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Public and Private Goal Commitment: Self-Control and Choice

by

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Abstract

Public precommitment to a goal may drive goal achievement. This work explores the effects of public precommitment on goal achievement using the limited-resource model of self-control. Goal commitment which alters future choices available by inflicting a self-imposed cost for giving up is called precommitment. Public commitment to a goal can be viewed as precommitment by imposing a social cost for failure (e.g., anticipated embarrassment). This may facilitate goal pursuit through two processes: First, by shifting the cost earlier in the process via the structural route in which goal-setting processes may deplete self-control resources initially (Studies 1 and 2), while improving performance by replenishing regulatory resources before the goal task is attempted (Study 2). Second, goal pursuit may be facilitated via the procedural route in that precommitment may reduce the temptation to quit, thereby requiring less self-control resources to enact the goal task (Study 2). Two studies tested the effects of public and private precommitment on self-regulatory resource depletion and on goal performance in accordance with this “bank” model. While supporting evidence was limited (planned differences between conditions did not reach significance in most analyses of variance), three regression analyses partially supported the model (publicness and choice led to greater depletion after goal-setting; greater temptation led to worse goal performance; and greater goal commitment led to less post-goal depletion; Study 2). Evidence also suggested that publicness led to greater goal commitment, greater perception of choice, and more anticipated negative emotions as well as greater goal recall (and commitment at a six-week follow-up; Study 1). Thus, limited evidence supported the hypothesized model.

Keywords: precommitment, choice, goals, self-control, depletion
Goals and commitment have long been known to help people navigate self-control dilemmas. Much of the canonical early work on goal-setting established evidence of the effectiveness of goal-setting on improving task performance (see Locke & Latham, 2002 for a review). Though much work has been done to better understand how and why certain types of goals work (or do not work; for a review see Locke & Latham, 2002), it has been suggested that public goal-setting may improve success (as suggested by Janis & Mann, 1977; Salancik, 1977). Indeed, public goal-setting increases goal commitment (Klein, Wesson, Hollenback, & Alge, 1999) and improves goal performance (for reviews see Locke & Latham, 1990; Klein, Cooper, & Monahan, 2013).

Evidence suggests that when individuals pursue goals that they value at the time the goal is set, yet know that they may later be tempted to give up on it, certain commitment strategies are especially effective. One such method is to use a specific strategy that creates costly repercussions for not following through with a previously set goal. The choice to commit to this cost ahead of time in order to improve goal attainment is known as precommitment (Ainslie, 2001; Rachlin, 2000). Precommitment can be seen as a goal-setting strategy that alters future choice in order to help commit oneself to a goal, either fully (by restricting later choice) or partially (by imposing a cost for later choice alterations). The current work proposes that public goal-setting may be seen as form of precommitment whereby individuals impose costly social penalties upon themselves (e.g., anticipated embarrassment) for not following through with the designated goal. Although the proposed model should apply to any form of precommitment (adding a self-imposed cost such as monetary forfeiture, etc.), it is
striking that this process may be powerful enough to operate simply via the thought of public embarrassment without any tangible incentives. Public announcement of the goal is proposed to induce greater goal commitment and to reduce goal-incongruent temptations, whereas private commitment cannot do either to the same degree.

A good deal of evidence supports the effectiveness of goal-setting (see Locke & Latham, 1990 for a review). In much of the goal-setting literature, goal-setting can be construed as publicly known (e.g., known to experimenter or recorded as part of the study). If goal-setting works most effectively through public commitment, public versus private goal-setting may cause differing degrees of anticipated emotional reactions (e.g., greater anticipated public embarrassment for not following though in public goal-setting conditions; Janis & Mann, 1977; Salancik, 1977). Thus, the current work proposes to replicate results that public goal-setting is more effective than private goal-setting by systematically varying publicness of goal-setting. This will test whether precommitting to goals publicly may work through greater goal commitment triggered by induced anticipated emotional reactions. Therefore, setting a goal publicly may induce goal commitment due to the anticipated social cost, in which the temptation to give up cannot be negotiated or rationalized away, whereas setting a private goal could be rationalized, and therefore is less powerful. This would indicate that many forms of goal-setting in which others are aware of one’s commitment in fact constitute an act of precommitment due to the associated anticipated social cost that impact one’s future choices. The process of social precommitment is thereby an unexplored mechanism behind the effectiveness of goal-setting on improving goal task performance.
Thus, this work proposes a novel test of the processes by which goal-setting (and precommitment, specifically) works. First, goal-setting may improve goal attainment because although it takes self-control to commit initially, the separation between making the commitment and actual temptation typically provides time to replenish resources before attempting the goal task itself. Because self-control is a limited resource (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; for a review see Baumeister & Alquist, 2009), goal-setting could be seen as creating a sort of savings account by which individuals invest ego-resources in committing to the goal early on, giving themselves time to replenish their regulatory resources (Tyler & Burns, 2008). This structural format of precommitment, specifically the temporal delay component, is one way which can explain why it is effective. Second, it is hypothesized that increased goal commitment created by the precommitment strategy makes the task itself easier to conduct (fewer regulatory resources needed; e.g., Webb & Sheeran, 2003). This is because once the goal has been adopted (decision already made) the temptation to quit is reduced therefore reducing the regulatory resources needed to complete the goal task (e.g., motivation versus self-control; Inzlicht & Schmeichel, 2012).

**Precommitment**

Precommitment can be viewed as a specific method used in goal-setting, with a self-imposed contingency employed to improve one’s chances of achieving the desired goal. Although it seems counterintuitive that people would willingly choose to impose unnecessary costs on themselves, contemporary analyses suggest that this cost serves some function. The idea of precommitment has received great attention from economists who have long been fascinated with departures from seemingly rational choices in
classical economic theory. In particular, behavioral economists propose that these departures from rational thought have very predictable patterns (e.g., Ariely, 2009). These predictable patterns are best accounted for by including psychological factors in behavioral economics models rather than solely using the so-called rational model, which fails to accurately predict choice. In contrast, behavioral economics models are better able to account for the inconsistency of choice over time, known as intertemporal preferences. Changes in intertemporal preferences reflect the fact that people believe that they will want to rationally pursue a goal when imagining themselves in the future. However, when that future becomes the present moment, their choice reverses toward the desire to give into temptation instead of pursuing the goal, a very different future from what the person predicted for themselves (Rachlin, 2000; Thaler & Shefrin, 1981).

Commitment strategies (e.g., precommitment) are used in an attempt to control oneself from pursuing unwanted paths (for a review see Bryan, Karlan, & Nelson, 2010). Behavioral economists (e.g., Loewenstein & Thaler, 1989) have shown that people’s preference to wait for the rationally better reward reverses as the present self becomes closer in time to the end of the waiting period. This is known as hyperbolic discounting. This phenomenon was originally identified in pigeons (Ainslie, 2001; Green & Rachlin, 1972; Rachlin & Green, 1996) and later extended to help understand human behavior in seemingly irrational choices (Rachlin, 2000; myopic preferences, Thaler & Shefrin, 1981). Precommitment is particularly important because one’s future self may attempt to reverse even the binding choice that one’s past self has committed to, as in the story of

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1 Bryan, Karlan, and Nelson (2010) refer to hard commitments as those backed by material losses or gains whereas soft commitments are primarily psychological in nature; in the current work, no distinction will be made as no rewards or punishments are attached to goal achievement in any of the proposed studies, yet according to this classification all commitments in this body of work would be considered soft commitments.
Odysseus tying himself to the mast to avoid pursuing the song of the sirens in mythology (Ashraf, Karlan, & Yin, 2006).

Evidence of time-inconsistent preferences can be found in the economic choices of both consumers and providers. For example, naive consumers are unaware of their tendency to estimate future behavior, whereas sophisticated consumers are aware and attempt to use pricing strategies to precommit to using or not using goods (e.g., health club membership, life insurance, credit cards, gambling; DellaVigna & Malmendier, 2004). Firms take advantage of time-inconsistent preferences by offering contracts that target both naïve and sophisticated consumers (DellaVigna & Malmendier, 2004).

Self-imposing costs on oneself for backing out of pre-determined goal-related behaviors helps to keep individuals on track while pursuing difficult goals, especially in cases for which giving up may be tempting (Rachlin & Green, 1996). Full precommitment requires one to make a binding choice that cannot be revisited, thus taking a second act of self-control off the table (Schelling, 1984). One example would be cutting up one’s credit card so that it can no longer be used which destroys the temptation and ability to use it (Bryan, Karlan, & Nelson, 2010). The more commonly encountered partial precommitment similarly makes continued goal pursuit more attractive than paying the previously set costs associated with giving up. An example of partial precommitment to increase one’s savings would include buying a bond to ensure saving rather than spending the money. Because the bond can be redeemed early, but cannot be redeemed earlier for its full price, it becomes more attractive to wait until it matures rather than lose money by redeeming it for less than the full price, thus making it less tempting for its owner to cash in early and spend it.
Empirical evidence supports the effectiveness of precommitment techniques (for a review see Wertenbroch, Vosgreu, & Bruyneel, 2008). For example, precommitment has been shown to improve adherence to course-related goals, where students were given the option to hold themselves to self-imposed deadlines for classwork (Ariely & Wertenbroch, 2002). When students were instructed to precommit to deadlines (of their choice) or were given only the deadline to turn in all papers by the last day of the course, those who precommitted were better able to control their procrastination and thus performed better than students who did not precommit to earlier deadlines (Ariely & Wertenbroch, 2002). A third condition was assigned earlier and evenly spaced paper deadlines. Those with optimally timed, evenly spaced deadlines assigned did the best, those with self-imposed deadlines performed next best, and those who had the option to turn in the assignments any time before the course ended performed worst of all (Ariely & Wertenbroch, 2002). Precommitting to a task demanding self-control may require fewer resources to enact in part by making the temptation of giving up less attractive thereby reducing the demands on self-control. Another example from economics shows that consumers are willing to spend more to regulate their consumption of vice goods by paying more for smaller packages, whereas consumers will pay more for virtue goods in bulk (Wertenbroch, 1998).

**Public Goal-Setting, Goal Commitment, & Performance**

One common and powerful way to create a commitment to a goal is to make a public statement in support of that goal. Theory supports the supposition that public goal-setting can be powerful. Factors that are thought to influence how binding a goal commitment include publicness as well as explicitness, revocability, and volition
(Salancik, 1977). Publicizing a goal to others can be a binding commitment of an agent to his or her goal, and is one of four crucial factors that can influence goal commitment according to Salancik (1977). In addition, making a public statement of a particular persuasion is well known to influence attitudes more generally in the direction of the statement as a result of cognitive dissonance (Festinger & Carlsmith, 1959), as is the existence of actual or perceived free-choice in the decision-making (Salancik, 1977), and both of these phenomena impact goal commitment as well (for a review see Salancik, 1977). Some researchers (e.g., Bandura, 1986; Janus & Mann, 1977) have suggested that the mechanism responsible for the effects of public goal-setting is anticipated negative affect toward goal failure (Salancik, 1977). It is also possible that the magnitude of effectiveness of influencing goal performance may be at least partly contingent on how much one knows and interacts regularly with the others in public conditions. One could imagine that public goal-setting might increase commitment more so when potential embarrassment is possible within one’s own social network, as compared with a stranger. Yet, even so, the powerful effect of public goal-setting is indicated by the fact that it has been shown to be effective when goals were made known only to the experimenter (e.g., Hayes et al., 1985), or people in one’s own social network (e.g., Hollenbeck, Williams, & Klein, 1989). Thus, there should be an expected effect of publicness of goal on increasing goal commitment.

An act of commitment to an upcoming task should help facilitate goal achievement. Goal commitment can be thought of as the bond attaching oneself to a particular goal (Klein, Cooper, & Monahan, 2013). Goal commitment has long been thought to play a role in effective goal-setting (Janus & Mann, 1977). There is also
empirical support for a strong positive correlation between goal commitment and performance (Klein, Cooper, & Monahan, 2013). In support of this view, commitment to goals has been shown to improve goal attainment (for a review see Locke, Latham, & Erez, 1988). Goal commitment has been identified as a major moderator of goal achievement, along with task feedback and task complexity (Locke & Latham, 2002). The consensus across many lines of research is that goal commitment, built upon perceived importance of the goal and efficacy towards the goal, is a crucial component of goal achievement (Locke & Latham, 2002; Klein, Cooper, & Monahan, 2013).

Goal commitment is the hypothesized result of a successfully completed goal selection process. By selecting a goal and committing to it publicly, goal commitment can be inferred (Klein, Cooper, & Monahan, 2013). Theorists presume that self-selected goals inherently engage personal commitment, as opposed to assigned goals (Locke, Latham, & Erez, 1988; Klein, Cooper, & Monahan, 2013). Self-selected (participative) goals have been shown to improve performance more so than assigned goals (e.g., Locke, Latham, & Erez, 1988; Mento, Steel, Karren, 1987). Though a major focus of this research was on the effects of self-efficacy, the results could also be taken to support the importance of goal commitment, or is at least consistent with the interpretation that greater goal commitment leads to better performance.

Evidence suggests that public goal-setting increases goal commitment in that there is a moderate positive correlation between publicness and goal commitment in meta-analyses (Klein, Cooper, & Monahan, 2013). Although internal and external factors can play a role in goal commitment (Locke, Latham, & Erez, 1988), the current work is most interested in examining the effect of public goal-setting on goal commitment. Goal
commitment as a construct has been shown to depend on a variety of factors (e.g., expectancy, rewards), including external factors depending on others such as authority figure or peer influence (Locke, Latham, & Erez, 1988). The perception of others’ reactions (an external influence) may affect goal commitment via internal differences in anticipated emotions (e.g., embarrassment). A variety of studies suggest that greater publicity of goal-setting does seem to increase the effectiveness of goal commitments as compared with private goals (for reviews see Locke & Latham, 1990; for a meta-analysis see Klein, Cooper, & Monahan, 2013).

Thus, it can be inferred that public goal-setting will lead to greater goal commitment and thus to improved goal performance, and indeed evidence supports the positive effects of goal-setting on goal commitment and performance. Only a few studies have directly evaluated the effect of public goal-setting (see Latham & Locke, 1990) on performance, and even fewer studies have examined the effect of perceived publicness on commitment (see Klein, Cooper, & Monahan, 2013) or the effect of both publicness and goal commitment on performance simultaneously. At least three studies provide evidence that would be consistent with the interpretation that these three variables have sizable positive relationships (Ingledew, Wray, Markland, & Hardy, 2005; McCaul, Hinsz, & McCaul, 1987; Hollenbeck, Williams, & Klein, 1989). Recent findings suggest that publicness of goal-setting is positively correlated with goal commitment in an applied setting (Ingledew et al., 2005). Furthermore, structural equation modeling suggests that public goal-setting lead to greater value of the goal, and thus greater goal commitment (Ingledew et al., 2005). In another study (Study 2; McCaul, Hinsz, & McCall, 1987), students’ goals were either publicly computed by the experimenter, displayed on a poster
board and personally recorded on a worksheet including the participant’s name, or were computed privately (and not displayed) and computation worksheets were anonymous (no names recorded). Participants were given set percentage improvement goals for a reading and memorization task. Public goal-setting significantly increased goal commitment, and was also effective at improving goal task performance, achieving the highest pre-task study time as well as the highest overall scores (though only for difficult goals, Study 2; McCaul, Hinsz, & McCall, 1987). These results are also consistent with the idea that the effects of commitment are most pronounced for difficult goals, which one might infer require more self-control to inhibit the urge to give up. In another study, publicness was manipulated by publishing GPA goals to peer as well as a significant other (e.g., parent or sibling; Hollenbeck, Williams, & Klein, 1989). As predicted, public compared with private goal commitment accounted for 3% of increased goal commitment, and goal commitment in turn predicted goal attainment (Hollenbeck, Williams, & Klein, 1989).

In addition to the evidence cited above, further evidence suggests that public versus private goal-setting, even without any attached reward or penalty, may be effective, though these studies do not examine effects on goal commitment (e.g., Hayes et al., 1985; Kast, Meier, & Pomeranz, 2012). In one study, students in public conditions wrote down, and in some cases signed, goal statements which were then read out loud publicly (either by the student or by an experimenter) in front of the students’ peers (Hayes et al., 1985). Students in the private condition wrote down their goals anonymously and submitted them (into a sealed box; Hayes et al., 1985). Students in the public conditions improved goal performance on sample GRE questions as well as on
student study modules and post-module test scores (Hayes et al., 1985). Publicly reporting monetary savings to peer groups also appears to help improved achievement of savings goals (Kast, Meier, & Pomeranz, 2012). In a study comparing a standard savings account with monetary interest to one in which participants had to publicly announce their savings goals and weekly deposits, the public display group made more deposits and achieved greater savings (Kast, Meier, & Pomeranz, 2012). Interestingly, participation in self-help peer-groups increased savings, though neither meetings nor peer pressure seemed to play a crucial role in the effectiveness of this strategy (Kast, Meier, & Pomeranz, 2012). This could be interpreted as consistent with the hypothesis that perceived publicness of goal commitment (and anticipated emotions toward others reactions to one’s possible failure) may be the crucial factor rather than actual reaction of others. Furthermore, meta-analyses on goal-setting have identified public feedback and participatively set goals as somewhat more effective than no feedback or assigned goals respectively (Mento, Steel, Karren, 1987). While other factors are at work in some of these cases, they do provide additional evidence of the effectiveness of publicly set goals, which may account for some of the observed differences. In addition, those few studies that have found contradictory results typically have private conditions that can be interpreted as public in some way (e.g., seen by experimenter, McCaul & Kopp, 1982; Fryer, 1964) or that were confounded with other effects (e.g., performance public or private conflated with goal publicness, Ferris & Porac, 1984; for a review, see Locke & Latham, 1990).

