Journal of Social and Clinical Psychology, Vol. 28, No. 4, 2009, pp. 498-529

# THE PSYCHOLOGICAL PRESENCE OF FAMILY IMPROVES SELF-CONTROL

TYLER F. STILLMAN, DIANNE M. TICE, FRANK D. FINCHAM,
AND NATHANIEL M. LAMBERT
*Florida State University*

Three studies show that the psychological presence of family provides a temporary increase in self-control. In Study 1, participants (n = 79) subliminally primed with the names of their family members subsequently performed better at an open-ended language task relative to participants primed with neutral words. Study 2 ruled out two plausible alternative interpretations of this result. Participants in Study 2 ($n$ = 139) who wrote a short essay about a family member with whom they had a good relationship demonstrated more self-control than those who wrote about a humorous episode or an enemy relationship, as measured by their performance on a simple but tedious math test. Study 3 was designed to demonstrate that self-control, rather than motivation, was affected by thoughts of the family. Participants ($n$ = 66) primed with a visual cue of a family member ate fewer cookies than those not primed—when individual differences in eating restraint were controlled. The theoretical and applied implications of these findings are outlined.

Self-control is critical for maintaining close relationships, as evidenced by self-control failures. A mother's failure to control her temper may end with her hurting her children; a husband's inability to refrain from gambling could end in a family's financial ruin. That self-control has implications for the functioning of relationships is self evident. However, we propose a less intuitive connection between self-control and close relationships, namely that close relationships can improve self-control. Specifically, we test the hy-

Correspondence concerning this article should be addressed to Tyler F. Stillman, 1107 W. Call Street, Department of Psychology, Florida State University, 32306. E-mail: stillman@psy.fsu.edu.

pothesis that bringing family relationships to mind causes an improvement in one's ability to exercise self-control.

## SELF-CONTROL

Self-control, or how one "exerts control over his or her own responses so as to pursue goals and live up to standards" (Baumeister & Vohs, 2004, p. 500), has been investigated at two levels: as a trait and as a state. Trait self-control refers to a person exercising control over impulses across different situations and over time in the service of standards or goals.

Trait self-control is a good predictor of romantic relationship health, with the healthiest relationships being the ones in which both partners show a high degree of self-control, while the presence of at least one relationship partner with high levels of trait self-control improves the overall health of the relationship (Tangney, Baumeister, & Boone, 2004; Vohs, Baumeister, & Finkenauer, 2007). Although effective trait self-control has clear implications for close relationships, the focus of the current research is on state self-control.

### LIMITED RESOURCE MODEL

State self-control refers to the way in which one's capacity to restrain impulses changes from moment to moment and from situation to situation. This variability in self-control is thought to reflect fluctuations in self-control resources. In other words, state self-control is dependent upon a limited resource, such that exercising self-control temporarily depletes this limited resource and leaves an individual less able to exercise self-control successfully.

One early experiment effectively demonstrates the limited-resource model (Baumeister, Bratslavsky, Muraven, & Tice, 1998). In the study, all participants arrived at the laboratory having skipped a meal. These hungry participants were required to sit alone in a room in front of freshly baked chocolate chip cookies and a bowl of radishes. The experimenter instructed participants in the control condition to eat several cookies and rate the taste, which did not require self-control. In contrast, participants assigned to the self-control depletion condition were instructed to eat and rate the radishes

rather than the enticing chocolate chip cookies. Refraining from eating tempting foods like chocolate chip cookies requires self-control, especially when one is hungry.

According to the limited resource model of self-control, those who restrained themselves from eating cookies should have expended more self-control resources than those who had to refrain from eating a radish, leaving fewer self-control resources available for future tasks. Results supported the limited resource model. All participants were asked to complete unsolvable puzzles after several minutes alone with the food. Participants who had previously exerted self-control by refraining from eating the tempting cookies persisted at the puzzle task for significantly less time than participants who had not sapped their self-control resources.

The limited resource model of self-control is well-supported empirically. A temporary decrease in state self-control following a particularly difficult or prolonged self-control task has been demonstrated in many published experiments using a broad array of experimental manipulations and measures of self-control.

## THE IMPLICIT BARGAIN

We have proposed that thinking about family relationships could improve self-control, yet why would that be the case? A link between self-control and relationships has been described under the *implicit bargain* theory (Baumeister, Dewall, Ciarocco, & Twenge; 2005; Baumeister & Stillman, 2007). The theory begins by acknowledging that self-control can be considered the capacity to frustrate oneself. People exercise self-control when they avoid eating food that they otherwise would like to eat, pass up extradyadic romantic relationships that might bring them pleasure, or suppress the urge to act or speak aggressively when provoked. The implicit bargain theory holds that the reason humans developed the capacity to deprive themselves of things they want—the reason people evolved the ability to exert self-control—is that it enables them to get something more valuable: close relationships and belonging.

The reasoning is that self-control enables people to behave in ways that allow them the rich benefits of social belonging, given that failure to exert self-control can damage or end social relationships. For instance, self-control failures can end romantic relation-

ships or strategic partnerships. When self-control failures constitute the breaking of a law (e.g., stealing something one wants but cannot afford), these failures may end with the perpetrator being socially exiled or jailed. The implicit bargain is that people exert self-control over their selfish impulses in exchange for access to the immense benefits of social belonging, which vastly improve one's chances of surviving and reproducing—not to mention improving the prospect of being a happy and well-adjusted person.

The implicit bargain can break down on either side. According to the theory, a breakdown of self-control should not only diminish one's access to social relationships, but broken social relationships should also diminish one's self-control. To test this, researchers conducted an experiment in which some participants were deliberately socially excluded, for instance by being told that no one in their group wanted to work with them (Baumeister et. al, 2005). Those who were socially excluded demonstrated poor state self-control relative to control participants, as measured by the high number of cookies they ate, the low amount of a healthy but unpleasant drink they consumed, or the short time participants persisted on a difficult task. Thus, there is empirical support for the idea that one's social relationships affect state self-control.

One implication of the implicit bargain is that the capacity for self-control and belongingness are inextricably linked, just as self-control failure and social exclusion are deeply entwined. Families represent one of the primary sources from which people derive a sense of belonging (Hagerty, Williams, & Oe, 2002; Kissane & McLaren, 2006; Lambert, Stillman, Fincham, Graham, Hicks, & Baumeister, 2008; Leake, 2007), so thinking about one's family should affect self-control in the opposite direction that social exclusion does. Namely, thinking about one's family should enhance state self-control.

The bidirectional relationship between relationships and self-control, as anticipated by the implicit bargain theory, is supported by several lines of research which are described in the following two sections.

## SELF-CONTROL AFFECTS CLOSE RELATIONSHIPS

The suggestion that self-control (state or trait) affects close relationships is quite plausible. Consider a father who has spent the entire

day at work biting his tongue in the presence of an obnoxious boss. The prolonged restraint will wear down his self-control resources, and subsequently leave him prone to self-control failure. That is, he may be more likely to lose control and snap at his children or belittle his wife in response to even minor provocations. Research by Finkle and Campbell (2001) examined both state and trait self-control in romantic relationships. In particular, they were interested in how relationship partners react when the other person does something hurtful. The natural tendency is to want to get even, or to respond to a perceived harm in kind. The term *accommodation* refers to one's willingness to restrain a negative response to the hurtful actions of a loved one (Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991). Across four studies, Finkle and Campbell (2001) found that trait self-control predicted one's readiness to accommodate following a partner's hurtful behavior.

