

**PEOPLE RISK PERSONAL HARM FOR INTERPERSONAL APPROVAL:
A SELF-CONTROL PERSPECTIVE**

by

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ABSTRACT

Self-control often leads to good, healthy, and morally right outcomes for the self and others. Yet self-control is a process—of goal-directed modification or override of an incipient response—that may or may not result in normatively positive, healthy, or moral outcomes. Distinguishing the self-control process from its outcomes exposes a new perspective: Behaviors that appear disinhibited may be performed strategically with the goal of obtaining social rewards. Thus, to the actor, potentially harmful behaviors, such as alcohol, drug, or cigarette use, overeating or sex, may be incentives for obtaining the valued outcome of social acceptance.

This dissertation presents four studies. Using questionnaires, Studies 1a and 1b showed that most people can recall a time when they subjugated their personal well-being for social gain. Study 2 used a longitudinal design to examine behavior change in potentially harmful behaviors (i.e., alcohol consumption and sex) resulting from people's personal attitudes and perceptions of friends' attitudes toward those behaviors measured 1.5 months earlier. Supporting the hypothesis, over time people overcame a personal aversion to alcohol consumption and drank it regularly, but only if they had initially perceived that their friends approved of doing so. In contrast, people who felt negatively toward sex initially tended to avoid it later, regardless of their friends' attitudes.

Study 3 used an experimental approach. In the “peer pressure” condition, social success was contingent on eating pieces of bitter cocoa. Participants in the peer pressure condition ate significantly more cocoa than did those in the control condition; this effect held only among participants who interacted with the more likeable confederate. To examine whether eating more cocoa required self-control exertion, people in a third

condition were depleted of their self-control resources before the peer pressure manipulation. Cocoa consumption did not differ between peer pressure conditions, showing no evidence of self-control exertion. Collectively these studies show that people sometimes subjugate their personal well-being for social gain, but revealed only weak evidence of the proposed self-control process. This work highlights the importance of considering idiosyncratic aversions to, versus appetites for, behaviors when considering whether they stem from exertion or failure of self-control.

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DEDICATION

For my students and teachers.

CO-AUTHORSHIP STATEMENT

Much of the introduction and parts of the general discussion form a paper I co-authored with Kathleen Vohs that is currently under review. Based on ideas we developed through discussions together, I wrote the first draft of that paper on my own. Kathleen's editing and feedback throughout numerous subsequent drafts were instrumental in the final work, but I was ultimately responsible for implementing the revisions and honing the ideas to the current state. All remaining chapters are entirely my own work.

CHAPTER 1. INTRODUCTION

Alcohol consumption, overeating, smoking, gambling, and impulsive spending are considered to be key examples of domains in which impulse control is difficult and in which disinhibition results in problematic outcomes. Although these behaviors do at times represent failed self-regulation, they may also be self-regulation attempts in another manner. I propose that a desire to be socially accepted can lead people to strategically enact self-harming behaviors aimed at meeting this goal. I further propose that some ill-advised behaviors that are normatively coded as self-regulation failures can sometimes be self-regulation attempts with the higher-order goal of social inclusion.

I do not take issue with the evidence that exerting self-control often leads to outcomes that are good for the self (e.g., Baumeister, Heatherton, & Tice, 1994; Mischel, Shoda, & Peake, 1988; Tangney, Baumeister, & Boone, 2004). Yet I challenge the view that behaviors typically labelled as failures of self-control emerge exclusively because of a loss of self-control. I argue that some actions that often are labelled as self-control failures may well have been strategic means of reaching a goal (cf. self-control) at one point. That goal is to gain social rewards. In short, I contend that some disinhibited acts or unwise choices begin as plans designed to increase the odds of interpersonal acceptance, even if the behaviors come at a cost to the self. For ease of reference throughout this dissertation, behaviors that are normatively understood as disinhibited, unwise, or unhealthy (e.g., overeating, overspending, overdrinking, cigarette smoking, gambling, etc), will be referred to as *potentially risky behaviors* because they have the potential to risk harm to the self in some (although by no means all) circumstances.

The definition of self-control is mute with respect to the particular behavioral domains in which the process is or is not exerted. The term self-control represents the process by which people override or modify an incipient response in service of a goal (Tangney et al., 2004; Vohs & Baumeister, 2004). Self-control can be exerted in different ways, depending on whether the initial impulse is to approach or avoid a behavior. Perhaps the most obvious type of incipient response is an impulse to perform a particular behavior. To be clear, an impulse is a situation-specific urge or desire to enact particular responses or behavior (Baumeister, et al., 1994). It is distinct from general desires and traits. For example, hunger is a broad motivation to engage in any number of behaviors, whereas an impulse is a specific urge to grab the bag of chips on the counter and eat them. Self-control is used to stop that impulse and therefore avoid performing the behavior (Polivy, 1998).

Self-control is also a process that is used to override impulses and therefore avoid unpleasant behaviors. For example, the current obesity epidemic suggests that many North Americans perceive that exercise is a physically unpleasant experience – that is, that many people possess an impulse to avoid exercise.¹ To engage in exercise and consequently improve their health, people must overcome the urge to avoid exercise in order to step on the treadmill. In a parallel fashion, I argue that people can and do have impulses to avoid many behaviors, sometimes including potentially risky ones, for at first contact they are unpleasant or people fear harm or discomfort to self. Yet impulses to avoid potentially harmful behaviors at times conflict with the goal of interpersonal acceptance. This goal conflict can lead to people using self-control in order to make

¹ There are of course other issues at work in this epidemic (e.g., impulses to eat fattening foods). I consider exercise in particular for the sake of example.

themselves perform such personally aversive behaviors in the hopes of gaining interpersonal acceptance.

When applying the concept of self-control to circumstances in which the initial urge is to avoid an undesirable behavior, good self-control means overcoming its distastefulness and impelling oneself to perform the behavior to attain the goal one expects it to serve. If I am to argue that potentially risky behaviors and instances of overconsumption initially involve self-control in this way, this means that these behaviors entail overriding an initial impulse to avoid the action. Are actions that are often viewed as self-regulation failures objectionable at first encounter? Research has shown that people commonly possess an initially aversive reaction toward some actions that are normatively viewed as self-control failures. For instance, it is well-documented that the taste of beer is bitter and unpleasant (Fallon & Rozin, 1983). Nonetheless, people overcome the impulse to spit out the bitter brew and, over time, acquire a liking for it. Thus, forcing oneself to drink beer when it (initially) evokes a repulsive reaction satisfies the definition of engaging in self-control. I further posit that the desired end motivating such behaviors is often to achieve social inclusion.

Why Do People Engage in Self-Control?

Given that there are considerable costs to engaging in self-control (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Vohs & Heatherton, 2000), people are unlikely to exert such effort unless it appears worthwhile from their perspective. Hence, it is important at this juncture to consider for what ends self-control is used. Stated plainly, people exert self-control to achieve valued goals. Those valued goals can be those that are meaningful to the self or those that enhance interpersonal relationships. Interpersonal

relationship success is of course a goal that benefits the self; however, I draw a conceptual line between intrapersonally-focused beneficial goals and interpersonally-focused beneficial goals (cf. Vohs & Finkel, 2006). Scholarly examinations of the types of goals people possess typically emphasize intrapersonal goal achievement, such as obtaining hedonic rewards (e.g., marshmallows for children; Mischel & Mischel, 1983), career success (Trope & Pomerantz, 1998), and long-term physical health (e.g., Sheeran & Orbell, 2000; Trope & Fishbach, 2000). Goals in domains such as personal health, competence, and identity are important, particularly in the North American context.

Intrapersonal goals are often assumed to result from good self-control, implying that behaviors that run counter to long-term intrapersonal well-being indicate self-control failure. For example, Fishbach, Friedman, and Kruglanski (2003) contrast “high priority goals” such as studying, work, goodness, watching weight, and sexual fidelity, against “ephemeral, low-priority enticements” such as playing basketball, using drugs, sinning, eating fattening foods, and having sex (p. 297). Smoking, alcohol use, gambling, purchase behavior, eating, and criminal behavior have been identified as key domains in which self-control failures abound (Baumeister, Heatherton, & Tice, 1994; Faber & Vohs, 2004; Mischel & Ayduk, 2004). However, I caution against assuming that such domains solely evince self-control failure, and instead I highlight the need to distinguish the process of self-control from the behavior. I argue that people will exert self-control to enact behaviors that counter their long-term personal well-being, particularly when those behaviors can achieve interpersonal goals.

Although the literature primarily has viewed self-control in terms of achieving intrapersonal goals, there is a growing recognition of the importance of self-control to

achieve interpersonal goals (e.g., Baumeister & Exline, 1999; Finkel et al., 2006; Rawn & Vohs, 2006; Vohs, Baumeister, & Ciarocco, 2005; Vohs & Finkel, 2006). Meeting interpersonal needs is paramount among people's activities, with the need to belong grounded in evolutionary history and at the root of much human behavior (Baumeister & Leary, 1995). Achieving social goals is crucially important to survival, and may have been the reason for the development of self-control in the first place (Heatherton & Vohs, 1998). Being able to put one's own impulses aside and act in ways that benefit one's group quite likely helped those people to reproduce and survive (Baumeister, 2005; Higgins, 1996).

Some research on self-control has considered it in the interpersonal milieu. For example, children will work at a tedious task to benefit a close friend but not an unknown child (Kanfer, Stifter, & Morris, 1981). People use self-control when interacting with incompetent teammates (Finkel et al., 2006), and when presenting themselves in a novel fashion (e.g., boasting to friends; Vohs, Baumeister, & Ciarocco, 2005). People respond to interpersonal rejection by acquiescing to impulses, resulting in eating many cookies and failing to persist at frustrating tasks (Baumeister, DeWall, Ciarocco, & Twenge, 2005). Moreover, Baumeister et al. (2005) showed that when good self-control does not result in enhanced interpersonal relationships, people abandon self-control. Taken together, several lines of research show that self-control is used to achieve interpersonal goals; yet when those goals are thwarted, self-control fails as it cannot lead to social connection.

The need to belong remains strong in modern society, despite the fact that the behaviors required for modern social acceptance differ considerably from those called

upon in the ancestral environment. In the modern context, behaviors such as breaking a diet, drinking too much alcohol, procrastinating, overspending, and having spontaneous unprotected sex are normatively understood as self-control failures because at times they impede intrapersonal goals such as losing weight, being productive, or protecting against sexually transmitted infections. However, these behaviors may serve interpersonal goals. Dining, drinking alcohol, avoiding work, shopping, and sex are often enacted in the presence of companions. Therefore, it is plausible that people may perform them to achieve interpersonal goals, and may exert self-control in order to do so.

An unfortunate reality is that goals are often in conflict (Carver, 2004; Emmons & King, 1988; Fishbach et al., 2003) and when they conflict, goal hierarchies may help solve the problem of goal prioritization (Austin & Vancouver, 1996; Wicker, Lambert, Richardson, & Kahler, 1984). A common crossroads may involve the clashing of the desire to do deeds that are good for the self (e.g., be healthy, follow the rules) with the desire be socially included. In some cases, people will do the normatively good thing and exert self-control to be healthy, moral, law-abiding, and so forth. In other cases, however, people will want to fit in and, in attempting to achieve that goal, may cast aside intrapersonal goals for the sake of social rewards. The current paper concerns the latter situation.

In some circumstances what may appear from the outside to be evidence of a self-control failure (by normative, outcome-based definitions) may have emerged from the exertion of self-control in the service of a social goal. Only the actor knows the incipient response and intended outcome, whereas the literature on self-control typically has used scholars' labels of behaviors as good or bad. This outside view may not capture the

intentions that people have to achieve goals that may not be viewed as valuable by scholars (cf. Monin, Pizarro, & Beer, 2007, for a similar discussion about moral behavior).

Potentially Risky Behaviors as Attractive or Aversive

When afforded the opportunity to engage in a potentially risky behavior (e.g., drinking alcohol, overeating), people can be initially averse or attracted to the behavior. I do not assume that everyone finds potentially risky behaviors attractive (see Figure 1). Acknowledging that sometimes people are averse to potentially risky behaviors allows for the view that sometimes people use self-control to engage in such behaviors. A behavior can be said to have required self-control only when one knows the nature of the initial impulse toward that behavior. If a person's initial impulse was not to perform the behavior, but the person is observed engaging in the behavior, then it is plausible that some degree of self-control effort was used to overcome the initial aversion. If a person's initial impulse was to engage in the behavior, and the person engaged in that behavior, there is little evidence that self-control was exerted.

Figure 1

Self-Control Exertion as a Function of Impulse Toward Potentially Risky Behaviors and Perceived Social Rewards for Performing the Behavior.

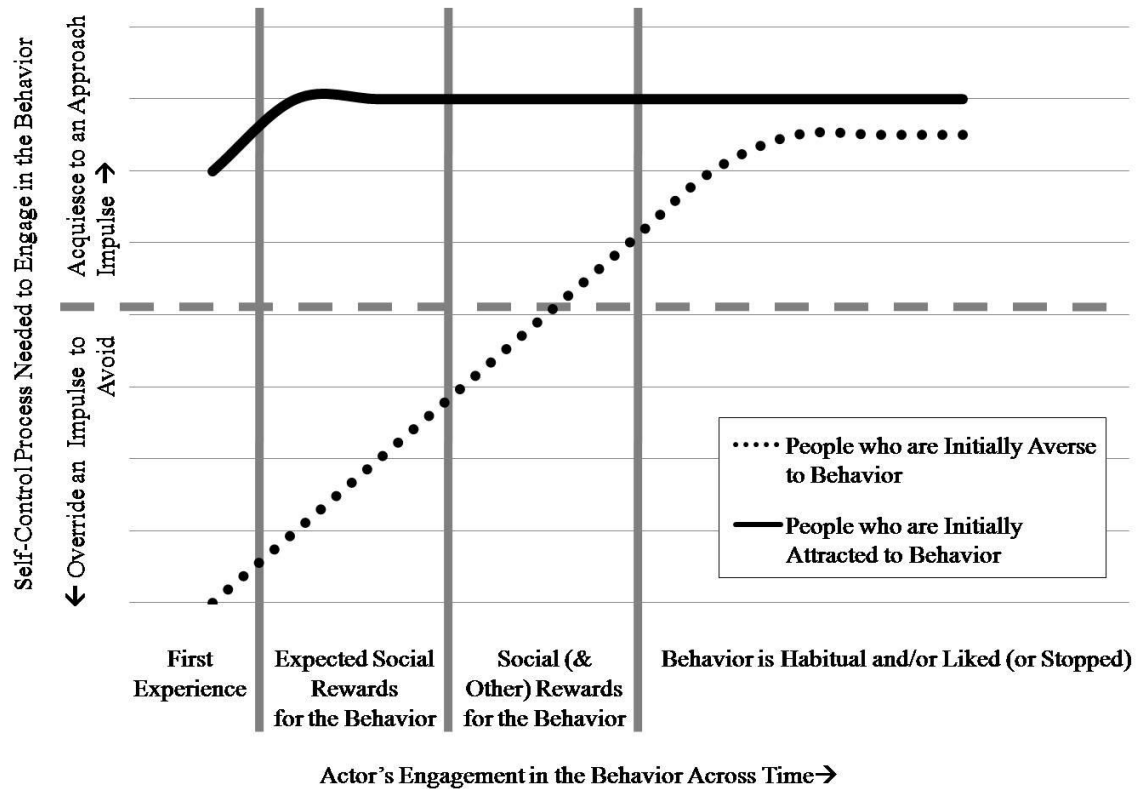


Figure 1 depicts a conceptual view of the proposed model in the context of the extant literature on self-control. The criterion (Y-axis) is the type of self-control process required to engage in a behavior: People who are initially attracted to a target behavior (represented by the solid line) need only to acquiesce to this attraction impulse in order to engage in the behavior. In comparison, people who are initially averse to a target behavior (represented by the dotted line) must exert self-control to override their aversion impulse and consequently perform the behavior. The initial impulse to avoid or approach a behavior is a critical component of the self-control process that has been overlooked to some extent in self-control research.

The X-axis represents the time course of acquiring a taste for a particular behavior. Take the example of a first sip of beer. Some people enjoy the taste of beer from the start (represented by the solid line). For them, social rewards are not necessary to engage in the behavior: the behavior is already rewarding. However, many people do not enjoy beer initially (represented by the dotted line). Only when they expect to receive external incentives will they have another sip. Continuing to drink while disliking the taste requires self-control. In parallel, research on self-control in the laboratory has used a method that is similar to this example in that the drink tastes bad (unsweetened artificial juice mix made partly with vinegar) – except that the drink is good for one’s health (Vohs et al., 2008). In both cases, one must use self-control initially to override the aversive taste. In the case of beer (and perhaps the vinegar drink, although doubtful), it is possible to acquire a liking for the taste and enjoy it for its own sake. Such taste acquisition may be particularly likely if social and/or other rewards (e.g., physiological pleasure) are experienced as a result of enacting the initially aversive behavior (see “Social and other rewards” in Figure 1). After the taste has been developed, exertion of self-control will be required to *avoid* the behavior, as represented in Figure 1 by the right side of the dotted line.

When deciding whether to engage in a personally aversive behavior, people may consider outcomes for the self (e.g., personal discomfort, health, or well-being) as well as interpersonal relationships (e.g., rejection versus acceptance). Whether someone ultimately engages in the personally aversive behavior is a function of the perceived costs relative to perceived benefits (Kahneman & Tversky, 1979). If the perceived benefits of

the behavior outweigh the perceived costs, people will likely engage in the target behavior. If the costs outweigh the benefits, people will not engage in the target behavior.

When the perceived benefits of the personally aversive behavior outweigh the perceived costs, the self-control process required to engage in that behavior will differ depending on the person's initial impulse toward the behavior. Someone who is initially attracted to the behavior will simply acquiesce to that urge in order to perform the target behavior. In contrast, someone who is initially averse to the behavior will need to override that incipient response in order to execute the behavior. It is this latter pathway that has been heretofore unrecognized as an example of self-control in the literature. The pathway leading to a seemingly disinhibited behavior may or may not involve the exertion of self-control.

Theory Summary and Caveats

I propose that self-control can be used to achieve outcomes that are not normatively viewed as good for the self, particularly when people are averse to those actions. Furthermore, I propose that the expectation of social rewards may compel people who are averse to such potentially risky behaviors to overcome their aversion and engage in them. For clarification, I will unpack some key assumptions of these statements.

To be sure, there are multiple pathways through which people engage in potentially risky behaviors. One of those pathways, as noted in Figure 1, is to simply acquiesce to a desire to engage in it. I do not argue that some people enjoy engaging in behaviors that have the potential to harm the self. The purpose of this dissertation is to expose a heretofore unrecognized pathway through which people come to enact such behaviors. By acknowledging variability in people's impulses toward potentially risky

behaviors (as with any behavior), I expose the possibility that some people may in fact exert self-control to engage in them (as with any behavior). Considering the self-control process as orthogonal to the behavioral outcomes avoids the assumption that any behavior, including potentially risky ones, always results from acquiescing to an approach impulse.

One reason why this pathway (i.e., through self-control exertion) may have been missed in prior thinking about potentially risky behaviors (e.g., Baumeister et al., 1994), is because it is common for people to be attracted to them. Behaviors such as drinking alcohol, having sex, smoking, overspending, and eating dessert when on a diet are often rightly characterized as temptations that require self-control to avoid (Schwarzer, 2001). Yet I propose that this need not always be the case. As depicted in Figure 1, variability in people's impulse toward a behavior may be especially apparent when people are first exposed to an action. Over time, many people may develop an appetite for potentially risky behaviors, as depicted by the increasing slope of the dotted line in Figure 1. This appetite may develop in response to social rewards or physiological pleasure experienced because of engaging in the behaviors, or a combination of the two (Haertzen et al., 1983; Knee & Neighbors, 2002). Although important, such appetite development with repeated behavior is not the focus of this work. To the extent that the majority of research on self-control processes in these domains has occurred after many people have developed a taste for them, the literature may miss out on instances when people might dislike and need to exert self-control to engage in them.

There are multiple reasons why people may override their aversion to a behavior and enact it. For example, the expectation of eventually finding an action pleasurable

might lead people to override an initial aversion to that behavior. I have focused on the expectation of social rewards because much research has shown the immense power of social affiliation goals to influence behavior (e.g., Baumeister & Leary, 1995; Maner et al., 2007) through self-control exertion (Finkel & Campbell, 2001; Vohs et al., 2005). I propose that social rewards offer an important incentive—but not the only incentive—for people to override an initial aversion to a behavior.

In summary, I do not propose that all people always (or even often) engage in potentially risky behaviors for social gain. Past research has tended to infer a process of self-control failure from behavioral outcomes that have the potential to risk harm to the self (e.g., alcohol consumption, risky sex). I seek to highlight the crucial role of an individual's initial impulse (as either negative or positive) when understanding whether or not people exerted self-control to enact any behavior, regardless of its potential costs to the self. When an individual finds a particular behavior aversive, but expects to gain valued social rewards by enacting it, I predict that person will likely exert self-control and engage in that behavior despite costs to self. In Study 3 I sought to test this hypothesis in the context of a personally aversive but not particularly risky behavior. In the literature review, as well as in Studies 1a, 1b, and 2, I focus on this possible phenomenon in the context of potentially risky behaviors. My emphasis is on these risky domains because it is in considering such behaviors that I think the literature has most conflated the process of self-control from its behavioral outcomes. Moreover, it is in these potentially risky behavioral domains that a thorough understanding of the underlying processes may have the greatest applied benefit, in terms of efforts focused on prevention.

Is Misregulation Really Amiss?

Several years ago, the concept of *misregulation* was proffered to denote attempts at self-regulation that result in self-harm, and the concept is considered a form of self-regulatory failure (Baumeister & Heatherton, 1996; Baumeister et al., 1994). The term is reserved for a variety of circumstances in which self-regulation ultimately results in failure because it is not exerted in an effective way. Regulating behavior in order to reduce short-term discomfort is deemed an instance of misregulation when viewed from the perspective of that behavior's contribution to longer-term goals (Baumeister et al., 1994).

The concept of misregulation suggests that self-regulation can only be successful when the goal it serves has clear and positive consequences for personal health and well-being. This notion conflates the process and outcomes of self-control: People who misregulate are exerting self-control, but they simply have a non-optimal strategy or target in mind. Accordingly, misregulation is by definition not a self-control failure. In contrast with this conceptualization, I recognize instances of misregulation as examples of self-control, albeit misguided ones. That a behavior has undesirable consequences is distinct from whether the process of self-control was exerted. Outcomes alone cannot stand as evidence of self-control; the process of exerting self-control must be of utmost attention when understanding self-control.

Separating the outcomes from the process of exerting self-control is crucial to my argument that people can exert self-control to perform personally aversive behaviors in the service of social goals. Breaking a diet might appear to be a failure of self-regulation. At times, it may be a self-regulation failure. Yet at other times the implications of caloric

overindulgence might be an unpleasant side effect of attempting to achieve a different goal, such as strengthening interpersonal bonds by joining a communal binge (Crandall, 1988). In this way, higher order goals can be served by what appears to be self-control failure (Polivy, 1996).

The difference between process and outcomes is illustrated by the example of the highly intelligent criminal. Being highly intelligent can produce beneficial or destructive ends. Some criminals are highly intelligent and use their cleverness to carry out dastardly crimes. Hence although being highly intelligent is generally associated with wise choices and normatively positive outcomes, a high level of intelligence can produce an ill end. Similarly, I argue that behaviors that are normatively understood as undesirable (i.e., self-control failure) can arise from the process of exerting self-control. Just as crimes do not necessarily arise from simple-mindedness (Holland, Beckett, & Levi, 1981), seemingly disinhibited behavior does not necessarily arise from a loss of self-control. Good self-control can yield bad outcomes; hence bad outcomes do not signal a failure to exert self-control.

When are Social Goals Worth Engaging in Potentially Risky Behaviors?

Risky behaviors can have undesirable personal consequences. The long-term consequences are apparent to self-control researchers (e.g., Fishbach et al., 2003), but many of these behaviors exact costs even shortly after being enacted. Impulsive spending can result in overdrafts or low cash supply, drinking alcohol can result in a hangover, smoking leaves one smelling bad, and overeating can cause physical discomfort and weight gain. Under what circumstances would such personal costs be deemed less important than the benefits for these behaviors?

I propose that people would be most likely to exert self-control to engage in potentially risky or harmful behaviors when two key conditions are met. First, a strong desire to belong to a specific group is necessary. If there are many desirable groups available to join, the urgency to join any one of them should be less than if there is only one desirable group available. For example, small rural communities might have only one or two social networks available for any one individual to join relative to large urban centers, which have a multitude of subgroups. When there is only one desirable group, belonging to it can be perceived as vital.

Second, the person must perceive that that potentially risky behavior is a central means of being accepted into the group. If there are multiple ways to gain entry into a group, there is less incentive for people to overcome aversions to a particular behavior. I predict that when these two preconditions are satisfied, people who have an aversion to a behavior likely will override that aversion (i.e., engage in self-control) and perform the behavior. If only one precondition is met, I predict that people who are averse to the behavior would be less likely to engage in it than if both preconditions are met. If neither precondition is met, I predict the behavior is unlikely to occur because it is aversive and therefore the person lacks both inner desire and external incentive to perform the behavior. The next part of this paper will provide evidence that people are often initially averse to potentially risky behaviors, and furthermore that people sometimes override their aversions to gain social rewards that are perceived to be contingent on such behaviors.

Supporting Evidence

This section reviews evidence indicating that people can and do override aversive impulses when social rewards are at stake. I drew support from research investigating a variety of potentially risky behaviors that range in their potential harm to the self from embarrassment to contracting a potentially lethal illness.

Alcohol and Tobacco

Overview

In multiple surveys, people have identified beer and other bitter alcoholic beverages as initially distasteful (Moore & Weiss, 1995; Fallon & Rozin, 1983). Similarly, first-time users of tobacco report that it tastes unpleasant (DiFranza et al., 2004). Hence I infer that people exert self-control when first ingesting alcohol and tobacco. Furthermore, it appears that they do so in response to potential social rewards. People experiment with tobacco and alcohol because they perceive such substance use as prevalent within their peer group, and their initial attempts often model their peers' behavior (Britt & Jachym, 1996; Jackson, 1997; Urberg, Degirmencioglu, & Pilgrim, 1997). With repeated exposure, people may acquire tastes for these substances, at which point requires the exertion of self-control to refrain from consuming them. Yet, the expectation of social rewards seems to entice many people to initiate the acquisition process.

Alcohol

Because the taste of alcohol is often perceived to be bitter and unpleasant at first (Moore & Weiss, 1995; Fallon & Rozin, 1983), many people need an incentive to acquire this taste. Alcohol beverage manufacturers have found it necessary to add sweet fruit

flavors to their beverages to attract so-called “entry-level drinkers” (Mosher & Johnsson, 2005). For example, in New Zealand, chocolate- and fruit-flavored beers have been introduced specifically to appeal to the young palate (McCreanor, Greenaway, Barnes, Borell, & Gregory, 2005). The existence of these sweetened versions of alcohol implies that alcoholic beverages are not inherently pleasant at first sip. Without additives to mask the taste, there is an impulse to avoid the unpleasant taste that must be overridden in order to imbibe.

Among both adolescents and adults, anticipating social benefits from drinking is associated with frequency of drinking (Brown, Goldman, & Christiansen, 1985). Similarly, perceptions of social benefits experienced while drinking, such as confidence, positively predict frequency of alcohol use (Roehling & Goldman, 1987). A longitudinal study of young adolescents revealed that the extent to which people expected alcohol to ease social interactions predicted increased alcohol consumption over time (Smith, Goldman, Greenbaum, & Christiansen, 1995). This study tracked adolescents between 11 and 14 years of age over a two-year period. The more strongly that adolescents believed that they would be socially aided by drinking alcohol, the more likely they were to begin drinking and to consume higher quantities of alcohol during the two-year period. Hence, in line with my hypothesis, adolescents begin to drink alcohol and drink more alcohol to achieve social gains. Additional results from this study revealed a pattern of reinforcement that may provide insight into how people acquire a taste for alcohol: expecting to be interpersonally included because of one’s drinking resulted in more alcohol consumption, which in turn led to stronger expectations of gaining interpersonal

rewards from alcohol use in the future. Early expectancies thus act as self-fulfilling prophecies, leading to more alcohol intake over time.

Motivations for drinking alcohol among college students have been studied from a Self Determination Theory perspective (SDT; Knee & Neighbors, 2002). Extrinsic reasons for drinking alcohol were measured using items such as, “I drink because most responsible adults drink” and “I drink because I feel uncomfortable if I am the only person not drinking.” These items can be interpreted as measuring desires for social rewards or to avoid social rejection, which from the SDT perspective are termed “extrinsic reasons” for engaging in a behavior. Results showed that people who tended to drink alcohol for extrinsic reasons (e.g., to gain status as an adult or avoid social exclusion) also tended to perceive heightened peer pressure to drink, which in turn led to greater alcohol consumption. Knee and Neighbors’ study provides solid evidence that people consume alcohol because they expect to be socially rewarded for doing so.

More evidence comes from the literature on pluralistic ignorance, which shows that college students who believe that drinking alcohol is commonplace among their peers use alcohol more than those who do not possess that belief (Schroeder & Prentice, 1998). A sample of first-year college undergraduates was randomly assigned to discuss pluralistic ignorance regarding drinking behavior. These students were taught that the belief that “everyone is doing it” (i.e., drinking alcohol) is pervasive yet false. First-year students in a control group also discussed an alcohol-related topic (decision making in drinking situations) but one that was engineered not to challenge the default belief that drinking is ubiquitous on campus. The following semester, students whose beliefs about the prevalence of drinking had been altered via the pluralistic ignorance discussion

reported drinking less than their counterparts in the control condition. This finding calls students' motivation to drink into question. If students' drinking had been driven chiefly by personal tastes, then the knowledge that fewer peers were drinking alcohol should not have affected drinking patterns. Yet when the students thought that alcohol consumption was not as prevalent as they had once believed, they reduced their alcohol consumption. This result implies that college students in the control group, a group representing students in general, drink larger amounts of alcohol in order to conform to drinking norms they perceive on campus.

In sum, research on alcohol consumption supports the overall hypothesis that people will drink alcohol in order to gain social benefits. None of these studies explicitly measured whether people were initially averse to the taste of alcohol or not, but broader evidence on the bitter taste of alcohol suggests that at least some of the people sampled were overriding aversion to alcohol. Many of the studies focused on adolescents because they are (in general) people initially attempting alcohol use. Numerous studies have shown that people believe that drinking alcohol leads to social benefits, such as confidence and ease in social situations, and the strength of these beliefs predicts whether and how much people imbibe. When combined, the reviewed research shows that despite the unpleasant taste and potential illness that results from drinking more alcohol than one is accustomed to drinking (not to mention the legal difficulties that adolescents risk when they drink before they are of lawful age), when people believe that alcohol will bring social advantages, they drink it.

Tobacco

Even tobacco companies acknowledge that starting to smoke is an awkward, uncomfortable, and physically unpleasant activity (DiFranza et al., 2004; Teague, 1973). One large study ($N = 679$) found that 69% of people who had tried smoking reported that their first inhalation was a bad experience, and that 72% of people who had tried smoking said that their first cigarette experience did not make them want to smoke again (DiFranza et al., 2004; see also Haertzen, Kocher, & Miyasato, 1983). In order to help potential smokers override the aversive taste of cigarettes, tobacco companies have added strong flavors such as fruit sensations; “Sweet Cherry,” “Happy Hour Bellini,” and “Caribbean Peach Rum” are flavors of cigarillos available for purchase (Montana Department of Revenue, 2007). Another frequently-added flavor is menthol, which is a taste that appeals to new smokers because the menthol helps to mask the tobacco taste (Hersey et al., 2006). To help would-be Indonesian smokers to learn to enjoy cigarettes, approximately 500 brands (including Marlboro) now include cloves as an ingredient. Cloves are a common taste in Indonesian cuisine and so their addition makes cigarettes more palatable. Moreover, cloves numb the throat and make it easier to inhale cigarette smoke (Brummitt, 2007).