Public versus private goal-setting processes have frequently been tested in conjunction with rewards and punishments, and thus not all results are fully separable.
There is evidence of public goal commitments in conjunction with a reward (or penalty), when there is something tangible on the line (commitment contracts help improve goal attainment; for a review see Ayres, 2010a). Yet the effects of public goal commitments are seemingly effective even when there are no identified stakes other than a formal written contract (for a review see Ayres, 2010a). Public commitments with stakes attached such as committing ahead of time to voluntary money forfeitures for giving up on savings plans earlier than originally designated helped bank customers save more (Ashraf, Karlan, & Yin, 2006) and helped smokers quit (Giné, Karlan, & Zinman, 2010). In fact, a website called StikK.com has been developed by professors of economics and of law (Karlan & Ayres, Yale University), based on the premise that public commitments enforced by others should be much more powerful incentives than self-identified and enforced commitments. While the primary method used by the website is to have people put money where their mouth is as a direct commitment device, some options also include informing friend-networks via emails when the goal is created and/or blackmailing oneself with the threat of pre-composed emails being sent to people of your choice if you fail to reach your goal (presumably an embarrassing prospect). Thus, publicly making your goal (or potential failure) known to others can be a powerful tool, according to data collected thus far from the StickK website. Ayres (2010a; p 183) reports that without any supporters, only a 45% success rate is attained, whereas adding one supporter raises that to a 52%, as compared with 60% with multiple supporters. Having one’s contract publicly refereed by a person of one’s choice (as opposed to a private contract refereed only by oneself) raises the success rate from 37% to 62%, as compared with no supporters, no stakes at risk, and no referee success rate of only 25%.
Of course self-selection biases plague these results, but at least these results are consistent with an interpretation that public goal awareness improved chances of goal attainment, at least at some level.

In sum, goal-setting requires an act of commitment to an upcoming task. When made publicly, goal commitment can be increased. Furthermore, by making a goal public, it can be interpreted as a form of precommitment due to the imposed anticipated social cost.

**Self-Control Depletion, Precommitment, & Goal-Setting**

To better understand how precommitment works as a mechanism of goal-setting, it is important to understand the costs and benefits of this self-regulation strategy according to the limited-strength model. For instance, perhaps one cannot gain the full benefits of precommitting to self-regulate by having unenforceable costs (e.g., private goal-setting). Rather, it may be necessary for others to know of the goal (e.g., public goal-setting) in order to be effective at enforcing future costs (e.g., embarrassment if the task is not completed), thereby decreasing the self-regulatory resources needed to enact the goal task. In theory, setting a private goal could be marginally successful via the same processes if the person committing felt that it was impossible to revisit the decision (e.g., perhaps due to maintaining one’s self-esteem, keeping one’s self-concept intact). However, one could easily “uncommit” to a goal if no one is aware of it besides oneself, thereby undermining the power of the precommitment strategy. Therefore, the effectiveness of private precommitment should be negligible, or at least less effective than that of public commitment.
The limited-resource model of self-control posits that, like a muscle, self-control can be depleted by repeated tasks, as shown by decrements on a second self-regulatory task (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998; for a review see Muraven & Baumeister, 2000). These original studies tested the effects of tasks requiring self-control (e.g., resisting tasty cookies in favor of radishes, thought suppression of a white bear) on a variety of unrelated tasks across domains, sharing only the commonality of requiring self-regulation (e.g., worse emotion regulation, less time spent solving anagrams, shorter duration holding a handgrip). Since then, nearly a hundred studies have found evidence supporting this effect, termed ego-depletion (meta-analysis identified large effect sizes across 83 studies; Hagger, Wood, Stiff, & Chatzisarantis, 2010; for a review, see Baumeister & Alquist, 2009). Self-regulatory depletion may be relevant during two stages in which self-regulation may be most important to goal achievement: during goal-setting (making the commitment, then taking a break, the structural route) and while enacting the goal task (efficient use of regulatory resources, the process route).

Consistent with the idea that goal-setting requires self-control, making choices has been shown to consume regulatory resources (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Study 2). This is thought to be the case because of the effort required to suppress alternative/discarded courses of action (Baumeister & Vohs, 2007; Baumeister, Sparks, Stillman, & Vohs, 2007; Baumeister, Vohs, & Tice, 2007; Vohs, 2006; Vohs et al., 2008; Wertenbroch, Vosgerau, & Bruyneel, 2008). Accordingly, during the goal-setting phase, individuals must choose from many possible goals which to pursue, how to pursue it, and must commit to the goal at hand. One could imagine that goal-setting, and
particularly the decision to commit during the goal-setting process would be quite taxing, especially when there are many possible alternatives to choose from or when considering serious decisions with potentially life-altering consequences. While engaging in goal-setting, individuals must effortfully consider and select one specific goal from many possible options. Hence, based on the research that shows that making decisions is depleting, making a commitment to a goal may require self-control and thus deplete resources. Thus, the current work tests whether asking participants to select and commit to a specific goal as part of the goal-setting process depletes regulatory resources as predicted.

Although goal-setting may have short-term costs, there may also be long-term benefits in terms of more efficient use of regulatory resources. The work supporting the limited-resource model is prolific, and over time extensions of the model have helped to develop a better understanding of the processes involved and of other factors that can affect depletion. First, motivation can in some cases exacerbate or overcome the effects of depletion (e.g., Muraven & Slessareva, 2003; conservation of resources can be accounted for by motivation, Muraven, Shmueli, & Burkley, 2006). Thus, when completing a task while one is expected to have low resources (e.g., after a first depleting task), one can overcome this lack of resources if sufficiently motivated (e.g., perform just as well as non-depleted participants when there is a belief that the outcome will help others or oneself, Muraven & Slessareva, 2003). Similarly, findings indicated that when a person is aware of another upcoming self-control task, resources are conserved for the final self-control task, as evidenced by better performance on the final task and worse performance on the interim task (presumably the individual is saving scarce resources
that will be needed to complete the final task, Muraven, Shmueli, & Burkley, 2006). The process model of self-control attempts to account for both previous findings by interpreting tempting urges and self-control to be opposing forces (those of impulse strength and self-control strength, Inzlicht & Schmeichel, 2012). In this view, motivational and attentional shifts are implicated for the observed reduction in self-regulated behavior predicted by the limited-strength model. This perspective emphasizes the fact that there are routes to controlling one’s behavior other than simply direct resistance that can be modified to reduce the direct exertion of self-control that is needed.

The process model can be viewed as integrated with the limited-strength model in that the direct exertion of self-control may still rely on a limited resource. Yet, the process model also suggests that strategies that reduce the amount of self-regulation required to complete a given task may do so by reducing the necessary expenditure of resources. The impact of resource loss can be minimized by replenishing resources after depletion (rest periods; structural route), by avoiding direct exertion of self-control in the first place (increase motivation, alter perception, etc.; process route), or by reducing the temptation to quit (via imposed costs for quitting, the process route). Focusing on the third method, when a temptation becomes less tempting, the self-regulatory resources required to conquer it should decrease proportionately (e.g., Inzlicht & Schmeichel, 2012). This interpretation is also in line with dual-process models, such as the Reflective Impulsive Model (RIM; Strack & Deutsch, 2004).

Although some researchers have speculated that certain types of goal-setting strategies (e.g., commitment contracts, Ayres, 2010b) might affect regulatory depletion demands, this idea has yet to be formally proposed or tested. If indeed, those who
selected a goal and strategy prior to completing the depleting goal task did not show subsequent depletion effects on a follow-up task, this would constitute evidence supporting the theory. Consistent with this theory, similar predictions have been made in a related line of work involving a certain type of goal-setting (e.g., for “if-then” goals known as implementation intentions, Webb & Sheeran, 2003). Implementation intentions tie a selected cue to a specific “if-then” strategy in order to promote goal attainment (Gallo & Gollwitzer, 2007). Consistent with the current work, some authors have proposed that the noted effects are due to goal commitment (Ajzen, Czasch, & Flood, 2009; for an opposing viewpoint see Gallo & Gollwitzer, 2007). Setting a specific goal strategy for the Stroop (color-naming) task increased persistence on a subsequent puzzle task (Study 1; Webb & Sheeran, 2003) suggesting that implementation intentions reduced the amount of regulatory resources consumed in the difficult Stroop task itself. In support of the interpretation proposed herein, one could argue that the reduced depletion was due to making a public commitment to do well on the Stroop. Reinterpretation of the studies by Webb and Sheeran (2003) provide preliminary evidence that goal-setting may reduce ego-depletion by increasing goal commitment, which is effective at reducing the need for regulatory resources while completing the goal task. Regulatory depletion of participants in these studies was not evaluated separately from the goal task; likewise participants’ goal commitment and anticipated emotional reactions were not evaluated, so it is difficult to conclude whether the proposed processes route is at work in these studies, though it seems likely. Furthermore, there was no reported break between the commitment and the goal task, which makes it impossible to evaluate the veracity of the proposed structural route.
Thus, the proposed work intends to answer the question of whether the decision to commit to a goal may act as a sort of savings account of self-regulatory strength (structural route), such that self-regulation at the time of the goal pursuit takes less energy than for those who do not (process route). Furthermore, it is proposed that the effect of this self-regulation strategy is strongest through public (or at least perceived public) commitment. Public goal-setting is thus analogous to precommitting, as one must commit to the goal, with the self-imposed costs of anticipated emotional backlash for public failure. The same process should occur for publicly set goals of all types, but consistent with findings in traditional goal theory, should be most effective when committing to specific goals and strategies. This idea is henceforth referred to as the “bank” model of precommitment, “pre-spending” self-control resources to create and commit to a goal may save resources later by enacting the goal-directed behavior more efficiently. Thus, the current theoretical framework proposes that demands are spread across time such that the costs are borne earlier in the decision-making process, to the benefit of the reduction of self-regulatory demands while on-task. First, replenishment of regulatory resources between goal-setting and the goal task itself should avoid residual self-regulatory depletion effects from goal-setting (structural route). And second, public goal-setting should avoid incurring the typical self-regulatory depletion, as measured immediately after the goal task, despite successfully completing the goal task (process route).

**Current Research**

Previous research has shown that goal-setting (Latham & Locke, 1990) and goal commitment, specifically (Klein, Cooper, & Monahan, 2013) improve goal performance. This should be especially true for goals that require self-control to achieve, such as in
cases for which giving up may be tempting. Precommitment may make continued goal pursuit easier to follow through with by increasing goal commitment. The present research aims to test the role of regulatory resources in goal achievement, first by examining the relative effects of public versus private goal-setting. It may be that the effectiveness of precommitment is contingent on the pressure people put on themselves to follow through after publicly stating their intent to do so. Therefore, this work will vary whether goals are public (known to the experimenter) or private (known only to themselves) to see whether these are selectively effective at improving task performance.

If the bank model is correct, then the use of regulatory resources may also be distributed across time through the process of goal-setting. Goal-setting (such as the decision to precommit to invoke costs for goal failure) should deplete self-control resources, as shown by worse performance on an unrelated self-regulatory task immediately after a public commitment is made (Study 1 & Study 2). On the other hand, due to increased goal commitment and a reduced impulse strength for the temptation to quit, the goal task itself should take less self-regulatory strength to complete (as shown by reduction of performance decrements on a second unrelated self-regulatory task; Study 2). This might explain how a precommitment strategy would improve task performance by reducing the amount of self-control required during the target task.

Two studies will test this model in order to determine whether the bank model of self-control is the mechanism by which precommitment works through the two proposed routes of spacing out regulatory costs (structural route) and decreasing goal task regulatory requirements (process route). These studies will examine the explanatory power of the proposed mechanisms, and will extend these findings into the goal-setting
and goal commitment literature by showing that public goal-setting is a specific form of partial precommitment. These findings would suggest that the success of goal-setting may be driven by the same mechanisms responsible for precommitment.

**Study 1**

Why is public goal commitment effective? If telling someone about your plan results in greater goal commitment, then privately making that decision may not have the same benefits, or at least those benefits may be less powerful. Publicness of the goal commitment should result in a fully finalized decision to commit because it is perceived as non-negotiable, whereas committing privately may not be perceived as fixed. For instance, one could change one’s mind later and rationalize the decision or reverse it with no consequences in a private goal-setting scenario. Thus, the perceived publicness of the goal may be an important antecedent to full goal commitment. It is expected, therefore, that those in the public commitment condition will show greater regulatory depletion after the goal-setting process, whereas those in the private condition will show less.

Study 1 examined the distinction between public and private goal-setting in an ecologically valid setting (publicizing one’s goal electronically to friends or keeping it unknown to others). This study realistically simulated the wide variety of choices participants encounter that correspond to dilemmas faced by participants in their own lives when committing to goal/strategy combinations. Because choosing and committing to a goal/strategy are not separable processes in most contexts, these processes are both included in the goal-setting task herein.

As previously noted, a great deal of evidence in studies on precommitment and goal-setting support the proposition that goal-setting can make it easier to accomplish the
specified goal. This is especially true for challenging goals requiring self-control to achieve (e.g., goal difficulty, Locke & Latham, 1990; Locke & Latham, 2002; Mento, Steel & Karren, 1987). One theoretical account of the processes behind these findings, which neither of these theories considers, is that of the temporal pattern of spending (and saving) of regulatory resources. This theory may play a role in why goal-setting leads to better goal accomplishment, as well as uncovering the mechanism to explain why precommitment works. Self-controlled actions that have been committed to chronologically ahead of time may result in more regulatory resources being available at the time of goal task enactment (structural route). Ideally, committing ahead of time may give one enough time to recover those resources so that incurred depletion does not affect subsequent task performance (to be further examined in Study 2). The current study was designed to evaluate whether there may be a cost to simply making the initial commitment, as measured by laboratory tasks immediately after committing to a real-world goal.

If this theory is correct, one would expect an immediate short-term cost associated with making these commitments, similar to those found in other decision-making paradigms (e.g., Vohs et al., 2008). This study examined the question of whether the decision to make these commitments was costly in terms of using one’s regulatory resources. Whether others know about the commitment may impact how difficult this decision was to make, and how binding it was (e.g., goal commitment), therefore this study included public and private manipulations in addition to a control no-goal condition.
Previous studies have shown, however, that if people know ahead of time that their goal will be private, they may create easier goals for themselves (e.g., Ferris & Porac, 1984). To control for this possibility, a fully private “private” condition (privacy known prior to goal choice) as well as a partially private “semi-private” condition (privacy indicated after goal choice) were included. Therefore, to answer the question of public versus private effects, there were four conditions: a public condition (selection and commitment known to others), a semi-private condition (selection unknown privacy level and commitment known to self-only), a fully-private condition (selection and commitment known to self-only), and a control condition (no goal commitment).

Study 1 aimed to examine whether the goal-setting process, in this case for a particular personal goal, temporarily depleted self-control resources. This was evaluated by asking participants to choose a personalized strategy with the intent of pursuing a personal goal (hereafter referred to as a goal strategy). As each goal was a self-generated personal goal with an accompanying strategy, commitment was fully volitional, introducing ecological validity to the goal choice task. In addition, the public/private distinction maintained ecological validity by using participants’ actual social networks (via Facebook) to publicize their goals (or unrelated information). Depletion of self-regulatory resources was measured after goal-setting had been completed (publicly or privately), thus enabling the distinction between the amount of ego depletion resulting from publicly, privately (semi or fully), or not committing to a goal.

Upon entering the study, all participants were told that they could be randomly assigned to publicize their goals later. The public and semi-private conditions were reminded of this immediately before the goal-setting task, in hopes that they would chose
relatively similar goals. In contrast, the fully private group was told before goal generation that their goals would be private in order to ensure that they were processing under the belief that their goals would be private. The addition of a fully-private as well as the semi-private condition ensured that the private group was in fact processing the information privately, while still controlling for a possible difference in goal choice difficulty between public and private conditions.

Method

Power analysis. As recommended by Cohen (1988) and Cohen (1992), a minimum power of .80 and an alpha of .05 were used in calculations for all studies. A fixed effects omnibus ANOVA test planned for use to examine main effects. Although a good estimate of the effect size for public/private goal commitment was lacking (no meta-analyses available), estimated effect sizes for a similar distinction, goal-setting with no feedback versus feedback, were small to medium in range (e.g., d = .38-.49 range; Mento, Steel, & Karren, 1987). Depletion effect-sizes were generally large (d+ = .62 across twelve studies), with choice and volition on par (d = .82; Hagger et al., 2010). The effects of choice on depletion should be analogous to choosing a goal (e.g., goal-setting). Whereas a few studies have evaluated the effect size for the depleting effects of decision-making as large, in these studies the cited depletion effects were aggregated across multiple decisions in each study rather than measured for a single decision such as was tested in this study. Because this study was attempting to catalogue the effect of a single decision (the goal-setting process for a single goal), it was anticipated that this effect size could be smaller than the aggregated effect of multiple decisions, and thus it was presumed that this effect size would be moderate. There should still have been a sizable,
though moderate, depletion effect even from setting a single goal—especially because it was one that is an involved decision with important life consequences which must be considered by each participant during the decision-making process. Assuming moderate effect sizes (as noted previously), but with four groups in this study, the intent was to include at least 180 subjects, averaging approximately 45 participants per condition (calculated with GPower v3.1.7; Faul, Erdfelder, Buchner, & Lang, 2009).