In a fifth study, these researchers asked participants to recall occasions in which they had engaged in accommodative behavior with their partners, and also occasions in which they had not demonstrated accommodation. Participants were also asked to report the amount of effortful self-control they exerted during the week preceding the incident (e.g., I had been exerting a lot of 'willpower' in my life or I had been on a diet). Instances of nonaccommodative behavior were significantly more likely to occur following a week of effortful self-control, whereas accommodative behavior was more likely to occur following a week in which self-control demands were low—indicating that depleted self-control resources led to relationship harming behavior. In sum, when demands for self-control were high, participants reported more relationship-harming behavior relative to when demands for self-control were low.

The connection between close relationships and self-control resources was built upon by other researchers who had participants think about how they would react to a partner's misdeeds in a current, past, or hypothetical romantic relationship. In all three cases, participants who had depleted self-control resources (the result of a randomly assigned effortful self-control task) were more likely to report that they would destructively respond to a partner's missteps relative to control participants (Vohs et. al., 2007). This pattern of responding makes sense, given that the impulse to respond to hurtful behavior with further unkindness can be strong, and so restraining that impulse requires adequate self-control resources.

Although self-reported data are limited, results of five studies have demonstrated that impaired state self-control leads to behavioral acts of aggression (DeWall, Baumeister, Stillman, & Gailliot, 2007). In one study, state self-control was manipulated by having some hungry participants refrain from eating tempting foods while other hungry participants refrained from eating a less enticing food. Aggression was measured by the amount of hot sauce participants provided a fellow student whom they believed would find hot sauce extremely unpleasant. Four other studies found similar results using different methods for depleting self-control resources and different operationalizations of aggression, which lends further credibility to the self-report data showing that adequate self-control resources are essential to relationship-maintaining behavior.

In sum, retrospective accounts of greater state self-control resources corresponded with higher rates of self-reported accommodative behavior (Finkle & Campbell, 2001), and experimentally manipulated self-control resources predicted both willingness to forgive a hypothetical relationship partner's misdeed (Vohs et. al, 2007), and aggressive behavior in the laboratory (DeWall et. al, 2007). These findings are consistent with implicit agreement theory, in that breaking (or keeping) the self-control dimension of the implicit agreement results in a relationship damage (or maintenance).

## CLOSE RELATIONSHIPS AFFECT SELF-CONTROL

Damaged social relationships also represent a breakdown in the implicit bargain and should result in a self-control deficit, just as intact relationships are in fulfillment of the bargain and should result in continued self-control. The notion that positive close relationships are associated with heightened self-control is supported by a longitudinal study of 200 male juvenile delinquents which showed that those who later married demonstrated more social stability than they had previously shown (Gibbens, 1984). Others have found that, while marriage did not reduce actual criminality, it did reduce some antisocial behaviors such as heavy drinking and drug abuse (Knight, Osborn, & West, 1977). One study found that, although marriage does not reduce criminality among repeat offenders, having a strong commitment to one's partner does reduce crime (Sampson & Laub, 1990). The researchers who reached this conclusion ex-

amined the lifespan data of a large sample of male offenders for childhood variables (i.e., early antisocial behavior), life events (i.e., marriage), and self-report variables (i.e., attachment to spouse). On the disproportionate reduction of crime among married individuals, they concluded, "it is cohesiveness that is central rather than marriage *per se*" (Sampson & Laub, 1990, p. 620). Thus, the act of marriage was not shown to be sufficient to change a proclivity for committing crimes, but having a healthy and committed relationship did decrease criminality. Although correlational and therefore subject to competing third variable explanations, this finding is consistent with the notion that intact social relationships co-occur with self-control successes.

Experimental evidence supportive of this conclusion is provided by research demonstrating that people are more willing to strive towards goals when they were induced to think about loved ones as compared to control participants (Fitzsimons & Bargh, 2003). In other words, the psychological presence of close relationship partners (one's mother, friend, etc.) led to participants trying harder to achieve a goal. Across four studies, participants were induced to think about loved ones via conscious and nonconscious primes. When primed with relationship partners, participants behaved in a way that is consistent with high self-control; they worked harder on a verbal task, were more willing to help an experimenter, and put more effort into understanding someone's behavior relative to control participants. Inasmuch as pursuing goals requires effortful self-control, this finding is consistent with our hypothesis that state self-control is increased by the psychological presence of loved ones. However, the Fitzsimons and Bargh investigation did not address self-control, as they focused on a relevant but different topic: the pursuit of goals. Because they did not expressly investigate the limited resource model, there was no manipulation of state self-control. That is, self-control resources were not assigned by virtue of an effortful self-control task.

## CURRENT INVESTIGATION

The formation and maintenance of close, positive relationships can aptly be described as one of the primary motivations for human beings (Baumeister & Leary, 1995; Buss, 1990; Maslow, 1968). What

might be the effect of bringing to mind a prototypic close relationship (one with a family member) on self-control? Some researchers have found that priming graduate students with the image of a frowning department chair caused them to rate their own research ideas less favorably (Baldwin, Carrell, & Lopez, 1990), so the psychological presence of social relationships has consequences. In three studies, we used a variety of methods to induce thoughts of family relationships and to measure the impact on state self-control resources. Our hypothesis was that the psychological presence of close relationships would increase self-control.

## STUDY 1

To test our hypothesis, the first study employed a 2(self-control depletion, no self-control depletion) x 2(family prime, neutral prime) experimental design.

### METHOD

#### PARTICIPANTS

Participants were 79 undergraduate students (56 female) who took part in the study in exchange for partial course credit. One participant was excluded because he reported that he was able to identify the prime, thus there were 80 participants originally.

#### PROCEDURE

*Preliminary Stage.* Participants arrived in a reception area where they read and signed an informed consent form. The experimenter then explained that the computer they would be using for the study was about to finish a system scan, so there would be a short wait before the study could begin. In fact, the wait was simply a pretext to allow the experimenter to get the names of the participants' family members. The experimenter asked "While we are waiting, would you mind helping us by completing this survey?" All participants were given a questionnaire that asked them to provide the names of

family members, among several other unrelated decoy items (i.e., names of pets, favorite letters, etc.).

When participants had finished the name survey, the experimenter explained that she would check on the status of the computer. Checking on the computer allowed her to prepare the computer to prime participants with the appropriate words according to condition. Participants randomly assigned to the control condition were primed with words of neutral valence (*average, lawn, slope,* and *neutral*); participants in the family-prime condition were primed with the words they used to refer to their mother, father, brother, and sister (e.g., *Mommy*, *Pops*, *Jer-Bear, Debra*). The number of different primes reflected the number of family members listed by participants, such that participants who did not list names for two siblings or two parents ($n$ = 9) were primed with fewer different family-related words (the names they did supply were simply primed more frequently, so that all Ps had the same number of primes overall).

The experimenter seated participants in front of the computer once it had been prepared to administer either family primes or neutral primes. The ostensible purpose of the computer task was to measure math skills. Participants were presented with 30 rather simple multiplication problems (e.g., 4 x 21) and were not given scratch paper. Rather, instructions were to make the computations mentally.