The existence of tobacco-masking flavors supports the view that tobacco tastes bad and is initially unpleasant to consume. People typically also need social incentives to start to smoke. Before curbs on advertising, tobacco companies focused their advertisements on the social benefits derived from smoking, including showing one’s independence from authority figures and gaining status within one’s peer group (Brandt, 2007; Kessler et al., 1997). An early survey on the perceptions of smoking revealed that

65% of people smoked because it facilitated social interactions, whereas only 5% said they smoked because they enjoyed the taste (Bogen, 1929). To this point, the vast majority of adolescents smoke their first cigarette with a friend, not by themselves (Hahn, et al., 1990; Friedman, Lichtenstein, & Biglan, 1985), suggesting that social support facilitates initial smoking attempts. People also acknowledge that they smoke because they expect smoking to improve their image among potential friends (Spijkerman, van den Eijnden, & Engels, 2005).

The perception that smoking is a normative behavior within one's peer group is a social incentive for smoking (Andrews, Hampson, & Barckley, 2008; Jackson, 1997), particularly among people who are sensitive to social cues as guides for behavior (Perrine & Aloise-Young, 2004). One study tracked students in 5th and 7th grades longitudinally and found that among students high in self-monitoring (i.e., who are sensitive and responsive to social factors), those who believed that smoking was common in their peer group were more than three times as likely to become a smoker within a year than were high self-monitors who did not hold such a belief (Perrine & Aloise-Young, 2004). In other words, young adolescents (approximately 11 years old) who had a keen desire to engage in impression management started smoking only if they believed smoking would yield social rewards. This finding suggests that adolescents who routinely alter their behavior to match social norms are especially likely to override the aversive taste of cigarettes for interpersonal gain. Without the expectation of social success from smoking, the likelihood of taking up smoking dropped precipitously.

Other research shows that adolescents smoke in order to be allowed into a desirable friendship group (Aloise-Young, Graham, & Hansen, 1994). In this study, 342

7th grade students were identified as either group outsiders, who desired entry to a friendship group, or accepted group members. The accepted students were asked to name their best friend in the group, whereas outsiders were asked to name a person in the group with whom they desired to be best friends. Outsiders who desired friendship with a smoker were twice as likely to begin smoking during the next year as outsiders who desired friendship with a non-smoker. More tellingly, how much the would-be friend smoked during that period predicted how much the outsider smoked over a one year period. In contrast, accepted group members' smoking was not predicted by how much their best friend within the group smoked. Hence, only when trying to gain acceptance to a social group did adolescents override the distaste of smoking and engage in the behavior; moreover, they calibrated their smoking to fall in line with desirable others' smoking level. Adolescents who were already successful group members had no incentive to increase their smoking behavior and therefore their smoking habits failed to match those of their best friends.

Not only did their smoking behavior change, group outsiders were rewarded for calibrating their smoking to others' smoking (Aloise-Young et al., 1994). Outsiders who smoked a similar amount as did their desired friend were more than twice as likely (15.2%) to become friends with that person than were outsiders whose smoking behavior did not match their desired friend's smoking behavior (6.5%). This study provides strong evidence that adolescents will use cigarettes to gain liking by a desired friend who smokes. Furthermore, these data show that this tactic works to build friendships with smokers.

In sum, smoking cigarettes for the first time is unpleasant and awkward, yet other research shows that people will smoke to the extent that they believe it will lead to social rewards—but do not begin to smoke when those rewards are unattractive or absent. It works, too: Strategic smoking does in fact secure friendships with other smokers. When taken together, this work is consistent with the overall hypothesis: Smoking, a behavior often (and rightly) considered an instance of self-regulatory failure, may sometimes require exertion of self-control to occur. People may override their initial aversion to the taste of cigarettes for social gain. Yet, like research on alcohol consumption, what remains inconclusive from these studies is whether those same people who initially find smoking aversive go on to smoke for social gain.

Binge Eating

Gastric distension, peptide release, and orosensory signals combine to indicate satiation in humans (Beglinger & Degen, 2006; French & Cecil, 2001). Binge eating involves eating past this point of satiation and overriding physiological cues to stop, including painful sensations, suggesting that binge eating can require self-control exertion. Long term binge eating is related to increased gastric capacity (Geliebter & Hashim, 2001), and an increased risk of obesity, anxiety disorders, and depression (Reichborn-Kjennerud, Bulik, Sullivan, Tambs, & Harris, 2004). Although chronic binge eating is clinically considered to be a loss of self-control (American Psychiatric Association, 1994), research on binge eating among university students suggests that people may strategically binge eat in order to fit into social groups.

Binge eating is rewarded with popularity in college sororities (Crandall, 1988). A longitudinal study tracked binge eating behavior in two sororities over the course of a

year. From the start, the two sororities had different norms for binge eating. In one sorority the norm was to binge eat often, whereas in the other the norm was to binge eat a moderate amount. Women who binged in line with the norms of their sorority became more popular over time than did women whose binge eating was misaligned with the sorority's norms. In contrast, women whose binge eating deviated from the sorority's norm became less popular over time. At a group level, a popularity-binge eating link existed too. Within each sorority, friendship subgroups that engaged in binge eating at the normative level became more popular over time than did friendship subgroups that exhibited deviant bingeing behavior (bingeing either more or less than the norm). This study provides some evidence that people will strategically engage in a behavior that is normatively understood as stemming from a loss of self-control and is dangerous to one's health when social rewards are at stake. Additionally, evidence suggests they are rewarded socially for doing so.

Recent research expanding on Crandall's (1988) study makes clearer the point that people binge eat, and purge as well, to align themselves with desirable others. Undergraduate women self-select into social groups that have similar personality patterns, and certain personality patterns predict bulimic tendencies (i.e., low self-esteem, high perfectionism; Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999). Drawing on the personality-bulimia link, researchers found that groups of women who possessed the vulnerable traits of low self-esteem and high perfectionism incited bulimic symptoms in each other (Zalta & Keel, 2006). Crucially, this study also revealed that spending time with group members spread bulimic behavior. Over the summer months, when these women were away from most of their university peers, the social rewards for bulimic

behavior disappeared and consequently so did many of the bulimic behaviors. That is, women reduced their purportedly disinhibited behaviors (bingeing and purging) when there was no social benefit for engaging in them. This drop in bingeing and purging suggests that the behaviors were controllable to some extent and furthermore unenjoyable unto themselves, therefore suggesting that an incentive – interpersonal rewards – had impelled those women to engage in it.

Acquired Tastes

Acquired tastes are, by definition, aversive tastes that become pleasurable after repeated exposure, which begs the question: Why would people repeatedly expose themselves to unpleasant tastes? I argue that part of the reason that some people acquire tastes for aversive and potentially harmful substances like chili peppers and coffee is because those substances can confer social benefits.

Chili Peppers

Chili peppers create a noxious burning sensation when placed on the tongue – so much so that they are used in some cultures to wean babies (Mennella, Turnbull, Ziegler, & Martinez, 2005; Rozin & Schiller, 1980). The compound capsaicin, which is what gives chili peppers their heat, can cause skin burns, stomach pain, eye irritation, and lung irritation if inhaled (Natural Medicines). Yet children in some cultures (e.g., Mexico) bear these risks and learn to eat them. According to observational and interview data, eating chili peppers is a behavior perceived as that which adults do, and in Mexico it is perceived as somewhat indicative of daring and masculinity (Rozin & Schiller, 1980).

Children are sensitive to the value that respected elders place on particular food items. One study showed that over time, schoolchildren increased their liking of foods

when the foods were presented to them in combination with praise from or brief conversations with their teachers, but not when the foods were presented without any social interaction (i.e., when the foods were placed in their lockers; Birch, Zimmerman, & Hind, 1980). Naturally, chili peppers are eaten socially in gatherings of respected adults and older children (Rozin & Schiller, 1980), which may afford the requisite social rewards for acquiring the taste. Acquiring a taste for chili peppers requires overriding a burning sensation in the mouth as well as possible chemical irritations to the mouth and gastrointestinal system; one reason people – even children – may force themselves to acquire this taste is for interpersonal approval.

Coffee

Coffee is another acquired taste that can have adverse side effects. The taste of black coffee is bitter and unpleasant (Fallon & Rozin, 1983; Haertzen et al., 1983). In fact, one prominent caffeine scientist quipped, “No one ever drank coffee for the first time and said, ‘Oh, now this is what I’ve been missing.’” (Griffiths, quoted in Price, 2008, p. 27). Moreover, the caffeine present in coffee can lead to sleep problems (Brezinova, 1974; Pollak & Bright, 2003; Roehrs & Roth, 2008), restlessness, nervousness, gastric irritation, and tremors (Griffiths, Juliano, & Chausmer, 2003), and may cause withdrawal symptoms including headache, fatigue, and irritability if used daily and is then stopped (Juliano & Griffiths, 2004). Work published in the journal *Nature* found that caffeine exerts effects on the brain similar to those of cocaine (Lindskog et al., 2002; see also McManis, 2002).

When people start drinking coffee they tend to make it sweeter, which serves to counteract bitterness (Yiee, Duffy, & Bartoshuk, 2002) and confirms that coffee has an

ill-taste that initially needs modification. Coffee house owners report that instead of drinking black coffee, youths mostly begin drinking coffee in highly sweetened variations, such as mochas (sweetened hot chocolate and coffee) and sweet lattes (one ounce of espresso, a cup of milk, and flavoured sugar syrup) (Rolek, 2004; Teitell, 2007).

Not only is coffee bad-tasting and potentially unhealthy, its consumption seems to be driven at least in part by social factors (Rozin, 1987). One study showed that the frequency with which adolescents drink coffee or tea is influenced by their parents' and peers' attitudes toward it (Webster, Hunter, & Keats, 1994). Perceiving that their own parents and peers think that drinking coffee is a "normal" action indirectly influences adolescents' coffee consumption by increasing their expectations of how much peers and parents expect them to drink.

In addition, adolescents who think their parents want them to drink coffee also believe that coffee will not taste bad, which subsequently increases coffee drink frequency. Taste expectations can have a great impact on taste experiences (Wansink, Payne, & North, 2007), so believing that coffee will not taste so bad may facilitate the acquisition process. Yet it is social influence that leads adolescents to adjust their expectations of how coffee will taste (from unpleasant to pleasant), which ultimately increases coffee consumption. Acquiring a taste for coffee may also be aided by finding ways (e.g., adding sugar) to alter the bitter taste. In sum, early drinkers of coffee chemically change or psychologically diminish its aversive taste and accept potential negative physical side effects. Whether such coffee consumption is enacted using self-control is unclear from the existing data; however, initial consumption seems to be driven by a desire to gain heightened social status.

Sabotaging Intellectual Performance

Some people behave as if they are less intelligent than they are in actuality. This behavior is not only deliberate but it also can harm the self. People are averse to giving answers that they know to be factually incorrect, suggesting that behaving as if one is dumb when one is not is an act of self-control. People who have been instructed to give an incorrect answer to a question, but who know the correct answer, have a strong impulse to give the correct answer and must consciously override this urge in order to give an answer they know to be erroneous (Wegner, Fuller, & Sparrow, 2003; Sparrow & Wegner, 2006). Despite explicit instructions and strong motivation to do so, people who were asked to respond randomly to a series of yes/no questions were more likely to give the correct answer than a wrong answer (Wegner et al., 2003). Even when offered incentives and additional opportunities for responding incorrectly, people found it quite difficult suppress their knowledge.

From a person perception perspective, research has shown that people are averse to appearing unintelligent and will over-represent their intelligence if given the opportunity (e.g., when accurate results are unknown by others; Schlenker & Wowra, 2003; Tice, Butler, & Muraven, 1995). Wanting to appear intelligent is particularly important when people want to be viewed positively by others (Paulhus, Harms, Bruce, & Lysy, 2003). Therefore, cultivating an impression that one is relatively unintelligent or simply not performing up to one's abilities requires overriding the accuracy motive as well as the ubiquitous impulse to self-enhance (Sedikides, Skowronski, & Gaertner, 2004).

To be sure, performing intelligently leads to personally beneficial outcomes such as academic and career success. However, intelligent behavior can sometimes have negative social consequences. Social ties can be damaged when one person outperforms another, and people are sensitive to this possibility. Not only do people feel uncomfortable, they worry that the relationship will be harmed because of a performance discrepancy (Exline & Lobel, 1999, 2001; Exline, Single, Lobel, & Geyer, 2004).

Underperformance poses a self-regulatory challenge, yet can lead to social success. Do people sabotage their own performance to gain favor with others? It seems so. Both men and women report deliberately “playing dumb” to improve their social relationships (Dean, Braito, Powers, & Britton, 1975; Gove, Hughes, & Geerken, 1980). Extending to more than self-report, laboratory tests have demonstrated that people will underperform on a cognitive intelligence test in order to avoid outperforming a likeable partner — but not so for an unlikable partner (White, Sanbonmatsu, Croyle, & Smittipatana, 2002). In this set of studies, a naïve participant and a confederate posing as a participant completed the study together. The confederate acted in a likeable or unlikeable manner toward the participant at the start and throughout the experiment. Their task was to individually solve anagrams, aloud, in the presence of each other. The confederate solved her set of anagrams aloud first, and either performed well or poorly. Then, the naïve participant took his or her turn at solving the anagrams aloud. Participants solved significantly fewer anagrams correctly — and hence deliberately underperformed — when the likeable confederate had just failed rather than succeeded, but not when the unlikeable confederate failed. These studies suggest that people will deliberately perform

below their ability levels, which is a task that takes controlled processing and is difficult to do (Wegner et al., 2003), in order to promote interpersonal ties with desirable others.

Delinquency and Drug Use

Delinquency and drug use are risky behaviors that can carry substantial costs to the self. Delinquent behavior, such as theft and vandalism, puts people at risk of developing a criminal record that could land a person in jail or hinder employability. Using illicit drugs carries personal costs such as short-term and long-term damage to the physical body (for example, see National Institute of Drug Addiction, 1999, on cocaine), financial costs, risk of addiction, legal troubles, and various other risks due to impaired judgment while under the influence of these substances. Accordingly, drugs are perceived to be dangerous, particularly by nonusers (O'Connor, Fite, Nowlin, & Colder, 2007). Nonusers of marijuana expect more negative effects of marijuana use (e.g., cognitive and social impairments) than users expect (Linkovich-Kyle & Dunn, 2001); yet some nonusers will later try drugs. I argue that the expectation of interpersonal success entices people to try drugs and other delinquent behaviors despite recognition of their potential costs.

Peer pressure is one reason why adolescents engage in delinquent behavior. One quarter of drug users report deliberately encouraging others to use drugs (Voss & Clayton, 1984) and people use drugs in response to this pressure. For example, one study of adolescents ages 12-14 found that peer pressure to do drugs predicted drug use more strongly than did other variables, including lax parenting practices (Kung & Farrell, 2000). Another study investigated predictors of a range of delinquent behaviors including theft, cheating, drunk driving, drug use, promiscuous sexual attitudes, and smoking

among 16- to 18-year-old teenagers (Santor, Messervey, & Kusumakar, 2000). Each of these risky behaviors and attitudes was predicted by perceived peer pressure as well as a desire for popularity. Many of the behaviors surveyed are normatively understood as indicative of low self-control (e.g., drug use, drinking alcohol) and involve costs to the self (e.g., physical and mental health, criminal record). Consistent with my broad hypothesis, these behaviors were enacted in response to a desire to belong.

Although deviance is often enacted by people who are attracted to it (e.g., impulsive people; White et al., 1994) and in response to peer pressure as noted above, some theories have conceptualized deviance as an interpersonal strategy seen as useful for asserting social status (Brezina, 2000) and for regulating one's identity among peers (Blanton & Christie, 2003). Deviant behaviors can sometimes result from deliberate action. Consistent with this idea, longitudinal research examining substance use among adolescents has revealed that late starters (i.e., those who do not use drugs until 9th grade) exhibit higher levels of trait behavioral control ability than do early users (Wills, McNamara, Vaccaro, & Hirky, 1996). Although correlational, this study suggests that people can engage in drug use despite—or, as I argue, in part because of—the possession of good self-control. Seiffge-Krenke (1995) proposed that some people recognize and reject societal norms and expectations for acceptable behavior. Instead, they respond by engaging in deviant acts such as drug use and vandalism. A decision to act in ways that deviate from society suggests self-control exertion, and dovetails with the broader message in this paper.

Further evidence of strategic deviance comes from a study of college students who are new to campus. Incoming freshmen are likely to be more anxious about fitting in and

joining social groups than are students who are on campus already and therefore likely have a group of friends. Hence people should be more willing to use drugs to build social connections upon their arrival at university than after some time experiencing university life. Samples of incoming freshman and college students already in the midst of their first year reported how much they were concerned with acting in socially appropriate ways, as well as their level of and reasons for recreational drug use (i.e., marijuana and alcohol intake) (Wolfe, Lennox & Cutler, 1986). Perceived peer pressure was reported as a primary reason for drug use. People who lacked an established social group and who were quite invested in fitting in (i.e., incoming freshman highly concerned with behaving socially appropriately) were more likely to use drugs when they believed there was social approval for doing so compared to those less keen on fitting in (i.e., students in their first year who were not concerned with enacting socially appropriate behavior, and seasoned college students in general). These data suggest that some drug use is strategic in that people do drugs when they expect that action to result in interpersonal rewards, consistent with my thesis.

Socially successful people, as compared to those who are not as successful, seem to know how to regulate their deviant behavior so that it achieves maximum social gain. Popular adolescents (as nominated by their peers) who perceived that behavioral misconduct was valued by their peers were more likely to engage in those misbehaviors over a one year period than were unpopular adolescents who nevertheless held the same perception of peer values (Allen, Porter, McFarland, Marsh, & McElhaney, 2005). Popular adolescents appeared to know their peer group's limits of delinquent behavior and limited their misconduct to acts of minor delinquency that were approved by their

peer group (e.g., theft under \$5, sneaking into a movie). Unpopular adolescents, conversely, misjudged their peers' opinions and instead engaged in serious criminal behavior (e.g., assault) that exceeded their peer group norms. Popular adolescents are more socially skilled than unpopular adolescents (Frentz, Gresham, & Elliott, 1991), so the fact that popular adolescents engaged in some delinquency suggests that they used their social skills to sense that minor acts of delinquency would maintain their popularity. Conversely, unpopular people's relative lack of social skills (Frentz et al., 1991) may have rendered them less able to recognize the boundaries of socially appropriate delinquency than their more popular peers. Other work also indicates that popular people enact an optimal level of delinquency for obtaining social rewards (Blanton & Christie, 2003) and therefore appear to regulate their behavior to avoid deviating from that optimal level. As such, delinquent behaviors can be strategically managed for social gain.

Delinquent behavior and drug use can be quite harmful to the self, and many people are well aware of this fact. Theories of deviance support the notion that self-control exertion can play a role in (i.e., has a positive association with) delinquent behavior, although empirical research has often emphasized the role of self-control failure when studying deviance (e.g., Muraven, Pogarsky, & Shmueli, 2006). The fact that research has shown that delinquent behavior occurs in the presence of peer rewards, but not without it, provides indirect evidence for the contention that delinquency can be the result of self-control exertion in the service of social rewards.

Sexual Practices

People sometimes engage in sexual activities that they find unpleasant or that carry a risk of personal harm. One reason why people engage in these potentially risky

behaviors is because they expect them, rightly or wrongly, to lead to social rewards such as companionship, intimacy, or a desirable social identity. These expectations provide the incentive needed for people to impel themselves to engage in sexual behaviors they would otherwise avoid.

Consensual unwanted sex occurs when a person who does not want sex agrees to it in order to fulfill their partner's desire (Impett & Peplau, 2003). The term itself, consensual unwanted sex, showcases the process of overcoming the urge to avoid a personally undesirable behavior in order to please another and thus promote interpersonal harmony. Both men and women in short- and long-term relationships report having engaged in consensual unwanted sex (Impett & Peplau, 2003). But longitudinal and recall studies show that more women than men report engaging in it. In fact, the majority of women report engaging in consensual unwanted sex at least some of the time (O'Sullivan & Allgeier, 1998; Sprecher, Hatfield, Cortese, Potapova, & Levitskaya, 1994).

Adolescents sometimes engage in sexual acts that they perceive to be personally harmful or unpleasant in order to enhance their popularity or encourage a romantic relationship. Adolescent girls who are highly sensitive to rejection report a reluctant willingness to engage in sexual behaviors they perceive as wrong in order to maintain a relationship (Purdie & Downey, 2000). This finding strongly suggests that adolescent girls will override an aversion to sexual behaviors to continue a dating relationship. Furthermore, 25% of adolescent girls in a large sample ($N = 425$) spontaneously reported that the main reason for oral sex (giving or receiving) was to heighten intimacy in their romantic relationships, whereas boys most frequently cited pleasure as the primary goal of oral sex (Cornell & Halpern-Felsher, 2006; Halpern-Felsher, Cornell, Kropp, &

Tschann, 2005). Women report less enjoyment than men for giving and receiving oral sex (especially giving; Laumann, Gagnon, Michael, & Michaels, 1994); accordingly, girls may be engaging in sex acts that are personally undesirable in order to bolster their romantic relationship and boost their social status. Additionally, some evidence suggests that adolescents are in fact rewarded with popularity when they engage in sexual behaviors: self-reported sexual activity predicts peer-nominated popularity among adolescents (Prinstein, Meade, & Cohen, 2003).

A shocking example of subjugating personal well-being for interpersonal connection comes from a small subculture of gay men. Some gay men refer to Human Immunodeficiency Virus (HIV) as “The Gift”. A small percentage of gay men seek to be infected with HIV; these men are called *Bug Chasers*. Another group of gay men (again, a small percentage) seek to give HIV to other men; these men are called *Gift Givers* (Groß & Parsons, 2006; Tewksbury, 2006). Bug Chasers seek to become part of the group, known as *Poz Brotherhood*, and Gift Givers seek to initiate new members. Qualitative analyses of online posts revealed that both groups possess an image of becoming HIV-positive as something akin to joining a brotherhood, with expectations of mutual support and caring to accompany group membership (Graydon, 2007). Some of the Bug Chasers’ statements acknowledged the physical danger of acquiring HIV, yet a simultaneous willingness to endure it in order to attain this identity. These themes suggest that people do not want to acquire HIV, yet actively seek it in order to become part of the *Poz Brotherhood*. This subculture is small and understudied, yet the pattern of findings is consistent with my thesis: People may override an aversion to contracting a potentially

lethal virus in order to gain the anticipated social connections that come with an HIV-positive status.

In sum, some people engage in unwanted sexual acts to gain interpersonal rewards such as relationship harmony and desired social identity. Research shows that at times people (especially women) willingly engage in sex so as to please relationship partners, despite a lack of personal desire. Adolescent girls expect that interpersonal intimacy follows from oral sex. Other reports suggest that women require self-control to engage in sexual behaviors, particularly oral sex, due to a relatively lower sex drive. Moreover, the existence of the uncommon phenomenon of Bug Chasing among a minority of gay men suggests that some people willingly take on a deadly virus in order to gain a social identity and its attendant communal support. The compilation of extant evidence supports the view that people exert self-control to engage in unpleasant and potentially risky sexual behaviors for social reward.

Conclusions and Role of the Current Research

Evidence from a variety of literatures and behavioral domains provides an empirical basis for proposing that some potentially risky behaviors can stem from self-control exertion rather than failure under certain conditions. People will smoke cigarettes, drink alcohol, binge eat, drink coffee, eat chili peppers, fail tests, steal, ingest illicit drugs, have sex, and seek to become HIV-positive for the sake of building relationships with others. Critically, research suggests that the expectation of social rewards impels people to engage in these potentially risky behaviors even if they would rather avoid their consequent personal harm. Research converges to suggest that people are willing to

sacrifice their personal well-being, ranging from embarrassment to noxious tastes to HIV-positive status, to achieve connection and approval from others.

The literature review provides a strong foundation of evidence consistent with my theoretical propositions. I have used research findings, cultural artifacts, and facts about the harmfulness of certain substances to infer that certain behaviors that are normatively viewed as self-control failures are at least somewhat harmful or unpleasant to the self. I inferred that because at least some people find such behaviors aversive, and because research shows that people sometimes engage in these behaviors to gain social rewards, that people are using self-control to subjugate their well-being (particularly initially, as I explained using Figure 1). No study has expressly investigated whether people will subjugate personal well-being by engaging in potentially risky or otherwise aversive behavior for the purpose of social gain, and if so, whether they exert self-control to do so.

Based on the compilation of evidence across various behavioral domains, I predict two critical conditions increase the likelihood a person will subjugate personal well-being in order to gain social rewards: (1) the person must have a strong desire to belong to a specific group, and (2) a novel personally aversive behavior must be perceived as the key route to being liked. In this dissertation, the studies were designed to create or reflect these conditions by directing people to recall this type of instance (Studies 1a and 1b), by tracking people's potentially risky behavior over time as a function of personal attitudes and perceived friend's attitudes toward the behaviors (Study 2), and by contriving such a situation in the lab (Study 3).

Changing Perceptions: A Potential Alternative to the Self-Control Process

Thus far, self-control has been considered the process through which people enact personally risky or otherwise aversive behaviors, when they believe that those actions will lead to social benefits. However, it is also possible that people ultimately engage in behaviors they thought were unappealing because their expectations were changed. To the extent that people perceive their desired friends enjoying the behaviors they themselves find aversive, people may (consciously or unconsciously) change their expectations of the behavior to align with their peers' enjoyment. Thus, people may ultimately engage in the behaviors because they no longer expect them to be aversive, rather than in spite of the aversion.

There is much empirical work showing that people's sensory experiences are influenced by their expectations, and that those expectations can be affected by information provided to them. For example, receiving descriptive information about a product's ingredients *before* tasting it influences people's sensory perception of that product, including both flavor (Lee, Frederick, & Ariely, 2006; Wansink et al., 2007; Wansink, Park, Sonka, Morganosky, 2000) and texture (Wansink et al., 2000). Receiving information about a product *after* tasting it does not influence subsequent taste ratings (Lee et al., 2006), suggesting that the a priori information affects people's sensory experience, rather than biasing recalled experience during ratings.

In addition to factual information, people use others' attitudes and actions to inform their own attitudes and actions, particularly when people unsure of how to feel or act (Bandura, Ross, & Ross, 1961). Informational social influence is a well-established phenomenon in which people align their behavior with that of others because they either

do not know what to do or do not have time to decide what to do for themselves (Deutsch & Gerard, 1955; Sherif, 1935). Subsequently, people tend to privately believe that the other's behavior was correct (Castelli, Vanzetto, Sherman, & Arcuri, 2001). Further evidence suggests that information about others' attitudes informs more than people's own attitudes or behaviors, but also changes their sensory experiences of the attitude object or action. For example, people who are provided with expert's ratings of wines privately rate the wines as more or less palatable to align with the expert's ratings (Siegrist & Cousin, 2009). Moreover, work cited earlier showed that adolescents who believe their parents and peers want them to drink coffee also believe that coffee will not taste bad; such a belief predicts increased drinking frequency (Webster et al., 1994).

To conclude, there is some evidence that people may change their attitudes to align with other's attitudes toward behaviors they find personally aversive. Social information could alter people's expectations of the activity, leading people to engage in it not for social gain per se, but because they no longer think it will be aversive. This process of attitudinal change offers an alternative mechanism through which people who begin with aversion to a particular behavior yet eventually engage in it, one that does not rely on self-control exertion. In Study 3 (see Chapter 4), I will seek evidence of perceptual change as a function of peer attitudes toward an aversive behavior as an alternative explanation for anticipated results.

Overview of Current Studies and Hypotheses

The broad purpose of the following set of studies was to test the hypothesis that people subjugate personal well-being under certain circumstances (i.e., for social rewards), and if so, to provide some initial evidence that the underlying process is one of

self-control exertion. To do this, the studies focused on behaviors that people perceived to be aversive and, in Studies 1 and 2, were normatively viewed as self-control losses. All studies sought to demonstrate that in spite of their aversion to the behavior, people would override their aversion only when social rewards hinged on that behavior—thus providing evidence consistent with the mechanism of self-control exertion. The additional, unique purpose of Study 3 was to investigate whether self-sacrifice for social gain requires self-control.

Studies 1a and 1b investigated whether this phenomenon resonates with people by asking them whether they have sacrificed their personal well-being for social gain in the past. Then, using a longitudinal design, Study 2 explored the extent to which personal preferences for potentially risky behaviors and perceptions of how much people's friends approved of these behaviors interacted to predict future behavior. This study investigated whether some people—particularly those who were not inherently attracted to potentially risky behaviors such as drinking alcohol and having sex—would subjugate their well-being and engage in those behaviors to gain social acceptance.

Study 3 offered control that is lacking in Studies 1 and 2 by contriving a situation in the lab. Social rewards were contingent on eating a substance that was expected to be (and indeed was) aversive to nearly everyone: Chocolate with 100% cocoa concentration. People needed to exert self-control to eat the substance; those who expected to gain rewards from eating it should have forced themselves to eat more than those who did not. This study offered the cleanest test of this hypothesis by measuring participants' behavior in the moment as they faced the choice of whether to sacrifice their personal comfort for social gain. The addition of a self-regulation resource depletion condition in this study

was intended to enable examination of the self-control process through which subjugating personal well-being for social gain is proposed. The effect of condition on perceptions of the chocolate was also investigated. If the changing perceptions hypothesis described above is correct, people in the peer pressure conditions would have rated the chocolate more favorably than people in the control condition.

Together these studies were designed to expose a novel way of thinking about why people engage in personally harmful behaviors. This perspective emphasizes the roles of initial impulses toward the harmful behaviors—which are not necessarily approach-oriented as is often assumed—along with perceived rewards for engaging in them. Taken together, this set of studies sought to test whether personally aversive behaviors are sometimes enacted as a result of self-control exertion, in order to gain important social rewards.

CHAPTER 2. STUDIES 1A AND 1B RECALLING PAST EXPERIENCES

In two questionnaire studies, I asked people to recall—if they could—a behavior they had enacted that they found personally aversive yet they did anyway for social gains. People were asked to recall such a time and to think about their motives for, struggles with, and consequences of this behavior. The key purpose of these studies, especially Study 1a, was to identify whether the proposed phenomenon resonates with people's experience. Underlying my main hypothesis is the proposition that self-control failure cannot be inferred from the particular behavior; whether an action requires self-control is a function of people's impulse to engage in it. Therefore, questions included prompts for people to reflect on their initial impulses. Additionally, in Study 1b people rated the extent to which the typical student was attracted to a variety of behaviors, including those domains included in the earlier literature review and those recalled by participants in Study 1a. Overall, these studies were designed as an initial investigation into the possible ways people may subjugate their well-being for social gain in their everyday lives. The two studies share the same goal and methodology and are therefore presented together in this chapter.

In my analyses, I focused on exploring relevant predictors of the degree to which people had to force themselves to engage in that behavior (particularly in Study 1b). Broadly, I anticipated that people who recalled having felt more aversive to the behavior initially would have exerted more self-control exertion to enact the behavior than those who felt less aversive to the behavior, but that this would differ depending on how much people had wanted to be liked. People who engaged in the personally aversive behavior would have been willing to exert extra effort to do so if they expected social success from

it; those who did not expect to gain socially would have nominated behaviors that took relatively less effort. Similarly, people who are more relationship-oriented at a trait level should have been more willing to put forth effort to overcome an aversion to a behavior for social gain, relative to people who are less relationship-oriented.