**Participants.** Data from two-hundred and fifty-one introductory psychology students (130 men, 118 women, 3 unidentified) were included in the final analyses. In sum, two-hundred and eighty-two participants completed the study (resulting in n=276 with usable\(^2\) questionnaire data; n=262 with usable CPT data). Sixty-four participants responded on the six-week follow-up questionnaire (n=54 with usable ID codes matching the original data set; n=50 remained after exclusions). Participants were excluded for violating experimental condition (e.g., spontaneously stating a goal to the experimenter or posting a goal on Facebook when assigned to private conditions; n=20), for failing two attention check questions designed to identify random responders (n=8), and for withdrawing permission to use data (n=3). Of those remaining (n=251 total participants remained after exclusions), no participants reported a misunderstanding of task instructions and thus no further exclusions were warranted. Final analyses are conducted with the data available from each task, thus degrees of freedom vary by task and type of

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\(^2\) Technical difficulties led to different portions of data collected by different programs failing to record for some participants at random. To maximize the data available for analysis, all data were kept in the data set for analysis, with any missing data simply coded as such and excluded from that specific analysis. Thus, the number of subjects varies slightly between type of analysis, depending on whether the DV is based on questionnaire (Media Lab) data, response/reaction times (DirectRT), or follow-up questionnaires (survey-monkey).
analysis. Participants received research credit upon completion of either study. The sample consisted of students between the ages of 18 and 28 ($M = 19.34$, $SD = 1.42$).

**Procedure.** An overview of the procedure follows: Participants completed a goal-setting task in which they were directed to generate a specific goal/strategy to assist in succeeding at the next task (in public, semi-private, or fully-private conditions) or not (control condition). After setting their goal, but before actually conducting any goal related tasks (later accomplished outside of the lab), participants answered questions about their current mood. Participants also completed anticipated mood questions and manipulation checks about goal-setting (public, semi-private, and fully-private conditions) and experimental tasks. A partial debriefing was included at the end of the lab session, and a full debriefing was included at the end of the follow-up survey, in which participants were told the true nature of the study and given the option to withdraw their data ($n = 3$ participants withdrew permission to use data, one each from the public, semi-private, and fully-private conditions). During the debriefing, participants were asked to recall and write down their goal strategy, either publicly (with their name) or anonymously (with no name). In both cases the slips of paper were submitted into a “lockbox” full of other (blank) slips, such that the perception of public or private goal-setting was maintained while still allowing the experimenter to record the goal strategy of each participant. Tasks and questionnaires were administered at a research laboratory using Media Lab v2008 and DirectRT v2008. Data analysis for all studies was conducted using SPSS. Participants were thanked, awarded credit, and dismissed.

Participants were first asked to generate a unique ID code which was later used to access a short (optional) electronic survey administered six-weeks after the lab portion of
the study was over to track their goal progress (six-week follow-up). Generation of the ID code in the lab was followed by a goal-setting task in which participants were directed to choose a personal goal/strategy combination (see Appendix I\(^3\)). Goals were created for the public, semi-private, and fully-private conditions but not the control condition. Upon completion of the goal-setting task, participants were engaged in a social media (Facebook) task using their newly created goal strategy (public) or an unrelated topic (semi-private, fully-private, and control conditions). Only individuals in the public condition wrote the goal strategy down, and only those in the public condition publicized them on Facebook. Participants in the private conditions still completed the goal choice task, but publicized an unrelated comment on Facebook. Control condition participants publicized an unrelated comment on Facebook, and did not engage in the goal-setting task. Participants in all conditions answered questions regarding their typical use of social media, perceptions of current social media use in the lab, as well as mood ratings. Single-word ratings of anticipated mood ratings (similar format to mood current mood ratings; participants were instructed to imagine both goal-failure and goal-achievement scenarios) were also collected to assess whether there were between group differences in public versus private anticipated emotions toward task completion/failure (see Appendix III). Participants completed a computer-administered test of self-control performance, the continuous performance task (CPT). A second measure of self-reported current mood and task manipulation checks were administered immediately thereafter. Questionnaires were administered on the computer, along with additional strategy manipulation checks and goal debriefing/manipulation checks. Debriefing procedures included a request to recall their goal and record it publicly with the participant’s name included (public group) or

\(^3\) Appendices are grouped by Study 1 first (Appendices I-VII), followed by Study 2 (Appendices VIII-XIII).
anonymously (private groups) by depositing it on a slip of paper into a lockbox. Goal strategies were recorded surreptitiously by the experimenter. Award of credit was given and permission to use data was sought, with the results recorded. Individuals who elected to have their data withdrawn have been excluded.

Measures

Self-report measures were used to assess state measures of current mood and anticipated mood (see Appendix IV). Task and strategy manipulation checks were also administered (see Appendix III).

ID Code for follow-up survey. Participants generated a unique ID code (see Appendix I) in order to anonymously complete the 6-week follow-up survey online (see Appendix VII). This was completed immediately after informed consent as the first task in the lab, and served a dual purpose. In addition to the practical purpose of identification for data collection, this process also emphasized the need to choose and commit to a long-term goal for which the participant would later be held accountable. It was hoped that this procedure would increase the effect size for goal commitment across conditions.4

Public/private manipulation. During the informed consent procedures, all participants were informed at the beginning of the study that their goals could be made public using the following statement:

In order to participate, you must have an active Facebook account and must bring your username and password with you to the study. Some of you will also be randomly selected to post information about your goals on Facebook. You will also have an opportunity to report on your goal progress using a short internet follow-up survey.

4 Unfortunately, some participants did not enter accurate code numbers, either because they did not understand the instructions, or because they felt the information was not anonymous enough. This resulted in the loss of follow-up data in cases for which the participant’s entry for the follow-up ID code could not be located (matched) in the original ID code data set (n = 11 unmatched reports).
Immediately prior to the goal-setting task, those in the public, semi-private, and fully-private conditions were reminded that their goal may be made public later (to ensure no difference in the difficulty of goals selected due to the public/private manipulation).

Public/Semi-Private: As I mentioned earlier, some of you will be randomly selected to post your goals on Facebook for others to see. You will be notified which condition you’ve been randomly assigned later in the study. In the meantime, you will pick goals and strategies to reach those goals.

Fully Private: As I mentioned earlier, some of you will be randomly selected to post your goals on Facebook for others to see. You have been randomly assigned to the private goal condition, which means that only you will know your personal goal. You will not have to write it down, so just use the worksheets I give you to help work through the process in your mind. Imagine the goal choices instead of writing them down.

Control: As I mentioned earlier, some of you will be randomly selected to post on Facebook since we are also interested in studying relationship dynamics. You have been randomly assigned to post a status update.

The public, semi-private, and fully-private reminders (above) were immediately followed by the instructions for the goal-setting task (below), whereas the control groups did not complete or refer to the goal-setting task. Furthermore, participants in the public condition publicly posted their goal strategy on Facebook, whereas the private and control conditions posted non-goal related status updates of their choice.

Participants’ self-rated difficulty levels were combined with a single-item independent rating of goal difficulty provided by the experimenter. To enable independent ratings of goal strategy difficulty while still maintaining the perception of the goal as public or private, the additional goal difficulty manipulation check was used just prior to the debrief. Participants in the public condition wrote their names and their goals on a slip of paper which was placed into a “lockbox” (a visibly sealed box with a
one-way access slit on top). Participants in the private and semi-private conditions wrote their goal only on the slip, and similarly placed it in the “lockbox.” The control condition wrote down their Facebook posting and placed it in the “lockbox” to maintain similar procedures across groups. Thus, goals were recorded during the debriefing (publicly, or seemingly privately) and goal difficulty was rated independently by a trained research assistant for each goal. Unbeknownst to participants, the experimenter independently rated the goal difficulty on a scale from 0) *not at all difficult*, to 5) *extremely difficult*. Self-rated and experimenter-rated goal difficulty levels were recorded for each participant, and combined to create a composite goal difficulty rating.

**Goal-setting task.** Participants chose real-world goals rather than goals related to lab tasks (for full instructions see Appendix II). The experimenter emphasized this in the verbal instructions to participants in the public and private goal-setting conditions.

You will pick goals and strategies to reach those goals. You will have the opportunity to choose and commit to a real-life goal to pursue for the next 6 weeks. It can be any goal you want. We will give you a few examples to give your ideas, but the choice of goal is completely up to you. You can even write in your own if you don’t see anything that matches your personal ideals. We’ll walk you through the process step-by-step. Take your time in considering your options, remember this is YOUR goal and YOUR life!

The goal-setting task consisted of a funnel design to assist in the decision, starting broadly and narrowing goal objectives, ultimately leading them to a single focused goal/strategy combination (write-in goals were also accepted). First, all participants completing the goal-setting task were asked to mentally brainstorm difficult but important personal goals for 1 minute, without writing anything down. Participants were then presented with a list of sample goals and strategies from a variety of domains for 1

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5 A single rater was used, thus interrater reliability could not be calculated.
minute (see Appendix II: Part I). Common goals were listed for their reference, but the intent was for participants to generate their own goals, which is why they were asked to brainstorm personal goals before they saw the example list. Participants were then given 1 minute to list 10 personal goals that they could work towards (see Appendix II: Part I Worksheet). Before handing participants the second worksheet (see Appendix II: Part II Worksheets), the experimenter asked the participant to choose one valued goal that the participant would like to work towards. The experimenter verbally reviewed the worksheet instructions before leaving the room to give the participant time to select their final goal/strategy combination. The experimenter gave participants the chance to ask any questions related to the goal-setting task before leaving the room (the experimenter avoided discussing goal specifics to ensure those in the private condition remained private).

Now I will go over instructions for the next worksheet. You can follow along if you like. Fill in each blank with a strategy. For example, “to complete X goal, I will do Y strategy.” Your strategies should be in the format, “to complete X, I will do Y” where X is a goal you have and Y is the specific action you will take to achieve that goal. Think of Y as the specific strategy you will commit to use to avoid a temptation that could interfere with your goal. Pick a temptation that you feel is hard to resist, that you encounter frequently.

Now that you’ve chosen your top overall goal, pick one (or multiple) specific goals that could help you achieve your overall goal. Then come up with one particular strategy to fill in each blank section below, each designed to combat a specific temptation to help reach a specific goal which contributes to your overall goal.

Finally, all participants completing the goal task were asked to choose and commit to one of the identified specific goal strategies. Public participants were reminded to, “take a moment now to fill in your own examples on the worksheet,” whereas private
participants were reminded to, “take a moment now to think about how you would fill in your own examples on the worksheet, but don’t actually write on them.”

Now, pick ONE combination from the choices you came up with (see above) that you feel will best help you achieve your overall goal. Choose ONE COMBINATION of a specific goal and strategy that you are willing to commit to follow through with over the next 6 weeks. Remember to pick something you are actually willing to do, so try to be realistic. Do you have any questions? Okay, are you ready to choose? Take a moment to consider which one you will pick. Let me know when you have made your choice. (1 minute)

So, now that you have picked ONE and COMMITTED to it, make sure you are clear on exactly what you are committing to. Be sure your goal/strategy combination is in the correct format of “If X, I will do Z strategy, and I will do Y.” You may look at previous worksheets for reference. Please let me know when you are clear on your choice. (1 minute)

Finally, make sure you are clear on the exact wording of your chosen goal and strategy combination. Please repeat the goal and strategy combination to yourself. Do your best to commit it to memory. You will only have 1 minute to do this, I’ll let you know when your time is up. (1 minute)

At the end of the goal-setting task, all participants had chosen and committed to a personal goal, either publicly known to the experimenter, or not known to anyone else.

The private participants concluded engagement in the goal-setting task immediately.

Only the public condition continued the goal-setting task in the next portion of the study, the Facebook posting portion of the public manipulation, concluding engagement in the goal-setting task.

Facebook public/private manipulation. The Media Lab program was temporarily minimized, and all participants were verbally instructed by the experimenter to pull up their minimized Facebook account (logged in during the informed consent...
process; having a Facebook login and password was required to participate in the study).\textsuperscript{6}

In the public condition only, goal strategies were published as the participant’s status update. The experimenter remained in the room and openly observed the student posting to increase the perception of publicness.

Now that you have completed the decision-making exercise in order to choose your goal and your goal strategy, it is time to tell your network of friends and family about your goal. Please take a moment to update your current status with the exact wording that you chose in the goal decision task that you just finished. We don’t have time to let you check other people’s postings, so just update your status and then minimize the window. We’ll need you to answer some Facebook related questions in a few minutes. I’ll be standing by. When you are done, please let me know so we can start you on the next task.

In contrast, the private condition as well as the control condition participants were simply asked to post a status update of their choice. The experimenter remained in the room, but stood with a visibly occluded view of the screen to ensure the perception of privacy.

Please take a moment to update your current status in any way you like. It can be about anything you wish, and does not have to be related to anything we are doing in the lab. We don’t have time to let you check other people’s postings, so just update your status and then minimize the window. We’ll need you to answer some Facebook related questions in a few minutes. I’ll be standing by. When you are done, please let me know so we can start you on the next task.

In all cases, once the post was published, the window was minimized immediately so that the experiment could continue. Unbeknownst to the participants at the time, during the debrief, the participant would later be asked to pull up the minimized window so that the experimenter could record the content of each Facebook post (to ensure it matched the public or private condition) as well as recording the actual number of

\textsuperscript{6} Due to technical difficulties with internet connectivity, some participants completed the Facebook portion of the study on a different computer (n = 18) and then moved into the lab room for the remainder of the study.
Facebook friends (to confirm self-reported number in survey). This ensured that public participants actually posted goal strategies as instructed.

**Facebook manipulation check questions.** Participants were told that the study was interested in examining relationship dynamics and social media as a cover story, and accordingly were asked to give information about their typical Facebook usage (e.g., how often do you update statuses or check Facebook, how many Facebook friends do you have, how many family members are your Facebook friend, etc.; see Appendix III). In addition, they were asked to think about and respond to questions about who would respond, how quickly, and what their Facebook friends would think of their post (e.g., who will be most surprised, supportive, or unsupportive). They were also asked to identify which other social media platforms they have been active on. The primary intent of asking these questions was to further induce feelings of public commitment in the public group, although answering these questions should have no effect on the private or control groups.

**Current mood.** This measure (Meyer & Gashke, 1988) asked participants to self-report valence and arousal of their current mood on a seven-point scale from 1) *definitely do not feel* to 7) *definitely feel*. Participants rated sixteen mood-related words, selected from eight mood-categories, which were then combined to form the following subscales: *positive-tired* and *negative-relaxed*. This measure was included to assess whether differential mood changes occurred due to the goal-setting task. Current mood was not expected to differ across conditions, and was intended to rule out alternate explanations

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7 A rotated solution can alternatively form subscales of *pleasant-unpleasant* and *arousal-calm*, however the patterns for the other subscales using the alternative scoring system were the same and are therefore not reported.
for poor performance caused by a given manipulation (e.g., performed worse due to poor mood rather than depletion).

**Anticipated Mood.** To evaluate whether anticipated emotions differed by condition (see Appendix IV), participants first answered two free-response questions indicating anticipated mood for task success or failure (generate three-words each). This was followed by three forced-choice scales indicating the motivation for completing the goal. Participants indicate whether their goal pursuit was motivated by: *duty or interest; obligation or excitement; requirements or enjoyment.* This was used to create a composite intrinsic anticipated emotion score. Finally, a selection of forty-eight mood words were rated according to two sets of possible outcomes: task completion or task failure. Participants rated each word as to their anticipated feelings using the following instructions: “if you were to complete this task/goal as you stated in your plan, how would you feel” (or failed to; italics added for clarity). Items included positive words (e.g., proud, confident, calm, satisfied) as well as negative words (nervous, ashamed, embarrassed, disappointed, unsatisfied). Adapted from the Positive and Negative Affect Schedule-Extended (PANAS-X; Watson & Clark, 1999), participant rated words from 1) *very slightly or not at all* to 5) *extremely.* Anticipated mood words were also selected from the regulatory focus literature, with motivation toward “ought” or “ideal” goals having similar valence to the selected PANAS-X target words (e.g., emotion words associated with promotion such as pride, or prevention focus, such as embarrassment, Higgins, 1987). Positively associated emotions (composite variable) were not expected to differ across conditions. However, it was expected that the public condition should have
greater negative anticipated emotions (composite variable) compared with private or control conditions.