*State Self-Control Manipulation.* Prior to beginning the simple math problems, participants randomly assigned to the self-control depletion condition were asked to "not think about a white bear" while doing the math problems (e.g., Wegner, Schneider, Carter, & White, 1987). The experimenter further told those in the depletion condition that if they did think about a white bear, they should "immediately refocus" their attention on the math problems. Participants in the control condition were not asked to avoid thinking about a white bear. Thus, all participants were required to exert at least a minimum of mental effort in order to answer simple multiplication problems; however, only participants in the depletion condition had to employ additional self-control resources to avoid thinking about a white bear. Traditionally, the white bear manipulation has not been used in combination with math problems as it was in the current investigation. The purpose of the simple math problems was not to deplete participants' state self-control; rather it was to ensure

that participants were paying attention to the computer screen (and were therefore capable of being primed).

*Psychological Presence of Family Manipulation.* As participants responded to each of the 30 math problems, new problems would appear. The primes were administered following responses to each problem. Stimuli were administered using Inquisit (Millisecond Software, 1998) on a 15-inch Dell color monitor controlled by a computer running Microsoft Windows. The sequence of stimuli was as follows: (1) a fixation stimulus, plus sign in the center of the screen for 300 ms, (2) a 200-ms forward mask (XXXXXXXXXXX), (3) a 33-ms family or control prime, and (4) a 33-ms backward mask (XXXXXXXXXXX). Following this, a multiplication problem appeared. These steps were repeated for each of the 30 math problems.

*Measurement of Self-Control Resources.* Upon completion of the math problems, self-control resources were assessed. The assessment of self-control resources was done by measuring persistence on an open-ended, resource-dependent task that has been used to measure depletion successfully in other research (DeWall, Baumeister, & Vohs, 2007). Onscreen instructions directed participants to create as many words as possible from a list of letters. All participants were presented with the letters *m,p,l,a,* and *e*. Participants were provided with a space in which to type all of the words they could come up with. Participants whose self-control resources were intact were expected to persist longer than participants whose self-control resources had been depleted, as measured by the number of words they came up with (not including nonwords and duplicate words; names were acceptable). When participants finished creating words, they signaled the experimenter, who probed participants for suspicion, debriefed them, and thanked them for their participation.

## RESULTS AND DISCUSSION

### SELF-CONTROL RESOURCES

Results of a 2(self-control depletion vs. control) x 2(family prime vs. neutral prime) ANOVA demonstrated a main effect for family priming; participants who were primed with the names of family members created more words ($M = 9.63$, $SD = 3.26$) than those who were

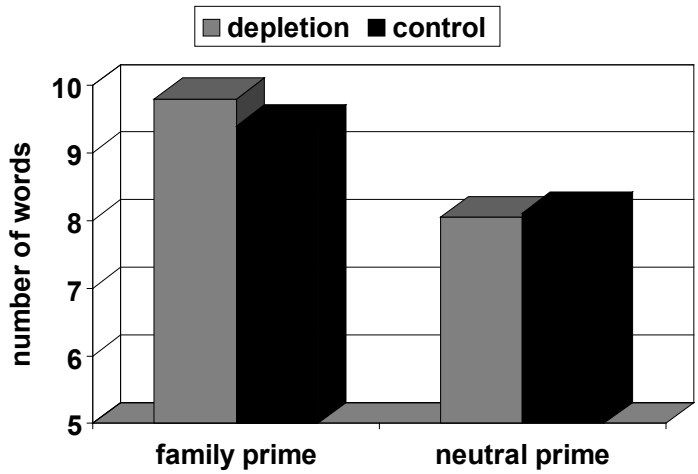


FIGURE 1. Self-control resources as a function of prime and depletion condition.

*Note*. Bars correspond to mean number of words. Higher scores indicate more words.

primed with neutral words ($M$ = 8.08, $SD$ = 3.13), $F(1,76) = 4.48$; $p$ = .038. The effect was medium, as measured by partial eta squared, $\eta_p^2$ = 056. Thus, results were consistent with our hypothesis (see Figure 1). However, the self-control depletion manipulation and the interaction did not reach significance, $F < 1$, *ns*.

One plausible reason we did not get an effect from the depletion manipulation could be that the participants were distracted by the math problems, such that the participants assigned not to think about a white bear—like those in the control condition—simply focused on doing the problems rather than on controlling their attention. In short, we may have inadvertently made the depletion task ineffective by providing participants with a distraction.

Planned contrasts revealed a marginally significant difference among participants who were given the depletion manipulation: Those who received the family prime had greater self-control resources as evidenced by the number of words created ($M$ = 9.86, $SD$ = 3.59) than those who had received the neutral prime, $M$ = 8.05; $SD$ = 1.88; $F(1,76) = 3.38$; $p$ = .07. Among participants who were not given the depletion manipulation, means were in the predicted direction but failed to reach significance, $F(1,76) = 1.40$; $p$ = .24.

## SUMMARY

The strongest conclusion to be drawn from Study 1 is based on the significant family priming effect. Participants in Study 1 who were primed with the names of family members appear to have had greater self-control resources, as measured by the number of words they created. Our conclusion that the between-groups difference in number of words created was due to differences in state self-control is in part an inference, mainly because alternative explanations—such as the psychological presence of family improving intelligence or verbal skills—are less plausible.

## STUDY 2

If the results of Study 1 are to be considered as consistent with the implicit bargain theory, then it should be the psychological presence of family—a potent source of social belonging—that improves self-control. However, we see two main alternative interpretations for why the prime improved self-control in Study 1. The first concerns the general positivity of the names of family members relative to the control prime. Specifically, increased self-control might not be due to the psychological presence of a family relationship but to the priming of positive thoughts. That is, participants may have perceived the names of family members as more positive than the neutral control primes, and the resulting difference in self-control could simply be a reflection of this difference. A second plausible alternative interpretation is that the results were due to the personal significance of the primes. Namely, the reason the names of family members improved self-control is that the control primes were not personally relevant (e.g., the word "neutral" is unlikely to resonate with most individuals), while the family primes are highly personally relevant.

Study 2 was designed to address these alternative interpretations by using a personally relevant control prime and a positive topic control prime as well as a family relationship prime. Consistent with Study 1, we hypothesized that participants exposed to family relationship primes would show increased self-control resources relative to participants given control primes. Given that both sets of control primes in Study 2 could conceivably improve state self-

control, we considered this a more rigorous test of our hypothesis that the psychological presence of family improves self-control.

One drawback of Study 1 was that the manipulation of self-control resources was unsuccessful in producing a measurable difference in state self-control. In Study 2, we changed the self-control resources manipulation from the white bear task to an attention-control task in which participants in the depletion condition had to focus their attention on a video while ignoring words scrolling across the bottom of the screen.

To ensure that our findings were not method-specific, we also altered the way in which we induced the psychological presence of family. Whereas in Study 1, participants were subliminally primed with thoughts of loved ones, participants in Study 2 were consciously aware of the thoughts that were primed. Additionally, Study 1 measured self-control resources using an open-ended task. In contrast, participants in Study 2 were given a fixed time (five minutes) in which to complete resource-dependent problems, to determine whether psychological family presence improves performance only on a specific, open-ended task or whether the improvement in self-control is more generalizable.