Study 1a

Method

Participants: Study 1a

Seventy-six undergraduates completed this questionnaire for partial course credit. Fifteen (19.7%) participants were male and 61 (80.3%) were female. The average age was 20.63 years ($SD = 4.07$), ranging from 17 to 47 years (13 people did not report their age). Eighteen people (23.7%) were of European North American descent and birthplace, 18 people (23.7%) were born in either Canada or the United States with East Asian ethnic heritage, and 31 people (40.8%) were born and at least partially raised in an East Asian country. An additional 9 respondents did not fit any of these three categories. In total, thirty-eight participants (50%) were not born in Canada. On average, these participants moved to Canada approximately 10 years ago.

Procedure: Studies 1a and 1b

Participants were recruited for the “Past Experiences Study.” After providing informed consent, participants were given a questionnaire packet containing instructions to recall an incident, questions about that incident, followed by multiple measures assessing potentially relevant personality measures (as listed below). Participants spent approximately thirty minutes completing the questionnaire packet in a lab room with up

to nine other participants. All participants earned partial course credit as payment, and were debriefed after completing the questionnaire.

Materials: Study 1a

Incident recall. Participants began the questionnaire by writing about a time when they had engaged in an aversive behavior in order to be liked by others. Participants were given the option to skip the incident-related questionnaires if they could not think of such an incident. See Appendix A for the exact instructions.

Incident recall follow-up items. Participants elaborated on their target incident by responding to 8 open-ended questions as well as 13 items with 7-point Likert-type response scales. Questions asked people to assess the riskiness of that behavior, the degree to which they felt the behavior would work to gain them favor, the amount of self-control it took to engage in the behavior, how much the behavior actually worked to gain them favor, how costly the behavior was to them personally, and how frequently they have engaged in the behavior since then. Please see Appendix B for the exact quantitative items.

Perceived consequences. Five items asked participants to evaluate the costs and benefits they experienced as a result of this behavior. These items included ratings of regret, satisfaction, how well the behavior worked to secure liking, severity of costs, and whether the benefits were worth the costs. Four items were rated on 7-point Likert-type scales, including one was reverse-coded, such that higher numbers indicated greater positivity of consequences. These items were averaged to form a single index of positive consequences, $\alpha = .75$. Because of a clerical error, one item was rated on an 8-point scale (0 = no consequences, 7 = extremely negative consequences). Although including it did

not affect results, it was omitted from the composite in the final analyses because of this different scale.

Need to Belong Scale. Individual differences in the need to belong with others were measured using a 10-item scale (Leary, Kelly, Cottrell, & Schreindorfer, 2007). Sample items include, “*I want other people to accept me,*” and “*I try hard not to do things that will make other people avoid or reject me.*” Three reverse-keyed items were recoded such that higher numbers on this scale indicated a greater need to belong. This scale has been used successfully in a few published studies (e.g., Carvallo & Pelham, 2006 who report $\alpha = .84$; Pickett, Gardner, & Knowles, 2004, who report $\alpha = .83$).

Because a validation study for this scale has not been published, I performed exploratory factor analysis, reliability analysis, and item analysis on the data. Items 2 and 4 had unacceptable correlations with the other items (item 2 range of r : $-.135$ to $.254$, item 4 range of r : $-.130$ to $.280$). After these items were removed, the resulting 8 item scale had adequate internal consistency reliability, $\alpha = .79$. As recommended by past research (Leary et al., 2007), I forced a 1 factor solution on an exploratory factor analysis using Principal Axis Factoring, which converged in 5 iterations. This analysis revealed an acceptable first Eigenvalue (3.37, second Eigenvalue = 1.24), which alone explained 34.32% of the variance in the measure. Factor loadings on this one factor were acceptable and ranged from $.45$ to $.72$. Thus, the 8 items were averaged to create a single need to belong index, with higher numbers reflecting greater need.

Additional Personality Variables

The following two scales were included to explore relationships between trait self-control and the extent to which people needed to exert effort to engage in the behaviors they reported.

Big Five Inventory. The Big Five Inventory (BFI; Benet-Martinez & John, 1998; John & Srivastava, 1999) was included to explore linkages between variables of interest and conscientiousness because that particular trait conceptually overlaps with self-control. The BFI consists of 44 items rated using 7-point Likert-type scales (1 = *disagree strongly*, 7 = *agree strongly*). Previous studies cited above have reported 5 facets with internal consistency reliabilities ranging from $\alpha = .80$ to $.87$. In this study, the internal consistency reliabilities ranged from $\alpha = .74$ (conscientiousness) to $\alpha = .87$ (extraversion), with all but conscientiousness above $.80$.

Self-Control Scale. The Self-Control Scale (Tangney et al., 2004) is a 36-item measure that is intended to tap trait levels of self-control. Sample items include, “*I don’t keep secrets very well*,” and “*Sometimes I can’t stop myself from doing something, even if I know it’s wrong*.” Twelve reverse-keyed items were recoded such that higher numbers of this scale indicate *lower* self-control. In the original study (Tangney et al., 2004), internal consistency reliability was reported at $\alpha = .89$, and test-retest reliability after a 3-week interval was $.89$. I obtained the same value for Cronbach’s alpha (i.e., $.89$) in this study.

Neither conscientiousness nor the Self-Control Scale was significantly correlated with the variables of interest, except for one unexpected correlation of $.27$ between low self-control and perceiving the act as a requirement of being liked, $p < .05$. Thus, there

was no compelling theoretical or empirical reason to explore these measures further (see Table 1 for all correlations).

Background Information. Participants reported basic demographics information including as gender, academic major, and ethnicity.

Results

Throughout this dissertation (Studies 1a, 1b, and 2), all regression analyses were conducted using linear regression unless otherwise specified. Predictors were centered before creating interaction terms and conducting analyses (Aiken & West, 1991).

Does This Experience Resonate with People?

Seventy-three out of 76 participants (96%) were able to recall a time that they engaged in an aversive act to gain social rewards; only three participants identified that they were unable to think of such a time. As requested in the instructions, people reported target behaviors they perceived to be at least somewhat risky [$M = 3.70$, $SD = 1.58$, which differed from 1 (not risky), $t(72) = 14.61$, $p < .001$]. People reported experiencing both costs [$M = 2.59$, $SD = 2.01$, which differed from 0 (no costs), $t(72) = 10.99$, $p < .001$], as well as social benefits from engaging in the risky behavior [$M = 4.81$, $SD = 1.08$, which differed from 4 (no change in being liked), $t(72) = 6.42$, $p < .001$]. Generally, people nominated behaviors that were in line with the described phenomenon in terms of risk and social benefits, suggesting such experiences resonate for people. Nonetheless, descriptive statistics indicated enough variance in the degree to which people believed the behaviors they nominated were aversive and enacted to achieve social gains to enable further analyses. See Table 4 and Study 1b for discussion of the types of behaviors reported.

Table 1*Study 1a. Descriptive Statistics for Predictors and Criteria*

Variable	<i>M</i>	<i>SD</i>	<i>N</i>	2	3	4	5	6	7	8
1. Effort to engage in behavior	3.62	1.66	73	.30*	.17	-.07	-.22	-.06	.06	-.10
2. Riskiness of behavior	3.70	1.58	73	--	.14	.08	-.34**	-.10	-.14	.16
3. Perceived requirement of being liked	3.86	1.63	73		--	.20	.08	.30*	-.16	.27*
4. Need to Belong	3.37	0.63	76			--	-.01	.06	-.23*	.28*
5. Positivity of consequences	3.87	1.23	73				--	.34**	.02	.01
6. Frequency of behavior since incident	2.66	1.63	73					--	-.06	.22
7. Conscientiousness	4.64	0.75	76						--	-.70**
8. Trait Self-Control (higher values mean lower self-control)	2.77	0.48	75							--

* $p < .05$, ** $p < .01$ (two-tailed)

Predicting Effort to Engage in the Behavior

Based on the theory, people should have forced themselves (i.e., exerted self-control) to overcome aversion to a behavior only when they felt it was a requirement of being liked. Perceived riskiness of the behavior was the closest indicator of aversion available in this study. To explore this relationship, I regressed recollections of effort (i.e., *How much did you have to force yourself?*) on the degree to which people felt the behavior was risky and a requirement of being liked, as well as their interaction, $R^2 = .11$, $\text{Adj } R^2 = .06$, $F(3, 69) = 2.75$, $p = .05$. Only perceptions of riskiness uniquely predicted the degree to which people forced themselves to engage in the behavior (see Table 2). Not surprisingly, people exerted more effort to engage in behaviors they thought were riskier to their well-being.

Table 2

Regression Analysis Summary for Perceiving the Behavior was a Requirement of Being Liked and Perceived Riskiness Predicting Effort Exerted

Predictor	<i>B</i>	<i>SE B</i>	β
Intercept	3.62***	0.19	
Perceived riskiness	0.30	0.12	0.28*
Perceived requirement of being liked	0.12	0.12	0.13
Interaction	-0.002	0.07	-0.003

* $p < .05$, *** $p < .001$.

Single-items measures tend to be psychometrically poor indicators of the constructs they intend to measure. In this analysis, I was able to replace the single-item perceived requirement of being liked with the composite need to belong measure, although both perceived riskiness and the criterion, effort, remained single items, $R^2 =$

.16, $\text{Adj } R^2 = .12$, $F(3, 69) = 4.40$, $p < .01$. Perceived riskiness remained a significant predictor of effort, $t(69) = 2.96$, $\beta = .33$, $p < .01$. However, this was qualified by a significant interaction with need to belong, $t(69) = 2.27$, $\beta = .26$, $p = .03$ (see Table 3). People who had a strong need to belong had to force themselves the most if the behavior was very risky, but easily enacted it if it was not risky, $t(69) = 3.54$, $\beta = .58$, $p < .001$. People who had a weak need to belong forced themselves to enact the behavior a moderate amount, regardless of how much they felt the behavior was risky, $t(69) = 0.49$, $\beta = .07$, $p = .62$. This interaction pattern shows that people will exert self-control to overcome aversion to a behavior (in this case measured as perceived riskiness) only if they strongly desire inclusion to a group, which is consistent with the broad hypothesis.

Table 3

Regression Analysis Summary for Need to Belong and Perceived Riskiness Predicting Effort Exerted

Predictor	<i>B</i>	<i>SE B</i>	β
<u>Omnibus Analysis</u>			
Intercept	3.59***	0.18	
Perceived riskiness†	0.35	0.12	0.33**
Need to Belong (at the Mean)	-0.39	0.30	-0.15
Interaction	0.42	0.19	0.26*
<u>Simple Slope (Need to Belong -1SD)</u>			
Intercept	3.83***	0.26	
Perceived riskiness	0.08	0.16	0.07
<u>Simple Slope (Need to Belong +1SD)</u>			
Intercept	3.34***	0.26	
Perceived riskiness	0.62	0.17	0.58***

* $p < .05$, ** $p < .01$, *** $p < .001$.

† Because need to belong is centered, this coefficient represents the relationship between perceived riskiness and perceived effort holding need to belong constant at its mean.

Predicting Subsequent Behavior Frequency

Although this idea was not central to my theory explained in Chapter 1, I stated that people would likely repeat a personally aversive behavior to the extent that they were actually rewarded for enacting it initially (see Figure 1). Therefore, I explored whether the positive consequences people remember experiencing as a result of the behavior predicted subsequent behavior frequency beyond the impact of how risky people thought

the behavior was. To do this, I regressed reported frequency of engaging in the behavior since then on how risky people thought the behavior was, how positive the consequences were, and their interaction, $R^2 = .14$, $\text{Adj } R^2 = .10$, $F(3, 69) = 3.69$, $p = .02$. Only positivity of consequences emerged as a significant predictor, $t(69) = 2.83$, $B = .45$, $SE = .16$, $\beta = .34$, $p < .01$. Recalling experiencing positive consequences as a result of the behavior was positively related to engaging it more frequently since then. The single item measure of perceived riskiness of the behavior did not predict subsequent behavior frequency either alone, $t(69) = .25$, $B = .03$, $SE = .12$, $\beta = .03$, $p = .81$, or in interaction with positive consequences, $t(69) = 1.43$, $B = .16$, $SE = .11$, $\beta = .16$, $p = .16$.

Results from Study 1a show that most people are able to recall a time when they subjugated their personal well-being for social gain. Moreover, the most self-control was exerted by people who were highest in need to belong enacting behaviors they thought were risky. Although it is retrospective, this finding is consistent with the idea that people who most desire social gain will be most willing to use self-control to subjugate their personal well-being. Last and not surprisingly, the degree to which people recall reaping positive consequences from their actions is correlated with how frequently they have engaged in the behavior since then.

Study 1b

Like Study 1a, this study asked participants to explain—if they could—a behavior they have enacted in the past that they found aversive yet they did anyway for social gains. The purpose of this study was to explore, in greater detail than Study 1a, people's perceptions of the events and psychological states that preceded these events. The purpose of Study 1b was to ask participants to answer more questions on the critical

theoretical components of this phenomenon, to gain greater understanding. Specifically, questions were added that asked participants for insight into the nature of their own impulse toward the behavior before trying it in this instance (c.f. Nisbett & Wilson, 1977), how much self-control they exerted to do it, and how much they had expected their peers to reward them for the behavior. Moreover, I also explored the extent to which people assumed risky behaviors typically resulted from self-control failure versus exertion (i.e., a normative perspective).

Method

Participants

One hundred sixty-one undergraduates completed this questionnaire for partial course credit. Due to disturbances during the study session, data from three participants were not analyzed, leaving a final sample size of 158. Forty-one (25.9%) participants were male and 117 (74.1%) were female. The average age was 20.43 years ($SD = 1.76$), ranging from 17 to 26 years (1 woman did not report her age). Forty-five people (28.5%) were of European North American descent and birthplace, 22 people (13.9%) were born in either Canada or the United States and had East Asian ethnic heritage, and 64 people (40.5%) were born and at least partially raised in an East Asian country. An additional 27 people (17.1%) did not fit any of these three categories. In total, eighty-seven participants (55.1%) were not born in Canada. On average, these participants moved to Canada approximately 8 years ago.

Materials

Incident recall. As in Study 1a, participants began the questionnaire by writing about a time when they had engaged in a personally risky behavior in order to be liked by

others. (See Appendix A for the exact instructions.) I created follow-up questions for Study 1b that expanded on those in Study 1a. See descriptions below and Appendix B for the specific items.

Incident Recall Follow-Up Items

Recalled self-control exertion (effort). Seven items asked participants to recall the degree to which they had to exert self-control in order to engage in the behavior. Six items were rated on 5-point Likert-type scales (1 = *strongly disagree*, 5 = *strongly agree*). Three of these items converged to form a coherent index of effort, $\alpha = .88$. The three items included in the index were, “*I had to force myself to do it,*” “*I had a hard time getting myself to actually do it,*” and, “*At first I had to force myself to do the behavior.*”

Pre-existing impulse toward behavior. Eight items were created to measure the extent to which people were attracted to or repelled by the behavior *before* they engaged in it, for example, “*Before this incident happened, I tried to avoid that type of behavior.*” All items began with the stem, “*before this incident happened,*” two were reverse-scored, and all were rated using a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Items were averaged to form a single index of pre-incident impulse, $\alpha = .85$. Higher values indicated greater aversion to the behavior; lower values indicated greater attraction.

Perceived peer incentive. Participants rated the degree to which they expected social rewards from engaging in the behavior. The set of four items included “*this was the only thing I felt I could do to be accepted*” and “*before this incident happened, I thought that this type of behavior was acceptable among my friends.*” All items were rated on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*), and one was reverse-

scored. These items were not internally consistent, $\alpha = .16$. Inter-item correlations ranged from $r = -.18$ to $r = .39$. Therefore, items were considered separately in analyses. The item, “*before this incident happened, I thought that this type of behavior would improve my social status,*” was prioritized in analyses. Of the items available, it was the most face valid assessment of enacting a behavior specifically for social gain.

Perceived consequences. Using the same five items as in Study 1a, participants were asked to evaluate the costs and benefits they experienced as a result of this behavior. The four items that used 7-point Likert-type scales were averaged to form a single index, $\alpha = .78$.

Subsequent behavior frequency. Participants rated how often they engaged in this same behavior since that time using an 8-point Likert-type scale (1 = *never*, 8 = *daily*; all intermediate points were specifically labeled to facilitate accuracy). Participants who had engaged in the behavior at least once since then rated the degree to which they have had to force themselves to do it in those subsequent times using a 7-point Likert-type scale (1 = *it’s now easy to get myself to do that*, 7 = *it’s still really difficult to get myself to do that*). These two items correlated negatively, $r(105) = -.23$, and were considered separately in analyses.

Additional Scales Used in Analyses

Ratings of behaviors listed in Study 1a. Paraphrasing recalled behaviors from Study 1a provided a list of 51 behaviors that people had done for social gain. For exploratory purposes, I gave that list to participants in Study 1b, and asked them to rate how “*attractive or enticing*” each of the behaviors were to most UBC students. Response options ranged from 1 (*very unattractive*) to 6 (*very attractive*). These ratings were

averaged across participants, and across broader behavior categories. For example, items included both “*getting drunk from alcohol*” and “*drinking alcohol*.” These items were collapsed into the same “*alcohol*” category by an independent coder. I also coded the behaviors; the very few differences that emerged (< 3) were resolved through discussion. Broad behavior categories and mean normative attractiveness scores for each category are listed in Table 4.

Sociotropy. Sociotropy is a construct capturing concern with interpersonal relationships (Robins et al., 1994) that is conceptually similar to need to belong. Because of the psychometric complications experienced in Study 1a, the sociotropy scale was used instead of Leary et al.’s (2007) need to belong scale to index relationship orientation. Theoretically, people who are characteristically high in this construct should be more willing to subjugate their well-being for social gain, because they presumably value the latter more than those who are characteristically low in sociotropy. Sociotropy is measured with a validated 24 item scale (Robins et al., 1994) that has three related subscales: concern about what others think, dependency, and pleasing others. Participants respond to a series of “I” statements using a six point Likert-type scale (1 = *strongly disagree*, 6 = *strongly agree*). Representative items include: “*It is very important to me to be liked or admired by others*,” “*It is hard for me to break off a relationship even if it is making me unhappy*,” and “*It is hard for me to say ‘no’ to other people’s requests*.” In this study, the scale showed good internal consistency, $\alpha = .87$, and was considered as a single scale.

Additional Trait Scales

The following three scales were included to explore relationships between trait self-control and the extent to which people needed to exert effort to engage in the behaviors they reported. Consistent with Study 1a, none of these measures were significantly related to the predictors (e.g., pre-incident impulse) or the criterion (i.e., effort) of interest, and were not explored further (see Table 5 for correlations). Additionally, self-construal was included as another measure of concern for relationships, but was not analyzed due to severe psychometric problems.

Barratt Impulsiveness Scale. The short form of the Barratt Impulsiveness Scale (BIS; Spinella, 2007) was used to measure trait levels of impulsivity. Participants rated how often each of 15 items applied to them, including 6 items that were reverse scored, using a 4-point Likert-type scale (1 = *rarely/never*, 4 = *almost always*). Both the long- and short-forms of this measure have three factors: attention impulsivity, motor impulsivity, and non-planning (long-form: Patton, Stanford, & Barratt, 1995; short-form: Spinella, 2007). Representative items of each subscale include: “*I concentrate easily*” (attention subscale, reversed, $\alpha = .65$), “*I act on impulse*” (motor subscale, $\alpha = .77$), and “*I plan tasks carefully*” (non-planning subscale, reversed, $\alpha = .74$). I focused on the full scale, which showed good internal consistency, $\alpha = .81$.

Trait self-control. The same scale from Study 1a was used again to measure trait self-control (Tangney et al., 2004). Once again, internal consistency reliability was high, $\alpha = .88$.

Big Five Inventory. As in Study 1a, the BFI (Benet-Martinez & John, 1998; John & Srivastava, 1999) was included to explore linkages between variables of interest and

personality traits, specifically conscientiousness. In Study 1b the internal consistency reliabilities ranged from $\alpha = .58$ (Neuroticism) to $\alpha = .81$ (Conscientiousness). Only conscientiousness was explored because it had acceptable internal consistency and was theoretically relevant to self-control.

Self-construal. Independent and interdependent self-construals were measured using Singelis' (1994) scale. Participants rated the extent to which they agreed with each of 24 statements using a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Each subscale uses 12 items to tap either independent self-construal (e.g., "*I enjoy being unique and different from others in many respects*"), or interdependent self-construal (e.g., "*I will sacrifice my self-interest for the benefit of the group I am in*"). In this sample, internal consistency was adequate or poor, depending on the subscale, $\alpha_{\text{independent}} = .71$, $\alpha_{\text{interdependent}} = .66$. Because interdependence was a construct of theoretical interest, I investigated the inter-item correlation matrix and item-total correlations to attempt to improve the scale. The correlation matrix indicated very poor relationships among most items. Of 66 inter-item correlations, only nine were above .30, including the largest two which were in the .45 range. Twenty-two correlations were below .10, including 7 that were negative. This scale was psychometrically unsalvageable so I did not explore it further.

Results

Does this Experience Resonate with People?

As in Study 1a, the majority of participants (in this case, 90%) were able to recall a time when they engaged in an aversive act to gain social rewards. Only 16 out of 161 participants indicated they could not recall such an act. I investigated whether there were

demographic differences between people who could recall a time and those who could not. Groups did not differ by ethnic composition, $\chi^2(3) = 4.51, p = .21$, age, $t(155) = .46, p = .65$, year of study, $t(156) = .35, p = .73$, or (among those born abroad) year of arrival to Canada, $t(85) = .08, p = .93$. There was a marginally significant trend for males to be underrepresented (and therefore females to be overrepresented) among those who could *not* recall such an experience, $\chi^2(1) = 2.94, p = .09$.

Participants generally identified behaviors that fit the criteria. On average, people viewed the behaviors as at least somewhat risky [$M = 3.29, SD = .82$, which differed from the neutral midpoint, $t(141) = 4.28, p < .001$], and intended for improving social status [$M = 3.44, SD = .96$, which differed from the neutral midpoint, $t(141) = 5.53, p < .001$]. See Table 4 for the behavioral domains people reported in both Study 1a and Study 1b.

Table 4

Studies 1a and 1b. Behavioral Domains Nominated as Risky, and Normative Ratings of Perceived Attractiveness

Domain	Normative attraction to behavior as rated							
	Frequency		Frequency		by Study 1b Ps			
	Study 1a		Study 1b		(higher means more attractive)			
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	<i>M</i> *	<i>SD</i>	<i>d</i> †
Alcohol	21	28.77	32	22.70	141	4.73	3.63	0.34
Partying	3	4.11	13	9.22	141	4.65	0.82	1.40
Sex	5	6.85	8	5.67	137	4.25	1.04	0.72
Idiosyncratic personal discomfort (e.g., horror film)	8	10.96	12	8.51	139	4.02	0.56	0.93
Overspending	1	1.37	4	2.84	141	3.96	0.78	0.59
Failing to Study	5	6.85	8	5.67	141	3.26	1.36	-0.18
Drugs	6	8.22	12	8.51	140	2.78	1.07	-0.67
Smoking	2	2.74	2	1.42	142	2.68	1.47	-0.56
Lying/ Cheating	4	5.48	7	4.97	140	2.46	0.98	-1.06
Break law/rules (e.g., skip class, speeding while driving)	9	12.33	25	17.73	139	2.41	0.73	-1.49

Domain	Normative attraction to behavior as rated							
	Frequency		Frequency		by Study 1b Ps			
	Study 1a		Study 1b		(higher means more attractive)			
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	<i>M</i> *	<i>SD</i>	<i>d</i> †
Antisocial (e.g., bullying)	5	6.85	7	4.96	140	2.11	0.87	-1.60
Overeating	3	4.11	2	1.42	142	2.07	0.80	-1.79
Physical risk (e.g., skateboarding trick)	0	0.00	8	5.67	--	--	--	--
Uncodable/irrelevant (e.g., walking home on sunny day)	1	1.37	1	0.71	142	4.41	0.42	2.17
Total <i>N</i>	73		141					

* All means are significantly different from neutral (3.5), $p < .05$. Scale ranged from 1 (*very unattractive*) to 6 (*very attractive*).

† Cohen's d values reflect the extent to which the mean differs from the scale's neutral midpoint.

Note: Domains are ordered by mean attraction rating.

Predicting Effort to Engage in the Behavior

As in Study 1a, people should have exerted the most self-control to overcome aversion to a behavior only when they felt it was instrumental for being liked. I regressed recollected effort (i.e., a 3 item composite in which higher scores signal more effort) on pre-incident impulse toward the behavior (i.e., an 8 item composite in which higher scores signal weaker impulse, more aversion), the extent to which people felt the act would improve their social status (1 item), and their interaction, $R^2 = .22$, $\text{Adj } R^2 = .21$, $F(3, 138) = 13.19$, $p < .001$ (see Table 5 for descriptive statistics). Pre-incident impulse uniquely predicted effort, $t(138) = 6.20$, $\beta = .48$, $p < .001$, as did expected social status improvement (marginally), $t(138) = 1.89$, $\beta = .15$, $p = .06$, but they did not interact, $t(138) = -.84$, $\beta = .17$, $p = .41$.

To improve upon the single-item measure of expected social status improvement, I re-ran the above analysis and replaced it with sociotropy, a measure of desire to be liked, $R^2 = .26$, $\text{Adj } R^2 = .24$, $F(3, 135) = 15.40$, $p < .001$. Again, the same pattern emerged. Pre-incident impulse, $t(135) = 6.40$, $\beta = .49$, $p < .001$, and sociotropy, $t(135) = 2.29$, $\beta = .17$, $p < .001$, both uniquely predicted effort. Contrary to expectations and results from Study 1a, pre-incident impulse and sociotropy did not interact to predict effort, $t(135) = -.79$, $\beta = -.06$, $p = .43$. Together, these analyses show that people exerted more effort to enact these behaviors to the extent that they were averse to them, and to the extent they were concerned about social relationships.

Table 5***Study 1b. Descriptive Statistics for Predictors and Criteria***

Variable	<i>M</i>	<i>SD</i>	<i>N</i>	2	3	4	5	6	7	8	9
1. Effort to engage in behavior	2.84	1.01	142	.45**	.03	.17*	-.32**	-.31**	-.10	-.07	-.07
2. Pre-incident impulse toward behavior	3.29	0.82	142	--	-.22**	.001	-.42**	-.39**	.08	-.13	-.11
3. Expectation of social status improvement	3.44	0.96	142		--	.13	.12	.11	.06	.10	.07
4. Sociotropy	4.21	0.73	139			--	-.13	-.01	-.22*	.22**	.13
5. Positivity of consequences	3.99	1.27	141				--	.24**	-.02	.12	.10
6. Frequency of behavior since incident	3.01	1.66	142					--	-.02	.09	.03
7. Conscientiousness	4.57	0.88	142						--	-.66***	-.58***
8. Trait self-control (higher values mean lower self-control)	2.91	0.46	137							--	.69***
9. Trait impulsivity (BIS)	2.28	0.42	140								--

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Predicting Subsequent Behavior

In Chapter 1, I proposed that people who exert self-control to override an aversion to a behavior for social gain would, over time, come to like that behavior. This retrospective study affords the opportunity to investigate this possibility, inasmuch as self-reported past behavior is an accurate reflection of true past behavior. Overall, people who exerted more effort to enact the recalled behavior tended to engage in it less often since then, $r(142) = -.31, p < .001$. To explore this relationship further, I investigated the degree to which pre-incident impulse, sociotropy, and their interaction predicted the extent to which people have enacted the same behavior since then, $R^2 = .18$, $\text{Adj } R^2 = .16$, $F(3, 135) = 9.73, p < .001$. Unlike when predicting effort, only pre-incident impulse predicted repeating the behavior, $t(135) = -5.38, \beta = -.43, p < .001$, such that people who had a stronger impulse toward the behavior repeated it more often since then than did people who had a weaker impulse. Sociotropy did not uniquely predict repeating the behavior, either alone, $t(135) = -.21, \beta = -.02, p = .83$, or in interaction with pre-incident impulse, $t(135) = .69, \beta = .06, p = .50$.

As in Study 1a, I investigated the unique predictive power of positivity of consequences on subsequent behavior frequency, controlling for pre-incident impulse and their interaction, $R^2 = .16$, $\text{Adj } R^2 = .15$, $F(3, 137) = 8.94, p < .001$. Unlike Study 1a (which used a single item measure of perceived riskiness as a proxy for pre-incident impulse), pre-incident impulse was the only significant predictor of subsequent behavior frequency, $t(137) = -4.02, \beta = -.35, p < .001$. Contrary to results from Study 1a, recalling experiencing positive consequences did not relate to subsequent behavior frequency either alone, $t(137) = 1.18, \beta = .11, p = .24$, or in interaction with pre-incident impulse,

$t(137) = .52, \beta = .04, p = .61$. This analysis suggests that people repeated the behavior only if they were not strongly averse to it, regardless of how many benefits they recall receiving from enacting it.

Types of Behaviors and Normative Levels of Aversion

Across Studies 1a and 1b, participants nominated behaviors that overlapped substantially with the potentially risky behavior categories I identified in the introduction, possibly in part because some of these domains were offered as examples in the introduction to the question (see Table 4 for domains reported; see Appendix A for recall instructions). I argued that these domains, although normatively viewed as attractive temptations, are perceived as aversive by some people. In Study 1b, participants provided normative ratings of each domain's appeal. Drinking alcohol, partying, having sex, overspending, and a variety of idiosyncratic aversions (e.g., watching a horror film, starting a bonfire) were all presumed by participants to be appealing to the average UBC undergraduate student (all M s > neutral 3.5, all p s < .05; see Table 4). Yet all of these behaviors were nominated by actual UBC undergraduates as personally aversive.

Failing to study, using drugs, smoking cigarettes, lying and cheating, breaking the law or other rules, being antisocial (e.g., bullying others), and overeating were all presumed by participants to be unappealing to the average UBC undergraduate student (all M s < neutral 3.5, all p s < .05; see Table 4). These behaviors are not viewed as typically resulting from self-control failures in this sample.

Discussion

Across two studies, the vast majority of people were able to recall and discuss at least one time when they sacrificed their personal well-being in order to be liked by

others. This finding is an important contribution to this dissertation because it means that the phenomenon I proposed resonates with people's life experiences. Self-insight is certainly not always a pre-requisite for important psychological phenomena (Nisbett & Wilson, 1977; Wilson & Dunn, 2004). However, the fact that people can recall such a time has theoretical implications, suggesting that at least some of the time people may deliberately sacrifice themselves for social gain.

The theory on which this dissertation is based focuses on predictors of behavior (as do Studies 2 and 3 reported later). In the current studies, everyone who completed the full questionnaire was remembering a behavior they had enacted, which prevented analyses that were direct extensions of the theory. Instead, I used variance in the degree to which people felt the behaviors were effortful and risky to explore predictors of effort and frequency of subsequent behavior. Overall, in both Studies 1a and 1b, people who were more attracted to the behavior before the incident (i.e., had low scores on the pre-incident impulse measure) exerted less effort to engage in the behavior than those who were averse to the behavior.