**Continuous performance task (CPT).** Participants were asked to monitor semi-random numbers that appeared one at a time on-screen patterned after a task used by Muraven, Shmueli, and Burkely (2006). After a practice session in which they pressed the spacebar any time the numbers 4 or 6 appeared, inhibitory task instructions were presented (see Appendix V for full instructions). Participants were instructed to press the spacebar if and only if they saw the number 6 proceeded by the number 4. They were also informed that a video would be playing, and were asked to ignore the video clip. Inhibiting the urge to watch an engaging video while completing the boring number identification task was intended to make the answering correctly even more difficult (e.g., inhibition of incorrect responses). This was similar to a procedure used by Webb and Sheeran (2003) to measure regulatory depletion, for which the difficulty of the task was increased by playing loud noises while working on unsolvable puzzles during the task. Participants’ performance on the CPT assessed the state of their self-control depletion, with more errors, lower d-prime scores, and greater response times indicating greater depletion.

**Video clip.** As noted, a short 10-minute clip from the animated movie “Up” was shown at the same time the CPT was being completed. The video was about two young children playing together who grow up to marry, but can’t have children. The old woman eventually died and the old man was left alone, lonely, but befriended a young boy to go on an adventure. The clip was taken from the beginning of the movie when the

\[ \text{d-prime} = z(\text{hits}) - z(\text{false alarms}) \]

Higher d-prime scores indicate better performance.
characters were introduced. As it was an engaging clip with both emotional ups and downs (funny and sad parts), it should have been hard to resist attending to, yet should not strongly affect mood (nonetheless, a mood measure is also included in case there are any confounds with mood due to attending to the movie clip).

**CPT video content quiz.** A surprise 10-question quiz consisting of multiple choice and true-false questions assessed participants’ attentiveness to the video (see Appendix VI). These questions addressed major conceptual plot questions such as responding as true or false to statements such as, “the old man became friends with a young girl” or “the young girl from the start of the film eventually dies.” Participants were also asked if they had seen the movie before, in case they already knew the plot (n = 156 responded yes, n = 103 responded no, n = 4 unidentified). Video quiz scores (0-10) and a dummy variable for having seen the movie (or not) were intended to enable controlling for whether people were successfully ignoring the movie as instructed. High scores (for those who indicate that they have not seen the movie) would suggest that individuals were watching the movie instead of attending to the CPT.

**Manipulation checks.** The goal-setting manipulation checks included ratings of the perceived publicness, goal commitment, and strategy commitment. These were rated on a scale as not applicable (0), or from not at all (1) to extremely (5). Composite scores were calculated for perceived publicness, commitment, goal difficulty, and anticipated emotions consisting of appropriate manipulation checks related to each variable. Publicness was rated using a series of questions assessing the perception that goal-setting was known to others. Sample questions included, “how anonymous do you feel your goal and strategy are?” (reverse-scored) and, “do you think that anyone could possibly know
your goal and strategy?” Goal commitment was indicated using a series previously validated series of questions (as cited in Klein, Cooper, & Monahan, 2012). For example, “how committed are you to [your/the/this] goal?” Participants also indicated confidence in their strategy, for example “I plan to stick to my strategy.” Participants also rated their understanding of all task instructions at the end of the study as 0) not applicable or from 1) not at all to 5) extremely well.

Manipulation check questions (in this case, for the goal-setting task and the CPT) were administered after each task in order to assess participants’ evaluation of how much effort and energy was required and how much self-control was needed to complete each task (e.g., over-riding urges, self-control exertion). Frustration and boredom, as well as task difficulty, efficacy, liking, interest, and engagement were also rated. For example, the question, “how much self-control did you need to use during the concentration task?” was rated on a similar 0-5 scale. Finally, performance in relation to peers was assessed using a self-report rating of performance rated from 1) worse than most to 5) better than average. Self-regulatory questions were expected to differ by condition (public possibly requiring greater explicit inhibition, though previous studies have found mixed results); however, the remainder were not expected to differ and were simply used to rule out alternate explanations of performance effects in subsequent tasks.

**Goal debriefing.** Participants rated how carefully they selected their goal strategy, how committed they were to following through, whether they took their commitment seriously, and whether they intended to follow through on it. This was indicated on the 0-5 rating scale. During the debrief, participants were also asked verbally by the experimenter if they could recall the goal/strategy combination they chose, which
was recorded in the participant log (yes or no; actual goal was recorded either anonymously or publicly using the lockbox method described above, and ultimately recorded in the participant log as well). Presumably, if they were committed to the goal, they should at the very least remember it by the end of the study less than 90-minutes later. Similar inquiries were also included in the follow-up self-report questionnaire (below).

**Goal completion survey.** An invitation to take a short follow-up survey was sent to all participants six-weeks after completion of the study via email and was administered via Survey Monkey (see Appendix VII). This survey asked participants to recall their goal from the study and very generally asked them to rate how successful they had been at achieving their goal. Questions included items that addressed how well participants remembered their goal, how well they stuck to their goal and strategy, as well as how much they experienced identified temptations. As before, this was indicated on a 0-5 rating scale as *not applicable* (0), or ranged from (1) *not at all* to (5) *extremely*.

**Results**

**Manipulation Checks**

Manipulation checks evaluated any potentially unexpected effects of each task (goal-setting task and CPT) to ensure each had the intended effects on self-regulatory engagement, and not any other unintended effects.

**Self-regulatory effort.** A manipulation check question evaluating self-control confirmed that dependent variable (e.g., the CPT) did require inhibition. The mean value across conditions indicated a positive response (e.g., differed significantly from the “not at all” response; $M = 3.30$, $SD = 1.02$, $t(237) = 34.67$, $p < .001$), which confirmed that
self-control was required for this task. No significant differences between conditions were found for this variable, \( F (3, 233) = 1.02, p = .39, NS. \)

The goal-setting task was also expected to be rated as requiring self-control, and this was confirmed using a manipulation check evaluating the amount of self-control required during the decision task (e.g., participants who completed the goal-setting task reported differing significantly from the “not at all” response; \( M = 2.34, SD = 1.21, t(179) = 28.20, p < .001 \)). In contrast, it was expected that the goal-setting task would be rated by participants as requiring more self-control for publicly set than either of the privately set goals, however these differences were not significant, contrary to expectations, \( F (3, 235) = 1.61, p = .19 \) (see Table 1). An ANOVA of condition on the self-regulation manipulation check was used to evaluate group differences. A significant difference was expected between public and the two private conditions, however this was non-significant \( (F < 1) \); a non-significant difference was expected and found between the private conditions \( (t < 1) \).

**Confounding variables.** An ANOVA was used to confirm that there were no differences across conditions on the manipulation checks, including alternative explanation questions (e.g., CPT task-liking, boredom, frustration, etc. as well as goal-setting task-liking, boredom, frustration, etc.). No differences between conditions were expected for extraneous variables unrelated to self-regulation \( (Fs < 1) \). Indeed, for the goal-setting task manipulation checks, there were no significant differences between the public, private, or semi-private conditions \( (df = 2, 177) \) in ratings of goal difficulty, task liking, effort, energy required, frustration, task engagement, interest, or pressure to do well, \( Fs < 2 \). Significant differences between conditions were found for boredom, \( F = \)
3.40, $p = .04$. However, the bivariate correlations of goal-setting task boredom ratings on the dependent variables (CPT performance errors, reaction time, and d-prime) were non-significant $rs < .08, ps > .22$. Furthermore, CPT manipulation checks did not differ by condition ($df = 3, 232$) on rated task difficulty, liking, effort, energy required, trying hard, frustration, task engagement, interest, boredom, or pressure to do well, temptation to attend to the movie, wandering thoughts, or expected task performance, $Fs < 2, ps > .20$. Effort ratings were non-significant, though marginal, $F = 2.15, p = .09$. Attentiveness to the video was also measured by correct answers using a video quiz about the plot and character, indicating possible differences in inhibiting attentiveness to the movie clip. These did not differ by condition, $F = 1, p > .75$, ruling this out as an alternate explanation for any differences identified as well. Thus, no extraneous variables included in the manipulation checks differed by condition and also evidenced a significant impact on CPT performance (depletion measures).

Current mood differences were also compared across condition ($df = 3, 242$) to rule out mood as a confound using an additional ANOVA (no differences expected). Negative mood differed by condition, $F = 3.60, p = .01$, but did not trend in any clear pattern related to goal-setting or publicness. Public and fully private groups both rated high in negativity, whereas semi-private and control groups rated lower. Neither of the mood variables had any effect on CPT errors or reaction times. However, there was an effect of slightly worse performance on d-prime for mood negativity, $r = -.14, p = .03$. Given the non-consistent effects, it seems unlikely that mood differences could account for any consistent pattern of changes.
**Goal Difficulty.** Although some previous work has shown differences to exist between public and private goal-setting (e.g., publicly set goals may increase level of difficulty, Ferris & Porac, 1984), there were no significant group differences in goal difficulty when compared across goal conditions, $F(2, 180) < 1, p > .56, \text{NS}$. As there were no significant group differences, there was no need to use goal difficulty as a covariate in subsequent analyses.

**Goal-Setting Publicness.** Participants’ self-reported perception of the publicness of the manipulations was assessed using an ANOVA. While the public group trended toward higher scores and the private groups lower scores, differences were not significant, $F(2,181) = 1.93, p = .15$. The contrast between public versus private conditions was marginally significant, and trending in the expected direction, $t(182) = 1.91, p < .06$. The fact that this difference was not significant may indicate that the public/private manipulation was not strong enough.\(^{10}\)

**Dependent Variables**

Study 1 descriptive statistics for dependent variables and composite variables included in the following analyses can be found in Table 1. Self-report composite variables including publicness, commitment, choice, and anticipated emotions did not deviate from relatively normal distributions. However, publicness, commitment, and anticipated emotion distributions showed a slight negative skew (ceiling effect). In

\(^{9}\) A post-hoc ANOVA examining differences in perceived publicness of Facebook was also conducted. Usual frequency of status updates trended toward significance, $F(2,179) = 2.36, p < .10$, but no other group differences were significant, $Fs < 1.15, ps > .32$. To be certain status update frequency did not have an effect, bivariate correlations with the dependent variables were run; however, none reached significance, $ps > .10$.

\(^{10}\) Pilot data indicated that a similar public/private manipulation did effectively manipulate perceptions of publicness as rated on a simpler 1-question scale, $F(2,39) = 3.64, p < .04$. However, as with the composite variable reported herein, the current data did not show significant differences in perception of publicness using an identical 1-question assessment, $F(2,181) = 0.48, p = .62, \text{NS}$. This suggests that for some reason the manipulation of perception of goal publicness was not effective in the current sample.
contrast, CPT variables showed more extreme departures from normality (d-prime, mild negative skew/ceiling effect; errors, extreme positive skew/floor effect\textsuperscript{11}; reaction time, mild positive skew/floor effect). Because $F$ and $t$ tests are relatively robust to departures from normality, analyses were conducted as planned. However, as a failsafe, log (10) and square-root transformations were used to adjust for the more extreme negatively (positively) skewed distributions, respectively, and ANOVAs were rerun with transformed variables. No change was evident in the pattern of results or resulting significance levels from these transformations, thus analyses using the original, untransformed variables are reported. Single-item goal adherence variables (six-week follow-up) showed relatively normal distributions.

**Depletion.** The main analysis of the dependent variable examined the structural model, by utilizing an ANOVA of condition (public, fully-private, semi-private, or control group) on CPT performance (d-prime, errors, and reaction times). The analysis (omnibus $F$-test) examined the effects of goal choice condition on depletion (CPT performance) after committing to the goal, with more errors, lower d-prime scores, and longer reaction times, expected to indicate greater depletion of self-control due to the goal choice. However, the expected differences were not significant for errors, d-prime scores, or reaction times, $Fs < 1.04$, $ps > .37$, $NS$.

It was also expected that the effects of depletion would be most pronounced for the public group (showing greater number of errors, lower d-prime scores, and slower reaction times) due to the greater commitment induced by public goal-setting, followed by the two private groups. Thus, the planned contrasts (F-tests) between the public and all

\textsuperscript{11} Because of the extremity of this departure from normality for CPT errors, a non-parametric analysis was also run (logistic regression, reported in the appropriate section below).
other conditions (fully private, semi-private, and control conditions) were expected to yield significant results, but did not, $F_s < 1$. Planned contrasts between public and private conditions were also non-significant, $t_s < 1$. Furthermore, group comparisons between the public and each of the other groups were expected to maintain significant differences (t-tests), however this was not the case (public versus semi-private, public versus fully-private, public versus control), $t_s < 1.5$. Comparisons with each of the private groups (fully or semi) versus the control group were not expected to differ significantly ($t_s < 1$), which was true across all three variables (errors, d-prime, and reaction time) showing non-significant differences. The control group was considered the baseline for comparison with the other groups as described, since these participants should not be depleted at all and thus able to perform quite well on the CPT. Worse performance in non-control conditions would have indicated greater depletion levels, with significantly more depletion occurring for those who made public goal commitments. This would have indicated that making a public commitment to a goal requires self-control; however evidence for this was not obtained.\textsuperscript{12}

**Anticipated Negative Emotions.** Composite scores for anticipated positive and negative emotions were used to test differences due to public versus private goal-setting using one-way ANOVAs ($df=2, 178$), followed by a planned contrast between public versus private conditions ($df=1, 189$).\textsuperscript{13} Contrary to expectations, neither negative nor

\textsuperscript{12} Due to the non-normality of the distribution, a logistic regression was also run for CPT errors, coding errors/no-errors as the binomial outcome measure, and using number of trials to failure (ranged from 1 to 770); nonetheless, experimental conditional remained a nonsignificant predictor, $b = .05$, $SE_b = .06$, Wald $= .67$, $p > .41$, $EXP(B) = 1.05$.

\textsuperscript{13} The control group in this case could not be compared, because the anticipated emotions refer to the imagined contingent emotions felt toward completion of a goal, which the control condition lacked. As there were no differences in anticipated emotion between public and private groups, this variable will not be included in further analyses. As the control group cannot be included, this variable is also precluded from use as a covariate.
positive anticipated emotions (ranked immediately after completing the goal task) were found to differ by experimental condition, $F_s < 1.5, ps > .23, NS$. Neither omnibus tests nor contrasts were significant. Differences in internal anticipated emotions (motivation) were also non-significant, $F < 1, p > .42$.

**Goal Commitment.** Goal commitment was expected to be highest for the public group compared with the private groups (omnibus, $df = 2, 182$; and planned contrast $F$-tests, $df = 1, 183$). Contrary to expectations, goal commitment (ranked immediately after completing the goal task) did not differ by condition on either the omnibus test, nor for planned contrasts, $F_s < 1.09, p > .30, NS$. As in the previous analysis, the control group was excluded from analysis because they had not committed to any goal.

**Goal Performance.** An exploratory analysis of variance (omnibus $F$-tests, $df = 2, 35$) examined the impact of condition (publicness) on self-rated goal adherence (measured at six-weeks post-lab visit). Those who committed publicly were expected to exhibit better goal adherence as compared with those who committed privately in a planned contrast for sticking to the goal and sticking to the strategy, however this was not the case, $F_s < 1.58, ps > .22; ts < 1.12, ps > .25, NS$. Omnibus tests of goal commitment differences across groups were not significant either, $F = 1.49, p > .24$; however, the planned contrast between public and private conditions trended in the expected direction, such that those who publically committed in the lab remained more committed to the goal six-weeks later than those who committed privately, $t (36) = 1.55, p < .13$. Recall of the goal was improved for the public group, with those in the public condition recalling their goals the most vividly, though this effect was significant only when including all four groups, $F(3, 46) = 4.01, p = .01$, and when compared across the three goal conditions was
reduced to a non-significant effect though trending in the hypothesized direction, $F(2,35) = 1.41, p = .26; t(36) <1, p = .33$. Likewise, there were significant differences between groups for goal-related temptations experienced when including all four groups, such that (sensibly) the goal groups felt more tempted than those in the control condition with no goals, $F(3, 46) = 3.18, p < .03$, however neither planned contrast was significant, $F$ and $t < 1.40, ps > .26$. Thus, contrary to previous findings in the literature, the effectiveness of public goal-setting on goal accomplishment as compared with private goal-setting was not supported by this study. However, the evidence at the six-week follow-up suggested that goal recall and goal commitment may be stronger in the public condition. Especially given the low power available for the explanatory analyses due to the low response rates, these hypotheses may merit further investigation.  

Mediation

**Structural Model Mediation (Goal Commitment).** To test the primary hypothesis regarding depletion and the structural model, a mediation analysis (see Figure 1a) examined whether greater perceived publicness (x) increased goal commitment (m), thereby increasing post goal-setting depletion (y). In order to test whether the expected relationship of publicness with post-commitment depletion was mediated by increased goal commitment, a mediation analysis was conducted. The composite publicness and goal commitment scores were used to predict depletion as measured by CPT performance

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14 As expected, due to a great deal of attrition on the follow-up self-report surveys measuring goal performance (rate of return for the follow-up survey was approximately 22%), this analysis is somewhat inconclusive. Therefore, this analysis should be considered exploratory in nature. The impact of perceived publicness on goal task performance was addressed in Study 2, with goal commitment as a mediator.