Study 2 also included a search for possible moderators of the relationship between psychological family presence and the state self-control dependent variable. Gailliot and Baumeister (2007) provided some evidence that trait self-control moderated the relationship between state self-control depletion and restraint, such that having poor trait self-control leaves one at increased likelihood for self-control failures when state self-control is depleted. The possible moderators included were perseverance and ambition (Duckworth, Peterson, Matthews, & Kelly, 2007), as well as trait self-control (Tangney, Baumeister, & Boone, 2004). We also included a measure of mood to see if the findings were driven primarily by the valence or arousal dimensions of mood (Mayer & Gaschke, 1988).

## METHOD

### PARTICIPANTS

Participants were 139 undergraduates (86 women, 8 not reporting gender) who took part in this study in exchange for partial course

credit. Six participants (4%) were excluded from all analyses for failing to follow directions. Thus, there were originally 145 participants.

## PROCEDURE

*Potential Moderators.* Upon arrival at the laboratory, all participants were instructed to complete a small packet of questionnaires that contained trait measures to be tested as moderators. These included perseverance and ambition in pursuit of long-term goals (GRIT; Duckworth et al., 2007) as well as trait self-control (Tangney et al., 2004).

*State Self-Control Manipulation.* Once the questionnaires were completed, the experimenter asked participants to watch a short video. The video, the experimenter explained, would be a soundless clip of a woman being interviewed. He further explained that participants were to make their impressions of her based on her nonverbal behavior. He then notified all participants that words would appear in the bottom corner of the screen. Additional instructions varied according to condition. Participants in the self-control depletion condition were instructed that it was very important that they focus their attention exclusively on the woman's face and that they ignore the words that would appear. In contrast, participants in the control condition were instructed simply to watch the clip as though watching TV at home. In short, participants in the depletion condition were required to exert self-control over their attention while those in the control condition had no self-control demands made on them, as previously demonstrated by DeWall et al. (2007).

*Psychological Presence of Family Manipulation.* After participants had watched the video clips, the experimenter administered a second small packet of questionnaires. The packet contained three items: a manipulation check, stationery for writing an essay, and an affect measure. The manipulation check simply asked participants to rate how much effortful self-control was required for the video watching task. Ratings were from one (not any effort) to four (great effort required). Next, participants wrote an essay on one of three randomly assigned topics. Participants assigned to the *personally-relevant* condition were asked to write about "a person you consider an enemy." Participants who could not think of an enemy *per se*

were instructed to write about a person who actively wants to see them fail. Research has demonstrated that enemy relationships have a high degree of personal salience (Sinclaire & Gitter, 2007), so this is a fitting manipulation of personal relevance.

Those assigned to the *positive-topic* condition were asked to describe a humorous scene from a movie or television program. Research indicates that experiencing humorous material improves positive affect and reduces anxiety (Szabo, Ainsworth, & Danks, 2005), so this is a suitable way to operationalize a positive topic. Last, participants assigned to the *family prime* experimental condition were instructed to describe their relationship to a family member with whom they have a close relationship. Thus, participants in this condition were in the psychological presence of a close family member. Following completion of the essay, all participants completed the Brief Mood Introspection Survey (BMIS; Mayer & Gaschke, 1988). When participants had finished the BMIS, they signaled the experimenter to return.

*Measurement of Self-Control Resources.* The experimenter explained that participants would have five minutes to take a brief math test. The experimenter urged participants to work as quickly and accurately as possible and not to skip any problems. The math test consisted of three-digit by three-digit multiplication problems (e.g., 146 x 279). The intellectual capacity to compute these math problems is expected of college students, although the problems do require sustained effortful self-control. Lastly, participants were probed for suspicion, debriefed, and thanked for their participation.

## RESULTS AND DISCUSSION

### MANIPULATION CHECKS

Participants rated how much effortful self-control was required in watching the video from one (not any effort) to four (great effort required). As anticipated, participants asked to control their attention rated the task as requiring more effort ($M = 2.65$, $SD = .80$) than participants who were asked to watch the video normally, $M = 2.33$, $SD = 1.02$; $F(1,130) = 4.13$, $p = .04$

To ensure that the priming manipulation engaged participants to think about the topics they were assigned to write about, we simply read their essays. Nearly all participants wrote about the topics they were assigned, with just six responding in a way that indicated that the directions were misunderstood or not heeded. These six participants were excluded from all analyses, as mentioned above. Thus, all essays included in this analysis were written on the assigned topic.

## SELF-CONTROL RESOURCES

Eight participants (6%) failed to keep within the guidelines clearly set by the experimenter: four answered the multiplication problems by cheating with a calculator, three skipped difficult problems, and one participant summed the numbers rather than multiplying them. Given that these mistakes can be interpreted as self-control failure, these participants were counted as getting no problems correct. Nevertheless, the central findings of this study are unchanged with these participants excluded rather than assigned zeros. There was considerable variability in the number of correct answers provided by participants, ranging from zero to nine.

Results of a two-way ANOVA indicated that the main effect for depletion was significant, such that depleted participants answered fewer questions successfully ($M$ = 2.49, $SD$ = 1.79) than did nondepleted participants, $M$ = 3.13, $SD$ = 2.83; $F(1,133) = 4.47$, $p = .04$, see Figure 2. The main effect for priming condition, as operationalized by the essay topic, was also significant, $F(2, 133) = 3.33$, $p = .04$; $\eta_p^2 = 046$. The interaction did not reach significance, $F(2,133) = 2.13$, $p = .12$.

Planned contrasts revealed that, overall, participants who wrote about a close relationship ($M$ = 3.23, $SD$ = 2.31) solved more math problems correctly than did participants who wrote about a humorous episode, $M$ = 2.50, $SD$ = 2.65; $F(1,133) = 5.49$, $p = .02$. Likewise, those primed with thoughts of a family relationship solved more math problems than did participants who were primed with an enemy relationship, $M$ = 2.57, $SD$ = 1.95; $F(1,133) = 3.91$, $p = .05$. These are particularly persuasive results, given that both control conditions could have conceivably improved self-control.

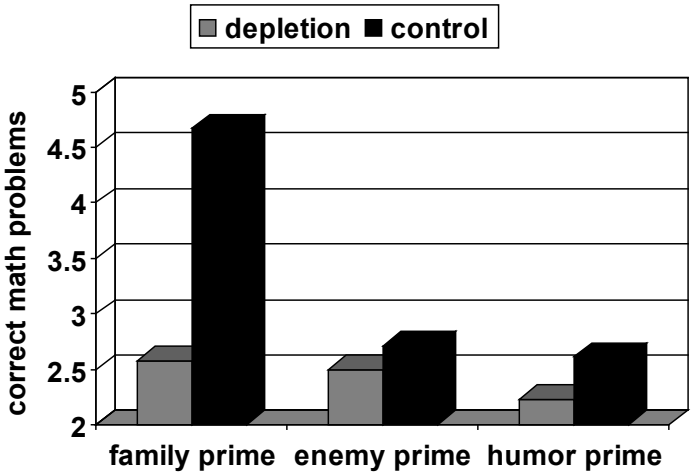


FIGURE 2. Self-control resources as a function of prime and depletion condition.

*Note*. Bars correspond to mean number of math problems answered correctly. Higher scores indicate more responses that are correct.