The role of concern for interpersonal relationships in predicting effort differed somewhat across the two studies. In Study 1a, need to belong interacted with perceived risk to predict effort in Study 1a, such that people who were highest in need to belong exerted high effort to enact the behavior only if the behavior was risky. In Study 1b, sociotropy was a unique predictor of effort along with pre-incident impulse: people who were more concerned about interpersonal relationships tended to exert more effort to enact the behavior than those who were less concerned. Unexpectedly, the two predictors did not interact in Study 1b. I had anticipated that the most effort would be exerted among

people who were most relationship-oriented *and* who were most averse to the action, which is a pattern consistent with results from Study 1a only. Nonetheless, the broad picture that emerges across these studies shows that people who are most concerned with relationships are most willing to exert effort to overcome personal aversion for expected social gain.

Predictors of the frequency with which people have repeated the behavior since the time they described differed substantially across the two studies. In Study 1a, receiving positive consequences was the predictor that overpowered other predictors including riskiness and need to belong. In Study 1b, repeating the behavior was most strongly (and negatively) predicted by people's pre-incident impulse toward the behavior, which overpowered positive consequences, sociotropy, and other predictors. People who most strongly disliked the behavior did not tend to repeat it after this incident. Although I tend to have more confidence in Study 1b (due to more reliable composite measures and double the sample size relative to Study 1a), no firm conclusions can be made here about predictors of repeating the behavior. Importantly, this particular analysis was not directly relevant for the theory and was conducted for exploratory reasons. There are many other processes that influence whether someone repeats an action they had initially found aversive, including social and biological rewards. For example, biological precursors of nicotine addiction may begin with a single exposure to nicotine (Mansvelder & McGehee, 2002). Thus, biological rewards may lead people to continue engaging in certain behaviors such as smoking cigarettes, regardless of the social context or their initial aversion to the behavior.

Some of the very behaviors people nominated as resulting from their own self-control exertion for social gain were presumed to be self-control failures by their peers. This finding supports the idea that people make assumptions about the self-control process underlying certain behaviors. Yet these risky behaviors do not always result from self-control failure. The fact that people nominated these very behaviors as times when they exerted self-control to engage in these acts shows that common assumptions about self-control processes can be wrong.

Strengths and Limitations

Study 1a used single items to measure key constructs such as effort and aversion to the target behavior. Single items are notoriously unreliable, and therefore in Study 1b I improved the measurements by creating composite scores across multiple related items when it was psychometrically justifiable to do so. Importantly, Studies 1a and 1b relied on self-reported memories of times when people sacrificed their personal preferences for social gain. This method enabled a focused examination of situations people had actually encountered in their lives, thereby offering external validity to the package. Many of the behaviors people discussed (summarized in Table 4) could not be experimentally manipulated for practical or ethical reasons; self-report was the only way to access these activities.

Self-reported memories of psychological states are open to a variety of distortions, including biases to maintain consistency with a current self view (McFarland & Ross, 1987), to self-enhance (Ross & Wilson, 2003), or to project a particular image of oneself to others (Paulhus, 1984). To the extent that participants in these studies were motivated to present themselves in a particular way, they may have consciously or nonconsciously

edited their memories to support that goal. However, it is not clear that participants' responses on the whole were systematically biased in any given direction. It is likely that some people were motivated to conceal past potentially risky acts, whereas others were motivated to embellish past potentially risky acts. Such motivations likely added random noise to the data. If all behaviors reported had been normatively coded by participants in Study 1b as appealing, there would be cause for concern that people were reporting only those acts that are perhaps socially desirable in the UBC context. Yet people reported a variety of behaviors that varied in how much others generally thought they were attractive. Because of this great variability in normative assumptions about the behaviors people reported, it is unlikely that there was a systematic bias in reported behaviors.

The main limitation in these studies is that people were asked to recall *any* time when they had subjugated their well-being for social gain, rather than the *first* time they had forced themselves to engage in something they did not want to do. Theoretically, the phenomenon should most often occur when people are first attempting a particular behavior. Asking about a first attempt would have mapped on to this aspect of the theory more precisely. Then, I could have asked people to reflect on different reasons they had for enacting this particular behavior that first time. To the extent that they could report their motivations with some accuracy (c.f. Nisbett & Wilson, 1977), I could have examined the degree to which personal aversion, and social pressure predicted the amount of effort they needed to do that action. Based on my theory, I would predict that people would have exerted the most effort to enact the behavior to the extent that both their personal aversion and social pressure were high.

Ideally, a fully separate group of participants would have rated the presumed self-control process of the behaviors nominated in both studies. Using a separate sample would avoid participants evaluating a behavior that they had just recalled enacting deliberately for social gain. Because these ratings were preceded by their own recall task, these participants may have been primed to think about the full list of behaviors as requiring more self-control than a naïve group of participants would have. To the extent this is the case, the current appraisals of the assumed self-control process underlying each behavior may be biased toward higher self-control than they would have been from a separate sample.

Conclusions

Relying on recall has its dangers (McFarland & Ross, 1987; Paulhus, 1984; Ross & Wilson, 2003), but can afford us some insight nonetheless. People in this study were reporting their memories, some of which were from years earlier, as well as their interpretations of their own antecedent and consequent psychological states. Granted the limitations of memory distortions, this study offers external validity by exploring accounts of behaviors that are personally meaningful to participants yet may be inappropriate for contrived lab experiments. Results from this study lend support to the overall idea that sometimes people subjugate their well-being to gain socially. Most clearly, the fact that the phenomenon makes sense to people provides a useful starting point for more empirically rigorous tests that follow.

CHAPTER 3. STUDY 2 LONGITUDINAL STUDY OF POTENTIALLY RISKY BEHAVIORS

People overspend, overeat, smoke, take drugs, get drunk, have unprotected sex, and otherwise act in ways that jeopardize their personal well-being. It is possible that everyone who does so is giving in to impulsive attractions to these potentially risky behaviors, and despite awareness of risks they acquiesce to the impulse. However, it is likely that people vary in their attraction—and aversion—to such behaviors, as suggested by the literature review and Studies 1a and 1b. It is possible that some people engage in potentially risky behaviors because they think they can gain valued social rewards for doing so, despite an aversion to the behavior itself. The aim of this longitudinal study was to investigate whether people who were initially averse to potentially risky behaviors (such as drinking alcohol, having sex, smoking, and taking drugs) would eventually engage in them if they perceived the behaviors as routes to valued social success.

Underlying this hypothesis is the assumption that not everyone who engages in potentially personally risky behaviors (e.g., drinking alcohol, having sex, smoking, doing drugs) does so primarily because of an attraction to them, as is generally assumed (see Study 1b). However, for some, potentially risky behaviors may require self-control exertion. As reviewed in Chapter 1, some research has shown that each of these behaviors can be aversive, particularly initially; other research has shown that people engage in these behaviors to gain social rewards. What is missing from the literature is a study that links people's appetite for potentially risky behaviors to future behavior, while accounting for social gains expected from engaging in those behaviors. This study provided that missing link.

In the current study, people reported in September and November the degree to which they personally enjoyed each of four potentially risky behaviors (drinking alcohol, having sex, smoking cigarettes, and doing illicit drugs). At each session, people also reported how frequently they engaged in each behavior, as well as the extent to which their friends liked and approved of each behavior. I predicted that people who reported disliking the behaviors initially would later engage in them if they perceived that their friends enjoyed and approved of the behaviors, but not if they perceived that their friends disapproved. Thus, I am focusing on this neglected aspect of how self-control could be used to engage in potentially risky behaviors. To situate these analyses in the broader context of what is known about self-control (e.g., Tangney et al., 2004), I also made a prediction about people who already personally enjoyed the potentially risky behaviors. For them, potentially risky behaviors should be difficult to inhibit. Thus, they should tend to engage in them more often than those who are averse to the behaviors, especially when they think their friends approve of them.

Method

Participants and Recruitment

Participants were recruited for a two part questionnaire study about “attitudes toward risky behavior” in exchange for two \$7 gift certificates. Participants for Time 1 (T1) were recruited during the first two weeks of September using two methods. First, I set up a booth at an information fair geared toward first year students, and people either completed a paper version of the T1 questionnaire at that booth ($n = 80$), or signed up to receive a link to an online version of the same questionnaire. Additionally, flyers were distributed after first-year classes during the second week of class. Seventy-eight

participants completed the T1 questionnaire online, for a total T1 sample size of 158. In order to link data from T1 to Time 2 (T2) anonymously, participants generated a unique code both times. This included the participant's day of birth, month of birth, and the last four digits of their permanent phone number.

Five weeks later, everyone who participated in T1 was contacted by email to participate in the second phase. One-hundred and nine participants provided T2 data, including 27 people whose data could not be linked to T1. Thus the final sample consisted of 82 participants, for whom we had both T1 and T2 data linked using the unique code. Mode of T1 questionnaire administration had no effect on attrition: Exactly half of the participants who completed the paper version for T1 completed T2 ($n = 40$), and 54% of the participants who completed T1 online also completed T2 ($n = 36$).

The final sample consisted of 61 females and 21 males (74.4% female). The mean age of participants was 18.51 ($SD = 2.99$), and the vast majority of the participants (91.5%) were in their first year of university. Forty-eight participants were born in North America (59% of the sample), including 27 of European descent (32.9% of the sample) and 19 of East Asian descent (23.2% of the sample). Thirty-four participants were born outside of North America (41% of the sample), including 29 people who were born in East Asia (35.4% of the sample), and an additional 5 participants who hailed from elsewhere in the world. Those born outside North America moved here, on average, 9 years ago ($SD = 5.57$ years). Although there was substantial attrition from T1 to T2 ($n = 76$), the ethnic and gender composition of the final sample did not differ appreciably from T1.

Materials: Repeated Measures

Current engagement in potentially risky behaviors. Participants rated the frequency with which they engaged in each of four potentially risky behaviors on average per week: drinking alcohol (“*On average, how many alcoholic drinks do you consume each week?*”), smoking cigarettes (“*On average, how many cigarettes per week do you smoke?*”), trying hard drugs (“*On average, how many times per week do you use hard drugs?*”), and having sex (“*On average, how many times per week do you have sex?*”). The base rates for smoking and drug use were so low that analyses were impossible. Over 95% of the sample did not smoke or use hard drugs at either T1 or T2, whereas approximately 50% of the sample drank at least one alcoholic beverage per week at both times, and approximately 20% of the sample had sex at least once per week at both times. Therefore, only analyses for drinking alcohol and having sex were conducted.

Personal attitudes toward potentially risky behaviors. Participants rated their own current attitudes toward each behavior. On 7 point Likert-type scales (1 = *strongly disagree*, 7 = *strongly agree*), participants rated the extent to which they agreed with three items adapted for each behavior. For example, the three items assessing attitudes toward drinking alcohol were, “*I like the idea of drinking alcohol,*” “*Drinking alcohol is risky to my personal well-being,*” and “*I enjoy drinking alcohol.*” For each behavior at T1, these three items were highly related to each other and, after reverse scoring the “risky” item, were collapsed to form a single index, $\alpha_{\text{alcohol}} = .82$, $\alpha_{\text{sex}} = .82$. To streamline the second questionnaire, only the last item was administered at T2 for each behavior type.

Perceived friend’s attitudes toward potentially risky behaviors. After rating their personal attitude toward each behavior, participants were asked to report how their

current friends felt about that behavior. They responded to five items using the same 7 point scale as above. The items, again phrased here in terms of alcohol, were, “*My friends sometimes encourage me to drink alcohol,*” “*My friends would approve if I decided to drink alcohol,*” “*My friends like the idea of drinking alcohol,*” “*My friends think drinking alcohol is risky to one’s personal well-being,*” and “*My friends enjoy drinking alcohol.*” For each behavior at T1, these five items were highly related to each other and, after reverse scoring the “risky” item, were collapsed to form a single index, $\alpha_{\text{alcohol}} = .91$, $\alpha_{\text{sex}} = .91$. To streamline the questionnaire, only the first and last items above were administered at T2 for each behavior. These two items were collapsed to form a single index of perceived friend attitudes for each behavior at T2, $r_{\text{alcohol}} = .74$, $p < .001$, $r_{\text{sex}} = .67$, $p < .001$.

Identification of closest friends. To measure whether participants’ friends changed between the two administrations, participants identified up to five of their closest friends by first name. Over 86% of the sample reported five names at both times ($M_{T1} = 4.74$, $SD_{T1} = .73$, $M_{T2} = 4.79$, $SD_{T2} = .67$). Names were used to create an index of degree of change in friends from T1 to T2. On average, about two of five close friends changed from T1 to T2 ($M = 35.16\%$, $SD = 25.27\%$). Degree of friend change did not correlate significantly with any of the predictors or criteria of interest and was not explored further, all $|rs| < .19$, $ps > .10$.

Participants also rated the degree of closeness they felt toward each friend by identifying one of seven Inclusion of Other in the Self Venn diagrams to represent the relationship (Aron, Aron, & Smollan, 1992). On average, people reported feeling moderately close to the people they nominated as friends ($M_{T1} = 4.71$, $SD_{T1} = 1.08$, $M_{T2} =$

4.64, $SD_{T2} = .95$). Degree of closeness with friends at T1 and T2 correlated significantly with only one predictor each, and this differed by time of administration, offering no compelling evidence of a meaningful relationship with the variables of interest, all $|rs| < .31$, $ps > .01$. Thus, degree of friend closeness was not explored further.

Additional Materials: T1 Only

None of the following additional materials correlated significantly or meaningfully with any of the key variables for either sexual behavior or alcohol consumption, and were therefore not explored further. See Table 6 for descriptive statistics and correlations.

Impulsivity. The Barratt Impulsiveness Scale is a commonly used index of impulsivity (Barratt, 1959; Patton et al., 1995). The fifteen item short form (i.e., BIS15) I used here has been demonstrated to be reliable and has a factor structure comparable to the full scale in a non-clinical community sample (Spinella, 2007). The whole scale demonstrated adequate internal consistency, $\alpha = .71$, as did two of the three factors: motor impulsivity, $\alpha = .72$, attentional impulsivity, $\alpha = .72$, and non-planning $\alpha = .56$.

Sociotropy. Sociotropy is a construct capturing concern with interpersonal relationships. It is measured with a validated 24 item scale (Robins et al., 1994), to which participants respond using a six point Likert-type scale (1 = *strongly disagree*, 6 = *strongly agree*). The scale demonstrated good internal consistency, $\alpha = .87$.

Demographics. Participants reported basic demographic information including age, gender, year in university, and ethnicity. For exploratory purposes, gender was included in the main analyses as reported below.

Results

I predicted that people who did not like a potentially risky behavior (e.g., drinking alcohol, having sex) would engage in it more over time if they thought their friends liked it than if they thought their friends did not. All analyses were conducted using linear regression, unless otherwise specified. Predictors that were measured on Likert-type scales were centered before creating interaction terms and conducting analyses; those with meaningful zero points (i.e., behavior frequencies) were not centered (Aiken & West, 1991). Analyses for drinking alcohol and having sex are reported in sequence.

Alcohol Consumption

Do people who dislike alcohol initially later engage in alcohol use if they think their friends approve of it?

I expected that people who disliked drinking alcohol at T1 would drink it regularly at T2—but only if they perceived that their friends enjoyed and approved of drinking alcohol at T1. To test this hypothesis, I regressed T2 self-reported weekly alcohol consumption on T1 perceived friend attitudes toward drinking alcohol, T1 personal attitudes toward drinking alcohol, and their interaction, $R^2 = .26$, $F(3,76) = 8.71$, $p < .001$ (see Table 6 for descriptive, Table 7 for regression summary). T1 personal attitudes did not uniquely predict T2 drinking behavior after controlling for the effect of T1 perceived friend attitudes, $B = .31$, $SE = .27$, $\beta = .16$, $t(76) = 1.16$, $p = .25$. Perceived friend attitudes significantly predicted T2 behavior independent from personal attitudes, $B = .82$, $SE = .32$, $\beta = .40$, $t(76) = 2.57$, $p = .01$, but this relationship was qualified by a significant interaction, $B = .32$, $SE = .16$, $\beta = .24$, $t(76) = 2.01$, $p = .05^2$.

² This interaction was significant using Poisson regression for count data, Wald $X^2(1) = 4.17$, $p = .04$.

Using simple slope analyses, I investigated the ability of T1 personal attitudes to predict T2 alcohol consumption at different levels of perceived friend attitudes toward drinking alcohol. Because these variables were centered, the intercepts in each analysis represent the number of alcoholic drinks consumed per week at T2 among those who personally feel negatively toward alcohol [i.e., at the mean = 3.49, which is significantly lower than the scale's neutral midpoint of 4, $t(81) = -2.30, p = .02$], at different levels of perceived friend attitudes. Perceiving at T1 that one's friends liked drinking alcohol (i.e., 1SD above the mean) led to higher T2 alcohol consumption, particularly among people who personally enjoyed drinking alcohol at T1, $B_{high} = .80, SE = .27, \beta = .42, t(76) = 2.90, p = .05$ (see Figure 2, panel 1). Importantly, the intercept was also significant. This indicates that people who disliked drinking alcohol at T1 were drinking more than two alcoholic beverages per week by T2 if they had perceived at T1 that their friends really enjoyed drinking alcohol, $B_{high_intercept} = 2.20, SE = .50, t(76) = 4.40, p < .001$. Over time, people overcame a personal aversion to alcohol if they thought initially that their friends liked and approved of drinking alcohol.

Among people who perceived that their friends either disliked drinking alcohol (i.e., at -1SD) or felt neutrally toward drinking alcohol (i.e., at the mean, which did not differ from the neutral scale midpoint), T1 personal attitudes had no influence on T2 alcohol consumption. People who perceived that their friends disliked drinking alcohol at T1 did not drink any alcohol at T2, regardless of their personal attitudes toward alcohol consumption, $B_{low} = -.16, SE = .43, \beta = -.08, t(76) = -0.38, p = .71, B_{low_intercept} = -.26, SE = .71, t(76) = -.37, p = .72$. This pattern suggests that those who enjoy drinking alcohol at T1 are using self-control to inhibit their drinking behaviors at T2 if their friends do not

approve of drinking alcohol. Although this is not a test of the hypothesized phenomenon, this finding supports the role of self-control in regulating alcohol consumption in the context of social rewards.

People who perceived that their friends felt neutrally toward drinking alcohol at T1 (i.e., at the mean of perceived friend attitude) tended to drink about 1 alcoholic beverage per week by T2, $B_{average_intercept} = .97$, $SE = .39$, $\beta = .16$, $t(76) = 2.50$, $p = .02$, regardless of how they personally felt about drinking alcohol at T1, $B_{average} = .31$, $SE = .27$, $\beta = .16$, $t(76) = 1.16$, $p = .25$. Indeed, the significant intercept shows that people who reported personally disliking drinking alcohol at T1 were drinking it regularly by T2 if they had perceived that their friends were moderately in favor of drinking it at T1. Thus, the answer to the subtitle question is yes: people who dislike alcohol initially will later drink it regularly when they perceive their friends approve of it.

Additional analyses were conducted to explore the potential effects of gender and perceived friendship closeness on this analysis, and neither impacted the conclusions drawn above. The interaction pattern of results reported above was consistent across both genders. In this sample, 61 participants were female, and 21 were male. When this analysis (including centering of predictors) was conducted separately by gender, the same interaction pattern explained above was found for both females and, after the removal of one outlier, males. Slopes for both males and females were in the same direction as reported in Table 7. For males, all were non-significant due to lack of power from the small sample size, except the intercept for the simple slope of personal attitudes at positive friend attitudes, $B_{high_intercept} = 2.90$, $SE = .60$, $t(76) = 4.81$, $p < .001$. The intercept occurred at males' mean of personal attitudes [$M = 3.79$, $SD = 1.49$, which did not differ

from 4, the neutral scale midpoint, $t(20) = -.63, p = .53$]. Men who reported feeling only neutrally toward alcohol at T1 were drinking almost three drinks per week by T2 if they initially thought their friends liked and approved of it.

Table 6*Descriptive Statistics for Alcohol Consumption and Sex Behavior and Attitude Indices*

Variable	items	Alcohol Consumption				Sex				1	2	3	4	5	6	7	8
		<i>M</i>	<i>SD</i>	<i>N</i>	α	<i>M</i>	<i>SD</i>	<i>N</i>	α								
1. T1 behavior frequency	1	1.80	3.42	82	--	0.60	1.57	82	--	--	.38**	.47**	.78**	.40**	.51**	.12	.05
2. T1 perceived friend attitude	5	4.28	1.50	82	.91	3.86	1.52	82	.91	.39**	--	.64**	.41**	.79**	.66**	.11	.03
3. T1 personal attitude	3	3.59*	1.60	82	.82	4.15	1.53	81	.82	.51**	.87**	--	.43**	.65**	.81**	.13	-.03
4. T2 behavior frequency	1	1.46	3.08	80	--	0.42	1.15	80	--	.75**	.43**	.45**	--	.38**	.48**	.03	.02
5. T2 perceived friend attitude	2	4.19	1.84	80	.74	3.51*	1.73	80	.67	.31**	.79**	.73**	.36**	--	.72**	.02	-.08
6. T2 personal attitude	1	3.79	2.14	80	--	3.72	2.06	80	--	.50**	.78**	.84**	.49**	.82**	--	.11	-.08

Variable	items	Alcohol Consumption				Sex				1	2	3	4	5	6	7	8
		<i>M</i>	<i>SD</i>	<i>N</i>	α	<i>M</i>	<i>SD</i>	<i>N</i>	α								
7. Trait impulsivity (BIS)	15	2.07	0.34	79	.71					.06	.08	-.004	.09	.03	.02	--	.21
8. Sociotropy	24	4.13	.58	77	.87					-.01	.08	.12	-.08	-.14	-.09	.21	--

* Mean differs significantly from scale midpoint (4 = *neither agree nor disagree*) at the .05 level (two-tailed).

**Correlations, $p < .01$ (two-tailed).

Note: Correlations above the diagonal correspond to alcohol consumption and those below the diagonal correspond to sex.

Table 7***Regression Analysis Summary for Time 1 Personal Attitudes and Perceived Friend******Attitudes Predicting Time 2 Behavior Frequency***

Predictor	Alcohol			Sex		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
<u>Omnibus Analysis</u>						
Intercept	.97*	.39		.16	.14	
T1 personal attitude†	.31	.27	.16	.23	.17	.31
T1 perceived friend attitude (at Mean)	.82	.32	.40*	.15	.17	.20
Interaction	.32	.16	.24*	.13	.04	.29**
<u>Simple Slope (Friend Attitudes - 1SD)</u>						
Intercept	-.26	.72		-.06	.30	
T1 personal attitude	-.16	.43	-.08	.04	.18	.05
<u>Simple Slope (Friend Attitudes +1SD)</u>						
Intercept	2.20***	.50		.38	.29	
T1 personal attitude	.80	.27	.42**	.42	.18	.56*

* $p < .05$, ** $p < .01$, *** $p < .001$.

†Because perceived friend attitude is centered, this coefficient represents the relationship between T1 personal attitude and T2 behavior holding perceived friend attitude constant at its mean.

Can T1 alcohol consumption predict T2 alcohol consumption beyond the effect of perceived friends' attitudes?

The degree to which attitudes predict behavior has been questioned for decades (e.g., Ajzen & Fishbein, 1977). Attitudes are closely related to target behaviors only to the extent that the measured attitudes are as specific as the behaviors—and this is the case in the current study. Nonetheless, comparing behavior over time should result in greater consistency than comparing attitudes with later behavior. In this study, raw correlations showed that T1 drinking behavior was much more strongly related to T2 behavior, $r = .78$, than were T1 personal attitudes, $r = .43$. It is possible that the above analyses revealed a significant impact of T1 perceived friend attitudes simply because T1 personal attitudes were weak indicators of underlying attitudes. The stronger test of my hypothesis is whether perceived friend attitudes predict T2 consumption beyond the contribution of T1 behavior.

I regressed T2 alcohol consumption on T1 alcohol consumption, T1 friend attitude, and their interaction, $R^2 = .67$, $F(3, 76) = 52.52$, $p < .001$. Because friend attitude was centered, this omnibus analysis occurred at the mean level of friend attitudes toward drinking alcohol. As shown in Table 8, T1 alcohol consumption was a significant predictor of T2 alcohol consumption, holding friend attitude constant at the mean (i.e., zero), $B = .28$, $SE = .23$, $\beta = .31$, $t(76) = 2.25$, $p = .03$. The predicted interaction also emerged, $B = .31$, $SE = .09$, $\beta = .45$, $t(76) = 3.52$, $p < .001$ ³. I decomposed this interaction by examining the relationship between T1 and T2 alcohol consumption at different levels of friend attitude (i.e., $\pm 1SD$, see Figure 2, panel 2). When people perceived their friends had a relatively positive attitude toward alcohol at T1, T1 alcohol consumption

³ This interaction was not significant using Poisson regression for count data, Wald $X^2(1) = .19$, $p = .66$.

significantly predicted T2 consumption, $B = .75$, $SE = .07$, $\beta = .83$, $t(76) = 10.87$, $p < .001$.

The two significant slopes reported thus far indicate stability in alcohol consumption from T1 to T2 when people perceive that their friends have either moderate or positive attitudes toward alcohol. In other words, when people perceive that their friends really like to drink alcohol, they will tend to drink in the future as much as they do in the present. However, when people perceive that their friends have a relatively negative attitude toward alcohol, the relationship between present and future (i.e., T1 and T2) alcohol consumption disappears, $B = -.19$, $SE = .25$, $\beta = -.21$, $t(76) = -0.76$, $p = .45$. There is no relationship between present and future drinking behaviors among people who perceive that their friends have negative attitudes toward drinking.

One important feature of these simple slope analyses lies in the intercepts. T2 alcohol consumption does not differ significantly from zero among non-drinkers at T1 (i.e., holding T1 consumption constant at zero), regardless of perceived friends' attitudes, $B_{low_intercept} = .14$, $SE = .30$, $t(76) = 0.47$, $p = .64$; $B_{mean_intercept} = .32$, $SE = .23$, $t(76) = 1.36$, $p = .18$; $B_{high_intercept} = .50$, $SE = .35$, $t(76) = 1.42$, $p = .16$. These data show that perceived friends' attitudes were unlikely to convert someone from a non-drinker at Time 1 to a drinker at Time 2. This pattern fails to support the hypothesis. However, among those who drink even a small amount of alcohol, perceived friend attitudes impact how much people go on to drink two months later, which is consistent with the hypothesis.

Because the intercepts are not significant, evidence for overriding aversion to alcohol is less clear in this analysis than in the previous one. The story from this analysis is most clearly to be one of inhibition of regular alcohol consumption when friends

disapprove of drinking alcohol. The less that people perceive their friends approve of drinking alcohol, the less they drink at T2, across levels of T1 alcohol consumption.

Table 8

Regression Analysis Summary for Time 1 Behavior Frequency and Perceived Friend Attitudes Predicting Time 2 Behavior Frequency

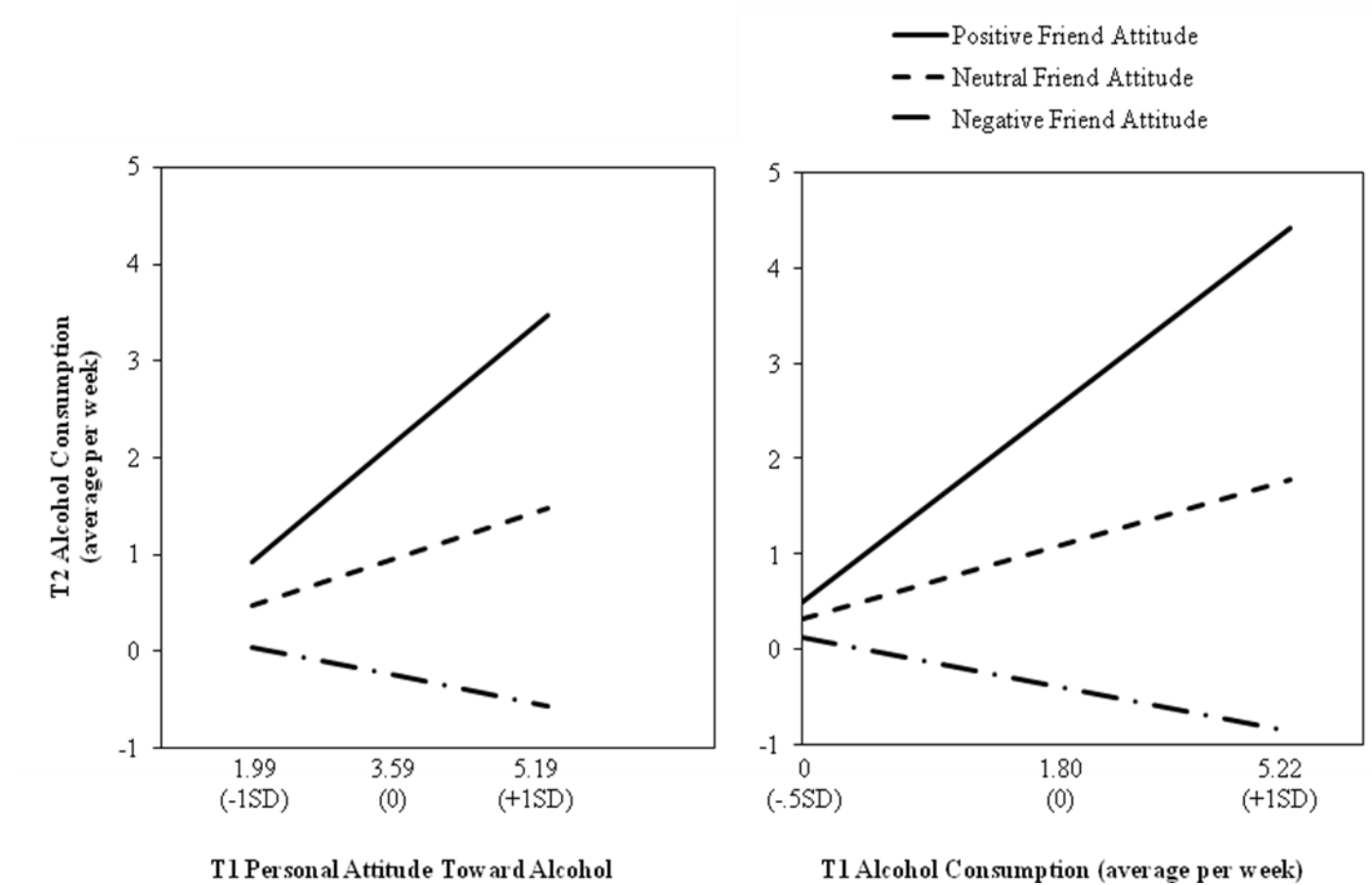
Predictor	Alcohol			Sex		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
<u>Omnibus Analysis</u>						
Intercept	.32	.23		.13	.09	
T1 behavior frequency†	.28	.12	.31*	.24	.12	.33*
T1 perceived friend attitude (at Mean)	.12	.15	.11	.09	.06	.12
Interaction	.31	.09	.45***	.16	.06	.15*
<u>Simple Slope (Friend Attitudes - 1SD)</u>						
Intercept	.14	.30		-.02	.12	
T1 behavior frequency	-.19	.25	-.21	.03	.20	.04
<u>Simple Slope (Friend Attitudes +1SD)</u>						
Intercept	.50	.35		.27	.13	
T1 behavior frequency	.75	.07	.83***	.47	.06	.64***

* $p < .05$, *** $p < .001$.

†Because perceived friend attitude is centered, this coefficient represents the relationship between T1 and T2 behavior holding perceived friend attitude constant at its mean.

Figure 2

T2 Alcohol Consumption Predicted by T1 Personal Attitudes toward Alcohol and T1 Alcohol Consumption, Both at Levels of Perceived Friend Attitude Toward Alcohol



Can T1 personal attitudes predict T2 behavior, beyond the role of T1 behavior?