15 Estimation of indirect effects in each mediation analysis used the methods and syntax described by Preacher and Hayes (2004; 2008). Mediation analyses were tested on the sub-sample of individuals who committed to a goal (public, semi-private, and fully-private), as goal publicness and goal commitment does not make sense to compare in the control group without goals to commit to.
degradation; however, the structural model was not supported (indirect effect not significant; see Table 2).

While the existence of an indirect effect was evaluated using a method devised by Preacher and Hayes (2004), Baron and Kenny’s (1986) standard steps to examine mediation can be helpful in describing the mediation. Thus, the following linear regressions were performed: publicness (X) on depletion (Y); publicness (X) on goal commitment (M); and goal commitment (M) on depletion (Y). Only one leg of the traditional triumvirate leading to mediation (Baron & Kenny, 1986) was significant in this analysis (see Table 3), that of the relationship between publicness (x) and goal commitment (M). In addition, Preacher and Hayes (2004) method did not indicate a significant indirect effect, which did not support the mediation hypothesis. While greater publicness did lead to greater goal commitment, there was no evidence that the initial decision to commit publicly to a goal was depleting, nor was there support for depletion varying according to how committed one was to the goal (see Table 3).

**Structural Model Mediation (Choice Inhibition).** To further examine the role of choice as the mechanism behind depletion in goal-setting, a second mediation analysis (see Figure 1b) examined the processes behind depletion during the goal-setting process. In order to test whether the inhibition of alternative choices explains the depletion effect, an analysis using inhibition of choice to mediate the relationship between publicness and depletion was conducted. Publicness was expected to predict increased perception of choice during goal commitment, which in turn would predict depletion-induced performance decrements on the CPT. As in the previous analysis, however, publicness did not significantly affect depletion. While publicness did predict increased processing
of goal choice, inhibiting the array of alternative goal choices did not show the expected depletion effect on the CPT, nor was any indirect effect identified (see Table 2).

As before, the existence of an indirect effect was evaluated using Preacher and Hayes’ method, paired with Baron and Kenny’s steps to examine the direct effects. Thus, Table 3 presents the linear regression of publicness (x) on depletion (y) as completed in the previous analysis, additionally joined by a linear regression of publicness (x) on choice inhibition (m) and a linear regression of choice inhibition (m) on depletion (y). An indirect effect and evidence of mediation would have indicated that public goal-setting led to more depletion due to a stronger need to resist alternative tempting options while publicly choosing a goal, yet this did not seem to be the case (see Table 2).

**Mediation of Commitment.** To further examine the processes that may have contributed to increased goal commitment for both the process and structural models, a third mediation analysis was included (see Figure 1c). In order to test whether the expected relationship of publicness with increased goal commitment was partially mediated by anticipated negative emotions, the indirect effect was evaluated. Publicness rating score was used to predict increased goal commitment; if anticipated negative emotions are responsible for mediating the effect on goal commitment, then the anticipated emotion composite score(s) should account for at least some of the relationship (showing evidence of partial or full mediation). However, contrary to expectations, no significant mediation was identified (see Table 2).

As noted previously, the linear regression of publicness (x) on goal commitment (y) was significant and the two variables were positively related, as predicted (see Table 3). Furthermore, linear regressions were performed for publicness (x) on anticipated
emotions (m), as well as of anticipated emotions (m) on goal commitment (y). All variables were positively related, and each of these relationships trended in the expected directions, suggesting that the effects of these variables may be as hypothesized (see Table 3). However, the lack of a direct effect of negative anticipated emotions on commitment, despite the trend and the lack of an indirect effect (see Table 2) suggests that negative anticipated emotions cannot account for the relationship between greater goal commitment and public goal-setting conditions as was hypothesized.

Discussion

This study was designed to test the volitional choice aspect of goal-setting, in which fully committing in public while experiencing the full weight of the decision, one must decide and stick to the decision, thus increasing the use of regulatory resources. While public goal-setting was indeed associated with greater goal commitment as expected, contrary to expectations, this increased goal commitment did not result in impaired performance on the follow-up regulatory task (CPT). Instead, differences between groups were non-significant. Nonetheless, the failure to identify significant effects may be at least in part due to a failure of the public and private manipulations to cause a significant difference in perceptions across experimental manipulation groups. It is possible that the effect size of the manipulation was not sufficient to trigger the hypothesized reactions during the goal-setting process.

The associated degree of goal commitment was expected to differ between groups as well, with goal commitment expected to affect CPT performance as well. However, differences in resultant goal commitment between groups were not significant, as measured by goal debriefing questions and goal manipulation checks. Differences in goal
commitment were expected between public (expected to be highest) and private conditions (expected to be lower), and control condition participants who should choose not applicable since they did not set a goal (lowest). While these differences were not significant, the linear regression of perceived publicness on goal commitment was indeed significant in the expected direction (positive; see Table 3), lending some support to this aspect of the hypothesis despite the lack of significant differences between groups. As has been found in some previous studies, public goal-setting increased goal commitment as hypothesized; however, the lack of difference between conditions suggests that the public/private manipulations may not have been convincing enough to affect all participants’ perceptions of goal publicity. Therefore, a stronger manipulation needs to be tested in a future study to rule out the possibility that the effect was simply not strong enough due to participants’ belief in the privacy or publicity of goals in a psychological study. Indeed, the universally high scores and the lack in variation of publicness ratings may indicate that participants believed that their goals were public despite assurances of privacy, creating a ceiling effect. Thus future studies should take care to preserve the image of privacy during goal-setting in order to better examine the differences between public and private goal-setting.

In addition, the somewhat non-normal distribution of the dependent variables may have contributed to a difficulty in locating an effect, if indeed the hypothesized effect occurred. Although transformation of the dependent variables were examined as well, it remains possible that use of a dependent variable with a more normal distribution would expand the range of the resulting variance, making it easier to identify existing depletion
effects. Future studies should use dependent variables that typically evidence normal distribution properties to enable the maximal effectiveness of parametric statistics.

To better understand the antecedents of goal commitment, anticipated emotions toward goal failure (or completion) were also evaluated. If publicness led to increased goal commitment (as indeed it did in Study 1), and increased goal commitment indeed resulted in more feelings of anticipated negative emotions at the thought of not following through, one would expect the relationship between publicness and goal commitment to be mediated by anticipated negative emotions. However, surprisingly, this was not the case (see Table 2). Anticipated negative emotions were expected to differ by condition as well (most for public, least for private), with no differences expected for positive anticipated emotions, however there were no significant differences by condition. In support of the hypothesis, however, greater perception of goal-setting as public did lead to greater anticipated negative emotions. Furthermore, negative anticipated emotions did trend towards greater goal commitment (see Table 3 linear regression); however, neither the ANOVA of goal commitment across conditions nor the proposed mediation analyses (see Table 2) were significant. Even so, the results of the linear regressions provided at least partial support for the hypothesized relationships. However, despite these associations, anticipated negative emotions did not mediate the relationship between publicness and goal commitment as expected. Thus, anticipated negative emotions could not account for the effect of publicness on increased goal commitment as proposed through mediation. The predicted hypothesis was that this would only occur for negative anticipated emotions (and not for positive emotions). In fact, the effect was not significant for either emotion. The lack of difference across conditions may also be
related to the previously discussed lack of difference in perceived publicness between conditions, since this was hypothesized to directly impact anticipated negative emotions.

The structural model presumed that increased depletion would occur due to goal commitment. Differences by condition on the variables of goal commitment in the expected directions, along with a significant mediation, would have indicated that greater goal commitment incurred a greater regulatory cost, confirming the first step (Time 1) of the structural model. However, these differences were not significant; nor was the proposed mediation.

Although this study used controlled lab conditions to focus on and simulate the Time 1 (goal commitment) phase with the intention of establishing the depleting nature of public commitment on goal task performance, results from Study 1 did not support the depleting nature of publicly set goals. Furthermore, while the effects of publicly set goals on post-goal task depletion levels could not be tested using this experimental design, some interesting findings emerged regarding goal outcomes despite this shortcoming through exploratory analyses on the six-week follow-up on goal completion.

The effect of the public, private, or no commitments on goal achievement was measured by self-report follow-up surveys six weeks after the study (goal completion survey). Even given the limited number of usable responses, some trends emerged from the data. Evidence suggested that public goal commitment was associated with better goal recall and tended toward increased goal commitment six weeks later. However, it was hypothesized that public goal commitment would also provide a powerful motivator toward goal completion (at Time 2), yet this was not found to be the case. It is possible that the lack of a significant difference between groups may be due partially to low
response rate on the follow-up survey or the inaccuracy of voluntary survey responses. Given the anticipated low number of follow-up responses to the optional follow-up survey, Study 1 did not create an ideal scenario to measure effects on goal performance. Furthermore, the single-item nature of each of the 5-questions corresponding to one construct of interest could be improved by creating composite variables composed of multiple questions to evaluate each construct, which would provide a much more accurate and reliable estimate of goal completion variables. As anticipated, due to the low number of responses, Study 1 failed to provide a satisfactory test of the process route on the goal task, a limitation that Study 2 was designed to address. Despite this limitation, exploratory analyses were expected to yield a significant difference between conditions such that goal completion would differ with public being the most successful and private being less successful, but this did not occur. This evidence would have at least been consistent with both the positive effects of public pre-commitment according to both the structural and process routes; yet, no significant differences in goal performance were identified. However, the lack of results identified for goal performance does not provide conclusive evidence due to the small number of participants returning usable data in the follow-up survey. Despite this, exploratory results did indicate some interesting differences consistent with the predicted effects on goal processes. This evidence suggests at least some lasting differences in goal recall, commitment, and temptation.

**Study 2**

In addition to examining differential effects of public versus private commitments, Study 2 was intended to extend the results of Study 1 by further examining the mechanisms via which precommitment works. That is to say, Study 2 examined
whether precommitment affected goal performance by dispersing ego-depletion costs across time (structural route, as measured immediately after goal commitment noted as Time 1) as well as by reducing regulatory demands of the goal task (process route, as measured after goal task completion noted as Time 2). Although support for this model was not fully forthcoming in Study 1, Study 2 attempted to constrain testing of the hypothesized processes to lab tasks with more accurately measurable results. Study 2 enabled examination of whether setting the goal was costly at the time of the decision to commit (Time 1), especially when making one’s goals public such that there is the need to consider the anticipated public embarrassment for not following through. Study 1 was unable to adequately test the effect of either model on outcome variables such as goal task performance in a controlled environment, a role which Study 2 was able to fulfill. The hypothesized effects could be evaluated at Time 2 after a regulatory rest period, to examine whether results of regulatory depletion patterns might be consistent with a structural model explanation. In addition, a direct test of the process model was possible in Study 2. Confirmatory results would have indicated that there was an immediate up-front cost as predicted, which would have paid off later when self-control demands at the time of the goal-task itself were reduced (process route at Time 2) in addition to more regulatory resources being available for use after the rest period (structural route at Time 2).

Study 2 aimed to extend the findings of Study 1 by identifying an initial depletion effect in the public group while also examining the effect of this precommitment strategy (public goal-setting) on a controlled measure of goal task performance (in contrast to the uncontrolled longitudinal goal measure used in Study 1). This was accomplished by
providing recovery time between the depleting goal-setting decision at Time 1, thereby returning all participants to self-regulatory baseline and removing any potential depletion effects of the goal commitment, before measuring performance at Time 2 on the intended goal task. The expectation is that participants in the public condition show greater initial depletion, but better performance on the goal task (Stroop task), allowing for the completed pattern required to implement the structural model. If precommitment in fact operated by spreading the cost of regulatory resources, it would also be plausible that temporal separation of the commitment and task would allow individuals to regain their full complement of regulatory resources to perform the difficult goal task. Thus, using regulatory resources earlier in time to precommit to the goal may serve as a method of enabling oneself to recover resources before the difficult event (goal task).

To date, no one has examined whether there is an initial depletion effect on regulatory resources due to goal-setting. Furthermore, the potentially beneficial effects of a delay between the decision to commit to the goal (initial regulatory depletion) and the goal task itself could provide a mechanism for later performance improvements. In addition, as in Study 1, it was postulated that the magnitude of goal-setting effects may be dependent upon the publicness of commitment strategies, which resulted in the relative success of public compared with private goal commitment identified in previous studies.

First, Study 2 was intended to replicate findings from Study 1, however given the null results from much of the previous study, this study aimed to test the hypotheses in a more controlled setting to examine whether publicly committing to a goal strategy for the Stroop task (measured at Time 1) was depleting. Though smaller in magnitude than a life-altering decision (e.g., Study 1), if the theory is correct, there should still be a
measurable depletion effect in evidence post-goal commitment. This was expected to impair performance on a stop-signal task immediately following the (public) goal-setting, as compared with lesser impairment for private or no impairment for no-goal groups.

Second, a recovery period was provided, during which all participants were expected to return to a baseline level of self-control ability (in line with previous work by Tyler & Burns, 2008). If commitment is effective because the completion of the goal task requires fewer resources to follow through with (procedural route), then participants who publicly commit should have more resources after completing the goal task than those in control or private groups—in this case, after the Stroop task. This would be indicated by longer persistence on a follow-up anagram task (as measured at Time 2) for the public commitment group whereas private and control groups should show less persistence in comparison. Less persistence for private or no-goal groups would be consistent with the theory that the same goal task caused greater depletion during the execution of the goal task. Thus, the second part of this study (post-recovery period) isolated the effects of public commitment on goal task performance (on the Stroop task) and on post-goal task depletion (anagram task), as conditions differed solely by previous commitment to the goal. Less depletion should have occurred despite equally good (or even superior) performance on the goal task itself (Stroop) by the public goal commitment condition, followed by the private goal condition, with the worst performance and greatest depletion evident in the no-goal condition. A direct test of the process route was also possible using mediation analyses examining the relationship of publicness, goal commitment, and task performance as well as post goal task depletion.
Method

**Power analysis.** Study 2 used the same estimates for effect sizes cited in Study 1 (public/private goals and volition/choice after goal/strategy commitment). Two fixed effect omnibus ANOVA tests were conducted to evaluate the main effects separately after each task, one at Time 1 (after the goal-setting task) and the other at Time 2 (after the goal task). As in the previous study, post hoc follow-up tests were conducted as warranted (e.g., contrasts between specific groups). To be conservative, as in the previous study, a medium effect size was presumed (as supported by previous findings in the literature; see Study 1). For a medium effect size using three groups, a minimum of at least 159 subjects total was set, resulting in at least 53 participants per group across the three conditions (public, private, and no-goal control; calculated with GPower v3.1.7; Faul et al., 2009).

**Participants.** Participant recruitment, credit assignment, and questionnaire administration procedures were similar to the previous study. Data from two-hundred and seventeen participants were included in the analyses (105 men, 108 women, 4 unidentified). Partial data were included in the final analyses except when data did not record properly for a particular task, in which case it was coded as missing. In sum, two-hundred and fifty one participants completed the study (data recording errors resulted in n=222 with usable questionnaire data; n=225 with usable SST data; n=225 with usable anagram data; n= 217 total participants remained after exclusions). Participants were excluded for failing an attention check question designed to identify random responders (n=4), for reporting that they did not understand task instructions (n=4), and for
withdrawing permission to use data (n=2; one each from public and private conditions). Ages varied from 18 to 28 years ($M = 19.41, SD = 1.62$).

**Procedure.** Similar to Study 1, participants were presented with a goal-setting task in which they were directed to set a goal to assist in succeeding at a specified goal task (for both public and private conditions) or not (control condition). However, this goal-setting task was directed at an upcoming lab task (Stroop task) on which performance was directly observed by the experimenter. As in the previous study, current mood after the goal-setting task was recorded to control for any potential confounds from affective changes (though no mood changes were expected). Study 2 was designed to replicate the hypothesized goal-setting depletion effect in contrast to the null results of Study 1. In addition, Study 2 did not ask participants to rate anticipated emotional cost to avoid inadvertently priming the concept (which could have potentially artificially inflated the importance of this construct in Study 1), removing potentially accompanying confounds that were a concern. This controlled for any possible differences caused by asking participants to rate their anticipated emotions. Once the goal-setting task and brief mood questionnaire were completed, a computer reaction time task (Stop-Signal Task; SST) was used to measure performance differences as a proxy for self-control depletion (analogous to the use of the CPT in Study 1, with differing methods for task completion). Participants partook in a rest and relaxation period of approximately 10 minutes to give them time to regain regulatory resources. Participants had the chance to actually conduct the goal task (Stroop task) as planned, using their chosen goal strategy as applicable. Task manipulation checks for the goal-setting task, stop signal task, Stroop task, and the anagram persistence task were administered after each task had been completed. As
before, at the end of the study, participants were debriefed, asked to recall and state their goal (in this case, regarding the Stroop task), and asked whether they would like their data retained before being thanked, awarded credit, and dismissed.

**Measures**

The same self-report measures used in Study 1 were used to assess mood state and strategy manipulation checks (the same manipulation checks were adapted for the additional tasks, see Appendix XIII), with the exception of anticipated emotion questions which were not included.