Among depleted participants, the number of multiplication problems answered correctly when primed with the family ($M$ = 2.58, $SD$ = 1.79) did not differ significantly relative to the combined average of the two control conditions ($M$ = 2.43, $SD$ = 1.82), $F < 1$, *ns*. However, among nondepleted participants, priming the family did result in significantly greater self-control resources relative to the combined control conditions, $M$ = 2.64; $SD$ = 2.71 $F(1,133) = 8.47$, $p$ = .004. Thus, while thoughts of the family did not eliminate the self-control deficit brought about by the self-control depletion task, the psychological presence of family improved the self-control of those in the no self-control depletion condition.

## MODERATORS

To test for moderation, separate regression analyses were conducted to predict number of correct math problems from priming conditions, the potential moderators (trait self control, perseverance, and ambition), and their interactions. Results did not indicate significant priming condition x trait interactions, βs < .15, *p*s > .08.

## MOOD

Given that one central aim of the study was to pit close relationships against a positive topic (a humorous scene) and a negative topic (enemies), some variance in mood was expected. To determine whether the observed effects of priming and depletion on self-control are mainly due to mood, we assessed the effect of experimental conditions on the valence and arousal dimension of the BMIS. A two-way ANOVA on mood valence revealed that priming condition did not significantly change mood valence, $F < 1$, *ns*. The interaction was likewise nonsignificant, $F < 1$, *ns*. However, the effect of depletion condition on valence was marginally significant, $F(1,126) = 3.29$, $p = .07$. To determine whether mood valence was driving the observed effect of depletion on self-control, we conducted an ANCOVA in which valence was controlled. Results indicated that depletion manipulation was not dependent on mood valence, $F(1,125) = 4.31$; $p = .04$.

Next, we assessed whether mood arousal was responsible for the effect of experimental condition on self-control. Depletion condition did not affect the arousal dimension or the interaction ($F$s < 1, *ns*), but there was a main effect for priming condition, $F(2,126) = 3.00$; $p = .05$. A t-test revealed that arousal was lower in the family-prime condition ($M = 2.67$, $SD = .43$) than the combined control conditions; $M = 2.83$, $SD = .43$; $t(128) = 2.05$, $p = .04$. Thus, one benefit of thoughts of the family may be a relatively calm, relaxed state that is conducive to performing thoughtful tasks like math problems. We hesitate to make much of this interpretation, as a follow-up ANCOVA in which arousal was controlled indicated that the effect of priming on self-control resources was only modestly reduced, $F(2, 123) = 2.09$, $p = .13$.

Although there was some limited covariation between experimental condition and mood, results do not suggest that mood is the driving force behind the observed differences in self-control resources. This is consistent with previous research (Baumeister et al., 2005; Schmeichel, Vohs, & Baumeister, 2003; Vohs & Schmeichel, 2003).

## SUMMARY

Study 2 replicated the findings of Study 1 in that bringing to mind close family relationships improved performance on a self-control

dependent task. Two alternative explanations for the results obtained in Study 1, that the effects were not due to the psychological presence of family but to being primed with something positive or something personally relevant, were not consistent with results.

## STUDY 3

It is possible to interpret the results of Study 1 and Study 2 as demonstrating that the psychological presence of the family increases motivation, or possibly academic performance, as opposed to self-control. This is because in Study 1, self-control was measured by performance on an open-ended verbal task, while in Study 2, self-control was measured by performance on timed mathematical problems.

Study 3 was designed to address these alternative interpretations. If self-control is the exerting of control over one's impulses (Baumeister & Vohs, 2004), then the psychological presence of family should be evident in tasks in which one must restrain an impulse. Specifically, self-control is needed to refrain from eating delicious but unhealthy foods. To provide further evidence that psychological family presence increases self-control (rather than motivation or academic achievement) we sought to demonstrate that inducing thoughts about one's family would result in the eating of fewer tempting treats. Because people vary in the extent to which they desire to retrain their impulse to eat, we measured individual differences in eating restraint as a covariate.

To ensure that our results are not method-specific, we again altered the way in which psychological family presence was manipulated. In Study 1, family presence was induced subliminally, and in Study 2 we had participants write about a relationship with a family member. In the current study, we brought about family presence by having a photograph of participants' close family members in front of them during a self-control task (or out of view).

## METHOD

### PARTICIPANTS

Participants were 66 undergraduates (47 female, 19 male) who participated in exchange for course credit. Potential participants were

informed of two requirements for participation. First, that they bring a photo of a close family member, and second, that they refrain from eating for two hours prior to participation. All participants included in the analyses met these criteria.

## PROCEDURE

Participants arrived at the laboratory with the expectation that they would be participating in a study investigating facial features and taste preferences. After giving informed consent, the experimenter asked the participant to complete the Restraint Scale, which measures the extent to which one desires to restrain their eating (Herman & Polivy, 1975). Upon completion of this measure, the experimenter asked participants for the photo of their close family member in order to do a "genetic-facial relatedness scan." The purpose of taking possession of the photo was to manipulate psychological family presence later in the experiment.

*State Self-Control Manipulation.* The experimenter administered the state self-control manipulation in the same manner as Study 2; participants were asked to form impressions of a woman on a soundless video clip. Those in the depletion condition were tasked with focusing their full attention on the woman while ignoring the words that would scroll across the bottom of the screen. Participants in the control condition were instructed to watch the video normally.

*Psychological Presence of Family.* When participants had watched the video, the experimenter returned. For participants assigned to the family-prime condition, the experimenter brought in the participant's photo and said, "The photo scan is complete, but I may need your photo again. Just leave it here for now." The photo was placed face-up in the center of the desk. For participants in the no-prime condition, the photo was not mentioned until it was returned at the end of the experiment. Thus, participants in the family-prime condition had a visual cue of a family member immediately in front of them, while those in the no-prime condition did not.

*Measurement of Self-Control Resources.* Following the video and the family-prime cue (or not), participants were told that they would be asked about their taste preferences. The experimenter presented participants with a plate full of cookies and an evaluation form on

which to record their appraisal of the cookies. Participants were given three soft, aromatic cookies, each of which was divided into four quarters (making a total of 12 quarters). Participants were instructed to rate the cookies on a variety of dimensions (how creamy, salty, moist, etc.) They were not given instructions about how many cookies they should eat, as they were simply instructed to "taste the cookies and fill out the evaluation." The experimenter left participants alone with the cookies for five minutes. The number of cookie quarters consumed during the five minutes constituted our measure of self-control.

At the end of five minutes, the experimenter returned. Participants completed a mood measure (BMIS; Mayer & Gaschke, 1988), manipulation checks, and a suspicion probe. Lastly, participants were debriefed.

## RESULTS

### MANIPULATION CHECKS

When asked whether they had looked at a photo of their family member during the cookie tasting task, over 70% of responding participants in the family-prime condition reported that they had. This is significantly more than those in the no-prime control, $\chi^2$ (1, $N$ = 65) = 10.99, $p$ = 001. Participants also rated the extent to which the video task required self-control. Participants in the state self-control depletion condition reported exerting more effort ($M$ = 2.76; $SD$ = .94) relative to those in the control condition ($M$ = 2.42, $SD$ = .82), but this difference was not significant, $F(1,62) = 1.94$, $p$ = .17.

### SELF-CONTROL RESOURCES

Results of a two-way ANOVA showed that the main effect for state self-control depletion did not reach significance, although participants in the depletion condition consumed more cookie quarters ($M$ = 2.85; $SD$ = 2.46) than those in the control condition, $M$ = 2.61, $SD$ = 2.17; $F(1,63) < 1$, *ns*. The interaction did not approach significance, $F(1,63) < 1$, *ns*.