It is possible that T1 perceived friend attitudes toward drinking alcohol are merely a reflection of T1 personal attitudes, given their sizeable raw correlation, $r = .64$. Could T1 personal attitudes predict T2 behavior beyond T1 behavior just as well as T1 perceived friend attitudes do? In a regression predicting T2 alcohol consumption from T1 personal attitudes, T1 alcohol consumption, and their interaction, only T1 alcohol consumption was a significant predictor of T2 consumption, $B = .52$, $SE = .14$, $\beta = .27$, $t(76) = 3.71$, $p < .001$, $R^2 = .79$, $F(3, 76) = 41.55$, $p < .001$. Earlier analyses showed that perceived friend's attitudes predict later alcohol consumption beyond one's past behavior, whereas this analysis shows that personal attitudes do not have the same predictive power.

Sexual Behavior

Do people who dislike sex initially later have sex if they think their friends approve of it?

Paralleling analyses for alcohol consumption, I regressed T2 weekly sex frequency on T1 personal attitudes toward sex, T1 perceived friend attitudes toward sex, and their interaction, $R^2 = .29$, $F(3, 75) = 9.92$, $p < .001$ (see Table 6 for descriptive statistics, Table 7 for regression summary). Again, a significant interaction emerged, $B_{interaction} = .12$, $SE = .04$, $\beta = .29$, $t(75) = 2.81$, $p < .01$ ⁴ (see Figure 3, panel 1). Because perceived friend attitudes predictor was centered, this omnibus analysis occurred at the mean level of friend attitudes toward having sex. T1 personal attitudes significantly predicted T2 sex frequency only among people who thought their friends approved of sex (see Table 7). As shown in Figure 3, people who personally disliked sex at T1 were not

⁴ This interaction was marginally significant using Poisson regression for count data, Wald $\chi^2(1) = 3.10$, $p = .08$.

having sex at T2, regardless of how they perceived their friends felt about it. This pattern fails to support the hypothesis, and differs from the previously reported interaction between personal attitudes and perceived friend attitudes toward alcohol consumption.

This simple slope analysis also reveals that people who personally had a positive personal attitude toward sex at T1 later engaged in sex only if they thought their friends approved of it, but not if they thought their friends disapprove of it. Again, the pattern suggests that those who enjoy having sex at T1 may be using self-control to inhibit their sex behaviors at T2 if their friends do not approve of it, which broadly supports the role of self-control in regulating sexual behavior.

Like results for alcohol, this pattern was consistent across both genders. When this analysis was conducted separately by gender, the same pattern explained above was found for both females and, after the removal of one outlier, males. Male slopes were in the same direction as reported in Table 7, but all were non-significant due to lack of power from the small sample size.

Can T1 sex frequency predict T2 sex frequency beyond the effect of perceived friends' attitudes?

As with alcohol consumption, the effect of T1 sex frequency on T2 sex frequency was moderated by the degree to which people thought their friends approved of it at T1. I regressed T2 weekly sex frequency on T1 sex frequency, T1 friend attitude, and their interaction, $R^2 = .62$, $F(3, 76) = 41.48$, $p < .001$. As shown in Table 8, T1 sex frequency was a significant predictor of T2 sex frequency, holding perceived friend attitudes constant at the mean, $B = .24$, $SE = .12$, $\beta = .33$, $t(76) = 2.02$, $p = .05$, but it was qualified

by a significant interaction, $B = .16$, $SE = .06$, $\beta = .15$, $t(76) = 2.45$, $p = .02^5$. I decomposed this interaction by examining the relationship between T1 and T2 sex frequency at different levels of friend attitude (i.e., $\pm 1SD$, see Figure 3, panel 2). The pattern replicated results for alcohol consumption. When people perceived their friends had a relatively positive attitude toward sex, T1 sex frequency significantly predicted T2 sex frequency, $B = .47$, $SE = .06$, $\beta = .64$, $t(76) = 8.60$, $p < .001$. These two slopes show stability in sexual behavior from T1 to T2 among people who perceive that their friends have either neutral or positive attitudes toward sex. In other words, when people thought their friends approved of sex, they tended to continue having sex at T2. However, when people perceived that their friends had a relatively negative attitude toward sex, there was no relationship between T1 and T2 behaviors, $B = .03$, $\beta = .04$, $SE = .20$, $t(76) = 0.14$, $p = .89$.

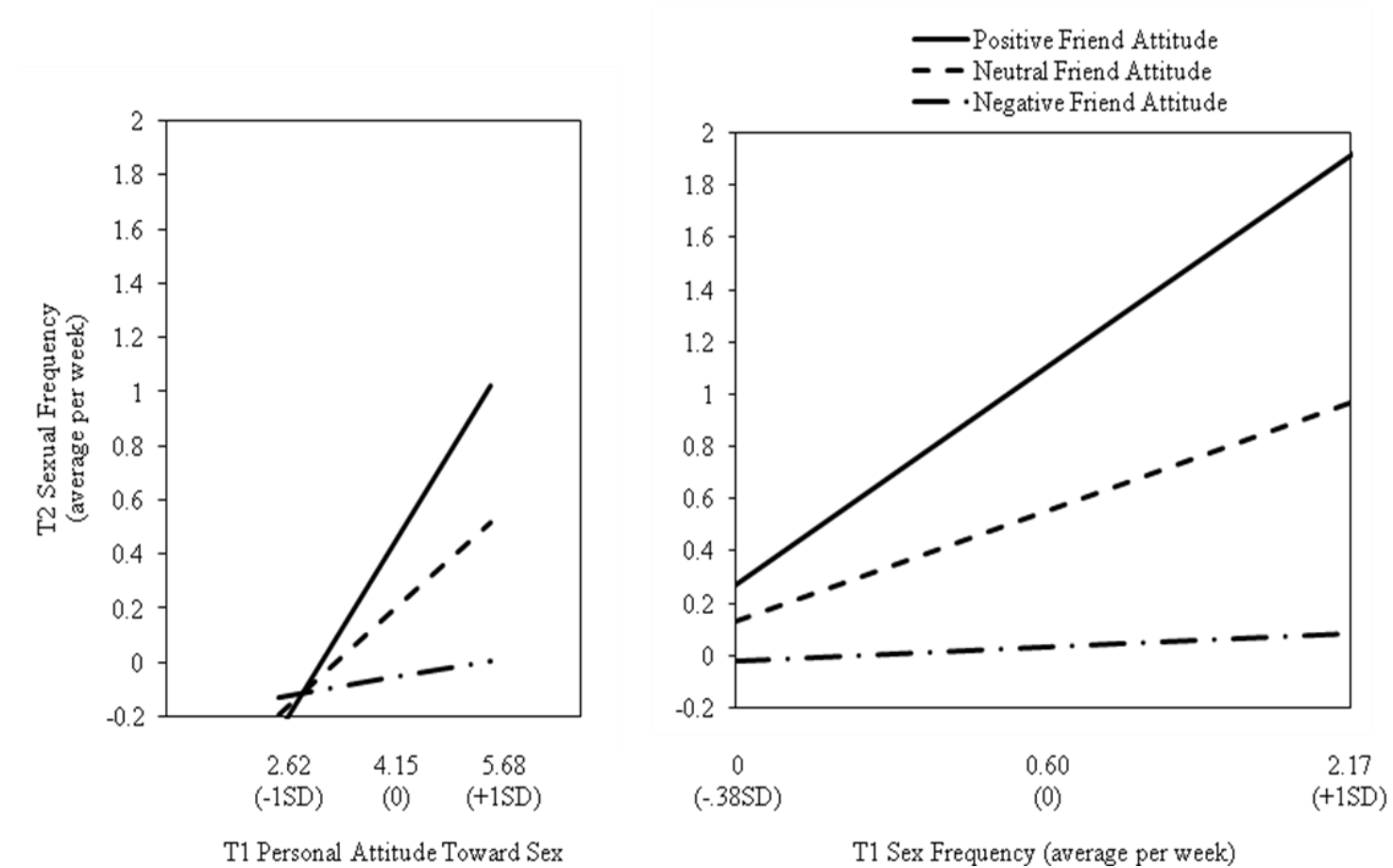
Again it is instructive to consider the intercepts. When perceived friend attitudes toward sex fell at or below the mean, people who were sexually abstinent at T1 tended to be sexually abstinent at T2, $B_{low_intercept} = -.02$, $SE = .11$, $t(76) = -0.13$, $p = .90$, $B_{mean_intercept} = .13$, $SE = .09$, $t(76) = 1.46$, $p = .45$. However, when people perceived that their friends felt positively toward sex, people who were sexually abstinent at T1 were significantly likely to be having sex at T2, $B_{high_intercept} = .27$, $SE = .13$, $t(76) = 2.02$, $p = .05$. Unlike T1 abstainers from alcohol, T1 abstainers from sex were significantly likely to be having sex regularly at T2 (approximately once every three weeks) – but only if they thought their friends approved of sex at T1. This finding may be interpreted as evidence supporting our hypothesis: people who did not enjoy sex (as defined by abstinence) at T1

⁵ This interaction was marginally significant using Poisson regression for count data, Wald $\chi^2(1) = 3.11$, $p = .08$.

later had sex if they thought their friends approved of it, but remained abstinent if they thought their friends disapproved of it. However, this conclusion should be taken as tentative given the previous analysis that included expressed personal attitudes. It is possible that in the current analysis, the T1 abstainers who went on to have sex at T2 had initially felt positively toward sex, and therefore did not have to exert self-control to have sex. Taken together, results from sexual behavior are mixed with respect to the study's main hypothesis.

Figure 3

T2 Sex Frequency Predicted by T1 Personal Attitudes Toward Sex and T1 Sex Frequency, Both at Levels of Perceived Friend Attitude Toward Sex



Can T1 personal attitudes predict T2 behavior, beyond the role of T1 behavior?

Results from alcohol consumption show that current personal attitudes cannot predict future alcohol consumption beyond the effect of current consumption. Data from sexual behavior replicate this pattern. As with alcohol, perceived friends' attitudes and personal attitudes toward sex were highly correlated at T1, $r = .87$, $p < .001$. Considering means, people report that their friends tend to like having sex less ($M = 3.86$, $SD = 1.52$) than they themselves do ($M = 4.15$, $SD = 1.53$), paired $t(80) = 3.14$, $p = .002$, which is opposite to the pattern for alcohol consumption (see Table 6 for means). This difference does not rule out the possibility that variation in T1 personal attitudes could explain changes in T2 sexual behavior. Thus, I regressed T2 sex frequency on T1 sex frequency, T1 personal attitudes, and their interaction, $R^2 = .76$, $F(3, 75) = 34.05$, $p < .001$. As with alcohol consumption, only T1 sex frequency was a significant predictor of T2 sex frequency, $B = .69$, $SE = .16$, $t(75) = 4.23$, $p < .001$, ruling out the influence of T1 personal attitudes on T2 behavior, either independently or in interaction with T1 sexual behavior, $B_{personal} = .07$, $SE = .07$, $t(75) = 1.01$, $p = .32$, $B_{interaction} = -.08$, $SE = .06$, $t(75) = -1.19$, $p = .24$. Consistent with results from drinking alcohol, perceived friend attitudes predict later sexual behavior beyond the influence T1 behavior, whereas personal attitudes do not.

Discussion

Supporting my hypothesis, people who personally disliked drinking alcohol initially were drinking it regularly five weeks later—but only if they had initially thought that their friends enjoyed and approved of drinking alcohol. This result offers evidence that, over time, people who are averse to drinking alcohol eventually drink it regularly if

such actions align with perceived social gain. This effect of overcoming negative attitudes held especially clearly among females, although the overall pattern was the same for males. Further analyses revealed that people who drank at least little alcohol initially continued to drink alcohol if they thought their friends enjoyed and approved of it, but stopped drinking alcohol if they thought their friends did not approve of it. This pattern suggests that self-control processes are implicated in alcohol consumption, including both inhibiting an impulse to drink only a little (and therefore drinking more than usual) as well as inhibiting an impulse to drink it often (and therefore drinking none – which is much less than usual), respectively.

Across both alcohol consumption and sex, perceptions of friend attitudes were better predictors of future behavior than were personal attitudes—a result consistent with the main hypothesis. Indeed, initial personal attitudes offered no unique information beyond initial consumption when predicting later behavior. This result rules out the explanation that personal attitudes are merely a reflection or an exaggerated reflection of perceived friend's attitudes toward potentially risky behavior. They have differential power to predict personal behavior.

The influence of perceived friend attitudes on sexual behavior was broadly similar to its effects on alcohol consumption. Yet in this case there was little evidence of overriding an initial personal dislike for sex to engage in it for social gain. Notably, initial sex abstiners were significantly likely to regularly have sex by T2, only if they initially thought their friends enjoyed and approved of it. This pattern is consistent with my hypothesis. However, the pattern was not replicated with analysis of personal attitudes. People who did not enjoy sex at T1 did not have sex at T2, regardless of their perceived

friends' attitudes. Thus, it is possible that those initial abstainers who went on to have sex were those who initially wanted to do so, and were merely given the opportunity by their friends who approved of it.

Essentially, these data about sex behavior suggest that initial perceptions of friends' attitudes toward sex impact people's later sexual behavior only if their initial personal attitudes toward sex are neutral or positive. When initial personal attitude is neutral to positive, having friends who seem to enjoy and approve of sex greatly increases people's future frequency of having sex, relative to having friends who initially dislike sex. The clearest story from these data is *not* about people overriding an aversion to have sex when they expect to be rewarded socially for doing so. Instead, results show that people who initially desire sex inhibit their desire when they expect friends to disapprove, and acquiesce to their desire when they expect their friends to approve. This pattern is consistent with the normative view that people have impulses to engage in sex and need to exert self-control to avoid it.

Strengths and Limitations

Methodologically, Study 2 represents a key improvement over Studies 1a and 1b through its use of a longitudinal design, thereby avoiding sole reliance on retrospective reports of behavior and attitudes. This study offered two major design strengths to the broader investigation. First, the longitudinal nature of this study enabled investigation of the impact of perceived friend attitudes over time. As I explained using Figure 1, it is reasonable to expect that overriding a personal aversion to a potentially risky behavior for social gain is a process that may take time, and it was necessary to consider change over time to see the effects of perceived friend attitudes on behavior. Indeed, analyses that

focus only on one of the two time points (e.g., T1 personal attitudes and T1 friend attitudes predicting T1 behavior) show a dominating effect of personal attitudes. Second, ethical considerations make it difficult to manipulate truly risky behavior in the laboratory setting. I was able to investigate sex and alcohol consumption profitably without jeopardizing my participants' health and well-being (beyond that which they chose to do in their lives and report in the study).

In this study it was most appropriate to gauge personal and perceived friend attitudes via self-report. Indeed, a strength of this study is that people were reporting their perceptions of friend attitudes, as opposed to measuring friend attitudes directly. How people think their friends feel should have greater influence on their behavior than how their friends actually feel toward a particular behavior. Yet despite its strengths, a self-report methodology necessarily raises the issue of social desirability response bias (Paulhus, 1984). If social desirability biased people's responses, it should have impacted reports of alcohol consumption and sexual behavior in the same direction. Instead, at the mean level people reported that their friends enjoyed alcohol more than they personally did, whereas people reported that their friends enjoyed sex less than they personally did (see Table 6). If desire for modesty was the key source of bias, personal attitudes for both behaviors would be more negative than perceived friend attitudes. If people desired to appear adventurous, I would expect the reverse pattern, but both behaviors in the same direction. Coupled with the fact that personal and perceived friend attitudes have differential predictive power on behavior, and that both alcohol and sex were normatively coded as appealing in Study 1b, there is no clear impact of a systematic social desirability bias on reported attitudes.

By logistic necessity, the frequency of engaging in potentially risky behavior was also self-reported, rendering this merely a “behavioroid” measure (Aronson & Carlsmith, 1968, as cited in Ajzen & Fishbein, 1977) rather than a true behavioral dependent measure. Again it is possible that people may have wanted to appear modest or adventurous, although it is not clear which direction the bias would be, or why it would have a differential impact on the data from T1 to T2. Moreover, to the extent that there is no evidence of systematic social desirable responding for attitudes, any argument for an impact on reported behavior is attenuated.

This study occurred across a relatively short time period (5-6 weeks). The interval began with freshman week events and ended at the dawn of midterms, which is not known as being a season of promiscuity and parties. Thus, these conditions likely made it more difficult to detect behavior change. It is notable that meaningful, positive behavior change was detected despite both a short time interval and academic pressures that likely exerted a negative effect on behavior change from T1 to T2 data collection (i.e., counter to the hypotheses).

It is also worth noting that although people’s close friends changed somewhat over time, the degree to which they changed friends did not impact results. It is not the case that by T2 people had merely sought friends who matched their initial propensities to drink alcohol or have sex. People’s initial (T1) perceptions of their friends’ attitudes toward these acts influenced their later (T2) behavior, beyond their own initial behavior and attitudes. Future work using a similar methodology would likely profit from asking about how long people have known their friends, in addition to how close they felt to

them. Newer friendships might be more fragile than older friendships, and therefore more susceptible to people willing to subjugate their own well-being to fit in.

In hindsight, it is not surprising that results for alcohol consumption and having sex differ somewhat, as these two actions differ in important ways. Most obviously, a willing partner is required for having sex – and this is independent of whether or not people's friends approved of the practice. In this study, predicting sexual behavior from people's perceptions of their friends' attitudes offers a conservative test of the effect. Perhaps a more appropriate predictor of behavior would have been perceptions of a sexual partner's willingness to have sex, rather than perceptions of friends' attitudes. Unfortunately, participants in this study were not asked about their relationship status. Adding questions about current romantic or sexual partners and perceptions of those people's attitudes toward having sex (rather than their friends' attitudes) would have enabled investigation of behavior change among only those people who had the opportunity to have sex, outside of a stable, long-term relationship. Based on findings from Impett & Peplau (2003), I would predict that people who did not personally enjoy sex would over time engage in it, but only if their potential sexual partner(s) wanted to do so. Considering this important limitation on the sexual behavior analyses, the fact that some results were consistent with my hypothesis is notable.

The proposed theory posits that people who *initially* try a behavior and dislike it will go on to engage in it only if they expect rewards for doing it (e.g., being liked by others). It is possible, and perhaps quite likely, that people in this study had previous experience drinking alcohol and having sex, given their late adolescent/early adult age. The current investigation could have been informed by adding questions about alcohol

consumption and sexual behavior patterns before T1. It is plausible that the strongest aversion would be among people with the least amount of experience with alcohol or sex before the study, and, given the theory, these people would evince the strongest effect of perceived friend's attitudes on T2 behavior. Ideally, a longitudinal study such as this would track younger adolescents who are beginning to experiment with these potentially risky behaviors. A larger portion of the sample would likely be averse to these particular actions because of their youth, thereby increasing the power of the test. Such a sample would enable investigation of the role of initial impulse toward the behavior among those people who have had no or very little prior exposure to it. Then, the longitudinal component would enable tracking of the behaviors over time among those people who do versus do not subsequently expect social rewards for engaging in them. Such a design would offer a cleaner test of the proposed phenomenon by removing the effects of prior exposure to the behaviors of interest.

Above I recommended that future research recruit a younger adolescent sample to capture more frequent and stronger aversion to these particular behaviors (sex, alcohol consumption, smoking, and drug use). However, it is important to note that this idea does not mean to imply that this phenomenon is limited to adolescents. I would expect to find people subjugating their personal well-being for social gain in any sample who have little experience with an aversive behavior that is presumed to be normatively appealing and is socially rewarded. Importantly, future research should attempt to gain a larger sample to identify the potentially small subgroup of people who are averse to behaviors of interest. Moreover, pretesting for base rates of particular behaviors of interest would avoid the problem of collecting data that are of no use. Although the very low base rates of drug

use and smoking in this sample show that first year UBC undergraduates are making healthy choices in these domains, these low base rates meant I collected much data that was ultimately unable to be analyzed.

Conclusions

Taken together, data from alcohol consumption and sex behavior offer important clues for this investigation. There is evidence that when people are initially attracted to either potentially risky behavior, they later engage in it if they initially thought their friends approved, but avoid it if they thought their friends did not approve. These data are consistent with the (often correct) common assumption that potentially risky behaviors require self-control exertion to *avoid* them. However, in line with my underlying message, some people reported disliking each potentially risky behavior. And supporting my hypothesis, alcohol-averse people overcame their aversion and proceeded to drink alcohol, but only if they initially perceived that their friends approved of drinking alcohol. Before now, this phenomenon has been buried amid the likely more common process of self-control exertion to avoid potentially risky behaviors. This study is the first to show that some people overcome an aversion to engage in potentially risky behaviors over time—but only for social gain.

CHAPTER 4. STUDY 3 CHOCOLATE AND MONEY STUDY

Results of the longitudinal study demonstrate that people will indeed overcome personal aversion to a potentially risky behavior and engage in it if they think their friends will approve of that behavior. What remains implied by those data, but not directly measured, is that self-control exertion is the process through which this phenomenon occurs. The current study was specifically designed to examine real-time behavioral responses to a trade-off between personal well-being and important social rewards. In this controlled laboratory experiment, the nature of the self-control process can be examined.

One way to consider the notion of social gain is as an important resource that is controlled by other people. In this study, I contrived a situation in which money—an attractive coveted resource—is attained by being liked. Money was used to enhance the importance of the resource; without it, people may not care whether a stranger likes them or not, thereby undermining the premise of the study. I operationalized personal well-being as avoiding eating unsweetened chocolate (which has been used to induce negative affect, Brehm, Miron, & Miller, in press). Therefore, subjugating personal well-being in this study meant eating more of this aversive food. The key manipulation was whether or not people were led to believe that eating the bitter chocolate would help them gain favour with the person who controlled a coveted resource. I predicted that people who perceived that eating the chocolate would help them attain that coveted resource would force themselves to eat the chocolate, despite having an aversive physical reaction to it.

Conceptually, this study was designed to align with the two preconditions I proposed were important for people to be willing to subjugate their personal desires for

social gain. First, people must desire acceptance by a particular person or group. The purpose of the money game was to enhance people's desire to be liked by the stranger in front of them, thereby approaching real life conditions in which people truly desire to be liked by someone or group. Second, the manipulation varied whether people perceived that personally aversive behavior was a central means of being accepted, which should be a vital precondition of willingness to subjugate well-being for social gain.

Thus far I have described two conditions: the peer pressure condition, in which people are led to believe eating the aversive chocolate will help them attain a coveted resource (money via being liked), and the control condition in which the chocolate and the money are unrelated. With just these two conditions, the extent to which self-control was exerted to eat the chocolate would remain unclear. A third condition applied the Limited Resource Model of self-regulation (e.g., Baumeister et al., 1998; Vohs & Heatherton, 2000) in order to illuminate the self-control process in the peer pressure condition. This third condition was procedurally identical to the peer pressure condition, except that participants were depleted of their self-regulatory resources before the manipulation. If people in the peer pressure plus depletion condition eat only as much chocolate as those in the control condition (i.e., less than those in the peer pressure condition), it can be inferred that people in the peer pressure condition were exerting self-control to eat the chocolate. However, if people in the two peer pressure conditions eat the same amount of chocolate, and that is more than those in the control condition eat, it can be inferred that little effortful self-control was used to eat the chocolate.

Method

Participants

One-hundred and thirty-two participants were recruited from the psychology subject pool for a study about “Chocolate and Money.” The first forty participants were used to pilot test the method for all conditions and for training confederates and experimenters. Because methods were adjusted and confederates were standardizing their procedures throughout this period, these data were not analyzed. Of the remaining participants, 11 expressed a high degree of suspicion about aspects of the method during the funneled debriefing (e.g., that the other student was a confederate, that they would not ultimately receive any money from the game). These participants were removed from analyses, leaving a final sample size of 81 (66 females, 15 males; $M_{\text{age}} = 20.10$, $SD = 3.46$). The sample was ethnically diverse, including 36 people of East Asian descent, 17 Caucasian North Americans, 12 South Asians, and 16 people from elsewhere. Fifty participants (62% of the sample) were born outside of Canada, and moved here on average 9 years ago ($SD = 6.35$ years).

Procedure

Introduce money game. Upon arrival to the lab and after providing informed consent, participants were introduced to a confederate posing as another participant. The experimenter explained the rules of a variation on the Dictator Game (Forsythe, Horowitz, Savin, & Sefton, 1994). In this game two people have the chance to win money, but the amount must be divided. In the true Dictator Game one person (the proposer) proposes a split; if the other person (the responder) rejects it, neither person receives anything. In our version of this game, the responder must accept whatever

decision the proposer makes. The confederate was always “randomly” assigned to be the proposer, and the amount was \$20.

After ensuring the participant understood the rules of the game, the experimenter pretended that she had forgotten the first step in the study procedure: the chocolate taste test. She explained, “We have just merged these two studies into a full hour session and I’m still trying to remember the new procedure. The Money Game will be put on hold until after the taste test.” In the peer pressure plus depletion condition, this script was followed by the self-regulation depletion task. This task involved scanning a paragraph and crossing out all instances of the letter *e*, except those that follow particular rules (e.g., the *e* is followed by a vowel or a vowel comes two letters before the *e*). Control and peer pressure condition participants completed a simplified, non-depleting version of this task (i.e., simply cross out the letter *e* each time it appears). This task has been used successfully in the past to induce self-regulation resource depletion (e.g., Tice, Baumeister, Shmueli, & Muraven, 2007).

Depletion manipulation check. Immediately following this task (and at the start of the experiment in the other two conditions), four questions taken from the State Self-Control Capacity Scale (Ciarocco, Twenge, Muraven, & Tice, 2007) served as a depletion manipulation check. Participants rated the degree to which they agreed with items such as “*My mental energy is running low,*” and “*I feel mentally exhausted*” on a 7-point Likert-type scale (1 = *not true*, 7 = *very true*). Three of these items were averaged to create a single index of depletion, $\alpha = .80$.

Chocolate taste test and independent variable. The experimenter then retrieved two packets (one each for the confederate and the participant), each containing 10 small

pieces of chocolate (approximately 5mm wide) that were 100% cocoa. A pre-test ensured that these pieces of 100% cocoa were unpleasant for most people. The experimenter gave each person a packet and explained that this chocolate was being pre-tested for use in another study, so we would like to know their thoughts about it. Just when she was about to leave the room, the confederate asked a question about the money game. Specifically, she asked if she understood correctly that she would be deciding how much money the participant would receive. The experimenter confirmed that this was correct, and then turned to the participant and stated in a friendly, joking manner while smiling, “that’s right, you better be nice to her!” The purpose of this exchange was to remind participants of the Money Study and to enhance their motivation to be liked. The experimenter then left the participants alone for two minutes.

The key manipulation in this study was the confederate’s (i.e., the Dictator Game proposer’s) behavior during the taste test. In all conditions the confederate spoke to the participant in a friendly manner and ate 5 pieces of chocolate. In the control condition, the confederate engaged the participant in a conversation about academics, speaking emphatically about a course she was taking. In both peer pressure conditions, the confederate emphatically praised the chocolate and encouraged the participant to do the same using statements like *“Isn’t this delicious chocolate? You can tell it’s really high quality. Don’t you like it? Why don’t you be adventurous, try another piece?”* The purpose of this encouragement was to create a situation in which eating the aversive chocolate was a contingency of being liked, which in turn was of consequence in the upcoming Money Game. This manipulation using the confederate is based loosely on the methodology of White and colleagues (2002). Two confederates were trained extensively

to perform consistently in this role and to deliver these lines in a way that was natural flow in the conversation.

After the chocolate taste test, participants rated the chocolate quality and the confederate's friendliness. The confederate was escorted to another room for the remainder of the session, and the participant completed measures of sociotropy, trait impulsivity, trait self-control, and demographics (see materials below). For appearance purposes only, the Money Study was resumed and participants were informed the confederate split the money evenly. The experimenter conducted a funneled debrief in the new room. Ultimately, participants were told that the person with whom they had interacted was a confederate.

Chocolate consumption. The main dependent variable was the number of chocolate pieces each participant ate. Three participants (one from each condition) took their garbage including any remaining pieces with them, rendering it impossible to count the number of chocolate pieces these participants ate. Thus, the final sample size for this key analysis was 78.

Materials

Chocolate ratings. Immediately after the chocolate taste test, participants rated how much they enjoyed the chocolate sample using a 7 point Likert-type scale (1 = *not at all*, 7 = *very much*). Questions included: "*How much did you enjoy the first piece of chocolate you tried?*" "*How much did you enjoy the sample you tasted?*" and "*How much do you want to try more of this chocolate?*" The 6 items indexing overall chocolate liking were collapsed to form a single index, $\alpha = .90$. Participants also rated the extent to which they perceived the chocolate to be of high quality on a 7 point Likert-type scale (1 = *very*

low quality, 6 = *very high quality*, 7 = *I don't know*). Overall, people thought the chocolate was of average quality (11 did not know, $M_{remaining} = 3.57$, $SD = 1.45$, $Mdn = 4.00$, $Mode = 4.00$).

Interaction ratings. Participants rated the extent to which people liked interacting with the confederate during the taste test. Using 6 point Likert-type scales (1 = *not at all*, 6 = *very much*), participants answered four items, including “*How much did you enjoy talking to your study partner?*” and “*Would you like to spend more time with your study partner?*” These items were averaged to form one index of confederate liking, $\alpha = .82$.

Demographics. Participants reported demographic information including age, gender, year in university, and ethnicity.

Trait Questionnaires

None of the following trait level questionnaires correlated significantly or meaningfully with how much chocolate people ate, regardless of condition, all $|rs| < .33$, $ps > .12$. Therefore, these measures were not explored further.

Sociotropy. The same measure of sociotropy as in Studies 1b and 2 was used to measure excessive concern with interpersonal relationships (Robins et al., 1994). Participants responded to 24 “I” statements using a six point Likert-type scale (1 = *strongly disagree*, 6 = *strongly agree*). Items were averaged to create a single index, $\alpha = .88$.

Impulsivity. The 15 item short form of the Barratt Impulsiveness Scale was again used to index impulsivity (Spinella, 2007). In this sample, $\alpha = .82$.

Trait self-control. This is the same Self-Control Scale (Tangney et al., 2004) as was used in the previous studies. In the current study, internal consistency reliability was high, $\alpha = .88$.

Results

Was the interaction positive?

It was important for participants to like the confederate in order for this study design to map on to the proposed phenomenon. Overall, people enjoyed interacting with the confederate [$M_{grand} = 4.52$, $SD = .70$, which is significantly greater than the scale midpoint of 3.5, $t(80) = 13.11$, $p < .001$]. Because the confederates were administering the independent variable, it was important for participants to regard them equally positively, regardless of experimental condition. Across conditions, this would ensure that only peer pressure, and not friendliness of the confederate, was varied. Two women were used as confederates; each participant interacted with only one of them. For experimental control, the confederates attempted to act equally friendly toward participants. I conducted a two-way Analysis of Variance (ANOVA) to investigate whether there were differences in how positively participants perceived the interaction, as a function of condition and confederate (see Table 9 for means and Table 10 for the ANOVA summary). Collapsing across confederates, participants perceived the interaction to be equally positive regardless of condition, thereby ensuring that only the peer pressure and not friendliness differed across conditions, $F(2, 75) = .91$, $p = .41$.

Across conditions, interactions with Confederate A were perceived as marginally significantly more positive than interactions with Confederate B, $F(1, 75) = 3.20$, $p = .08$, $d = .42$, .95CI for $\delta = -.05, .89$. This difference in interaction positivity is theoretically

important. People should be more willing to subjugate their personal well-being in order to be liked by someone, to the extent that they actually want to be liked by that other person. Because of this important difference across confederates, all further analyses were conducted separately by confederate.