**Goal-setting task.** Participants in the public and private goal commitment conditions selected and committed to a strategy to achieve the goal of succeeding at an upcoming goal task (in this case the Stroop task), or not if in the control condition. First, the experimenter explained instructions for the Stroop color-naming task (e.g., to read the ink-color, and to avoid reading the color words out loud). Participants then completed one practice line of the Stroop task for demonstration purposes to ensure that they understand the instructions for the task before creating a strategy to help achieve their goal (e.g., goal strategy). Instructions stated the following (see Appendix VIII):

> Fill in each blank with a goal strategy. For example, “as soon as I see the word I will ignore its meaning (for example, by concentrating on the second letter only) and I will name the color ink it is printed in.” Your goal strategies should be in the format, “if X, then Y” (e.g., if I see the word, then I will ignore it and state the color).

Public and private goal-setting conditions were given a worksheet to fill out with one completed example plus five fill-in-the-blank spaces for participants to complete on their own. Public condition participants wrote down five goal strategies and circled their final choice (picked one and publicly indicated it on the worksheet). Similarly, private
condition participants mentally listed five goal strategies and chose one, mentally. The goal-setting task created a goal strategy for succeeding at the upcoming color-naming task (public and private), pre-formatted to apply specifically to the color-naming task that would follow shortly thereafter.

**EXAMPLE:**
When I see the word, I will ignore its meaning by **concentrating on the second letter only**, and I will name the color it is printed in.

**SAMPLE FILL-IN-THE-BLANK:**
When I see the word, I will ignore its meaning by __________________________, and I will name the color it is printed in.

Upon completion of the worksheet, participants in the public and private condition chose a personalized goal-related strategy to help attain their goal of stating the ink color while avoiding reading the written color-words. For instance, participants could have chosen to focus on a particular letter of the word when they see the color-words in order to read the ink-color rather than the printed word (see example above). Control participants were not given the option to choose/generate any goal strategy, and were not given the worksheet.

Public and private conditions were then given the worksheet to fill out (e.g., one example, plus five fill-in-the-blank spaces) on the goal-setting worksheet and committed publicly or privately. Once public condition participants had written down possible choices, they circled their top choice in front of the experimenter to indicate commitment to that particular goal strategy. Once private condition participants had mentally listed goal strategies using the same worksheet and procedures they also mentally choose their goal strategy, yet without having marked any part of the worksheet (no writing or
circling). Thus the experimenter did not know which private goal strategy was chosen until the end of the study (indicated during the debrief, but never committed to publicly). In either case, because participants generate these goal strategies themselves, it can be inferred that they are committed to using the goal strategy to help achieve the goal (see Janis & Mann, 1977 for a discussion of commitment; Klein, Cooper, & Monahan, 2013).

**Stop signal task (SST).** For this task, participants were directed to press the designated key located on the left or right side of the keyboard (Z or /) corresponding to left or right arrows presented in the center of the screen (see Appendix IX). In addition, participants were told that when a tone sounded, they must refrain from (or immediately stop pressing) the indicated key, thereby inhibiting the response. The onset of the tone was varied, in accordance with the methodological recommendations of Verbruggen, Logan, and Stevens (2008) in administering the SST. Developed by experts in the field (Verbruggen, Logan, & Stevens, 2008), the program automatically adjusted the presentation of stimuli to the reaction times of the participant reaction times, such that hits and misses would average approximately 50% per participant (the scoring algorithm also removed those who did not fall within acceptable rates of hits/misses). Thus, a mix of stop signal onset times were presented, with harder trials (onset late into the initial reaction period) and easier trials (onset prior to the initial reaction period for that trial, or early in the initial reaction period). These were presented across one practice round and three experimental trial blocks (using the basic SST programming code developed by Inquisit; Millisecond, 2012). This enabled the SST estimates to converge onto an individualized and more accurate optimal delay time (SSD) as well as to compute average reaction time estimates (SSRT) for each subject (Verbruggen, Logan, & Stevens,
The reaction time latency for the stopping (duration of time between the stop signal and actually stopping) was also measured (Aron et al., 2004; Logan, 1994; Verbruggen, Logan, & Stevens, 2008). The scoring algorithm calculated delay values based upon the horse-race model, thus taking into account the competition of “go” signals with “stop” signals to ultimately determine whether the behavior could be successfully inhibited (Verbruggen, Logan, & Stevens, 2008). The SST was administered on the computer using Inquisit, an experimental program compatible with Media Lab. Administration of the SST was conceptually similar to the Verbruggen, Logan, and Stevens (2008) freeware (“STOP-IT” and “ANALYZE-IT”). The SST was used to measure regulatory depletion, indicated by increased delays (SSD) and increased reaction times (SSRT).

**Rest period.** Participants were instructed to relax quietly in their chairs with eyes open or closed, while listening to approximately 10-minutes of classical music selections via headphones (see Appendix XII). Resting in this fashion has been shown to replenish regulatory resources (Tyler & Burns, 2008).

**Goal-task (Stroop task).** After resting and recovering their regulatory resources, participants engaged in the Stroop color-naming task (see Appendix X). The Stroop task was the target of the goal-setting task earlier in the study in which participants were asked to commit to a goal strategy. Participants were reminded of the instructions, with participants in the public or private conditions also reminded to use the goal strategy they initially chose. Participants in the control condition (no-goal; did not complete the goal-setting task) simply heard the instructions. All conditions had one line of practice. The Stroop task was the color-naming task in which a series of color-words printed in colored
ink were presented to participants, specifically words that were incongruent (non-matching word and ink) on each trial. Participants were asked to state aloud the ink color of the color-word instead of simply reading the color-word that was spelled out. Completing the task using incongruent trials (ink and word do not match) has been shown to deplete self-regulatory resources (Wallace & Baumeister, 2002; as compared with completing congruent trials, Webb & Sheeran, 2003). Though a combination of congruent and incongruent words have been used in different variations of this task, to maximize depletion in this study, all trials were incongruent. Performance impairment was measured by number of errors and time to complete the task.

**Anagram persistence task.** Finally, after the Stroop task, participants were given twenty-one sets of letters to unscramble, approximately one-third unsolvable and two-thirds solvable combinations (see Appendix XII). As past research has validated use of both unsolvable anagrams as well as solvable anagrams (Muraven, Tice, & Baumeister, 1998) to indicate self-control depletion, the current study included a mix of solvable and unsolvable anagrams which adequately maintained the cover story of being an intelligence test. As in previous research, participants were stopped after a set period of time if they were still working (e.g., Muraven, Tice, & Baumeister, 1998); in this case, 20 minutes was set as the maximum time. All participants had their time recorded. Posing the task as indicative of intelligence was also intended to motivate participants to work harder on the task, thus it was presented as a subsection (verbal) of an intelligence test. Including a selection of unsolvable anagrams ensured that self-control was required in order to persevere in the face of unbeatable odds, of course unbeknownst to participants.
**Task manipulation checks.** Similar questions to those used in the previous study were administered intermittently between tasks. Manipulation checks for the goal-setting task, Stop Signal Task, Stroop task, and the anagram persistence task and were administered after each task (see Study 1 task manipulation checks).

**Results**

**Manipulation Check**

**Self-regulatory effort.** Manipulation checks confirmed the self–regulatory nature of the two self-control tasks across conditions (SST, anagram task; see Table 4). The goal choice task and the goal task (Stroop) also were rated as requiring self-control across conditions (see Table 4). Neither the self-regulatory demands of the SST (at Time 1; $F(2,209) = 1.56, p = .21, NS$) nor the anagram task (at Time 2; $F(2,209) = 1.73, p = .18, NS$) differed by condition as predicted, as determined by examination of the self-control manipulation check scores in one-way ANOVAs.

The goal setting task was expected to be rated as requiring the most regulatory effort in the public condition and less in the private condition, yet this difference was not significant. Thus, self-regulatory demands did not appear to differ by condition in the goal-setting task for public versus private conditions, contrary to predictions, $t < 1, p > .39$. Although the expected increased requirement of regulatory resources due to public commitment was not confirmed, the second part of the hypothesis was partially confirmed in that for the public group, fewer resources were reported as being required to complete the later goal task (Stroop). In accordance with predictions, self-regulatory demands of the goal task (Stroop) were rated as significantly less for the public condition in comparison with the private and control conditions, $F(2,209) = 5.44, p = .01$, with the
public versus private contrast being marginally significant in the predicted direction, 
\( F(132) = -1.86, p < .07 \). The goal (Stroop) task was expected to require less regulatory 
resources for the public condition, more for the private condition, and the most for the 
no-goal condition; this part of the hypothesis was confirmed. Thus, although the ratings 
of self-regulatory effort required for the goal setting task did not differ as predicted 
(Time 1), the perceived self-control needed for the goal task itself (Time 2) did show the 
expected pattern.

**Publicness.** Similarly, public versus private perceptions of condition were 
confirmed with a comparison of the public and private groups (unequal variances, 
Levine’s \( F = 10.84, p < .001 \)) using scores on the composite publicness variable, \( t(132) = 
2.65, p < .01 \). Thus, the public manipulation \((M = 19.21, SD = 3.72)\) was indeed 
perceived as more public than in the private condition \((M = 17.99, SD = 5.84)\), in contrast 
to the non-significant differences in publicness manipulation checks in Study 1.

**Confounding variables.** These analyses examined potentially confounding 
variables including current mood, task liking, etc. There were no differences anticipated 
between groups on any of these variables, tested using one-way ANOVAs across all three 
groups \((df = 2, 209)\). The computer task (SST) ratings did not differ by condition on 
effort, energy required, task interest, task liking, frustration, boredom, or pressure to do 
well, \( F < 2.21, ps > .11 \), with the exception of task engagement which was marginally 
significant, \( F = 2.63, p = .07 \). However, task engagement did not have an effect on SST 
performance, \( r < .03, p > .65 \). Self-rated performance, however, did differ by group, \( F = 
3.60, p < .03 \). However, self-rated performance was unrelated to the delay on the SST 
(\( SSD)\), \( r > -.03, p > .67 \); although it was significantly related to reaction time (SSRT), \( r = 

- .66, p < .001, this can be interpreted as simply an accurate estimation of one’s performance based upon response speed. The word puzzle task ratings did not differ between groups on effort, energy required, task engagement, task interest, task liking, frustration, boredom, pressure to do well, or self-rated performance, Fs < 2.09, ps < .13. The goal choice task ratings did not differ between public and private groups on effort, energy required, task engagement, task interest, frustration, boredom, or pressure to do well, ts < 1.50, ps > .14. The Stroop task ratings did not differ between groups on effort, energy required, task engagement, task interest, task liking, frustration, boredom, or self-rated performance, Fs ≤ 1.59, ps = .21. Pressure to do well was marginally greater in the public group, F = 2.57, p < .08, however this did not effect Stroop time, r = .05, p > .47, whereas it did have an effect on errors, r = .32, p = .001.16 No mood indicators showed significant differences across groups, Fs < 1, ps > .51; therefore, mood changes are not likely to explain any differences on key variables of interest. Manipulation checks for each task (stop-signal task and anagram task; goal-setting task and Stroop goal task) and mood states were evaluated. Furthermore, all variables with group differences identified were tested for effects on variables of interest (SST, Anagram, and Stroop measures), thus the unwanted effects of these confounding variables were ruled out as alternate causes for any systematic changes (with the exception of pressure to perform on the Stroop, addressed in post-hoc analyses). The remaining variables with significant group differences did not show significant effects on variables of interest, and therefore can be discarded as alternate explanations.

16 A post-hoc ANCOVA revealed that this did not show a significant effect (F < 1, p > .86) over and above experimental condition, nor did it change significance or pattern of results in original ANOVAs.
**Goal commitment.** Goal commitment was expected to differ by group, with public goal commitment providing a higher level of goal commitment than private goal commitment. However, the expected differences were not present. The comparison between groups (unequal variances, Levine’s $F = 7.40, p < .01$) used to evaluate these differences was not significant, $t < 1, p = .65, NS$.\(^{17}\)

**Dependent variables.**

Study 2 descriptive statistics for dependent variables and composite variables included in the following analyses can be found in Table 5. Self-report composite variables including publicness, commitment, and choice, plus the single-item measure of temptation, were distributed relatively normally. Commitment and goal choice had slightly unusual modes at the low end of each distribution, likely due to ratings by the control group; however, there were no extreme departures from normality. SST variables (errors and reaction time) both had unusually high modes, though reaction time was distributed somewhat normally aside from the leptokurtosis caused by the mode, and a few unusual outliers on the low end (these should likely be excluded, but were maintained to avoid losing additional power). SST errors showed a strong positive skew, exacerbated by the leptokurtic mode. Stroop time was normally distributed, however Stroop errors showed a moderate positive skew (floor effect), but this appeared to be mainly due a few outliers rather than a systematic pattern. Anagram performance was only slightly skewed (negatively), and was otherwise normally distributed. Anagram time, however, had a leptokurtic peak due to an extreme mode at the higher end of the distribution; however, there were some more extreme scores beyond the mode reducing

\(^{17}\) Because the goal task is a standardized lab task here, an evaluation of goal strategies or goal difficulty would be superfluous, and will therefore not be conducted for Study 2.
the extremity of departures from normality. As previously discussed, given the robustness of \( F \) and \( t \) tests to departures from normality, the analyses were again conducted as planned. However, as before, variables with the most egregious departures from normality were subjected to transformations, accordingly (Stroop errors and Anagram time, \( \log(10) \) transformations; SSD, square root transformation) and ANOVAs were rerun with transformed variables. No change was evident in the pattern of results or resulting significance levels, thus analyses using the original, untransformed variables are reported in the results.

**Depletion (Time 1).** A one-way ANOVA of condition on the SST \((df = 2, 213)\) was conducted to evaluate whether public goal commitment was more depleting than private or no commitment. It was expected that participants would experience significantly greater depletion due to public goal commitment (omnibus F-tests), as compared with the private or no commitment, as demonstrated longer delays (SSD) and longer reaction times (SSRT) on the SST. Unexpectedly, there were no significant differences, \( F_s < 1, ps > .67 \). Similar to the analyses conducted in Study 1 for the CPT, a planned contrast (F-test) comparing the public group to the private and control groups was expected to show a significant difference; however, this difference was also non-significant, \( t_s < 1, p > .49 \). Differences between the public versus private group, or the public versus the control group, were expected to each yield significant differences (t-tests) in the proposed directions, yet these were also non-significant, \( t_s < 1 \). Examination of the difference between the private and control groups were expected to be small in magnitude \((t < 1)\), and non-significant. Results consistent with the proposed differences in group patterns (as in Study 1) would have supported the usefulness of the structural
model as proposed, indicating that a rest between the decision to commit to a goal and the attempt at the goal may be beneficial. However, this test of the structural model did not lend support to the proposed hypothesis.

Depletion (Time 2). A one-way ANOVA of condition on the anagram persistence task \((df = 2, 213)\) was conducted to evaluate whether completing the goal task which has previously been committed to publicly versus privately was less depleting. Expectations were to find significant differences between groups using ANOVA (omnibus F-tests) measured by persistence time and number correct. While these differences were non-significant for number correct, \(F = 1.39, p > .25\), there was a marginally significant effect for persistence time, \(F = 2.62, p = .08\). Planned contrasts evaluated whether less depletion occurred during the goal (Stroop) task, as measured by persistence and score on the post-goal (anagram) task, for individuals who first engaged in public goal commitment as compared with individuals who engaged in private or made no goal commitment (independent means t-tests). While number correct was non-significant, \(t < 1, p = .42\), the difference in persistence times for public versus other conditions remained marginally significant, \(t = -1.78, p = .08\). In addition, comparisons of the public group versus the private, and public versus control groups, were expected to show significant differences (t-tests). Number correct was again non-significant in both cases \((t = -1.64, p = .10; t = 1.07, p = .29; NS)\) as was public versus control for persistence time, \(t < 1, p > .45, NS\). However, the public versus private contrast showed a significant difference, \(t = -2.31, p < .03\). Contrasts between the private and control group (t-test) were expected to be small in magnitude \((ts < 1)\) for both number correct and persistence time and indeed, none of the contrasts were significant, \(ts < 1.5\). Results following the proposed pattern of
significantly better post-goal task performance on the anagram task would have indicated that fewer resources were used in completing the goal task itself for the public commitment condition, supporting the effective reduction of requisite resources needed via the proposed process route. Instead omnibus differences were non-significant, with a trend in the opposite direction, and ultimately a significant contrast indicating greater persistence time on the anagram task (less resources used for the Stroop) in the private commitment group rather than for the public group. Thus, this test of the process route did not support the hypothesis.

Mediation

**Structural model choice inhibition increases depletion.** To further examine the mechanism behind depletion in goal-setting, a set of mediation analyses were included in Study 2 to examine the role of choice in the depletion process. This was expected to replicate the results of the mediation conducted in Study 1 examining choice as a mediator of the structural model. In order to test whether the inhibition of alternative choices explained the depletion effect, a mediation analysis of choice inhibition on the relationship between publicness and depletion was conducted. The composite publicness rating score was again used to predict increased feelings of choice inhibition during goal commitment; it was expected that the choice inhibition composite score should account for some of this relationship (showing evidence mediation). However, the mediation proved not to be significant (see Table 6). As in the previous study both indirect and remaining direct effects were to be examined in the mediation analysis. If consistent with predictions, this would have shown that public goal-setting was more depleting due to a stronger need to resist choosing alternative options while committing to a goal publicly,
whereas privately the decision to decline other choices lacked the same sense of finality. However, this conclusion was not supported.