The two-way ANOVA demonstrated a modest effect for family prime condition, such that participants in the psychological presence of family ate fewer cookies ($M$ = 2.62, $SD$ = 2.17) than those in the no-prime control, $M$ = 2.85, $SD$ = 2.46; $F(1,63) = 2.80$, $p = .10$. However, the consumption of unhealthy foods is a self-control failure only to the extent that one seeks to avoid unhealthy foods. We therefore controlled for restricted eating and conducted a two-way ANCOVA. Controlling for individual differences in restricted eating resulted in a significant main effect for family prime $F(1,60) = 3.99$; $p = .05$, $\eta_p^2 = 062$. Consistent with our hypothesis, those primed with thoughts of the family ate fewer cookies, when controlling for restricted eating (see Figure 3).

Planned contrasts demonstrated a pattern consistent with the results of Study 2 when controlling for eating restraint. Participants in the depletion condition were not affected by the family prime, $F(1,60) < 1$, *ns*. However, the self-control resources of those in the nondepletion condition tended to vary according to whether they received the family prime or no prime. Those who received the family prime ate fewer cookies ($M$ = 1.85; $SD$ = 1.39) than those who received no prime, $M$ = 3.21, $SD$ = 2.49; $F(1,60) = 3.65$, $p = .06$. As in Study 2, we observed no increase in self-control resources among those in the depletion condition, suggesting that the benefits of the psychological presence of the family are experienced by those not already depleted of self-control.

## MOOD

To determine if the observed effects were primarily due to mood, we conducted separate two-way ANOVAs on both the arousal and valence dimensions of the BMIS. Depletion did not affect valence ($F < 1$, *ns*), nor did the family prime ($F < 1$, *ns*). Likewise, arousal was not affected by the depletion manipulation, $F(1,58) = 1.91$, $p = .17$, or the family prime ($F < .1$, *ns*). Given the limited mood effects in Study 2 and Study 3, mood does not appear to be driving the results.

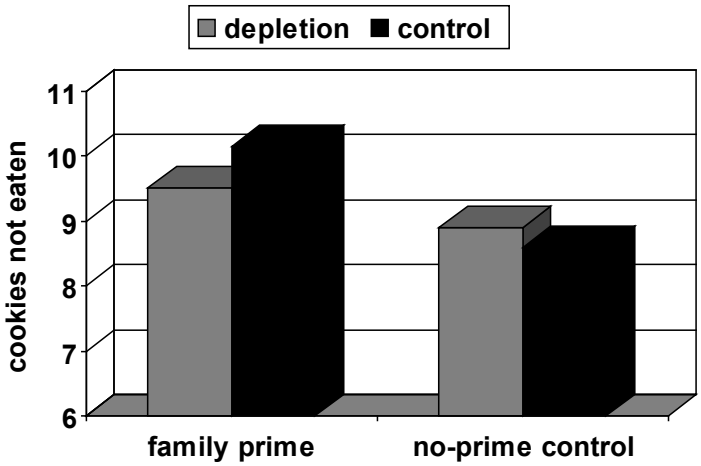


FIGURE 3. Self-control resources as a function of prime and depletion condition.

*Note*. To keep the figures consistent, bars correspond to mean number of cookies not eaten. Higher scores indicate fewer cookies consumed (more self-control).

SUMMARY

Participants who had a picture of a family member placed in front of them during a simulated taste-test ate fewer tempting but unhealthy cookies relative to a control group, when controlling for individual differences in eating restraint. This suggests psychological family presence affects self-control, rather than motivation or academic achievement.

## GENERAL DISCUSSION

Pictures of loved ones are one of the most common personal artifacts people keep in their workspaces. Why is this practice common? The results of three studies suggest that one reason people place pictures of family at their place of work may be that work is an environment in which people need the additional self-control resources brought about by the psychological presence of loved ones.

The current work fits nicely with research demonstrating that social exclusion causes a decrease in state self-control (Baumeister et al., 2005). That social exclusion leads to poor self-control is somewhat counterintuitive, as one might expect people in need of social belonging (e.g., excluded individuals) to expend more of a resource closely tied to social acceptance. Likewise, one might expect that thinking about one's family, a primary source of a sense of belonging (Hagerty et al., 2002; Kissane & McLaren, 2006; Lambert et al., 2008; Leake, 2007), to result in expending less self-control. After all, why exert self-control if one is cognizant of belonging to an important social group? Yet this pattern of responses is anticipated by the implicit bargain. Social rejection represents a breakdown of the implicit bargain, the result of which is that excluded individuals no longer keep the end of the bargain that entails control of one's impulses. Likewise, family relationships represent a fulfillment of the implicit bargain, and heightened awareness of family relationships results in keeping the self-control dimension of the bargain.

The implicit bargain does not specify family as the preferred source of social connection, so it is possible that the psychological presence of other social groups could have a similar beneficial effect on state self-control. Yet family relationships are qualitatively different than other social relationships. Mikesell and colleges have argued that family is the "primary context of human experience from the cradle to the grave" (Mikesell, Lusterman, & McDaniel, 1995, p. xiii). The importance of family relationships is also attested to by theoretical biologists who have argued that family relationships are naturally and biologically preeminent over other relationships, and that nature shaped people to value those with whom one shares genes (Hamilton, 1964, 1975; Taylor & Getz, 1994). So while it is theoretically plausible that other relationships might evoke a similar response, thoughts of family most likely have the strongest effect on state self-control relative to other social groups.

## REPLENISHING SELF-CONTROL RESOURCES

Self-control is dependent upon the availability of self-control resources, and those resources naturally replenish over time. Sleep is a natural way in which the self regains strength. The current findings fit within a growing, but very limited line of research on fac-

tors that replenish state self-control resources. One study demonstrated that participants who practiced self-control for a two-week period by keeping a food diary or by improving their posture, later showed better performance on a physically demanding self-control task (Muraven, Baumeister, & Tice,1999). Thus, one way to maintain high levels of self-control resources is by persistent self-control exercises.

Recent research indicates that positive affect also replenishes self-control resources (Tice, Baumeister, Shmueli, & Muraven, 2007). Across four studies, Tice and colleagues depleted participants' self-control resources using a variety of methods. Subsequently, positive mood was induced in some participants by random assignment using multiple methods. In one study, some participants were given a neatly wrapped bag of candy as a surprise gift (Isen, 1984), while participants in the other three studies were shown one of two different comedy routines.

Results demonstrated that positive mood counteracted the effect of depletion in participants, as indicated by several measures of self-control resources. Specifically, participants who were given a positive affect boost had improved state self-control as measured by the amount of a healthy but unpleasant tasting beverage consumed (Baumeister, DeWall, Ciarocco, & Twenge, 2005), the duration participants persisted at difficult puzzles (Baumeister et al., 1998), and the duration participants endured the strenuous physical demands of a handgrip exerciser. While this research demonstrates that positive mood does improve state self-control, the findings of the current investigation were not driven by mood.

Studies 2 and 3 suggest that the psychological presence of family does not overcome the effects of state self-control depletion. Instead, the increase in self-control was apparent among those whose self-control resources were not depleted. While psychological family presence does provide a temporary boost in self-control resources, it apparently does not replenish state self-control resources depleted by prior exertion.

