance) (m=3.22). Low self-control participants however, did not differ in the number of samples requested across the two conditions (m=4.1, 3.96, for the control and manipulation conditions, respectively).

Trans-fat free ice-cream. Since ice cream is a fattening product, we filtered out participants on diet; the remaining sample included 163 participants. We ran a 2 (self-control) X 2 (product attribute condition) ANOVA (see figure 2). Results show a significant main effect for the product condition (F(1,163)=3.93, p<.05), such that overall the improved and healthier ice-cream (control condition) was preferred over the improved ice-cream with an additional negative attribute (manipulation condition). In addition results show no significant main effect for self-control (F(1,163)=2.1, p>.05) and a marginally significant interaction (F=1.163)=2.90, p=.09). In the control condition, high self-control participants requested more samples (m=5.64) than high self-control participants in the manipulation condition, where the description included a none-healthy attribute (i.e. monosodium glutamate) (m=3.98). However, low self-control participants did not indicate a significant different number of samples across the two conditions (m=5.08, 4.95, for the control and manipulation conditions, respectively).

GENERAL DISCUSSION

The purpose of this research is to suggest a theoretical model which views self-control as a process individuals go through whenever they are faced with a temptation. In addition, its objective is to present a scale that measures various levels of self-control as a stable disposition, and can be applied to a wide range of situations.

We propose self-control to be a dynamic process. The self-control process begins when an individual faces impulsiveness or procrastination temptations, experiences an inner struggle between yielding to and overcoming the temptations, and then allocates personal resources to overcome the temptations. The model further distinguishes between two ways of yielding to or overcoming temptations: One describes either extremely high or extremely low self-control individuals, who immediately either overcome or yield to the temptation respectively. The other describes individuals who are not extreme in self-control, and take certain actions called control mechanisms to try and overcome the temptation. We further propose two distinguished types of control mechanisms: intrinsic mechanisms which are self-thoughts and self-actions that one takes to overcome a temptation, while extrinsic mechanisms are actions that address others and seek their help in overcoming the temptation.
In four studies we examined the proposed model using a new scale measuring dispositional self-control (the DSC). The SSA map (Study 1) presented a structure that supported the distinction between the two types of temptations—impulsiveness and procrastination—as well as introduced the continuum of the self-control disposition. Items measuring yielding to temptations (i.e., low self-control) emerged the furthest from items measuring overcoming temptations (i.e., high self-control); whereas items measuring the tendency to activate intrinsic and extrinsic control mechanisms (i.e., the mid-levels of self-control) emerged in the center of the map between the two extreme levels. We tested the DSC relationships with relevant traits such as the Five Factor Trait Model, the general procrastination trait, the general impulsiveness trait, the buying impulsiveness scale, the frugality scale and the self-consciousness scale (Study 2) using varied samples of both students and non-students participants. We further supported our model by testing the distinctiveness between the tendencies to use intrinsic verses extrinsic mechanisms (Study 3). The two tendencies were related to different healthy lifestyle and study habits behaviors. Finally, we tested whether high verses low self-control consumers are more sensitive to health-related attributes of hedonic non-healthy products and by that also tested the predictive validity of the DSC (Study 4). We show that high self-control in comparison to low self-control consumers requested more product samples when a hedonic-non healthy product was introduced as improved and healthier, however when a negative attribute was added (i.e. a non-healthy attribute) high self-control’s product samples requests declined while low self-control’s product sample—did not change.

The proposed dynamic model of self-control pursues previous research directions on self-control and advances them in several ways: First, by proposing that self-control be perceived as a dynamic process. As such, different individual can experience the self-control process differently. Thus for example, the extensive-ness of the temptation can vary among individuals resulting in a varied amount of personal resources needed to extract self-control. Also, the degree to which one experiences an inner-conflict can also vary across people resulting in different struggle-resolving actions taken—such as control mechanisms. Second, by integrating two bodies of literature and proposing that impulsiveness and procrastination are two mirroring responses to temptations that stand in the way of self-control. Third, by suggesting that individuals who are extremely high (low) in self-control overcome (yield to) temptations immediately, whereas individuals who lie “mid-scale” tend to activate intrinsic or extrinsic control mechanisms to achieve self-control. Finally, the DSC scale is a context-free scale adequate for use across various situations, as well as to distinct between extremely high or low self-control individuals and those who tend to use control mechanisms.

REFERENCES


APPENDIX A
The Dispositional Self-Control Scale (DSC)

Overcoming impulsive temptation
I usually succeed in overcoming temptations.
Usually, when something tempts me, I manage to resist.
Even when something exciting happens to me, I do not get carried away by my feelings or act without thinking.
Even when stressed, most of the decisions I make are considered and calculated.
I rarely act impulsively.

Overcoming procrastination temptations
I am able to work effectively toward long-term goals, while resisting temptations along the way.
People can trust me to stay on schedule even if I am busy and under a lot of pressure.
It is important for me to finish all of my tasks on time, even if I do not feel like doing them.
I never delay work that needs to be done, even if I am busy.
I tend to finish assignments right away, even if they are unpleasant.

Yielding to impulsive temptations (reverse score)
I do many things on the spur of the moment.
People say I often make up my mind without thinking things through.
I often act without thinking through all of the alternatives.
I often make spontaneous and rather hasty decisions.

Yielding to procrastination temptations (reverse score)
I tend to postpone completing unpleasant tasks.
When I need to run errands, I usually put them off until the last minute.
I sometimes postpone tasks that I have to do until it is almost too.

The tendency to use extrinsic mechanisms
Sometimes I use others to obligate myself to keep on schedule.
At times, I ask a friend or relative to make sure I will not be tempted by something I really feel like doing.
When I have an urge I find hard to resist, I look for a framework that will help me resist it.

The tendency to use intrinsic mechanisms
In order to perform an important yet unpleasant task, I imagine how good I will feel afterwards.
When I fear I might put off a difficult task, I designate myself interim due dates for completion of various stages of the task.
Sometimes, I manage to resist temptation by compensating myself in some way.