As before, the existence of an indirect effect was evaluated in addition to linear regressions between each pair of variables in order to better understand the effects. A linear regression of publicness (x) on post choice depletion (y), a linear regression of publicness (x) on choice (m), and a linear regression of choice (m) on depletion (y) were performed. There was no direct effect of publicness on choice inhibition, and the mediation was not significant for either SSD or SSRT. Neither of the other regressions was significant using SSD as the measure of depletion (see Table 7), showing a lack of support for this test of the hypothesis. However, reaction times (SSRT; see Table 7) did show partial support of this hypothesis in that more perceived choice predicted longer reaction times (significantly greater depletion), and publicness was also associated with longer reaction times (greater depletion, marginally significant).

**Process model decreases depletion during the goal task.** Evidence from Study 1 indicated that perceived publicness increased goal commitment. In a direct test of the process route on depletion levels, the analysis in Study 2 was intended to extend this by examining the relationship between goal commitment and post goal task depletion, which was expected to be mediated by reduced temptations if the hypothesis was correct; yet this was not found (see Table 6). Less depletion (better performance on the anagram task) on the post-goal task for those whose goals were perceived as more public (and therefore less tempting), would have indicated that the same Stroop goal task was less depleting after publicly committing, as hypothesized. The same goal commitment composite scores, based on goal-setting manipulation checks, were used as in Study 1. Temptation
during the goal task (Stroop) was assessed via self-report during the task manipulation check questions (e.g., for this goal specifically, “how tempting was it to read the color word instead of saying the color?”). Post-goal task depletion was measured by persistence on the anagram task (tested immediately after completing the goal task), such that greater depletion during the goal task (Stroop) would have resulted in less persistence on the anagram task. Full or partial mediation would have provided evidence that the process route could account for at least some of the effects of goal commitment; however, this mediation was not significant and thus this aspect of the hypothesis was not supported (see Table 6).

Appropriate linear regressions further examining the relationship of the mediation were also used. Thus the following linear regressions were conducted for both persistence time on the anagram task as well as the number of anagrams correctly solved: goal commitment (x) on temptation (m); temptation (m) on post-goal task depletion (y); and goal commitment (x) on post-goal task depletion (y). The relationship of goal commitment and temptation was expected to be negatively related, temptation and depletion were expected be positively related, yet neither of these relationships were significant. Goal commitment was expected to show an inverse relationship with post-goal depletion, and in fact, there was a significant relationship of the two in the predicted direction on at least one measure, with more commitment associated with longer post-goal persistence time on the anagram task (e.g., less depletion; see Table 7). The other measure of post-goal depletion, correct anagram answers (e.g., fewer error, less depletion; see Table 7), was not significant.
**Process model increases performance on goal task.** In Study 1, perceived publicness was shown to increase goal commitment, partially supporting the process model which proposed that anticipated emotional outcomes can affect the perceived temptation to give in or give up on the goal. To extend this aspect of the theory to further understand and complete the test of mechanisms at work in the process model from those examined in Study 1, a mediation analysis was used to examine the next step in the proposed process by which increased goal commitment (x) and better goal task performance (y) was hypothesized to be mediated by reduced temptation (m). The reduced temptation to read the color word was expected to be mediated by the relationship between goal commitment and improved goal task performance, as shown by a significant indirect effect indicating mediation. Goal commitment and temptation were both assessed in the same manner as previously used. Goal task performance was assessed using faster response times and fewer errors on the Stroop task. However, neither estimate of the indirect effect estimate was significant, thus failing to demonstrate support for this part of the theory. Partial mediation would have indicated that the structural model could potentially add explanatory ability, leaving open the possibility that both the process and structural model could both contribute to regulatory processes. However, given the current data, it seems unlikely that either model can fully account for the data (see Table 6). Full mediation would have suggested that there was no need for additional routes such as the structural model to explain the effect. Thus, neither model evidenced a great deal of support in explaining causes and effects that influence goal performance.
Linear regressions were used to further examine the nature of the mediation, including: goal commitment (x) on temptation (m); temptation (m) on goal task performance (y); and goal commitment (x) on goal task performance (y). While commitment and temptation were not significantly related, in confirmation of the hypothesis, greater temptation led to longer times on the Stroop task (i.e., impaired performance on the goal task; however, there was no significant impact on number of errors, despite the slower response times; see Table 6). Thus, although the results suggested that there might be some role for these mechanisms at work via the process model, there was not a great deal of evidence to support the model.

Taken together, these two mediations would have illustrated how public commitment both increased performance at a given goal task, and still maintained a greater efficiency of self-controlled resource use while completing a difficult task. However, results did not provide strong support for either a process route or a structural one.

Discussion

Two analyses of variance examined the primary hypotheses regarding depletion costs in the structural model. Two mediation analyses tested the mechanisms at work via the process route. Main effects of condition on self-regulatory depletion were evaluated by a one-way ANOVA at Time 1 (immediately after goal-setting was complete), and another one-way ANOVA at Time 2 (immediately after the goal task was complete). Study 2 should have replicated the depletion effect due to the initial precommitment phase as was thought to have occurred in Study 1, which would have constituted evidence consistent with the structural route. In addition, Study 2 was conducted to
extend findings regarding the structural route to evaluate improvements in performance on a goal task (Stroop). Another ANOVA examined whether performance on the goal task itself was improved, most for public commitment, followed by private commitment, and finally compared with the baseline control no-goal condition; however, this was not found. Better performance by the public goal-setters would have allowed for examination of improving performance on the goal task, which could have been attributed to both the structural and the process routes; however, there was a lack of supporting evidence to sustain this argument. Study 2 was intended to help to better understand how goal-setting impacts performance on goal tasks (Stroop task), yet the inconclusive results leave many questions as yet unanswered.

To examine the effects of these two routes reducing use of regulatory resources and on performance gains, it would have been crucial to identify the magnitude of regulatory depletion caused by the goal task, measured immediately following the Stroop goal task (by persistence on an anagram task). The public condition was expected to a) show impaired performance immediately after goal-setting (as measured by the SSD and SSRT), b) show improved performance on the goal task (the Stroop task faster times and fewer errors), and c) show less impairment on the follow-up task (greater persistence and fewer errors on the anagram task). In contrast, the private and control conditions were expected to a) show less or no impairment (on SST) immediately after goal-setting, b) show worse performance on the goal task (Stroop), and c) show greater impairment on the follow-up (anagram) task. However, contrary to expectations, there were no significant differences identified between groups on regulatory depletion on the post-choice task (SST).
Furthermore, a mediation analyses in Study 2 examined the second part of the link between public goal commitment and reduced depletion on the goal task. Given the established mediation of the effect of publicness on goal commitment from Study 1, the follow-up mediation in Study 2 was to examine the effect of goal commitment on goal task depletion which would have allowed for further testing of the process model. A mediated relationship between goal commitment and goal task depletion, by reduced temptation during the goal task, would have supported the process model. An identical mediation analysis using goal task performance as the outcome variable would have helped explain how public goal commitment lead to better goal task performance (in agreement with previous findings). While the results of the regression analyses done in Study 1 suggested that publicness increased goal commitment (Study 1), as expected, Study 2 results did not find the expected effect of goal commitment on temptation during the goal task. Nonetheless, temptation was found to lead to longer response times on the goal task (impaired performance, Stroop). Confirmation of these two additional mediation analyses would have confirmed the process model in action; however, a lack of significant mediation effects failed to show evidence in support of the hypotheses. Despite this, the significant relationship of temptation with goal performance suggests that temptation may still be a crucial variable in determining one’s ability to successfully complete goals.

Overall, neither the structural model nor the process model was fully supported by the results of Study 2. Analyses of variance failed to identify differences between groups, with one exception (marginal significance of experimental condition on anagram persistence time, in which the private group persisted longest, contrary to expectations).
However, regression analyses resulted in a few of the key relationships being identified in the hypothesized roles: increased perception of choice led to more depletion (SSRT) and publicness was associated with more depletion (SSRT); greater goal commitment led to less post-goal task depletion (longer anagram persistence time); and more temptation to read the color words on the goal (Stroop) task was associated with longer (impaired) response times. Although none of the mediation analyses were significant, these regression analyses suggest that there may still be an important role played by at least some of these key variables in goal-setting and goal achievement.

**General Discussion**

The bank model proposed a distribution of regulatory resources across time in the goal-setting process; yet little evidence supported the hypothesized model. The depleting nature of goal-setting received no support in either study comparing differences across groups using analyses of variance; however, individual differences in perceived publicness (and commitment) were associated with greater depletion immediately after goal-setting (regressions showed longer SSRT; Study 1). The resource-conserving nature of goal-setting received some support in that individuals in the public group rated completion of the goal task as taking less self-control (Study 2). Furthermore, regression analyses indicated that publicness increased goal commitment (Study 1), and that goal commitment led to less depletion during the goal task (Study 2). Publicness was also associated with greater goal commitment, greater perceived choice, more anticipated negative emotions (Study 1). Whereas group differences did not affect goal performance (personal goals, Study 1; Stroop goal task, Study 2), perceived publicness led to greater goal recall and goal commitment six-weeks later (Study 1).
However, the remaining predicted group differences between conditions which would have supported the bank model in both studies were non-significant, failing to show support for the hypothesized processes. The lack of variation between groups on the self-control tasks used to measure depletion also unsurprisingly lead to non-significant findings for the planned mediation analyses, indicating that these proposed variables could not account for differences in task performance (goal task or depletion tasks). However, some of the hypothesized mechanisms involved in goal pursuit mentioned above were confirmed via the regression analyses used in examining the mediational processes. First, as hypothesized, perceived publicness of goal commitment significantly predicted greater goal commitment (Study 1). Second, publicness indeed increased anticipated negative emotions, as predicted (Study 1). However, while trending in the expected direction, anticipated negative emotions did not significantly increase goal commitment, and the mediation was not significant, indicating that the increased anticipated emotions could not account for the aforementioned relationship. Third, some of the hypothesized variables had significant effects on depletion levels as identified in Study 2. Increased perception of choice during goal-setting led to longer reaction times (more depletion) on the SST; greater publicness of goal-setting was also associated with slower reaction times. Greater goal commitment was also associated with less depletion after completing the goal task (persisted longer on the anagram task), indicating less depletion. Greater temptation to read the color words was also associated with worse goal performance (slower reaction times on the Stroop). Furthermore, although publicness of goal-setting was not shown to impact goal attainment, goal recall six-weeks later (Study 2) was better for those who publicly committed, as was goal commitment.
Thus, two studies failed to find evidence that public precommitment facilitates goal performance. Furthermore, to robustly support the hypothesis, evidence should have demonstrated how this facilitation was possible via one or both of the hypothesized routes as proposed by the bank model; however, these were only supported by very limited evidence. First it was proposed that precommitment should have improved goal achievement by spreading regulatory costs over time (structural route), thereby providing maximal resource availability at the time of execution of the goal task. Second, goal commitment (induced by public precommitment) should have reduced the amount of regulatory resources necessary to enact the goal task by reducing temptation (process route).

Study 1 examined the depletion effect caused by public commitment to a personal goal, which constituted a form of social precommitment. Goal choices found in this study should have reflected a reasonably accurate portrayal of personal goal choices as participants were asked to choose real-life goals. The manipulation was also a reasonable simulation of public commitment, as it leveraged participants’ actual social networks via social media (e.g., Facebook). Evidence from mediation analyses suggested that increased perception of goal-setting publicness increased goal commitment; however, evidence only partially supported that this would lead to more depletion (presumably would have been caused by the increased goal commitment). This study also identified proposed changes in anticipated emotion (e.g., embarrassment) which were thought to accompany goal commitment (especially public), thereby increasing goal commitment (mediation analyses); this hypothesis was partially supported. Finally, Study 1 previewed the facilitation of goal achievement via self-reported follow-up at six-weeks post goal
commitment, which was expected to be significantly better for public goal commitment participants, compared with private and no-goal commitment participants (analysis was conducted given a sufficient follow-up survey return rate). Contrary to expectations, no difference in goal pursuit was identified; however, goal recall and goal commitment were improved for those in the public group compared with the private groups.

Study 2 was expected to demonstrate the hypothesized effects expected in Study 1 that committing to a goal publicly should lead to greater depletion than making a private commitment to a goal, however again there was no significant difference in depletion levels. Moreover, Study 2 used a controlled laboratory environment to provide the primary evidence of goal facilitation on a measurable outcome, the goal task (e.g., performance on the Stroop task). A reduced depletion effect immediately after goal task performance was expected for the public condition, indicating a role of task facilitation via less goal task regulatory demands, yet again this was not supported. These findings would have indicated that publicly stating a goal had made it easier to later accomplish that goal. However, there was mixed evidence regarding the idea that public precommitment made the goal task easier to complete. While a regression indicated that publicness lead to greater goal commitment in Study 1, and that greater goal commitment lead to less depletion resulting from the goal task (Study 2), implying a relationship, the planned mediation to test this was not significant. Yet this is contrary to the analysis of variance which evidenced the least depletion in the private group, rather than the public one, which is difficult to interpret given the results of the regression. This mediation was intended to extend our understanding of improved goal task performance according to the process model. Yet, the effect of goal commitment on temptation was not found to
mediate the relationship between goal commitment and goal task performance. Nonetheless, the ancillary evidence supports aspects of this model, in that goal commitment (found to be related to publicness), did have an effect on post-goal task depletion.

Two studies tested the role of regulatory resources in each phase of precommitment, as proposed in accordance with the limited-resource model; while some evidence was consistent with these models, very limited support was evident. Despite this, some evidence did support aspects of the model, suggesting that further investigation may be called for. However, according to the current results, neither the structural nor the process routes were able to give a full accounting of the proposed effectiveness of goal-setting through increased goal commitment for publicly announced goals.

**Limitations**

Perceived publicness was intended to trigger the hypothesized depletion. Thus, the lack of a difference in perception of publicness in comparison to the private conditions may have contributed to a lack of findings. Manipulation of the perceived publicness and privateness of goal-setting may have limited the ability to identify the hypothesized results, and thus it is important to find ways to insure participants’ feelings of privacy during the goal-setting process in future studies. This weakness of the operationalization of public and private commitment remains, in that it is possible that no condition was perceived by participants as fully private. Despite the attempt to appear private, participants may have assumed that any information provided or any action taken during the study was observed or public in some way because they were in a laboratory setting. This is supported by the consistent negative skew of publicness in both studies. In
fact, this is especially relevant in Study 1, in which publicness of goal-setting failed to
differ between experimental groups and thus may have been a reason why group
differences were not observable for other variables in some cases. Thus, it might be
argued that even the private condition did not seem private to participants. Because this
may be the case, the difference between public and private may have been reduced, thus
creating a small effect size which could have failed to trigger significant differences on
other variables. Therefore, despite the paucity of evidence to support the bank model in
the current studies, further research using more extreme differences which provide a
greater variance of public/private perceptions of goal-setting might provide a better test
of the hypothesis. Although Study 2 successfully manipulated publicness (with only a
slight negative skew), the less powerful goal-setting manipulation of an impersonal lab-
task goal with only an experimenter knowing versus not-knowing may not have
generated extreme differences on goal commitment or feelings of choice, resulting in a
limited ability to test mediations in Study 2. To address these limitations, future studies
might attempt to better combine successful perceptions of publicness (privacy) with self-
relevant goals with a variety of goal options to choose from.

Similarly, a common dilemma when choosing tasks requiring self-control is to
choose a task that is both challenging (thus requiring self-control), but also achievable.
Often, a balance is not struck, and therefore dependent measures of self-regulatory
depletion are either too difficult, resulting in a positive skew (floor effect), or too easy,
resulting in a negative skew (ceiling effect). In either case, the limited variance and
potentially non-normal distributions can limit the effectiveness of standard parametric
analyses. While transformations of non-normal data can sometimes adjust for this, and/or
non-parametric tests are available to address these issues, both of these potential solutions may reduce power and add complications to interpretation of the results. Furthermore, even with these solutions in place, the issue of limited variance is still unaddressed. This was certainly a problem for Study 1 dependent variables (e.g., CPT d-prime, errors, and reaction time), and also somewhat for Study 2 dependent variables (e.g., Stroop errors, SSD, and anagram time). Thus, additional self-regulatory tasks should be considered for use with more normally distributed results; tasks could be pilot-tested and adjusted in difficulty level to approximate normal distributions prior to use as dependent variables to address this problem in future studies.

In the current research, goal commitment was induced by having participants create their own goals. Understanding whether the processes identified apply equally to self-generated as well as assigned goals may be a productive future direction of research. Although these models should apply to any goal one commits to, it is possible that individuals may not commit as strongly to externally imposed goals. However, a good argument against this interpretation can be found in the significant positive relationship between publicness and goal commitment, suggesting that publically committed goals (which might be viewed as more external) were committed to more fully. In addition, the results of Study 2 provide evidence that even lab tasks could be viewed as entailing personal choice and thus that the findings apply even to goals that are not personally relevant (e.g., Stroop task), although the strategy was freely chosen. Additionally, goal commitment in Study 2 did show an association with reduced regulatory efforts needed on the goal task (e.g., less post-goal depletion). As Study 2 goal-setting was focused on a lab task, this is an example of a self-generated version of a goal which would typically
have been assigned (similar to early operationalizations of participatively set goals). It therefore seems likely that increased goal commitment might be also be achieved by using goal-setting that is assigned, especially when it is perceived as more public. For instance, participatively set goals, or goals explained to the participant have been shown to be more effective than assigned, unexplained goals (Locke & Latham, 1990; Klein, Cooper, & Monahan, 2013).