## FAMILY RELATIONSHIPS AND SELF-CONTROL

Studies of parenting support a link between family relationships and self-control. A ten-year longitudinal study assessed the impact

that preparing to have a first child has on couples (Cowan & Cowan, 1999). In the nine months of pregnancy, approximately 10% of expectant fathers changed jobs, presumably to provide better for their growing families. These researchers observed, " . . . expectant fathers who were not changing directions seemed to be rededicating themselves to their work" (Cowan & Cowan, 1999, p. 67). Thus, the awareness of an impending birth caused men to exert themselves more than they had previously, consistent with our findings that psychological family presence increases self-control. This is not an isolated finding. The tendency for men to take employment more seriously when a child is expected or born (admittedly, sometimes accompanied by doing fewer domestic chores) has been shown in several studies using different methodologies (Grossman & Winicoff, 1980; Gutmann, 1975; Lewis, 1986). Although there are other ways to interpret these findings, the current studies suggest one valid interpretation is that thinking about an upcoming birth provides an increase in self-control, which allows greater striving at work.

The present findings are bolstered by research in developmental psychology. Following Baumrind's (1971) classifications of parenting styles, authoritative parents set consistent limits for their children in a warm and loving environment. In contrast, permissive parents rarely correct their children's misbehavior, preferring to let children manage themselves. Mauro and Harris (2000) found that authoritative parents have children with better self-control than the children of permissive parents, as measured by the children's capacity to refrain from touching a brightly wrapped gift when left alone with the instructions not to touch it. In other words, a parenting style associated with warmth, love, and direction corresponds with better self-control than does a laissez-faire approach to parenting—consistent with our findings that psychological family presence results in improved self-control. Similar results were found using different methods. Neitzel and Stright (2003) found that mothers who were observed interacting with their children in a loving and supportive fashion at a preliminary meeting had children who persisted longer at a task given several months later, relative to children whose mothers appeared less supportive and loving at the preliminary meeting. Again, the presence of a loving parental relationship predicts childhood self-control.

Research on the problem behaviors of adolescents is also consistent with our research question. Specifically, children and teens (age 9 to 17) that report having good relationships with their parents are less likely to develop substance abuse problems than adolescents who have poor relationships with their parents (Coombs, Paulson, & Richardson, 1991). This too supports the notion that close relationships improve self-control, although directionality is not clear in correlational studies. Retrospective accounts of family relationships also suggest that positive close relationships yield better self-control resources. Self-control, as measured by questionnaire, is higher among people who report having been raised in a positive family environment compared to those who report having been raised in a dysfunctional family (Tangney et al., 2004). It may be that parents are more likely to have a warm and happy relationship with a child who is obedient and self-controlled. However, in the context of the experimental evidence shown here, there is reason to believe that the psychological presence of family has a causal effect on self-control.

## NONCONSCIOUS GOAL PURSUIT

Although we have interpreted the effects of psychological family presence in terms of self-control, one cannot rule out interpreting, our results as being nonconscious goal pursuit. Fitzsimons and Bargh (2003) found that the psychological presence of the family resulted in participants working harder on a verbal task, putting more effort into understanding others' behavior, and being more willing to help an experimenter relative to controls. They interpreted these results as demonstrating that the psychological presence of relationship partners promotes the pursuit of goals which are consistent with the goals of that relationship. In step with this interpretation, Fitzsimons and Bargh (2003) demonstrated that performance on a verbal task was improved when participants were primed with thoughts of their mothers—but this effect was stronger for participants who desired to make their mothers proud relative to those who did not have the goal of making their mother proud.

Because the pursuit of goals requires self-control, we do not consider the Fitzsimons and Bargh (2003) goal-pursuit explanation as irreconcilable with our self-control explanation. Indeed, people who

have added self-control should be better able to pursue their goals than they otherwise would. Although speculative, it is plausible that relationship-specific goal striving is made possible by the increased self-control that results from thinking about that relationship.

## IMPLICATIONS FOR PRACTITIONERS

The findings from the current study have potentially important implications for practitioners. For example, in a nationally representative sample of married individuals (N = 2,034), Amato and Previti (2003) found that "infidelity was the number one cause of divorce followed by incompatibility, drinking, or drug use" (p. 602) with an impact on divorce that was more than twice as large as any other relationship problem. Additionally, therapists consider extradyadic affairs to be the most damaging of challenges couples endure and one of the most difficult problems to treat (Whisman, Dixon, & Johnson, 1997). Increasing self-control may be one method for handling this problem, given that Gailliot and Baumeister (2007) demonstrate a clear connection between high self-control and sexual restraint.

Our findings indicate that thinking of one's family increases one's self-control, thus, therapists working with infidelity couples may consider incorporating a strategy for helping clients to think of their families when tempted to engage in relationship-harming behavior. Such a strategy could be used as a potentially effective preventative tool for distressed couples in which one partner may be considering an affair, and for couples trying to avoid relapse. Other self-control related problems or addictions that are especially harmful to relationships may include domestic violence and abuse, gambling, pornography, and drinking/drug abuse. Our findings may provide the groundwork for developing a tool for clinicians to help clients dealing with these types of issues.

## LIMITATIONS AND FUTURE DIRECTIONS

Future research should focus on the individuals who are most affected by the psychological presence of close relationships. It is plausible that those with suboptimal family life might not respond to the psychological presence of family relationships in the same

way. Individuals from unhappy homes might experience a smaller boost or even a reduction in self-control resources when induced to think about positive close relationships. Likewise, the present research focused on how family of origin relationships affect self-control; future research could include how the psychological presence of other close relationships, such as romantic relationships, affects self-control.

Whereas the current investigation focused on state self-control, future research could explore how close relationships affect trait self-control. As discussed, there is correlational research that suggests that having positive close relationships improves trait self-control over time (Cowan & Cowan, 1999). Although one cannot randomly assign long-term close relationships, rigorous longitudinal studies could assess the effect of close relationships on trait self-control in a way that sheds light on causality.

## CONCLUSION

While self-control is clearly important for relationships, the current investigation is consistent with the implicit bargain theory, which holds that social relationships and self-control have a bidirectional relationship in that relationships affect self-control. Three studies, using different methods and measures, demonstrated that thoughts of family improve self-control. In Study 1, participants were subliminally primed with the names of family members, while in Study 2, participants were asked to consciously reflect on a close family relationship. In Study 3, we placed a photo of a close family member in front of participants. Despite the fact that the presence of family was brought about in these very different ways, it produced a similar increase in self-control—as defined by better performance on an open-ended linguistic task in Study 1, an increase in completion of simple but tedious timed math questions in Study 2, and the consumption of fewer cookies in Study 3. In sum, the present investigation provides evidence that the psychological presence of a family relationship increases state self-control.

## REFERENCES

Amato, P., & Previti, D. (2003). People's reasons for divorcing: Gender, social class, the life course, and adjustment. *Journal of Family Issues, 24,* 602-626.

Baldwin, M. W., Carrell, S. E., & Lopez, D. F. (1990). Priming relationship schemas: My advisor and the Pope are watching me from the back of my mind. *Journal of Experimental Social Psychology, 26*, 435-454.

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*, 1152–1265.

Baumeister, R. F., DeWall, C., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology, 88*, 589-604.

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.