Table 9

Summary Statistics for Positivity of Interaction by Condition and Confederate

Condition	Confederate A			Confederate B			Total		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
1. Control	16	4.70	.68	11	4.45	.59	27	4.60	.65
2. Peer pressure	18	4.54	.63	8	4.47	.54	26	4.52	.59
3. Peer pressure + depletion	20	4.60	.73	8	4.03	1.00	28	4.44	.84
<i>Total</i>	54	4.61	.67	27	4.33	.72	81	4.52	.70

Table 10

ANOVA Summary for Effects of Condition and Confederate on Positivity of Interaction

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Condition	2	.88	.44	.91	.41
Confederate	1	1.56	1.56	3.20	.08
Interaction	2	.72	.36	.74	.48
Error	75	36.45	.49		
Total	80	39.10			

Did people eat more chocolate when encouraged by a friendly peer?

I predicted that participants in the peer pressure condition would eat more of the aversive chocolate than would those in the control condition. Given differences in how much people liked interacting with the two confederates, I conducted a two-way ANOVA to investigate the influence of condition, confederate, and their interaction on the amount of aversive chocolate that participants ate. A significant interaction emerged, $F(2, 75) = 3.39, p = .04$, which was decomposed using planned orthogonal contrasts that investigated the predicted effect of condition on chocolate consumption per confederate. In line with the hypothesis, participants who had interacted with Confederate A ate significantly fewer chocolates in the control condition than in the peer pressure condition (see Contrast 1 vs. 2, Table 13 for Confederate A). However, contrary to the hypothesis, participants who interacted with Confederate B ate more, but not significantly more, chocolate in the control condition than did those in the peer pressure condition (see Contrast 1 vs. 2, Table 13 for Confederate B).

Table 11***Chocolate Consumption by Condition and Confederate***

Condition	Confederate A			Confederate B			Total		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
1. Control	16	2.31 _a	0.95	10	4.80 _a	3.79	26	3.27 _a	2.69
2. Peer pressure	18	4.33 _b	3.36	8	2.88 _a	0.99	26	3.88 _a	2.90
3. Peer pressure + depletion	19	4.32 _b	3.06	8	3.50 _a	2.98	27	4.07 _a	3.00
<i>Total</i>	53	3.71	2.84	26	3.81	2.94	79	3.75	2.85

Note: Means within a column that do not share a subscript differ, $p < .05$, using Welch's correction for unequal variances (as well as without the correction).

Table 12***ANOVA Summary for Effects of Condition and Confederate on Chocolate Consumption***

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Condition	2	1.67	0.84	0.11	.90
Confederate	1	0.09	0.09	0.01	.92
Interaction	2	53.20	26.60	3.39	.04
Error	73	572.02	7.84		
Total	78	634.94			

I predicted that people in the peer pressure plus depletion condition would be unable to overcome their aversion to the chocolate and would eat only as much chocolate as those in the control condition. Therefore, I conducted my second planned contrast which compared the peer pressure condition to the average of the control and peer

pressure plus depletion conditions, overall and separately for each confederate. When interacting with Confederate A, participants in the peer pressure and peer pressure plus depletion conditions ate almost exactly the same number of chocolate pieces on average, which offers no evidence for self-control exertion (see Table 11 for means, Table 13 for contrasts). Unexpectedly, participants interacting with Confederate B showed a reversed pattern. They ate more, but not significantly more, chocolates when in the depletion rather than the peer pressure condition.

Table 13***Summary of Planned Contrasts for Amount of Chocolate Eaten by Condition***

Planned Contrast†	Contrast Value	SE	t	df	p	Cohen's d	95% CI for δ	
							Lower limit	Upper limit
Total								
1 vs. 2	0.62	0.80	.77	76	.44	.24	-.33	.76
2 vs. 1, 3	0.43	1.37	.31	76	.76	.07	-.40	.54
Confederate A								
1 vs. 2	2.02	0.96	2.10	73	.04	.72	.04	1.40
2 vs. 1, 3	2.04	1.63	1.25	73	.21	.36	-.21	.93
Confederate B								
1 vs. 2	-1.93	1.33	-1.45	73	.15	-.51	-1.44	.43
2 vs. 1, 3	-2.55	2.38	-1.07	73	.29	-.46	-1.29	.38

†1 = control condition, 2 = peer pressure condition, 3 = peer pressure plus depletion condition.

Note: Degrees of freedom reflect the use of the error term from the omnibus analysis, which is appropriate because it is the best estimate of the population variance.

As Table 13 shows, when collapsing across confederates, Cohen's *d* effect size estimates for both contrasts tended to be small. Confidence intervals around those estimates included zero as well as moderate effect sizes in both directions (i.e., positive and negative). However, the effect of confederate is clearly important in these analyses. Effect size estimates were large for Confederate A, particularly for contrast 1 vs. 2, and in line with predictions. Inexplicably, those for Confederate B were moderate but reversed.

The wide confidence intervals across all effect size estimates reflect high variation in the amount of chocolate people ate, regardless of condition. Although the effect size point estimates for Confederate A are consistent with my predictions, clear imprecision of measurement and reversed pattern of means for Confederate B prevents solid conclusions from this analysis.

Did condition impact how much people like the chocolate?

People rated their perceptions of the chocolate after they interacted with the confederate. They were randomly assigned to condition, so there is no reason to believe that any group would like the chocolate more than any other—unless the interaction altered their perceptual experience of the chocolate. It is possible that experiencing the peer pressure may have altered people's expectations of the chocolate, and led them to eat more chocolate because of changed perceptions rather than to be liked by the confederate (i.e., the changing expectations hypothesis described in Chapter 1). A two-way ANOVA revealed no effects of condition or confederate, alone or by way of an interaction, on participants' perceptions of the chocolate (see Table 14 for means, Table 15 for ANOVA summary). There is no reliable evidence of an effect of peer pressure on perceptions of chocolate taste, regardless of confederate. Overall, participants rated the chocolate as unpleasant [$M_{grand} = 2.42$, $SD = 1.19$, which is significantly lower than the scale midpoint of 4, $t(80) = -11.97$, $p < .001$].

Table 14***Perception of the Chocolate by Condition and Confederate***

Condition	Confederate A			Confederate B			Total		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
1. Control	16	1.96	1.06	11	2.41	1.10	27	2.14	1.08
2. Peer pressure	18	2.72	1.53	8	2.50	0.86	26	2.65	1.35
3. Peer pressure + depletion	20	2.54	1.16	8	2.31	1.06	28	2.47	1.11
<i>Total</i>	54	2.43	1.29	27	2.41	0.99	81	2.42	1.19

Note: No means differ significantly by column.

Table 15***ANOVA Summary for Effects of Condition on Perception of the Chocolate***

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Condition	2	2.22	1.11	.78	.46
Confederate	1	< .001	< .001	< .001	.99
Interaction	2	1.88	.94	.66	.52
Error	75	107.27	1.43		
Total	80	112.75			

Depletion manipulation check. If the depletion manipulation failed, that could explain why people in the depletion condition ate as many pieces of chocolate as those in the peer pressure condition (for Confederate A). Condition had a significant effect on self-reported depletion, $F(2, 78) = 6.39, p = .003$.⁶ People in the depletion condition

⁶ The influence of confederate on self-reported depletion was not examined because the depletion manipulation and measure occurred before participants interacted with the confederate.

reported significantly more self-control resource depletion ($M = 4.08$, $SD = 1.27$) than did participants in the peer pressure condition ($M = 2.97$, $SD = 1.12$, $p_{LSD} = .001$). However, participants in the control condition reported a similar degree of depletion ($M = 3.70$, $SD = 1.05$) as did those in the depletion condition, $p_{LSD} = .23$. Unexpectedly, ratings of depletion in the control and peer pressure conditions significantly differed from each other, $p_{LSD} = .02$. The depletion manipulation seemed to have worked to deplete people's self-control resources, but this effect is ambiguous given the high level of depletion reported by those in the control condition.

Discussion

Conceptually, this study set out to test the hypothesis that people will ingest an unpleasant substance in order to gain social rewards, which were enhanced in this study by a financial incentive. Results support this hypothesis, but only for data collected with one of the two confederates. With Confederate A, people in the peer pressure condition ate significantly more bitter chocolate pieces than did people in the control condition. The effect size point estimate was large ($d = .72$), although the confidence interval range shows the data are consistent with both very large and very small positive effects. In contrast, among participants interacting with Confederate B, those in the control condition ate slightly more chocolate pieces than did those in the peer pressure condition. Although these means from Confederate B seem to contradict the hypothesis, they are not significantly different from each other. Admittedly, the pattern of means for participants who interacted with Confederate B is not what I have expected and I have no solid explanation for this difference. These data suggest that the role of the confederate is an important component of the way people respond to peer pressure.

The confederate effect clearly tempers conclusions that can be drawn from this study. It is impossible to know for sure why the data pattern differs by confederate, but there are some important clues in the data that may aid in understanding this effect. Confederate A was rated as more likeable than was Confederate B, regardless of condition. Theoretically, people should be more likely to subjugate their well-being for social gain when they have a greater rather than lesser desire to be accepted by the person who holds the desired social rewards. Based on this theory, I would expect that people would be more willing to override their personal aversion to the chocolate to be liked by Confederate A (because she was more likeable) than Confederate B (who was less likeable, but still friendly). Also, Confederate A ran twice as many participants as did Confederate B, increasing the power and precision of estimates from A's data relative to B's data. Lastly, Confederate A had extensive drama training whereas Confederate B did not, suggesting (although certainly not proving) that A may have administered the independent variable more reliably than B. For these reasons, I consider data from Confederate A more diagnostic of reality than those from Confederate B, although a replication is warranted before definitive conclusions can be drawn.

Importantly, people's perceptions of the chocolate did not differ as a function of condition or confederate. There is no evidence that people altered their personal attitudes toward the chocolate in response to the confederate's coaching, offering no evidence to support the changing expectations hypothesis. Overall, people rated the chocolate as distasteful. Yet people ate more of this aversive chocolate when the relatively more likeable confederate implied that eating it was the route to valued rewards, relative to when she did not make that link between chocolate and rewards. People did not appear to

shift their expectations of the chocolate and eat more of it because they expected to like it more in the peer pressure rather than in the control condition.

Results failed to support the self-control process that I tried to illuminate with this particular study. The peer pressure condition was contrived such that eating chocolate was a way for participants to ingratiate themselves with the person who controlled important resources, whereas the chocolate did not serve this purpose in the control condition. Self-reported ratings of state self-control capacity differed significantly across the two peer pressure conditions, suggesting that I successfully depleted people's self-control resources. However, an unexpectedly high level of state self-control depletion in the control condition tempers this conclusion.

Although I may have successfully depleted people's self-regulation resources relative to the peer pressure condition, depletion did not impact chocolate consumption. This study offers no evidence of self-control exertion to eat the aversive chocolate. Results from Confederate A show that people in the depletion condition ate as much chocolate as those in the peer pressure condition (and more than those in the control condition). Thus, these data suggest that sacrificing intrapersonal preferences takes little deliberate self-control exertion.

The detrimental effects of self-control resource depletion can be overcome with sufficient motivation (Muraven & Slessareva, 2003; Park, Glaser, & Knowles, 2008). I have proposed that people will exert self-control in order to engage in a personally aversive action for social gain. Social rewards are a powerful motivator of behavior (Baumeister & Leary, 1995). In the context of this study, it is possible that participants in the depletion condition were sufficiently motivated by the promise of financial via social

rewards to overcome the self-control deficit with which they began the study. This extra motivation may have led them to eat as much aversive chocolate as did those in the peer pressure condition, in spite of their self-control resource deficit. Thus, it is still possible that self-control is the mechanism through which people overcome their aversions to an action for social gain, but the current study's depletion condition did not provide an appropriate test of this effect.

Future replications using this study's design should attempt to measure the proposed self-control process in a different way. An alternative would be to compare remaining self-control resources of people in the control versus peer pressure conditions after the chocolate taste test and ratings. If people in the peer pressure condition exerted self-control to overcome their aversion to the chocolate for social rewards, they should perform poorer on a subsequent task requiring self-control (e.g., handgrip task, Baumeister et al., 1998), relative to participants in the control condition. Because people would likely not be motivated to perform well on this subsequent task this option would, theoretically, provide an index of remaining self-control resources.

Strengths and Limitations

In Study 3, I attempted a controlled experiment intended to capture people's true behavior while in the act of overriding a personal aversion for social gain. This design involved a detailed script for both the experimenter and confederate that included deceiving the participant about the true purpose of sampling pieces of bitter chocolate. Internal validity is this study's key strength; it offered experimental control of the procedures and stimuli, as well as random assignment to perceiving the bitter chocolate as a route to social gain or not. These two features were impossible to control in the previous

studies, but are important for a true test of the hypothesis. Eating the bitter chocolate was aversive for most people, as indicated by ratings of how much people liked it and the overall amount of chocolate eaten (on average 2-4 pieces out of 10, although there was substantial variability). Thus, the bitter chocolate provided a standardized, ethically sound target behavior.

The very control that served as this study's strength is also the root of its limitations. For ethical reasons, I could not invoke people to risk severe personal harm in the lab, so I attempted to invoke people to "risk" eating bitter tasting chocolate. Undoubtedly, people's aversion to bitter chocolate is attenuated relative to the aversions they may feel toward other truly potentially risky behaviors such as having unprotected sex, drinking large amounts of alcohol, ingesting illicit drugs, and the like. Such attenuated aversion may have contributed to the large variability in amount of chocolate eaten. Moreover, to the extent that people's aversion to chocolate was weak, relatively little self-control would be required to overcome it, thereby undermining the depletion manipulation.

Turning to the independent variable, I attempted to enhance people's desire to be liked by the confederate by adding a monetary benefit for being liked by her. Nonetheless, this manipulation may not have been strong enough to evoke the degree of self-sacrifice I predicted, across both confederates. It is also possible that this monetary enhancement may have ultimately served to counteract the strong affiliation goal I was attempting to instill, by priming self-sufficiency (Vohs, Mead, & Goode, 2006). In terms of both the independent and dependent variables, this lab-based operationalization of the phenomenon almost certainly suffered from low power. Future research attempting to

capture self-sacrifice for social gain in the lab may be well served to expect a small effect size, and should consider alternative means to enhance the importance of the social rewards that are contingent upon an aversive action.

Although there was a solid practical reason to add the monetary incentive (i.e., to increase the importance of being liked by a stranger), a cleaner test of the hypothesis would rely solely on the desirability of social rewards.⁷ One possible way to enhance the importance of the social rewards without priming money or adding other incentives would be to recruit in September new roommates from dormitories across campus. In the lab, one member of each pair could be randomly assigned to the role of an experimental accomplice who encourages the target participant to do something aversive (perhaps eat cocoa, but perhaps something else that would be perceived by most people as aversive). Target participants should be motivated to get along with this person with whom they will share a room for the ensuing eight months. Such natural motivation to gain liking would circumvent artificial incentives such as money, as was used in the current study. As I mentioned in Chapter 1, newly formed friendships might be contexts in which people are particularly likely to subjugate their well-being for social gain (Epstein, as cited in Maxwell, 2002).

Conclusions

Results were somewhat consistent the overall hypothesis. Among participants who interacted with the more likeable Confederate A, those who were led to believe that valued resources were obtainable by eating pieces of bitter chocolate ate more of them

⁷ To be clear, I do not think social rewards are the *only* incentive leading people to subjugate their personal well-being, but social rewards were the focus of this particular set of studies.

than those who were not led to believe this. Results among participants who interacted with Confederate B were inconclusive.

There was no clear support for the proposed self-control process through which people subjugate their well-being for social gain. Yet differences in bitter chocolate consumption by condition were not driven by differences in perception of the chocolate. Everyone rated the chocolate as equally unpleasant regardless of condition or confederate, which renders the process through which people eat more chocolate unknown at this point. Different measurements of self-control exertion may provide a more appropriate test of the self-control component of the hypothesis.

Contriving an experimentally real situation that afforded people the opportunity to subjugate their personal well-being for social gain in the lab was challenging. The current design offers a balance between internal and external validity, and offers both a methodologically solid contribution to this dissertation as well as some results that support the hypothesis. At least some of the time (i.e., when interacting with a most desirable partner), people will overcome their aversion to a bitter substance and eat more of it when they expect rewards from doing so.

CHAPTER 5. GENERAL DISCUSSION

Summary of Key Findings

People Engage in Personally Aversive Acts for Social Gain

My primary hypothesis was that people will overcome personal aversions to certain behaviors in order to gain social rewards they believe are contingent on those acts. I used three different methods to evaluate this hypothesis. In Studies 1a and 1b, most people could readily nominate such an experience from their past, thereby showing that this type of self-sacrifice was a real phenomenon that makes sense to laypeople. Using a longitudinal design, results of Study 2 also supported my hypothesis. People who initially disliked a potentially personally risky behavior (in particular, drinking alcohol) proceeded to engage in it later—but only if they perceived that their friends approved of it.

In Study 3, I attempted to conceptually replicate this phenomenon in a controlled laboratory environment. In the critical condition, social success was contingent on engaging in an aversive (although not particularly risky) act: eating pieces of 100% cocoa. This study revealed a large effect in the predicted direction, such that people who were encouraged by a peer to eat the chocolate ate slightly more than those who were not encouraged. However, this result held only for one of the two confederates posing as peers. Among those people who interacted with the less likable confederate, people ate slightly, but not significantly, more chocolate in the control condition rather than the peer pressure condition. Clearly this result was unexpected and failed to support my hypothesis. With two notable exceptions (i.e., Study 2, sex attitudes; Study 3, Confederate B), when considered in tandem results across these studies align with my hypothesis: people will engage in personally aversive acts for social gain.

***Is Self-Control the Mechanism through which People Engage in
Personally Aversive Acts for Social Gain?***

Across the four studies, there is a small amount of evidence supporting the proposed self-control mechanism. Study 2 shows that over time people who initially reported disliking alcohol eventually came to drink it, but only if their friends approved of it. This result is consistent with the idea that these people at some point had to exert self-control to override their distaste, but does not provide direct evidence of this process. One of the key goals of Study 3 was to illuminate whether self-control was the mechanism through which people subjugated their personal well-being for social gain. If self-control was the mechanism at play, people in the self-regulation resource depletion condition should have eaten as few pieces of bitter chocolate as people in the control condition, and fewer than those in the peer pressure condition. However, no significant mean differences were found between the peer pressure and the depletion conditions, regardless of confederate. This finding provided no evidence of self-control as the mechanism through which people engage in aversive acts for social gain.

Studies 1a and 1b offer evidence suggesting people will exert self-control to subjugate their well-being for social gain. People who were most concerned with interpersonal relationships (i.e., those who theoretically should be most likely to subjugate their personal well-being for social gain) reported exerting the most effort to engage in the behaviors they recalled (Study 1b), particularly when they perceived those behaviors were risky (Study 1a). Because effort exertion should be an indicator of self-control, this result is consistent with the idea that people—especially those who are most relationship-oriented—exert self-control to enact aversive behaviors for social gain. In

line with expectations, people high in concern for relationships may have actually exerted self-control to enact personally aversive behaviors (as suggested from the interaction between riskiness and individual differences in the need to belong in Study 1a).

However, there are a number of alternative explanations for this finding. It is possible that people high in concern for relationships (e.g., high need to belong or high sociotropy) have memories that are distorted in a way consistent with their self-image as relationship-oriented, and therefore recall behaving in relationship-oriented ways.

Overall, there is a little evidence across the four studies that self-control is the mechanism through which people enact aversive behaviors for social gain. I return later to this point when considering the possibility of nonconscious self-regulation as a mechanism at work.

Do Peers' Attitudes Change People's Perceptions of the Behavior?

It is possible that people may not need self-control to engage in personally aversive actions when others approve of them. People may respond to social approval of the action by changing their expectations of the behavior they had initially identified as aversive, using a process similar to informational social influence (Castelli et al., 2001; Deutsch & Gerard, 1955). Thus, people would not engage in the behavior by overcoming their aversion using self-control, but would do it because they no longer expect it to be aversive. Once people's expectations have been altered, prior research suggests that their actual sensory perception of the activity would be affected by their expectations (Lee et al., 2006, Wansink et al., 2000, 2007). Studies 1a, 1b, and 2 could not address this "changing perceptions hypothesis;" however, data from Study 3 do not support it.

In Study 3, comparing people's evaluations of the chocolate by condition could address the changing perceptions hypothesis as a potential alternative to the self-control

process. In the context of Study 3, this alternative account would result in the following data pattern: people in the peer pressure condition would expect to like the chocolate more than those in the control condition, which in turn would cause them to eat more than those in the control condition. Based on past research (Lee et al., 2006, Wansink et al., 2000, 2007), this effect should spill over into more positive chocolate ratings from those in the peer pressure condition relative to control participants. Instead, people rated the chocolate as equally unpalatable regardless of condition; this pattern held regardless of confederate. These data offer no support for the changing perceptions hypothesis. One limitation to this conclusion is that some participants may have eaten one piece before the confederate commented. Unfortunately, this specific aspect of the procedure was not controlled. Future work should seek clearer evidence to fully evaluate this alternative process.

Note that Study 3 was the only study in which I could examine the changing perceptions hypothesis. In Studies 1a and 1b, I could not examine this alternative process because of the retrospective nature of reports. Questionnaires in Study 2 were not designed for this purpose. Some people likely had exposure to alcohol and sex before the study. Thus, at least some people's personal attitudes toward these behaviors were not based on naïve expectations, but based on their prior experience. Because exposure was confounded with attitudes, I could not examine changes in the perception of the potentially risky behaviors in a way that informed this alternative theoretical perspective.

Some Behaviors are Normatively Assumed to Result from Self-Control Failure

One of the factors motivating the current work was the observation that self-control processes are sometimes erroneously inferred from particular behavioral outcomes, particularly those that are personally risky (e. g., Baumeister et al., 1994). For example, I asserted that there is a tendency to assume that drinking alcohol stems primarily from self-control failure: people are motivated to drink it, and therefore simply acquiesce to that impulse to do so. In Study 1b, I sought empirical evidence of this assumption among laypeople. Indeed, people rated certain behaviors as broadly appealing, including alcohol consumption, sex, and partying. Importantly, those behaviors had all been nominated as personally aversive by some people in Study 1a, for whom engaging in them should not be coded as a self-control failure—a stark contrast to the common perception of those acts. This contrast underscores my point that peoples’ impulses toward potentially risky behaviors, and therefore the self-control processes that may give rise to them, cannot be assumed on the basis of the behavior alone.

Notably, people in Study 1b assessed drug use and smoking as distasteful and, presumably, requiring self-control exertion. In Study 2, base rates for drug use and smoking were so low as to prevent analyses, in contrast to alcohol consumption and sex. Together, these findings suggest that undergraduate students at UBC are unlikely to engage in drug use or smoking for social gain because these particular domains are viewed as unappealing to most people. Investigating times when people subjugate their personal well-being for social gain requires an appreciation of the local normative beliefs about what actions are tempting and socially appealing.

Overall Summary

Combined, the four studies were designed to triangulate an investigation of whether people subjugated their personal well-being for social gain. I used a diversity of methods (i.e., descriptive recall self-report, longitudinal correlation design, and a laboratory experiment) that varied in their internal and external validity. Each study certainly has its strengths and limitations which were elaborated in their respective discussion sections. Yet together they offer some evidence that sometimes people will engage in behaviors they personally dislike in order to be liked by others, and they might exert self-control to do so.

Theoretical Implications

Relevance for Self-Control Theory

Two key theoretical advances stem from the ideas and the data presented here. First, whether a particular behavior resulted from the enactment or loss of self-control resides within the actor. Such judgment depends on whether the actor's initial impulse is to approach or avoid the behavior. This perspective challenges the field to distinguish the process of self-control from the outcomes of self-control. Making this distinction will enable a more nuanced understanding of the way self-control operates in people's daily lives by allowing for a new view of behaviors formerly cast as stemming from only low or high self-control. Subtle predictions can be made about how people will use self-control pursue their goals, based on their impulses toward behaviors that serve them.

Second, behaviors should be coded as successful or failed attempts at self-control based on the extent to which they serve the actor's intended goals, which may not be apparent to observers. Much work on goal pursuit emphasizes routes through which

people work toward long-term goals and temptations that deviate from those goals. For example, people override short-term temptations and discomfort in order to attain long-term goals by setting implementation intentions (i.e., “if..., then...” behavior contingencies; Gollwitzer, 1993; Gollwitzer & Brandstätter, 1997), by self-imposing costly deadlines (i.e., precommitment, Ariely & Wertenbroch, 2002), by nonconsciously activating the higher order (i.e., longer-term) goal (Fishbach et al., 2003), and by proactively boosting the value of enduring the short-term cost (Trope & Fishbach, 2000). This important work focuses on situations in which a short-term temptation is in conflict with a long-term goal. However, underlying this research is the assumption that the short-term temptation does not have redeeming qualities beyond hedonistic satisfaction. I have argued that some short-term temptations that can undermine one particular long-term goal could simultaneously serve other equally important long-term goals, such as interpersonal success. Instead of focusing solely on the damaging effects of potentially risky behaviors, examining other long-term goals beyond self-preservation can lead to a fuller understanding of the reasons people engage in them.

Additionally, it is noteworthy that individual differences in self-control, as measured using two distinct, validated instruments, played no detectable role across any of the studies presented herein. Of course, it is difficult to draw definitive conclusions from null findings. It is possible that trait self-control did not relate to the variables of interest because self-control is not the process at work. However, the absence of trait-level influences may also suggest that being faced with highly desirable social goals may be a “strong situation” (Mischel, 1977) that pulls people to override their aversions, regardless of their trait level of self-control. Such a result is consistent the vast literature

in social psychology that demonstrates of the power of the promise of social rewards on people's behavior (e.g., Asch, 1955, 1956; Baumeister & Leary, 1995; Maner et al., 2007). Future work is warranted to more precisely investigate the possible self-control processes at work when people engage in potentially risky behaviors for social gain. Because the clearest picture from the data does not address self-control processes directly, I turn now to implications of the findings to other related areas of research.

Relevance for Predicting Behavior from Norms and Attitudes:

Further Discussion of Study 2

The contribution that Study 2 makes should be considered separately because of the clarity of its results, relative to those from Studies 1 and 3. Study 2 revealed that over time, people who initially disliked alcohol later drank it regularly if—and only if—they had initially thought their friends approved of it. Likewise, people who initially tended to avoid drinking alcohol or having sex later engaged in those behaviors regularly if—and only if—they had initially thought their friends approved of it. These findings join a growing body of recent research showing that perceived social norms make a key contribution to potentially risky behavior. For example, research on the impact of perceived norms shows that when people perceive a behavior such as alcohol consumption is ubiquitous in their social group, they tend to engage in that behavior (Huchting, Lac, & LaBrie, 2008). Specifically, both personal attitudes toward alcohol and perceived normative levels of alcohol consumption among peers (i.e., descriptive norms) predicted behavior intentions, which in turn predicted behavior (Huchting et al., 2008). Other research has found simultaneous direct effects of personal attitudes toward alcohol, descriptive norms about alcohol consumption, and peer approval of alcohol consumption

(i.e., injunctive norms) on college students' alcohol consumption (Neighbors, Lee, Lewis, Fossos & Larimer, 2007). Neither of these studies considered the potential interactive effects of personal attitudes and perceived norms on behavior. By doing so, I have profitably contributed a more nuanced approach to understanding these predictors of potentially risky behavior. Data from Study 2 shows that perceptions of friends' attitudes about a potentially risky behavior moderate the extent to which people's personal attitudes and behavior predict future behavior.

One broad message that can be taken from the results of Study 2 is that personal attitudes are not always the best predictor of behavior, which is a finding consistent with decades of research on the attitude-behavior discrepancy (e.g., LaPiere, 1934; see Ajzen & Fishbein, 2005, for a review). An important criterion for predisposing attitudes to be able to predict behavior is specificity (Ajzen & Fishbein, 1977). Attitudes can predict behavior to the extent that the attitude measured maps on directly to the behavior. One alternative explanation for my results is that the personal attitudes I measured were not specific to the behavior, so could not be expected to predict behavior well. To the contrary, attitude items in Study 2 were crafted to map directly on to the specific behavior in question. Empirical evidence also supports the argument that personal attitudes had a fair chance to predict behavior in Study 2. Meta-analyses of the attitude-behavior relationship report average correlation coefficients near $r = .40$ (Kraus, 1995, $r = .38$ across 88 studies; Wallace, Paulson, Lord, & Bond, 2005, $r = .41$ across 797 studies), which is consistent with what I found. Correlations between the behavior and either type of attitude ranged between $r = .41$ and $.45$ for sex and alcohol. Personal attitudes had just as much opportunity to predict future behavior as did perceived friend attitudes. Yet,

when considered in tandem, the interaction between perceived friend attitudes and personal attitudes held superior power to predict future behavior.

The theory of planned behavior (TPB; Ajzen, 1985, 1991) is a well-supported and commonly used model for predicting behavior (Ajzen & Cote, 2008). According to the TPB, behavior is predicted by behavioral intentions, which are derived from social pressure to perform a behavior (i.e., subjective norms), personal attitudes toward that behavior, and a belief that one can enact the behavior (i.e., self-efficacy). This model has been profitably applied to explain numerous behaviors, including condom use (Albarracín, Johnson, Fishbein, & Muellerleile, 2001) and alcohol consumption (e.g., Collins & Carey, 2007; Huchting et al., 2008). In TPB models, the three predictors of behavioral intention are considered simultaneously and without interaction. What may be missed in these first-order models is the case where people's personal attitudes toward a behavior are negative but they have social pressure to enact it. In theoretical discussions of the TPB there is an awareness that the relative power of the three predictors likely varies as a function of the particular behavior and population (e.g., Ajzen & Cote, 2008), but interactions among predictors are not often modeled in empirical studies (cf. Wallace et al., 2005). Study 2 was not designed to test the TPB; however, results suggest that the predictive power of TPB may be improved to the extent that interactions among predictors are modeled in addition to the first-order effects. Doing so may illuminate cases in which people experience conflict among those three predictors, and therefore better predict people's engagement in potentially risky and other behaviors.

An analysis of TPB including interactions among the three predictors would still omit the psychological mechanism through which people come to enact the behavior. It is

possible that behaviors may arise through self-control in different ways (i.e., through self-control failure or exertion), depending on the degree of conflict among attitudes, subjective norms, and self-efficacy. Future research could merge the ideas I proposed in this dissertation with the TPB for a comprehensive understanding of *why* (i.e., TPB) and *how* (i.e., self-control processes) people enact behaviors.

Relevance for Deviance Regulation Theory

Essentially, Deviance Regulation Theory (DRT) posits that people attempt to cultivate desirable social identities by deviating from group norms (Blanton & Christie, 2003). Underlying this theory is the idea that people are socially rewarded for having some unique attributes that distinguish them from other group members. People attain desirable social identities by balancing the benefits of highlighting their uniqueness within the group (and therefore being accepted by other group members) versus avoiding rejection by straying too far from the group norms. This tension is focused on managing one's deviant behavior to approach acceptance and avoid rejection. In the DRT framework, deviant behaviors may or may not include those that risk personal well-being.

My overarching hypothesis is that people will sometimes subjugate personal well-being for social rewards. DRT may offer a way to predict the degree to which people expect social rewards from a given behavior, based on characteristics of the group and desired identity. Once a behavior is chosen that is expected to glean social rewards, the self-control process needed to actually enact the behavior will depend on people's impulse toward that behavior. As I have argued, if the behavior is appealing, people will merely need to acquiesce to the pre-existing desire to engage in it. If the behavior is aversive, people will need to exert self-control to engage in it. Thus, DRT offers a

comprehensive account of how behavior can be shaped by group norms and identity concerns, and specifically why people might choose to deviate from group norms. Once the behavior is chosen, self-regulatory processes are required to enact the behavior, and I have predicted the nature of that process depending on people's desires.