Baumeister, R.F., & Stillman, T.F. (2007). Self-regulation and close relationships. In J. Wood, A.Tesser, & J.G. Holmes (Eds.), *The self and social relationships.* Philadelphia, PA: Psychology Press

Baumeister, R. F., & Vohs, K. D. (2004). Self-regulation. In C. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 499-516). Washington, DC/New York: American Psychological Association/ Oxford Press.

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monographs, 4*, 1-103.

Buss, D. M. (1990). The evolution of anxiety and social exclusion. *Journal of Social and Clinical Psychology, 9,* 196-210.

Cohen, J., & Westhues, A. (1995). A comparison of self-esteem, school achievement, and friends between intercountry adoptees and their siblings. *Early Child Development and Care. 106*, 205-224.

Coombs, R. H., Paulson, M. J. & Richardson, M. A. (1991). Peer vs. parental influence in substance use among Hispanic and Anglo children and adolescents. *Journal of Youth and Adolescence, 20*, 73-88.

Cowan, C. P., & Cowan, P. A. (1999). *When partners become parents: The big life change for couples.* Lawrence Erlbaum Associates.

Cowan, C. P., Cowan, P. A., Heming, G., Garrett, E., Coysh, W. S., Curtis-Boles, H., & Boles, A. J. (1985). Transitions to parenthood: His, hers, and theirs. *Journal of Family Issues, 6*, 451-481.

DeWall, C. N., Baumeister, R. F., Stillman, T. F., & Gailliot, M. T. (2007). Violence restrained: Effects of self-regulation and its depletion on aggression. *Journal of Experimental Social Psychology, 43*, 62-76.

DeWall, C. N., Baumeister, R. F., & Vohs, K. D. (2007). *Recovering from rejection and coping with acceptance: Social incentive promotes self-regulation after rejection but impairs self-regulation after acceptance.* Manuscript in preparation, Florida State University.

Duckworth, A.L., Peterson, C., Matthews, M., & Kelly, D. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92,* 1087-1101

Finkel, E. J., & Campbell, W. K. (2001). Self-control and accommodation in close relationships: An interdependence analysis. *Journal of Personality & Social Psychology, 81*, 263-277.

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality & Social Psychology, 84*, 148-164.

Gailliot, M. T., & Baumeister, R. F. (2007). Self-regulation and sexual restraint: Dispositionally and temporarily poor self-regulatory abilities contribute to failures at restraining sexual behavior. *Personality and Social Psychology Bulletin, 33*, 173-186.

Gibbens, T. C. N. (1984). Borstal boys after 25 years. *British Journal of Criminology, 24*, 49-62.

Grossman, F. K., & Winicoff, L. S. (1980). *Pregnancy, birth, and parenthood*. San Francisco: Jossey-Bass.

Gutmann, D. (1975). Parenthood: A key to the comparative study of the life cycle. In N. Datan & L. H. Ginsbery (Eds.), *Life-span developmental psychology: Normative life crises* (pp. 167-184). New York: Academic Press.

Hagerty, B. M., Williams, R. A. & Oe, H. (2002). Childhood antecedents of adult sense of belonging. *Journal of Clinical Psychology,* 58, 793-801.

Hamilton, W. D. (1964). The genetical evolution of social behaviour, I and II. *Journal of Theoretical Biology, 7*, 1-52.

Hamilton, W. D. (1975). Innate social aptitudes of man: An approach from evolutionary biology. In R. Fox, (Ed.) *Biosocial anthropology* (pp 133-155). New York: John Wiley and Sons.

Herman, C. P., & Polivy, J. (1975). Anxiety, restraint, and eating behavior. *Journal of Abnormal Psychology, 84*, 666-672.

Inquisit 1.33 [Compute software]. (2003). Seattle, WA: Millisecond Software.

Isen, A. M. (1984). Toward understanding the role of aVect in cognition. In J. R. S. Wyer & T. S. Srull (Eds.), *Handbook of social cognition* (Vol. 3, pp. 179–236). Hillsdale, NJ: Erlbaum.

Kissane, M. & McLaren, S. (2006). Sense of belonging as a predictor of reasons for living among older adults. *Death Studies,* 30, 243-258.

Knight, B.J., Osborn, S.G., & West, D. (1977). Early marriage and criminal tendency in males. *British Journal of Criminology, 17*, 348-360.

Lambert, N.M., Stillman, T.F., Fincham, F.D., Graham, S.M., Hicks, J.A., & Baumeister, R.F. (2008). Family begets meaning: The unique contribution of family relationships to meaning in life. Manuscript under review.

Leake, V.S. (2007). Personal, familial, and systemic factors associated with family belonging for stepfamily adolescents. *Journal of Divorce & Remarriage, 47,* 135-155.

Lewis, C. (1986). *Becoming a father*. Milton Keynes, England: Open University Press.

Maslow, A. H. (1968). *Toward a psychology of being.* New York: Van Nostrand.

Mauro, C. F., & Harris, Y.R. (2000). The influence of maternal child-rearing attitudes and teaching behaviors on preschoolers' delay of gratification. *Journal of Genetic Psychology, 161,* 292-306.

Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology, 55*, 102-111.

Mikesell, R., Lusterman, D., & McDaniel, S. (1995). *Integrating family therapy: Handbook of family psychology and systems theory.* Washington, DC: American Psychological Association.

Muraven, M., Baumeister, R. F. & Tice, D. M. (1999). Longitudinal improvement of self-regulation through practice: Building self-control strength through repeated exercise. *Journal of Social Psychology, 139*, 446-457.

Neitzel, C., & Stright, A. D. (2003). Mothers' scaffolding of children's problem solving: Establishing a foundation of academic self-regulatory competence. *Journal of Family Psychology, 17*, 147-159.

Rusbult, C. E., Verette, J., Whitney, G. A., Slovik, L. F., & Lipkus, I. (1991). Accommodation processes in close relationships: Theory and preliminary empirical evidence. *Journal of Personality and Social Psychology, 60*, 53-78.

Sampson, R. H., & Laub, J. H. (1990). Crime and deviance over the life course: The salience of adult social bonds. *American Sociological Review, 55*, 609-627.

Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego depletion: Role of the self in logical reasoning and other information processing. *Journal of Personality and Social Psychology, 85*, 33–46.

Sinclaire, H. C., & Gitter, S. A. (2007). *With enemies like these, who needs friends? The relative impact of friends vs. enemies*. Manuscript in preparation.

Szabo, A., Ainsworth, S. E., & Danks, P. K. (2005). Experimental comparison of the psychological benefits of aerobic exercise, humor, and music. *International Journal of Humor Research, 3,* 235-246.

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.

Taylor, P. D., & Getz, W. M. (1994). An inclusive fitness model for the evolutionary advantage of sib-mating. *Evolutionary Ecology, 8,* 61-69.

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.

Vohs, K. D., Baumeister, R. F., & Finkenauer, C. (2007). *Enough for the both of us: Dyadic level of self-control predicts relationship success.* Manuscript in preparation, University of Minnesota.

Vohs, K. D., & Schmeichel, B. J. (2003). Self-regulation and the extended now: Controlling the self alters the subjective experience of time. *Journal of Personality and Social Psychology, 85*, 217–230.

Wegner, D. M., Schneider, D., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53*, 5–13.

Whisman, M. A., Dixon, A. E., & Johnson, B. (1997). Therapist's perspectives of couple problems and treatment issues in the practice of couple therapy. *Journal of Family Psychology, 11,* 361-366.