Relevance for Pluralistic Ignorance

I anticipated that people would sacrifice their personal well-being for social gain when they experience a discrepancy between their personal preferences and what actions they perceive to be required for social success, and prioritize the latter. Discrepancies between a person's public behavior and privately held attitudes can result from the psychological state called pluralistic ignorance. This state occurs when people think that their average peers feel differently toward the behavior than they themselves do, although everyone (including themselves) is engaging in that behavior (Miller & McFarland, 1987). The resulting problem is that everyone conforms to the group's normative behavior that no one in the group privately endorses (Miller & Prentice, 1994; Schroeder & Prentice, 1998).

People who are in a state of pluralistic ignorance may be predisposed to subjugate their well-being for social gain by conforming to the behavioral norms they think their peers support. Note the conceptual difference between pluralistic ignorance and my hypothesis: the critical pre-condition of the pluralistic ignorance phenomenon is misperception of others' attitudes toward the normative behavior, whereas subjugating personal well-being for social gain can happen whether or not the norm is perceived accurately. Thus, I predict that a discrepancy between personal attitudes and norms is

sufficient to start the proposed self-control process to overcome an aversion to a behavior for social gain, but it is not a necessary condition.

Opportunities for Further Research and Theoretical Refinement

I have provided some evidence and a basic model arguing that sometimes people subjugate personal well-being in order to gain social rewards that are perceived to be contingent on personally aversive behaviors. Further research and theoretical development is needed to fully understand the contexts and conditions in which this process occurs, particularly in three key areas.

When do People Subjugate Personal Well-Being for Social Rewards?

It is important to note that I am not proposing that all or even most people risk their personal health and well-being for the sake of social goals all of the time. When will people be most likely to subjugate personal well-being for social gain? As discussed above, DRT and pluralistic ignorance offer possible preconditions of this phenomenon. Fully answering this question will involve identifying the relative contributions of a number of variables, most critically including risk assessment and social versus personal goal prioritization. The influence of these two factors could be studied at both the chronic or situational levels.

Trading-off between personal well-being and social success will involve some perceptions of the risks involved in pursuing (or failing to pursue) each goal. Subjective perception and misperception of risk will likely influence whether people engage in personally harmful behaviors for social gain. Conceptually, the amount of risk perceived should align with the amount of personal aversion anticipated from the action. People likely will feel more aversion to the behavior to the extent that they (mis)perceive it as

personally risky. Assessing risk is susceptible to biases (e.g., Kahneman & Tversky, 1979; Kühberger, 1998), to emotions that occur when contemplating a future action, and to emotions people expect to feel when engaging in that action (Loewenstein, Weber, Hsee, & Welch, 2001). If people do perceive the behavior in question to be relatively innocuous (i.e., they do not expect to feel negatively during or after enacting it), then they may be more likely to pursue it for social reward than if they perceive the behavior to be particularly risky (Harris, Jenkins, & Glaser, 2006). Factors that influence risk assessment should contribute to the likelihood people will subjugate their personal well-being for social reward. Importantly, risk assessment should have implications for the degree to which self-control will be required to engage in the behavior. Overall, behaviors that are perceived (or misperceived) as low risk should require less self-control to enact, relative to behaviors that are perceived to be high risk.

The extent to which people value conflicting social rewards versus personal well-being should also influence whether they will pursue a personally harmful path to social success. When people feel averse to a behavior they perceive as a route to social success, personality traits or situational features that make salient interpersonal relationships should heighten the odds that a social goal will be pursued despite the cost to personal well-being. Conversely, personality traits or situational features that make salient the independent self should decrease the likelihood of sacrificing personal well-being to pursue social rewards. For example, people with independent self-construals tend to pursue goals for intrinsic reasons, whereas people with interdependent self-construals tend to pursue goals that are derived from external standards (Downie, Koestner, Horberg, & Haga, 2006). Coupled with the tendency to value interpersonal relationships

more broadly (Gardner, Gabriel, & Lee, 1999; Markus & Kitayama, 1991), this prior work suggests that people with interdependent self-construals may be more likely than people with independent self-construals to sacrifice their personal well-being for the sake of social relationships.

Notably, individual differences in relationship-orientation did not play a large role in the current studies. The only evidence of an effect of relationship-orientation occurred in Studies 1a and 1b, such that people who recalled exerting more effort were more relationship-oriented (Study 1b) and had perceived the behavior as more aversive (Study 1a). This pattern is in line with expectations outlined in the previous paragraph; however, using individual differences in people's current relationship-orientation to predict their past recalled effort is open to biases. In Studies 2 and 3, individual differences in relationship-orientation did not influence people's responses on the variables of interest. Theoretically, desire to fit in with the group is reasoned to be an important precondition of willingness to subjugate personal well-being for social gain, which suggests that people who have stronger desires to fit in should be more susceptible. Yet, given my overall data pattern, it is possible that situational cues to fit in may impact people's willingness to subjugate well-being more strongly than individual differences in overall relationship-orientation do. Future work is needed to test this empirical question.

Age and developmental stage may influence the value placed on social versus personal well-being. Much of the literature considered in Chapter 1 examined adolescents. Adolescence may be a time when people are especially likely to override aversive impulses to gain social success. Overall, young people tend to place high value on being members of popular peer groups (Gavin & Furman, 1989). Normative ideas

about potentially risky behaviors being “bad” come from the adult world, and therefore adolescents tend to base social acceptance on flouting those rules and purposefully engaging in those potentially risky behaviors (Harris, 1995; c.f., Moffitt, 1993). Thus, greater willingness to subjugate personal well-being for social gain may occur among adolescents to the extent that they are more likely than adults to highly value acceptance by their peer group, the peer group may be especially likely to value potentially risky behaviors, and peer pressure may make potentially risky behavior appear to be the only route to acceptance. Future research might examine whether people past adolescence or early adulthood generally are less susceptible to choosing potentially risky behaviors for social gain than are younger age groups because adult social groups perceive potentially risky behaviors as a less successful means to social acceptance.

Friendship closeness may also differ between adolescents and adults, which may impact willingness to subjugate personal well-being to gain interpersonal acceptance. Adolescents may be more likely than adults to lack security and closeness in their friendships. Genuinely close friends are likely accepting of each other despite some attitude differences (and perhaps especially because of some unique attitudes, Blanton & Christie, 2003). In the current Study 2, relationship closeness did not moderate people’s attitudes or behaviors. However, our sample was predominantly first year undergraduates, whose friendships may be particularly precarious. Future research should investigate more thoroughly the potential moderating impact of true friendship closeness and security on willingness to subjugate personal well-being for social gain.

Individual differences in tolerance for the potentially risky or otherwise distasteful behavior may override any impact of perceived risk and desire for social gain and thereby

limit who is able to engage in personally harmful behaviors for social gain. For example, some people, called *supertasters*, possess an extremely sensitive sense of taste and are especially likely to notice sourness and irritation in foods and beverages (Prescott, Soo, Campbell, & Roberts, 2004). Accordingly, they tend to avoid strong tastes such as alcohol because it creates a burning sensation in their mouths (Bartoshuk, Duffy, & Miller, 1994; Duffy, Peterson, & Bartoshuk, 2004), and are less likely to develop nicotine dependence than are *nontasters* (i.e., people who have less sensitive taste buds; Snedecor, Pomerleau, Mehringer, Ninowski, & Pomerleau, 2006; Enoch, Harris, & Goldman, 2001). One early study of particular relevance here compared supertasters' and nontasters' private and public taste ratings of a noxious taste (Kelley & Lamb, 1957). Consistent with my hypothesis, nontasters censored their private taste ratings when reporting them in public, such that their ratings conformed to the group's positive taste ratings. In contrast, supertasters did not conform their taste ratings to the group's ratings. It is possible that differences in levels of conformity were due to differences in certainty. Supertasters were more certainly negative in their private ratings than were nontasters. This study provides an interesting springboard for examining the limiting conditions of this model, specifically with respect to degree of aversion to the personally harmful behavior under consideration.

Would People Override Aversions for both

Approach- and Avoid-Framed Social Goals?

Throughout this paper I have implicitly framed social goals as positive rewards to be approached. Another side of the coin is to reframe the current analysis in terms of people subjugating personal well-being to avoid social costs such as humiliation or

ostracism. A recent surge in research on the psychological consequences of rejection suggests that avoiding rejection may be a strong motivation to act, perhaps including actions that require overriding a personal aversion. Rejection has a strong impact on people's emotional states and behavior, leading to feelings of numbness (DeWall, & Baumeister, 2006) and a strong desire to connect with others (Maner, DeWall, Baumeister, & Schaller, 2007). Social suffering (e.g., from being excluded from a group activity) produces a subjective experience of pain that is more severe than physical pain (Chen, Williams, Fitness, & Newton, 2008; Gray & Wegner, 2008). Behavioral data corroborates these subjective ratings: people prefer to pay money to be included than to receive money for being excluded (van Beest, & Williams, 2006).

It is possible that expecting to be rejected for avoiding a potentially personally risky behavior may be a particularly strong incentive for people to force themselves to engage in the behavior. Supporting this idea, a series of studies has demonstrated that people who have just been excluded by others tend to unintentionally make unhealthy, self-defeating choices, like overeating snacks and procrastinating, relative to people who have just been accepted (Twenge, Catanese, & Baumeister, 2002). However, in these studies it is unlikely that people expected these actions to lead to social gain because the manipulation used pertained to people's life course in general (i.e., false feedback that people will end up alone in life in the rejection condition, versus ending up surrounded by a rich network of friends in the acceptance condition), rather than a specific person or group as a source of rejection. Future research is needed to identify whether rejected people are willing to make self-sacrificing choices when they think they will lead to social gain or not. Regardless of whether the social goal is framed as approaching

inclusion or avoiding rejection, the proposed intrapersonal process is the same: overriding aversions to potentially personally risky behaviors should require self-control.

Potential for Conscious and Nonconscious Elements

Up to now, the process of subjugating personal desires or well-being for social gain has been discussed as if it was a deliberate, conscious choice people make, and indeed results revealed some evidence for this assertion. Study 1 clearly assumes the process is deliberate by asking people to report a time when they “did something [they] didn’t want to do in hopes that [they] would be liked by someone else because of it” (see Appendix A for full instructions). Peoples’ responses indicated that they have subjugated their own well-being for social gain in a seemingly deliberate way, but I do not assume that this is always the case.

I have argued that people override desires for health and well-being in order to gain social rewards from unhealthy behaviors. To be clear, I do not propose that this process is a fully conscious one. When personal and social goals conflict, it is doubtful that people calculate the importance and likelihood of obtaining each goal, or engage in a cost-benefit analysis. Accordingly, it is likely that people are not fully aware of times when they substitute a social goal for a personal goal. Hence, the process is not fully conscious, yet I doubt it is fully automatic either. Automatic processes run without control (Bargh & Chartrand, 1999), whereas overriding the aversive nature of a stimulus involves, definitionally, an aspect of control. Hence, there is likely a mixture of both conscious and nonconscious processes at work when people engage in personally aversive behaviors for interpersonal gain.

The idea that people might nonconsciously (rather than fully consciously) subjugate their well-being for social gain raises the possibility of mimicry as an alternative explanation for the predicted results. Is it the case that people who desire social gain are merely mimicking their peers' behaviors, whatever they may be, in order to ingratiate themselves? People nonconsciously mimic others' nonverbal behavior, especially when they are motivated to affiliate with that other person (Cheng & Chartrand, 2003; Lakin & Chartrand, 2003; van Baaren, Maddux, Chartrand, de Bouter, & van Knippenberg, 2003). This research on nonconscious mimicry shows that people will nonconsciously touch their faces, shake their feet, and play with a pen to connect with others. I doubt that people would likewise nonconsciously mimic behaviors they find aversive. Results from Study 3 align with this view, but do not entirely rule out mimicry. Confederates always ate five chocolate pieces, yet people ate on average only four pieces of chocolate in the peer pressure conditions (see Table 11). Even if people were nonconsciously pursuing a goal to affiliate, I think that feeling a personal aversion to the action would bring this nonconscious process into conscious awareness, although this remains an empirical question for future research.

Importantly, the definition of self-control does not necessarily require deliberate exertion. Research over the past decade has revealed the more subtle, nonconscious ways people regulate their behavior (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Fitzsimons & Bargh, 2004). I have argued that people sometimes deliberately exert self-control to engage in aversive acts for social gain. However, it is possible that people nonconsciously change their attitudes toward potentially risky behaviors to align with those of their peers, which over time affects their willingness to engage in the behavior

(i.e., the changing perceptions hypothesis proffered earlier). In Study 2, people's perceptions of their friend's attitudes toward drinking and sex impacted their future behavior but not their current behavior. People may have exerted self-control over time across repeated exposure to the aversive stimulus in order to override their aversion. Yet data on perceptions of the chocolate in Study 3 did not show evidence of perceptual change. It is possible that peer attitudes may have influenced people's perceptual experience of the aversive behavior over time (i.e., possibly in Study 2), but not immediate behavior (as in Study 3). If this changing perceptions process occurs, it is possible that it could still require self-control, although it may require more subtle forms of self-regulation than deliberate exertion. Future work is needed to fully examine this possibility.

In the present studies, there is no direct evidence that addresses the nonconscious versus conscious process debate. The designs of Study 2 and Study 3 did not require participants to be fully aware that they were overriding personal aversions for social gain, which renders the roles of conscious and nonconscious processes ripe fodder for future work. Thinking about self-sacrifice for social gain as arising through relatively nonconscious self-regulation versus (or in addition to) explicit self-control has implications for future research designs. The wide variety of evidence supporting the Limited Resource Model of self-regulation has shown that effortful attempts to regulate the self deplete self-regulation resources, but simple mental activities tasks do not (Schmeichel, Vohs, & Baumeister, 2003; Vohs et al., 2005). The depletion condition in the current Study 3 also assumes that subjugating personal well-being for social gain involves conscious deliberation. However, nonconscious self-regulation process, such as

goal-directed attitude change, might not drain resources as readily as conscious self-control. Future research should examine whether people engage in nonconscious self-regulation by over time changing their attitudes in order to overcome their aversions to behaviors contingent on social gain. To the extent that nonconscious self-regulation can facilitate self-sacrifice for social goals, future research should examine the conditions under which people require conscious effort for such self-sacrifice.

Future Directions: Extensions and Applications

Does Subjugating Personal Well-Being Secure Interpersonal Success?

Regardless of whether people consciously or nonconsciously subjugate their well-being for social gain, to the extent that such an action works to secure friendship people would likely repeat the behavior in similar contexts. I have shown that engaging in potentially risky behaviors stems at least in part from a desire to foster interpersonal relationships. The extent to which such behaviors succeed at this quest largely is an opportunity for future research to examine.

As is the case for all self-control, the costs of potentially risky behaviors can be fairly certain but the benefits are delayed and uncertain. People are willing to accept short-term costs in order to achieve potential long-term benefits when the latter are made salient (Trope & Fishbach, 2000). In the same way, vandalizing property or taking drugs are present-moment actions that may or may not work to enhance social inclusion. Anticipating receipt of future social success could impel someone to override aversion toward a potentially risky behavior and suffer the immediate personal costs. I am not claiming that these actions always work, but people's intent and hope is that they will. The self-control is in the intention, not the outcome.

For people to subjugate their well-being for social gain, they simply need to *expect* this strategy to work. Nonetheless, evidence reviewed earlier suggests that engaging in some potentially risky behaviors, specifically sexual behavior (Prinstein et al., 2003), binge eating (Crandall, 1988), and smoking (Aloise-Young et al., 1994), does in fact increase peer-nominated popularity among adolescents. The only relevant results from the current investigation are mixed. In Study 1a, there is some evidence that people tended to repeat a risky behavior to the extent that they recalled received positive social rewards as a result; however, Study 1b did not replicate this finding.

Overall, it is reasonable to surmise that subjugating personal well-being must work to gain social benefits at least some of the time for people to repeatedly attempt to strategically engage in it. Such benefits may lead people to repeat the behavior, and over time acquire an appetite for it (see Figure 1), although the biologically addictive properties of some behaviors such as drug use undoubtedly contribute to repetition of some behaviors (e.g., Mansvelder & McGehee, 2002). One ambitious way to extend the present line of studies would be to study the whole psychological process, from an initial aversion versus impulse toward the behavior, to an expectation that it will lead to social gain, through behavior, to the resulting positive and/or negative consequences (both social and physiological), and on to opportunities to repeat the behavior. Such a comprehensive investigation of times when people subjugate personal well-being for social gain could yield critical information about the self-control processes involved in acquiring tastes for potentially risky behaviors.

Applications for Prevention

From a practical perspective, the current model may provide insight into possible interventions to curb the propensity to engage in potentially risky behaviors. This model highlights the importance of the social demands that elicit potentially risky behaviors. People may be taught to recognize the circumstances in which they tend to subjugate their personal well-being for the sake of connection with others. Such awareness may expose options such as choosing alternative ways to connect with friends, or choosing friends with goals that are in concordance with important personal goals. The latter option dovetails with alcoholism treatment. Treatment results in better long-term success when it encourages the former alcoholic to connect with people who support abstinence, rather than when therapy focuses on lifestyle improvements like housing or employment (Litt, Kadden, Kabela-Cormier, & Petry, 2007).

Conclusion

This model exposes a new way of looking at self-control in the context of potentially risky behaviors by synthesizing a variety of findings from social, health, clinical, and developmental psychological literatures. Across literatures, the evidence suggests that people can and do exert self-control to engage in personally harmful behaviors with the hopes of achieving social goals. Current data supports the phenomenon, but failed to capture the self-control process. Most people can recall and discuss a time when they subjugated their personal well-being for social gain (Studies 1a and 1b); moreover, over time people engage in potentially risky behaviors that they personally find aversive (i.e., alcohol consumption) if they perceive that their friends approve of them (Study 2). Study 3 demonstrates that people will override a taste

aversion in the lab for social benefits; however, the effect held only for one of two confederates. Together, these studies suggest that people will enact behaviors they find aversive when social rewards are at stake; whether the mediating process is self-control exertion remains a question for future research.

I have highlighted the importance of considering idiosyncratic aversions to, versus appetites for, potentially risky behaviors in specifying whether a behavior stems from exertion of self-control. Broadly, I have demonstrated that the person must be considered in the context of the surrounding social situation to accurately determine the psychological processes that drive behavior. I have identified a theoretically novel phenomenon: people override their personal goals in order to fit in with others. In doing so, people may exert self-control to engage in the very behaviors that are often assumed to be caused by a loss of self-control.

REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). Heidelberg, Germany: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- Ajzen, I., & Cote, N. G. (2008). Attitudes and the prediction of behavior. In W. D. Crano & R. Prislin (Eds.), *Attitudes and attitude change* (pp. 289-311). New York: Psychology Press.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173-221). Mahwah, NJ: Erlbaum.
- Albarracín, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin*, 127, 142-161.
- Allen, J. P., Porter, M. R., McFarland, F. C., Marsh, P., & McElhaney, K. B. (2005). The two faces of adolescents' success with peers: Adolescent popularity, social adaptation, and deviant behavior. *Child Development*, 76, 747-760.

- Aloise-Young, P. A., Graham, J. W., & Hansen, W. B. (1994). Peer influence of smoking initiation during early adolescence: A comparison of group members and group outsiders. *Journal of Applied Psychology, 79*, 281-287.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Andrews, J. A., Hampson, S., & Barckley, M. (2008). The effect of subjective normative social images of smokers on children's intentions to smoke. *Nicotine and Tobacco Research, 10*, 589-597.
- Ariely, D., & Wertenbroch, K. (2002). Procrastination, deadlines, and performance: Self-control by precommitment. *Psychological Science, 13*, 219-225.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596-612.
- Asch, S. E. (1955). Opinions and social pressure. *Scientific American, 193*, 31-35.
- Asch, S. E. (1956). Studies of independence and conformity: A minority of one against a unanimous majority. *Psychological Monographs, 70* (9, Whole No. 416).
- Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*, 338-375.
- Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal and Social Psychology, 63*, 575-582.
- Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462-476.

- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81, 1014-1027.
- Barratt, E. E. (1959). Anxiety and impulsiveness related to psychomotor efficiency. *Perceptual and Motor Skills*, 9, 191-198.
- Bartoshuk, L. M., Duffy, V. B., & Miller, I. J. (1994). PTC/PROP tasting: Anatomy, psychophysics, and sex effects. *Physiology and Behavior*, 56, 1165-1171.
- Baumeister, R. F. (2005). *The cultural animal: Human nature, meaning, and social life*. New York: Oxford University Press.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252-1265.
- Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology*, 88, 589-604.
- Baumeister, R. F., & Exline, J. J. (1999). Virtue, personality, and social relations: Self-control as the moral muscle. *Journal of Personality*, 67, 1165-1194.
- Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, 7, 1-15.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press.

- Baumeister, R. F. & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Beglinger, C. & Degen, L. (2006). Gastrointestinal satiety in humans – Physiologic roles for GLP-1 and PYY? *Physiology and Behavior*, 89, 460-464.
- Benet-Martínez, V. & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait method analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology*, 75, 729-750.
- Birch, L. L., Zimmerman, S. I., & Hind, H. (1980). The influence of social-affective context on the formation of children`s food preferences. *Child Development*, 51, 856-861.
- Blanton, H., & Christie, C. (2003). Deviance regulation: A theory of action and identity. *Review of General Psychology*, 7, 115-149.
- Bogen, E. (1929). The composition of cigarets and cigaret smoke. *Journal of the American Medical Association*, 93, 1110-1114.
- Brandt, A. M. (2007). *The cigarette century: The rise, fall and deadly persistence of the product that defined America*. New York: Basic Books.
- Brehm, J. W., Miron, A. M., & Miller, K. (in press). Affect as a motivational state. *Cognition and Emotion*.
- Brezina, T. (2000). Delinquent problem-solving: An interpretive framework for criminological theory and research. *Journal of Research in Crime and Delinquency*, 37, 3-30.

Brezinova, V. (1974). Effect of caffeine on sleep: EEG study in late middle age people.

British Journal of Clinical Pharmacology, 1, 203-208.

Britt, M. A., & Jachym, N. K. (1996). Cigarette and alcohol use among 4th and 5th

graders: Results of a new survey. *Journal of Alcohol and Drug Education*, 41, 44-54.

Brown, S. A., Goldman, M. S., & Christiansen, B. A. (1985). Do alcohol expectancies

mediate drinking patterns of adults? *Journal of Consulting and Clinical Psychology*, 53, 512-519.

Brummit, C. (2007, July 3). Clove Marlboro launched in Indonesia. Retrieved March 6,

2009 from http://www.usatoday.com/money/economy/2007-07-03-3435618843_x.htm

Carvallo, M., & Pelham, B. W. (2006). When fiends become friends: The need to belong

and perceptions of personal and group discrimination. *Journal of Personality and Social Psychology*, 90, 94-105.

Carver, C. S. (2004). Self-regulation of action and affect. In R. F. Baumeister & K. D.

Vohs (Eds.). *Handbook of self-regulation: Research, theory and applications*. New York: Guilford Press.

Castelli, L., Vanzetto, K., Sherman, S. J., & Arcuri, L. (2001). The explicit and implicit

perception of in-group members who use stereotypes: Blatant rejection but subtle conformity. *Journal of Experimental Social Psychology*, 37, 419-426.

Chen, Z., Williams, K. D., Fitness, J., & Newton, N. C. (2008). When hurt will not heal:

Exploring the capacity to relive social and physical pain. *Psychological Science*, 19, 789-795.

- Cheng, C. M., & Chartrand, T. L. (2003). Self-monitoring without awareness: Using mimicry as a nonconscious affiliation strategy. *Journal of Personality and Social Psychology*, 85, 1170-1179.
- Ciarocco, N., Twenge, J. M., Muraven, M., Tice, D. M. (2007). *The State Self-Control Capacity Scale: Reliability, validity, and correlations with physical and psychological stress*. Manuscript under revision.
- Collins, S. E., & Carey, K. B. (2007). The theory of planned behavior as a model of heavy episodic drinking among college students. *Psychology of Addictive Behaviors*, 21, 498-507.
- Cornell, J. L., & Halpern-Felsher, B. L. (2006). Adolescents tell us why teens have oral sex. *Journal of Adolescent Health*, 38, 299-301.
- Crandall, C. S. (1988). Social contagion of binge eating. *Journal of Personality and Social Psychology*, 55, 588-598.
- Dean, D. G., Braito, R., Powers, E. A., & Britton, B. (1975). Cultural contradictions and sex roles revisited: A replication and a reassessment. *The Sociological Quarterly*, 16, 201-215.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, 51, 629-636.
- DeWall, C. N., & Baumeister, R. F. (2006). Alone but feeling no pain: Effects of social exclusion on physical pain tolerance and pain threshold, affective forecasting, and interpersonal empathy. *Journal of Personality and Social Psychology*, 91, 1-15.

- DiFranza, J. R., Savageau, J. A., Fletcher, K., Ockene, J. K., Rigotti, N. A., McNeill, A. D., et al. (2004). Recollections and repercussions of the first inhaled cigarette. *Addictive Behaviors, 29*, 261-272.
- Downie, M., Koestner, R., Horberg, E., & Haga, S. (2006). Exploring the relation of independent and interdependent self-construals to why and how people pursue personal goals. *Journal of Social Psychology, 146*, 517-531.
- Duffy, V. B., Peterson, J. M., & Bartoshuk, L. M. (2004). Associations between taste genetics, oral sensation and alcohol intake. *Physiology and Behavior, 82*, 435-445.
- Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology, 54*, 1040-1048.
- Enoch, M. A., Harris, C. R., & Goldman, D. (2001). Does a reduced sensitivity to bitter taste increase the risk of becoming nicotine addicted? *Addictive Behaviors, 26*, 399-404.
- Exline, J. J., & Lobel, M. (1999). The perils of outperformance: Sensitivity about being the target of a threatening upward comparison. *Psychological Bulletin, 125*, 307-337.
- Exline, J. J., & Lobel, M. (2001). Private gain, social strain: Do relationship factors shape responses to outperformance? *European Journal of Social Psychology, 31*, 593-607.
- Exline, J. J., Single, P. B., Lobel, M., & Geyer, A. L. (2004). Glowing praise and the envious gaze: Social dilemmas surrounding the public recognition of achievement. *Basic and Applied Social Psychology, 26*, 119-130.

- Faber, R. & Vohs, K. D. (2004). To buy or not to buy? Self-control and self-regulatory failure in purchase behavior. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 509-524). New York: Guilford Press.
- Fallon, A. E., & Rozin, P. (1983). The psychological bases of food rejections by humans. *Ecology of Food and Nutrition*, 13, 15-26.
- Finkel, E. J., & Campbell, W. K. (2001). Self-control and accommodation in close relationships: An interdependence analysis. *Journal of Personality and Social Psychology*, 81, 263-277.
- Finkel, E. J., Campbell, W. K., Brunell, A. B., Dalton, A. N., Scarbeck, S. J., & Chartrand, T. L. (2006). High-maintenance interaction: Inefficient social coordination impairs self-regulation. *Journal of Personality and Social Psychology*, 91, 456-475.
- Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not into temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, 84, 296-309.
- Fitzsimons, G. M., & Bargh, J. A. (2004). Automatic self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.). *Handbook of self-regulation* (pp. 151-170). New York: Guilford Press.
- Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic Behavior*, 6, 347-369.
- French, S. J. & Cecil, J. E. (2001). Oral, gastric and intestinal influences on human feeding. *Physiology and Behavior*, 74, 729-734.

- Frentz, C., Gresham, F. M., & Elliott, S. N. (1991). Popular, controversial, neglected, and rejected adolescents: Contrasts of social competence and achievement differences. *Journal of School Psychology, 29*, 109-120.
- Friedman, L. S., Lichtenstein, E., & Biglan, A. (1985). Smoking onset among teens: An empirical analysis of initial situations. *Addictive Behaviors, 10*, 1-13.
- Gardner, W. L., Gabriel, S., & Lee, A. Y. (1999). "I" value freedom but "we" value relationships: Self-construal priming mirrors cultural differences in judgment. *Psychological Science, 10*, 321-326.
- Gavin, L. A., & Furman, W. (1989). Age differences in adolescents' perceptions of their peer groups. *Developmental Psychology, 25*, 827-834.
- Geliebter, A., & Hashim, S. A. (2001). Gastric capacity in normal, obese, and bulimic women. *Physiology and Behavior, 74*, 743-746.
- Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review of Social Psychology, 4*, 141-185.
- Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology, 73*, 186-199.
- Gove, W. R., Hughes, M., & Geerken, M. R. (1980). Playing dumb: A form of impression management with undesirable side effects. *Social Psychology Quarterly, 43*, 89-102.
- Gray, K., & Wegner, D. M. (2008). The sting of intentional pain. *Psychological Science, 19*, 1260-1262.

- Graydon, M. (2007). Don't bother the wrap it: Online Giftgiver and Bugchaser newsgroups, the social impact of gift exchanges and the 'carnavalesque'. *Culture, Health and Sexuality*, 9, 277-292.
- Griffiths, R. R, Juliano, L. M., & Chausmer, A. L. (2003). Caffeine pharmacology and clinical effects. In A. W. Graham, T. K. Schultz, M. Mayo-Smith, R. K. Ries, & B. B. Wilford (Eds.) *Principles of addiction medicine* (3rd ed., pp. 193-224). Chevy Chase, MD: American Society of Addiction Medicine.
- Grov, C. & Parsons, J. T. (2006). Bug Chasing and Gift Giving: The potential for HIV transmission among barebackers on the internet. *AIDS Education and Prevention*, 18, 490-503.
- Haertzen, C. A., Kocher, T. R., & Miyasato, K. (1983). Reinforcements from the first drug experience can predict later drug habits and/or addiction: Results with coffee, cigarettes, alcohol, barbiturates, minor and major tranquilizers, stimulants, marijuana, hallucinogens, heroin, opiates and cocaine. *Drug and Alcohol Dependence*, 11, 147-165.
- Hahn, G., Charlin, V. L., Sussman, S., Dent, C. W., Manzi, J., Stacy, A. W., et al. (1990). Adolescents' first and most recent use situations of smokeless tobacco and cigarettes: Similarities and differences. *Addictive Behaviors*, 15, 439-448.
- Halpern-Felsher, B. L., Cornell, J. L., Kropp, R. Y., & Tschann, J. M. (2005). Oral versus vaginal sex among adolescents: Perceptions, attitudes, and behavior. *Pediatrics*, 115, 845-851.

- Harris, C. R., Jenkins, M., & Glaser, D. (2006). Gender differences in risk assessment: Why do women take fewer risks than men? *Judgment and Decision Making*, 1, 48-63.
- Harris, J. R. (1995). Where is the child's environment? A group socialization theory of development. *Psychological Review*, 102, 458-489.
- Heatherton, T. F., & Vohs, K. D. (1998). Why is it so difficult to inhibit behavior? *Psychological Inquiry*, 9, 212-215.
- Hersey, J. C., Ng, S. W., Nonnemaker, J. M., Mowery, P., Thomas, K. Y., Vilsaint, M.-C., et al. (2006). Are menthol cigarettes a starter product for youth? *Nicotine and Tobacco Research*, 8, 403-413.
- Higgins, E. T. (1996). The 'self digest': Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology*, 71, 1062-1083.
- Holland, T. R., Beckett, G. E., & Levi, M. (1981). Intelligence, personality, and criminal violence: A multivariate analysis. *Journal of Consulting and Clinical Psychology*, 49, 106-111.
- Huchting, K., Lac, A., & LaBrie, J. W. (2008). An application of the theory of planned behavior to sorority alcohol consumption. *Addictive Behaviors*, 33, 538-551.
- Impett, E. A., & Peplau, L. A. (2003). Sexual compliance: Gender, motivational, and relationship perspectives. *The Journal of Sex Research*, 40, 87-100.
- Jackson, C. (1997). Initial and experimental stages of tobacco and alcohol use during late childhood: Relation to peer, parent, and personal risk factors. *Addictive Behaviors*, 22, 685-698.

- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: Guilford Press.
- Juliano, L. M., & Griffiths, R. R. (2004). A critical review of caffeine withdrawal: Empirical validation of symptoms and signs, incidence, severity, and associated features. *Psychopharmacology*, 176, 1-29.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Kanfer, F. H., Stifter, E., & Morris, S. J. (1981). Self-control and altruism: Delay of gratification for another. *Child Development*, 52, 674-682.
- Kelley, H. H., & Lamb, T. W. (1957). Certainty of judgment and resistance to social influence. *The Journal of Abnormal and Social Psychology*, 55, 137-139.
- Kessler, D. A., Natanblut, S. L., Wilkenfeld, J. P., Lorraine, C. C., Mayle, S. L., Bertstein, I. B. G., et al. (1997). Nicotine addiction: A pediatric disease. *The Journal of Pediatrics*, 130, 518-524.
- Knee, C. R., & Neighbors, C. (2002). Self-determination, perception of peer pressure, and drinking among college students. *Journal of Applied Social Psychology*, 32, 522-543.
- Kraus, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin*, 21, 58-75.
- Kühberger, A. (1998). The influence of framing on risky decisions: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 75, 23-55.

- Kung, E. M., & Farrell, A. D. (2000). The role of parents and peers in early adolescent substance use: An examination of mediating and moderating effects. *Journal of Child and Family Studies, 9*, 509-528.
- Lakin, J. L., & Chartrand, T. L. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological Science, 14*, 334-339.
- LaPiere, R. T. (1934). Attitudes vs. actions. *Social Forces, 13*, 230-237.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2007). *Individual differences in the need to belong: Mapping the nomological network*. Unpublished manuscript, Duke University.
- Lee, L., Frederick, S., & Ariely, D. (2006). Try it, you'll like it: The influence of expectation, consumption, and revelation on preferences for beer. *Psychological Science, 17*, 1054-1058.
- Linkovich-Kyle, T. L., & Dunn, M. E. (2001). Consumption-related differences in the organization and activation of marijuana expectancies in memory. *Experimental and Clinical Psychopharmacology, 9*, 334-342.
- Lindskog, M., Svenningsson, P., Pozzi, L., Kim, Y., Fienberg, A. A., Bibb, J. A., et al. (2002). Involvement of DARRPP-32 phosphorylation in the stimulant action of caffeine. *Nature, 418*, 734-736.

- Litt, M. D., Kadden, R. M., Kabela-Cormier, E., & Petry, N. (2007). Changing network support for drinking: Initial findings from the Network Support Project. *Journal of Consulting and Clinical Psychology, 75*, 542-555.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*, 267-286.
- Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the “porcupine problem.” *Journal of Personality and Social Psychology, 92*, 42-55.
- Mansvelder, H. D., & McGehee, D. S. (2002). Cellular and synaptic mechanisms of nicotine addiction. *Journal of Neurobiology, 53*, 606-617.
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth and Adolescence, 31*, 267-277.
- McCreanor, T., Greenaway, A., Barnes, H. M., Borell, S., & Gregory, A. (2005). Youth identity formation and contemporary alcohol marketing. *Critical Public Health, 15*, 251-262.
- McFarland, C. & Ross, M. (1987). The relation between current impressions and memories of self and dating partners. *Personality and Social Psychology Bulletin, 13*, 228-238.

- McManis, S. (2002, December 8). Perk up: It's not all bad for you. Caffeine can get you addicted, but a little bit might not hurt. *San Francisco Chronicle*, pp. E-4.
- Retrieved March 6, 2009 from <http://www.sfgate.com/cgi-bin/article.cgi?f=/chronicle/archive/2002/12/08/LV227920.DTL&type=health>
- Mennella, J. A., Turnbull, B., Ziegler, P. J., & Martinez, H. (2005). Infant feeding practices and early flavor experiences in Mexican infants: An intra-cultural study. *Journal of the American Dietetics Association*, 105, 908-915.
- Miller, D. T., & McFarland, C. (1987). Pluralistic ignorance: When similarity is interpreted as dissimilarity. *Journal of Personality and Social Psychology*, 53, 298-305.
- Miller, D. T., & Prentice, D. A. (1994). Collective errors and errors about the collective. *Personality and Social Psychology Bulletin*, 20, 541-550.
- Mischel, W. (1977). The interaction of person and situation. In D. Magnusson & N. S. Endler (Eds.), *Personality at the crossroads: Current issues in interactional psychology* (pp. 333-352). Hillsdale, NJ: Erlbaum.
- Mischel, W., & Ayduk, O. (2004). Willpower in a cognitive-affective processing system: The dynamics of delay of gratification. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 99-129). New York: Guilford Press.
- Mischel, H. N., & Mischel, W. (1983). The development of children's knowledge of self-control strategies. *Child Development*, 54, 603-619.

- Mischel, W., Shoda, Y., & Peake, P. K. (1988). The nature of adolescent competencies predicted by preschool delay of gratification. *Journal of Personality and Social Psychology*, 54, 687-696.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674-701.
- Monin, B., Pizarro, D. A., & Beer, J. S. (2007). Deciding versus reacting: Conceptions of moral judgment and the reason-affect debate. *Review of General Psychology*, 11, 99-111.
- Montana Department of Revenue. (26 June 2007). *Listed product of little cigars classified as cigarettes for taxation purposes and youth access laws*. Montana: Dan Bucks & Brian Schweitzer. Retrieved March 6, 2009, from http://mt.gov/revenue/Forbusinesses/littlecigars/Little_Cigar_Classification_List_of_Little_Cigars.pdf
- Moore, M., & Weiss, S. (1995). Reasons for non-drinking among Israeli adolescents of four religions. *Drug and Alcohol Dependence*, 38, 45-50.
- Mosher, J. F., & Johnsson, D. (2005). Flavored alcoholic beverages: An international marketing campaign that targets youth. *Journal of Public Health Policy*, 26, 326-342.
- Muraven, M., Pogarsky, G., & Shmueli, D. (2006). Self-control depletion and the general theory of crime. *Journal of Quantitative Criminology*, 22, 263-277.
- Muraven, M., & Slessareva, E. (2003). Mechanisms of self-control failure: Motivation and limited resources. *Personality and Social Psychology Bulletin*, 29, 894-906.

National Institute of Drug Addiction (1999, May). *Cocaine abuse and addiction* (NIH Publication No. 99-4342). Retrieved March 6, 2009, from

<http://www.nida.nih.gov/PDF/RRCocain.pdf>

Natural Medicines Comprehensive Database. (n.d.a). Capsaicin. Retrieved March 6, 2009 from <http://www.naturaldatabase.com>

Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Larimer, M. E. (2007). Are social norms the best predictor of outcomes among heavy drinking college students? *Journal of Studies on Alcohol and Drugs*, 68, 556-565.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231-259.

O'Connor, R. M., Fite, P. J., Nowlin, P. R., & Colder, C. R. (2007). Children's beliefs about substance use: An examination of age differences in implicit and explicit cognitive precursors of substance use initiation. *Psychology of Addictive Behaviors*, 21, 525-533.

O'Sullivan, L. F., & Allgeier, E. R. (1998). Feigning sexual desire: Consenting to unwanted sexual activity in heterosexual dating relationships. *The Journal of Sex Research*, 35, 234-243.

Park, S. H., Glaser, J., & Knowles, E. D. (2008). Implicit motivation to control prejudice moderates the effect of cognitive depletion on unintended discrimination. *Social Cognition*, 26, 401-419.

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*, 51, 768-774.

- Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology*, 46, 598-609.
- Paulhus, D. L., Harms, P. D., Bruce, M. N., & Lysy, D. C. (2003). The Over-Claiming Technique: Measuring self-enhancement independent of ability. *Journal of Personality and Social Psychology*, 84, 890-904.
- Perrine, N. E., & Aloise-Young, P. A. (2004). The role of self-monitoring in adolescents' susceptibility to passive peer pressure. *Personality and Individual Differences*, 37, 1701-1716.
- Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, 30, 1095-1107.
- Polivy, J. (1996). Self-regulation failure: Can failure be successful? *Psychological Inquiry*, 7, 74-76.
- Polivy, J. (1998). The effects of behavioral inhibition: Integrating internal cues, cognition, behavior, and affect. *Psychological Inquiry*, 9, 181-204.
- Pollak, C. P., & Bright, D. (2003). Caffeine consumption and weekly sleep patterns in US seventh-, eighth-, and ninth-graders. *Pediatrics*, 111, 42-46.
- Prescott, J., Soo, J., Campbell, H., & Roberts, C. (2004). Responses of PROP taster groups to variations in sensory qualities within foods and beverages. *Physiology and Behavior*, 82, 459-469.
- Price, M. (2008). Caffeine's wake up call. *Monitor on Psychology*, 39, 26-27.

- Prinstein, M. J., Meade, C. S., & Cohen, G. L. (2003). Adolescent oral sex, peer popularity, and perceptions of best friends' sexual behavior. *Journal of Pediatric Psychology, 28*, 243-249.
- Purdie, V., & Downey, G. (2000). Rejection sensitivity and adolescent girls' vulnerability to relationship-centered difficulties. *Child Maltreatment, 5*, 338-349.
- Rawn, C. D. & Vohs, K. D. (2006). The importance of self-regulation for interpersonal functioning. In K. D. Vohs, & E. J. Finkel, (Eds.), *Self and relationships: The interplay between intrapersonal and interpersonal processes*. New York: Guilford Press.
- Reichborn-Kjennerud, T., Bulik, C., Sullivan, P. F., Tambs, K., & Harris, J. R. (2004). Psychiatric and medical symptoms in binge eating in the absence of compensatory behaviors. *Obesity Research, 12*, 1445-1454.
- Robins, C. J., Ladd, J., Welkowitz, J., Blaney, P. H., Diaz, R., & Kutcher, G. (1994). The Personal Style Inventory: Preliminary validation studies of new measures of sociotropy and autonomy. *Journal of Psychopathology and Behavioral Assessment, 16*, 227-300.
- Roehling, P. V., & Goldman, M. S. (1987). Alcohol expectancies and their relationship to actual drinking experiences. *Psychology of Addictive Behaviors, 1*, 108-113.
- Roehrs, T., & Roth, T. (2008). Caffeine: Sleep and daytime sleepiness. *Sleep Medicine Reviews, 12*, 153-162.
- Rolek, B. (2004, January 20). Coffee catches on with teens. *Northwest Indiana Times*. Retrieved March 6, 2009 from <http://www.thetimesonline.com/articles/2004/01/20/features/ink/85b1f891b2addf3786256e1d00213484.txt>

- Ross, M., & Wilson A. E. (2003). Autobiographical memory and conceptions of self: Getting better all the time. *Current Directions in Psychological Science*, 12, 66-69.
- Rozin, P. (1987). Psychobiological perspectives on food preferences and avoidances. In M. Harris, & E. B. Ross (Eds.), *Food: Toward a theory of human food habits* (pp. 181-206). Philadelphia: Temple University Press.
- Rozin, P., & Schiller, D. (1980). The nature and acquisition of a preference for chili pepper by humans. *Motivation and Emotion*, 4, 77-101.
- Santor, D. A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity, and conformity in adolescent boys and girls: Predicting school performance, sexual attitudes, and substance abuse. *Journal of Youth and Adolescence*, 29, 163-182.
- Schlenker, B. R., & Wowra, S. A. (2003). Carryover effects of feeling socially transparent or impenetrable on strategic self-presentation. *Journal of Personality and Social Psychology*, 85, 871-880.
- Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego depletion: The role of the self in logical reasoning and other information processing. *Journal of Personality and Social Psychology*, 85, 33-46.
- Schroeder, C. M., & Prentice, D. A. (1998). Exposing pluralistic ignorance to reduce alcohol use among college students. *Journal of Applied Social Psychology*, 28, 2150-2180.
- Schwarzer, R. (2001). Social-cognitive factors in changing health-related behaviors. *Current Directions in Psychological Science*, 10, 47-51.

- Sedikides, C., Skowronski, J. J., & Gaertner, L. (2004). Self-enhancement and self-protection motivation: From the laboratory to an evolutionary context. *Journal of Cultural and Evolutionary Psychology*, 2, 61-79.
- Seiffge-Krenke, I. (1995). *Stress, coping, and relationships in adolescence*. Hillsdale, NJ: Erlbaum.
- Sheeran, P., & Orbell, S. (2000). Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychology*, 19, 283-289.
- Sherif, M. (1935). A study of some social factors in perception. *Archives of Psychology*, 27, 23-46.
- Siegrist, M., & Cousin, M.-E. (2009). Expectations influence sensory experience in wine tasting. *Appetite*, 754, 762-765.
- Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 20, 580-591.
- Smith, G. T., Goldman, M. S., Greenbaum, P. E., & Christiansen, B. A. (1995). Expectancy for social facilitation from drinking: The divergent paths of high-expectancy and low-expectancy adolescents. *Journal of Abnormal Psychology*, 104, 32-40.
- Snedecor, S. M., Pomerleau, C. S., Mehringer, A. M., Ninowski, R., & Pomerleau, O. F. (2006). Differences in smoking-related variables based on phenylthiocarbamide "taster" status. *Addictive Behaviors*, 31, 2309-2312.
- Sparrow, B., & Wegner, D. M. (2006). Unpriming: The deactivation of thoughts through expression. *Journal of Personality and Social Psychology*, 91, 1009-1019.

- Spijkerman, R., van den Eijnden, R. J. J. M., & Engels, R. C. M. E. (2005). Self-comparison processes, prototypes, and smoking onset among early adolescents. *Preventive Medicine, 40*, 785-794.
- Spinella, M. (2007). Normative data and a short form of the Barratt Impulsiveness Scale. *International Journal of Neuroscience, 117*, 359-368.
- Sprecher, S., Hatfield, E., Cortese, A., Potapova, E., & Levitskaya, A. (1994). Token resistance to sexual intercourse and consent to unwanted intercourse: College students' dating experiences in three countries. *The Journal of Sex Research, 31*, 125-132.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271-322.
- Teague, C. E. (1973, February 2). *Research planning memorandum on some thoughts about new brands of cigarettes for the youth market*. R. J. Reynolds Tobacco Co, Winston-Salem (NC). Bates No. 502987407/7418. Retrieved March 6, 2009, from <http://ltdlimages.library.ucsf.edu/image/e/d/y/edy62d00>
- Teitell, B. (2007, June 3). Too young for coffee? *The Boston Globe*. Retrieved March 6, 2009, from http://www.boston.com/news/globe/magazine/articles/2007/06/03/too_young_for_coffee/
- Tewksbury, R. (2006). "Click here for HIV": An analysis of Internet-based Bug Chasers and Bug Givers. *Deviant Behavior, 27*, 379-395.

- Tice, D. M., Baumeister, R. F., Shmueli, D., & Muraven, M. (2007). Restoring the self: Positive affect helps improve self-regulation following ego depletion. *Journal of Experimental Social Psychology, 43*, 379-384.
- Tice, D. M., Butler, J. L., & Muraven, M. B. (1995). When modesty prevails: Differential favorability of self-presentation to friends and strangers. *Journal of Personality and Social Psychology, 69*, 1120-1138.
- Trope, Y., & Fishbach, A. (2000). Counteractive self-control in overcoming temptation. *Journal of Personality and Social Psychology, 79*, 493-506.
- Trope, Y., & Pomerantz, E. M. (1998). Resolving conflicts among self-evaluative motives: Positive experiences as a resource for overcoming defensiveness. *Motivation and Emotion, 22*, 53-72.
- Twenge, J. M., Catanese, K. R., & Baumeister, R. F. (2002). Social exclusion causes self-defeating behavior. *Journal of Personality and Social Psychology, 83*, 606-615.
- Urberg, K. A., Degirmencioglu, S. M., & Pilgrim, C. (1997). Close friend and group influence on adolescent cigarette smoking and alcohol use. *Developmental Psychology, 33*, 834-844.
- van Baaren, R. B., Maddux, W. W., Chartrand, T. L., de Bouter, C., & van Knippenberg, A. (2003). It takes two to mimic: Behavioral consequences of self-construals. *Journal of Personality and Social Psychology, 84*, 1093-1102.
- van Beest, I., & Williams, K. D. (2006). When inclusion costs and ostracism pays, ostracism still hurts. *Journal of Personality and Social Psychology, 91*, 918-928.

- Vohs, K. D., Bardone, A.M., Joiner, T.E., Jr., Abramson, L.Y., & Heatherton, T.F. (1999). Perfectionism, perceived weight status, and self-esteem interact to predict bulimic symptoms: A model of bulimic symptom development. *Journal of Abnormal Psychology, 108*, 695-700.
- Vohs, K. D., & Baumeister, R. F. (2004). Understanding self-regulation: An introduction. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation* (pp. 1-9). New York: Guilford Press.
- Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology, 88*, 632-657.
- Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2008). Making choices impairs subsequent self-control: A limited resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology, 94*, 883-898.
- Vohs, K. D., & Finkel, E. J. (2006). *Self and relationships: Connecting intrapersonal and interpersonal processes*. New York: Guilford Press.
- Vohs, K. D., & Heatherton, T. F. (2000). Self-regulatory failure: A resource-depletion approach. *Psychological Science, 11*, 249-254.
- Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science, 314*, 1154-1156.
- Voss, H. L., & Clayton, R. R. (1984). "Turning on" other persons to drugs. *International Journal of the Addictions, 19*, 633-652.

- Wallace, D. S., Paulson, R. M., Lord, C. G., & Bond, C. F., Jr. (2005). Which behaviors do attitudes predict? Meta-analyzing the effects of social pressure and perceived difficulty. *Review of General Psychology*, 9, 214-227.
- Wansink, B., Park, S.-B., Sonka, S., & Morganosky, M. (2000). Ingredient disclosure and product acceptance. *International Food and Agribusiness Management Review*, 3, 85-94.
- Wansink, B., Payne, C. R., & North, J. (2007). Fine as North Dakota wine: Sensory expectations and the intake of companion foods. *Physiology and Behavior*, 90, 712-716.
- Webster, R. A., Hunter, M., & Keats, J. A. (1994). Peer and parental influences on adolescents' substance use: A path analysis. *International Journal of the Addictions*, 29, 647-657.
- Wegner, D. M., Fuller, V., & Sparrow, B. (2003). Clever hands: Uncontrolled intelligence in facilitated communication. *Journal of Personality and Social Psychology*, 85, 5-19.
- White, J. L., Moffitt, T. E., Caspi, A., Bartusch, D. J., Needles, D. J., & Stouthamer-Loeber, M. (1994). Measuring impulsivity and examining its relationship to delinquency. *Journal of Abnormal Psychology*, 103, 192-205.
- White, P. H., Sanbonmatsu, D. M., Croyle, R. T., & Smittipatana, S. (2002). Test of socially motivated underachievement: "Letting up" for others. *Journal of Experimental Social Psychology*, 38, 162-169.

- Wicker, F. W., Lambert, F. B., Richardson, F. C., & Kahler, J. (1984). Categorical goal hierarchies and classification of human motives. *Journal of Personality*, 52, 285-305.
- Wills, T. A., McNamara, G., Vaccaro, D., & Hirky, A. E. (1996). Escalated substance use: A longitudinal grouping analysis from early to middle adolescence. *Journal of Abnormal Psychology*, 105, 166-180.
- Wilson, T. D., & Dunn, E. W. (2004). Self-knowledge: Its limits, value and potential for improvement. *Annual Review of Psychology*, 55, 493-518.
- Wolfe, R. N., Lennox, R. D., & Cutler, B. L. (1986). Getting along and getting ahead: Empirical support for a theory of protective and acquisitive self-presentation. *Journal of Personality and Social Psychology*, 50, 356-361.
- Yiee, J., Duffy, V. B., & Bartoshuk, L. M. (2002). Mixture suppression in nontasters, medium tasters and supertasters of PROP (6-n-propylthiouracil). *Appetite*, 39, 108.
- Zalta, A. K., & Keel, P. K. (2006). Peer influence on bulimic symptoms in college students. *Journal of Abnormal Psychology*, 115, 185-189.

APPENDICES

APPENDIX A: RECALL INSTRUCTIONS FOR STUDIES 1A AND 1B

People do lots of things they don't want to do in everyday life. For example, people spend time studying for an exam when they'd rather be out hanging out with friends. Sometimes these unpleasant things are good for us (as in the case of studying) but sometimes they involve risks to our personal health or wellbeing. For example, sometimes people will drink more alcohol than they really want to or more than they think they should drink in order to impress someone else, knowing that tomorrow's hangover will be costly but thinking that it may be worth it. Some other examples of personally costly behavior include overeating, smoking, sex, theft, etc.

One reason why people engage in behaviors they don't want to do is to impress or be liked by other people, or to avoid looking foolish and being made fun of. We're interested in finding out about a time when you did something you didn't want to do in hopes that you would be liked by someone else because of it.

Remember, all of your answers will be kept completely anonymous and confidential. Your name will not be linked to this information at all, so please be honest.

1. Please think of a time when you did something risky that you didn't want to do in order to be liked (or liked *more*) by someone. You can choose from the examples above or not, it's up to you. What was the situation? What did you do? What were your hopes about doing it? (You may use the back of the page if needed.)

(If, after a few minutes of thinking about it, you *really* cannot think about a time when you ever did something you (a) did not want to do because it had potential

costs to you (b) but you did anyway in order to be liked by others, please check here
_____ and move on to the next questionnaire.)

APPENDIX B

Table 16

Recall Items from Studies 1a and 1b and Descriptive Statistics from Study 1b.

Study 1b Item and Intended Construct	Rating Scale	Included in 1b Scale	Scale α	<i>N</i>	Mdn	Mean	SD	Included in Study 1a
<i>Pre-existing impulse toward behavior</i>	1-5	8 items	0.85	142	3.25	3.29	0.82	
Before the incident, I wanted to try doing that behavior. (R)	1-5	✓		142	3.50	3.39	1.17	
Before the incident, I had no desire to do that behavior.	1-5	✓		142	3.00	3.07	1.30	
Before this incident happened, I had a desire to do that behavior. (R)	1-5	✓		142	3.00	3.31	1.16	
Before this incident happened, I thought I never wanted to do something like that.	1-5	✓		142	3.00	2.85	1.26	
Before this incident happened, I tried to avoid that type of behavior.	1-5	✓		142	4.00	4.00	1.07	
Before this incident happened, this type of behavior made me uncomfortable.	1-5	✓		142	3.50	3.30	1.17	

Study 1b Item and Intended Construct	Rating Scale	Included in 1b Scale	Scale α	<i>N</i>	Mdn	Mean	SD	Included in Study 1a
Before this incident happened, I felt that this type of behavior could risk my personal well-being.	1-5	✓		142	4.00	4.00	1.18	
Before this incident happened, I thought this behavior was risky to me.	1-5	✓		142	4.00	4.00	1.01	
Using the scale below, please rate how risky you felt this behavior was <i>at the time you did it</i> .	1-7			141	5.00	4.00	1.53	✓
Looking back on this behavior, please rate how risky you <i>now</i> think this behavior was, using the same scale.	1-7			142	4.00	3.86	1.88	✓
<i>Degree of Peer Incentive</i>		no scale						
Before this incident happened, I thought that this type of behavior was acceptable among my friends.	1-5			142	4.00	3.67	0.94	
Before this incident happened, I thought that this type of behavior would improve my social status.	1-5			142	4.00	3.44	0.96	
Please rate how much you wanted to be liked by that person or group.	1-7			142	5.00	5.01	1.23	✓

Study 1b Item and Intended Construct	Rating Scale	Included in 1b Scale	Scale α	<i>N</i>	Mdn	Mean	SD	Included in Study 1a
I felt that many behaviors could get me in, not just this one.	1-5			142	4.00	3.47	0.90	
This was the only thing I felt I could do to be accepted.	1-5			142	2.00	2.08	0.97	
How much did you feel this behavior was required to be liked? (1 = many behaviors could get me in, 7 = this was the only thing I felt I could do to be accepted)	1-7							✓
<i>Self-Control Exertion to do it</i>	1-5	3 items	.88	142	2.67	2.84	1.01	
At first I had to force myself to do the behavior.	1-5	✓		142	3.00	2.93	1.15	
I had a hard time getting myself to actually do it.	1-5	✓		142	3.00	2.78	1.10	
I was giving in to a pre-existing desire to do it. (R)	1-5			142	3.00	3.18	1.02	
My actions were primarily caused by me losing self-control. (R)	1-5			142	4.00	3.47	1.15	

Study 1b Item and Intended Construct	Rating Scale	Included in 1b Scale	Scale α	<i>N</i>	Mdn	Mean	SD	Included in Study 1a
My actions were primarily caused by me exerting self-control.	1-5			142	3.00	2.65	0.96	
I had to force myself to do it.	1-5	✓		142	3.00	2.82	1.11	
Please rate how much you had to force yourself to engage in this behavior.	1-7			141	4.00	3.61	1.60	✓
<i>Consequences of Behavior</i>	1-7	4 items	.78	141	4.00	3.91	1.29	
Please rate how much you were liked by that person or group after doing the behavior.	1-7	✓		142	5.00	4.87	0.98	✓
Please rate how satisfied you were that you had engaged in that behavior.	1-7	✓		142	3.00	3.19	1.77	✓
Please rate how much you regretted engaging in that behavior. (R)	1-7	✓		141	5.00	4.66	2.04	✓
Please rate how extreme the costs to engaging in this behavior were for you. (R)	0-7			142	5.00	4.32	1.98	✓

Study 1b Item and Intended Construct	Rating Scale	Included in 1b Scale	Scale α	<i>N</i>	Mdn	Mean	SD	Included in Study 1a
Please rate whether you think the costs were worth the benefits you received for engaging in this behavior.	1-7	✓		142	3.00	2.97	1.70	✓
<i>Repeat Behavior</i>		no scale						
How often have you engaged in this same behavior since this instance?	1(never) - 8 (daily)			142	3.00	3.00	1.66	✓
If you responded with a 2 or above to the previous question, please rate how much you have had to force yourself to engage in this behavior since the initial time.	1 (easy) - 7 (really difficult)			105	3.00	3.10	1.54	✓

APPENDIX C. STUDY 1A ETHICS APPROVAL CERTIFICATE



The University of British Columbia
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CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Darrin R. Lehman	INSTITUTION / DEPARTMENT: UBC/Arts/Psychology, Department of	UBC BREB NUMBER: H07-01481
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution UBC Other locations where the research will be conducted: N/A		Site Point Grey Site
CO-INVESTIGATOR(S): Lesley Duncan		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: Student Life Study		
REB MEETING DATE: July 26, 2007	CERTIFICATE EXPIRY DATE: July 26, 2008	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: August 3, 2007
Document Name	Version	Date
<u>Consent Forms:</u>		
Study 2 Consent	2	July 31, 2007
Study 1 Consent	2	July 31, 2007
<u>Advertisements:</u>		
Advertisements	1	July 8, 2007
<u>Questionnaire, Questionnaire Cover Letter, Tests:</u>		
Study 2 Questionnaires	2	July 31, 2007
Questionnaires	1	July 8, 2007
<u>Other Documents:</u>		
Deception Form	1	July 9, 2007
Debrief Study 2	1	July 8, 2007
Debrief Study 1	1	July 8, 2007
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
<p align="center">Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</p> <hr/> <p align="center">Dr. Peter Suedfeld, Chair Dr. Jim Rupert, Associate Chair Dr. Arminee Kazanjian, Associate Chair Dr. M. Judith Lynam, Associate Chair Dr. Laurie Ford, Associate Chair</p>		

APPENDIX D. STUDIES 1B AND 2 ETHICS APPROVAL CERTIFICATE



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Darrin R. Lehman	INSTITUTION / DEPARTMENT: UBC/Arts	UBC BREB NUMBER: H08-01589
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution	Site	
UBC	Vancouver (excludes UBC Hospital)	
Other locations where the research will be conducted: N/A		
CO-INVESTIGATOR(S): Catherine Rawn		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: Decision Making Studies (PEQ2 and Attitudes)		
REB MEETING DATE: August 14, 2008	CERTIFICATE EXPIRY DATE: August 14, 2009	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: August 29, 2008
Document Name	Version	Date
Consent Forms:		
Study 2 Consent Time 2 (online) VERSION 2	2	August 19, 2008
Study 2 Consent Time 2 (online)	1	July 23, 2008
Study 1 Consent	1	July 21, 2008
Study 2 Consent Time 1 (online) VERSION 2	2	August 19, 2008
Study 2 Consent Time 1 (online)	1	July 23, 2008
Study 2 Consent Time 1 (paper)	1	July 23, 2008
Advertisements:		
Study 1 PEQ Advertisements	1	July 25, 2008
Study 2 Advertisement in PDF	N/A	July 25, 2008
Questionnaire, Questionnaire Cover Letter, Tests:		
Study 2 Materials Time 1 (Online)	N/A	July 24, 2008
Study 2 Materials Time 1 (online) VERSION 2	2	August 19, 2008
Study 2 Materials Time 1 (paper)	1	July 24, 2008
Study 2 Time 2 Contact Info Website	N/A	July 24, 2008
Study 2 Materials Time 2 (Online)	N/A	July 24, 2008
Study 2 Time 1 Contact Info Website	N/A	July 24, 2008
Study 1 Materials	1	July 21, 2008
Study 2 Materials Time 2 (online) VERSION 2	2	August 19, 2008
Other Documents:		
Study 2 Feedback Letter	1	July 24, 2008
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		

***Approval is issued on behalf of the Behavioural Research Ethics Board
and signed electronically by one of the following:***

Dr. M. Judith Lynam, Chair
Dr. Ken Craig, Chair
Dr. Jim Rupert, Associate Chair
Dr. Laurie Ford, Associate Chair
Dr. Daniel Salhani, Associate Chair
Dr. Anita Ho, Associate Chair

APPENDIX E. STUDY 3 ETHICS APPROVAL CERTIFICATE



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Darrin R. Lehman	INSTITUTION / DEPARTMENT: UBC/Arts	UBC BREB NUMBER: H08-00258
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution UBC Other locations where the research will be conducted: N/A	Site Vancouver (excludes UBC Hospital)	
CO-INVESTIGATOR(S): Catherine Rawn		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: Decision Making Study (Chocolate and Money Study)		
REB MEETING DATE: July 10, 2008	CERTIFICATE EXPIRY DATE: July 10, 2009	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: July 17, 2008
Document Name	Version	Date
<u>Consent Forms:</u>		
Pretest Consent	1	June 25, 2008
Main Study Consent	1	June 25, 2008
Main Study Consent (cash payment)	1	July 11, 2008
<u>Advertisements:</u>		
Main Study Poster	1	June 25, 2008
<u>Questionnaire, Questionnaire Cover Letter, Tests:</u>		
Main Study Questionnaires	1	June 25, 2008
Pretest Questionnaire	1	June 25, 2008
Main Study Debrief Letter	1	June 25, 2008
<u>Other Documents:</u>		
Deception Form	N/A	June 25, 2008
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
<p align="center">Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</p> <hr/> <p align="center"> Dr. M. Judith Lynam, Chair Dr. Ken Craig, Chair Dr. Jim Rupert, Associate Chair Dr. Laurie Ford, Associate Chair Dr. Daniel Salhani, Associate Chair Dr. Anita Ho, Associate Chair </p>		