One might also argue that the magnitude of depletion caused by a single decision is not enough to show depletion on a follow-up task; however, Study 1 increases the magnitude of the decision to major life-changing goal, which should have caused a proportionately larger effect size for the post-commitment depletion. Nonetheless, it may be that a stronger manipulation of goal choice would make it easier to measure the depletion caused by goal choice. Given the lack of evidence showing greater depletion after public choice in Study 1, it seems that the goal choice may not have been taken seriously, and/or may not have had a large enough effect to impact self-regulatory depletion. Goal-setting tasks with the ability to be externally monitored or enforced might be taken more seriously, but since follow-up was self-report this may have been less effective. Perhaps having a designated third party report one’s goal accomplishment would be a more objective measure, while also causing participants to take the goal choice task seriously. In Study 2 the resultant commitment-induced depletion was based on goal commitment to a basic laboratory task; this should have been relatively less life-impacting decision, and was thought to engender less goal commitment, therefore being associated with a smaller amount of regulatory depletion. Given the majority of null results, it is quite possible this could be the case. However, given that there was partial
support for depletion occurring in the Study 2 regression analyses; it seems that the laboratory task may have actually provided a better manipulation of goal-setting choices. If consistent evidence of the hypothesized processes were found in both studies, it would have constituted good evidence that even a single commitment could produce self-regulatory depletion. However, given the inconsistent findings, future studies might instead use goals that are viewed as enforceable as well as relevant. For instance, relevant life goals in Study 1 may have been perceived as unenforceable, whereas goals in Study 2 may have been enforceable, but not seemed relevant or important enough to cause any depletion.

Given the effectiveness of material costs/incentives on increasing goal commitment and thereby the effectiveness of goal pursuit, similar processes could be in effect for imposing any contingent cost, not just the social costs tested in this work. Committing to a material cost or gain could fulfill a similar role for anticipated negative emotions induced by public goal commitment. Thus, it seems likely that the process of precommitment spreading regulatory requirements across time might be similar with use of material incentives such as monetary or other self-imposed costs. However, this has yet to be tested, and would be an excellent venue for future research.

**Implications**

The limited-resource model of self-control was not able to explain the processes responsible for precommitment strategies on goal completion (structural route), or of goal commitment more generally (process route). Even so, taken together, given the identified importance of publicness on goal commitment, and the effects of goal commitment on increasing goal performance while decreasing post-goal depletion, it is possible that
manipulation of goal commitment through publicity may be a crucial variable which merits further investigation. Even given the limited support for the bank model, the results of previous studies which do not explicitly report time between goal commitments and enactment of goal tasks should be interpreted with caution since even inconsistent findings may indicate a cause for concern. It is common to have participants complete “filler tasks;” in some cases, participants who have completed difficult tasks could regain lost resources via the structural route before measurement of the dependent variable. Even given the tentative nature of the results, it is possible that the waiting periods and filler tasks often used in psychological research may inadvertently be creating a gap time in which regulatory resources may be recovered, unintentionally creating a precommitment paradigm by giving participants a delay to recover resources. This suggests that it is important in future studies to carefully control rest periods within a study, and to diligently report all “filler tasks” asked of participants to assist with better interpretation of results. One example of how this might affect reinterpretation of previous results can be found in the implementation intention literature. A more sweeping example can be found in reinterpretation of the mechanisms of goal-setting more generally via the structural process if there is a delay between setting the goal and completing the task, and/or via the process route if even if there is no delay.

Given the important effects of publicness on goal commitment processes, these findings may have implications for the implementation intention literature, which similar to the goal strategy paradigm in these studies typically asks participants to commit to an “if-then” goal/strategy. Many of the implementation intention manipulations could be interpreted as completed in situations that may be perceived as public (e.g., written down
and given the experimenter, stating out loud, etc.). It is possible that similar processes to those proposed herein might be as work, despite the partial nature of the evidence. Webb and Sheeran’s (2003) ground breaking study showed evidence of reduced ego-depletion after goal commitment (implementation intentions) for a goal task (e.g., Stroop task), which has been interpreted as supporting evidence for automatization and goal-related cues. Webb and Sheeran’s (2003) results could also be explained by the second (process) route proposed in this work, reduced regulatory resources required for the goal task due to the associated increases in goal commitment and reduced temptation to quit.

Consistent with this interpretation (though in contrast to earlier interpretations; e.g., Gallo & Gollwitzer, 2007), there has been a renewed interest in whether the success of strategies such as implementation intentions may be working through goal commitment (e.g., Ajzen, Czasch, & Flood, 2009), just as with other goal-setting processes. Indeed, recent evidence suggests that goal commitment may be able to account for the effects of implemention intentions previsously attributed to other processes (Ajzen, Czasch, & Flood, 2009).

Though evidence of the bank model was limited, the impact of publicness and of goal commitment within the bank model paradigm does lend some support to the model. Thus, the possibility remains that goal-setting processes in general may be working through these two routes (structural and process routes). Understanding the processes by which goal-setting can be effective may help individuals craft goals more effectively using a precommitment paradigm in order to improve goal achievement. Although evidence herein did not suggest that publicness of goal commitment was an effective way of improving goal adherence as proposed, limited evidence did suggest that regulatory
depletion expended on the goal task was reduced by public goal commitment. Thus, especially for difficult goal-tasks that require individuals to use self-control to avoid derailing their goals, committing to a goal ahead of time may save precious regulatory resources for subsequent self-control dilemmas to be faced once the goal task is complete.

Evidence suggests that public goal commitment may have an important role in goal-setting, despite the limited evidence supporting the bank model specifically. First, simply stating one’s goal in front of others does indeed seem to have imposed a social-cost, led to greater choice, increased goal commitment and goal recall. Although evidence of improved chances for goal successful attainment was not obtained, the lack of evidence may be due at least partly to methodological considerations. Second, given the identified relationship of publicness with goal commitment, and goal commitment with a reduction of goal-caused depletion, there seems to be some merit to the bank model, although the primary tests of the hypothesis did not yield the expected results. Even given these limitations, goal-setting may effectively conserve regulatory resources during goal tasks to be used for later tasks. Planning short rest and relaxation periods after goal setting may help reduce the amount of energy expended toward completing those goals. In addition, goal commitment may be a key variable in the proposed bank model processes and should be taken into account in future examinations of this theory. Specifically, it is important to consider the possible role of goal commitment in the limited-strength model within the precommitment framework, as proposed by the bank model. This could potentially help us understand how individuals might save more and spend less in the self-regulatory marketplace, in order to achieve the most.
References


Table 1

**Study 1: Means (Standard Deviations)**

<table>
<thead>
<tr>
<th>Variable (# items)</th>
<th>Public</th>
<th>Semi-Private</th>
<th>Fully Private</th>
<th>Control</th>
<th>α</th>
</tr>
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<tr>
<td></td>
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<td></td>
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<td><strong>Self-Report Ratings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Self-Control (CPT)</td>
<td>3.19 (1.03)</td>
<td>3.23 (1.06)</td>
<td>3.49 (1.02)</td>
<td>3.29 (0.98)</td>
<td>-</td>
</tr>
<tr>
<td>Self-Control (Goal)</td>
<td>2.28 (1.04)</td>
<td>2.20 (1.25)</td>
<td>2.55 (1.03)</td>
<td>2.59 (1.38)</td>
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</tr>
<tr>
<td>Mood Positivity</td>
<td>13.06 (6.53)</td>
<td>13.16 (6.13)</td>
<td>11.77 (6.58)</td>
<td>10.27 (5.99)</td>
<td>0.74</td>
</tr>
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<td>Mood Negativity*</td>
<td>10.27 (7.00)</td>
<td>7.77 (5.16)</td>
<td>11.29 (6.95)</td>
<td>8.89 (6.16)</td>
<td>0.78</td>
</tr>
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<td>Publicness (6)</td>
<td>20.08 (4.80)</td>
<td>18.85 (4.98)</td>
<td>18.45 (25.14)</td>
<td>19.14 (4.81)</td>
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<td>AECQ-Neg (24)</td>
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<td></td>
<td>(22.32)</td>
<td>(22.49)</td>
<td>(19.00)</td>
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<tr>
<td>AECQ-Pos (21)</td>
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<tr>
<td></td>
<td>(16.04)</td>
<td>(16.40)</td>
<td>(17.70)</td>
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<td>Commitment (3)</td>
<td>11.97 (2.20)</td>
<td>12.26 (1.86)</td>
<td>12.33 (2.00)</td>
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<td>0.96</td>
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<tr>
<td>Goal Difficulty (6)</td>
<td>18.08 (3.60)</td>
<td>18.79 (3.82)</td>
<td>18.52 (3.56)</td>
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<td>0.79</td>
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<td><strong>CPT Performance (Depletion)</strong></td>
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<tr>
<td>D-Prime</td>
<td>2.98 (0.73)</td>
<td>2.99 (0.54)</td>
<td>2.86 (0.79)</td>
<td>3.00 (0.55)</td>
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<td>Errors</td>
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<td>11.33</td>
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<td></td>
<td>(22.04)</td>
<td>(7.63)</td>
<td>(7.63)</td>
<td>(24.22)</td>
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<td>Reaction time</td>
<td>526 (179)</td>
<td>491 (109)</td>
<td>493 (116)</td>
<td>490 (130)</td>
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<td><strong>Goal Achievement (Six-Week Follow-Up)</strong></td>
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<tr>
<td>Goal Recall*</td>
<td>2.69 (0.95)</td>
<td>2.00 (1.00)</td>
<td>2.58 (1.24)</td>
<td>2.00 (1.86)</td>
<td>-</td>
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<tr>
<td>Temptation*</td>
<td>3.23 (1.09)</td>
<td>3.15 (0.69)</td>
<td>2.67 (0.89)</td>
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<td>-</td>
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<td>Goal Commitment</td>
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<td>2.23 (1.36)</td>
<td>2.58 (1.00)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Goal Adherence</td>
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<td>2.00 (1.00)</td>
<td>2.58 (1.24)</td>
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<td>-</td>
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<td>Strategy Adherence</td>
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<td>2.15 (0.90)</td>
<td>1.92 (1.31)</td>
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* significant ($p \leq .05$)

- not applicable
### Table 2

*Study 1: Indirect Effect Estimates (Mediation)*

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<th>Mediation Model</th>
<th>Est ES</th>
<th>SE&lt;sub&gt;ES&lt;/sub&gt;</th>
<th>Z</th>
<th>p-val</th>
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<td>Structural Model (Commitment, Errors)</td>
<td>-0.32</td>
<td>0.32</td>
<td>-0.99</td>
<td>.32 (NS)</td>
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<td>(Commitment, d-Prime)</td>
<td>0.00</td>
<td>0.00</td>
<td>1.07</td>
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<tr>
<td>(Commitment, Reaction Time)</td>
<td>-0.77</td>
<td>0.80</td>
<td>-0.96</td>
<td>.34 (NS)</td>
</tr>
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<td>Structural Model (Choice, Errors)</td>
<td>-0.09</td>
<td>0.19</td>
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</tr>
<tr>
<td>(Choice, d-Prime)</td>
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<td>0.00</td>
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<td>.77 (NS)</td>
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<tr>
<td>(Choice, Reaction Time)</td>
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<td>0.47</td>
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<td>Commitment (Neg Emotion)</td>
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<td>0.01</td>
<td>0.50</td>
<td>.62 (NS)</td>
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### Study 1: Mediation Regression Results

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<tr>
<th>Model &amp; Regression Analyses</th>
<th>$r^2$</th>
<th>$b$</th>
<th>$SE$</th>
<th>$\beta$</th>
<th>$F$</th>
<th>$p$-val</th>
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<tr>
<td>Structural Model (Commitment)</td>
<td></td>
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<tr>
<td>$a_1(XM)$ Publicness/Commitment</td>
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<td>0.13</td>
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<td>0.30</td>
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<td>$b_1(MY)$ Commitment/Depletion</td>
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<tr>
<td>Err</td>
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<td>0.05</td>
<td>0.44</td>
<td>.51 (NS)</td>
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<td>$b_1(MY)$ Commitment/Depletion</td>
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<td>0.03</td>
<td>0.03</td>
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<td>1.38</td>
<td>.24 (NS)</td>
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<tr>
<td>dP</td>
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<tr>
<td>$c_1(XY)$ Publicness/Depletion dP</td>
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<td>0.55</td>
<td>0.02</td>
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<td>$b_1(MY)$ Commitment/Depletion</td>
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<td>$c_1(XY)$ Publicness/Depletion RT</td>
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<td>$a_2(XM)$ Publicness/Choice</td>
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<td>0.05</td>
<td>0.16</td>
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<tr>
<td>$b_2(MY)$ Choice/Depletion Err</td>
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<td>.51 (NS)</td>
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<td>.10</td>
<td>.31</td>
<td>.10</td>
<td></td>
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<tr>
<td></td>
<td>.72 (NS)</td>
<td>.75 (NS)</td>
<td>.58 (NS)</td>
<td>.31 (NS)</td>
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<tr>
<td>b2(MY) Choice/Depletion RT</td>
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<td>-2.00</td>
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<tr>
<td>c3(XY) Publicness/Depletion RT</td>
<td>1.65</td>
<td>2.96</td>
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<td>2.10</td>
<td>2.08</td>
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<tr>
<td>b3(MY) Neg</td>
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<td>.10</td>
<td>.10</td>
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<td>c3(XY) Publicness/Commitment</td>
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<td>-</td>
<td>-</td>
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<td>&lt;.001*</td>
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</table>

Note: Depletion, measured by CPT task performance, was assessed using errors and reaction time ($df = 1, 177$) and d-prime scores ($df = 1, 168$) which varied due to technical errors resulting in missing data (Err = Errors, dP = d-prime, RT = reaction time). Composite self-report variables ($df = 1, 182$) included publicness, choice, commitment, and anticipated negative emotions.
Table 4

*Study 2: Self-Regulation Manipulation Checks by Task*

<table>
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<tr>
<th>Task</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>$p$-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop Signal Task (SST)</td>
<td>3.29</td>
<td>0.96</td>
<td>34.77*</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Anagram Task</td>
<td>3.19</td>
<td>1.09</td>
<td>29.26*</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Goal Task (Stroop)</td>
<td>3.63</td>
<td>0.92</td>
<td>42.02*</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Goal Choice Task</td>
<td>2.34</td>
<td>1.17</td>
<td>23.89*</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note: All t-tests conducted with $df = 212$, with the exception of the goal choice task, which was conducted on those in goal-setting conditions, $df = 141$. 
Table 5

*Study 2: Means (Standard Deviations)*

<table>
<thead>
<tr>
<th>Variable (# items)</th>
<th>Public</th>
<th>Private</th>
<th>Control</th>
<th>( \alpha )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Report Ratings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Control (SST)</td>
<td>3.13 (0.92)</td>
<td>3.37 (0.98)</td>
<td>3.39 (0.97)</td>
<td>-</td>
</tr>
<tr>
<td>Self-Control (Anagram)</td>
<td>3.07 (1.14)</td>
<td>3.37 (1.05)</td>
<td>3.09 (1.06)</td>
<td>-</td>
</tr>
<tr>
<td>Self-Control (Goal)</td>
<td>2.25 (1.21)</td>
<td>2.42 (1.13)</td>
<td>2.00 (1.41)</td>
<td>-</td>
</tr>
<tr>
<td>Self-Control (Stroop)*</td>
<td>3.36 (0.92)</td>
<td>3.68 (0.90)</td>
<td>3.86 (0.87)</td>
<td>-</td>
</tr>
<tr>
<td>Mood Positivity</td>
<td>10.01 (7.55)</td>
<td>11.25 (7.15)</td>
<td>10.33 (6.16)</td>
<td>0.78</td>
</tr>
<tr>
<td>Mood Negativity</td>
<td>10.75 (5.85)</td>
<td>11.25 (6.25)</td>
<td>9.84 (6.07)</td>
<td>0.73</td>
</tr>
<tr>
<td>Publicness* (6)</td>
<td>19.13 (4.00)</td>
<td>16.99 (5.70)</td>
<td>22.09 (5.79)</td>
<td>0.72</td>
</tr>
<tr>
<td>Commitment (3)</td>
<td>14.11 (1.62)</td>
<td>14.26 (2.25)</td>
<td>-</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>Post Choice Depletion (SST)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSD</td>
<td>272 (272)</td>
<td>237 (222)</td>
<td>260 (214)</td>
<td>-</td>
</tr>
<tr>
<td>SSRT</td>
<td>237 (194)</td>
<td>216 (175)</td>
<td>235 (96)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Goal Achievement (Stroop Task)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroop Time (sec)</td>
<td>246 (59)</td>
<td>232 (68)</td>
<td>232 (59)</td>
<td>-</td>
</tr>
<tr>
<td>Stroop Errors</td>
<td>7.04 (13.76)</td>
<td>7.38 (8.94)</td>
<td>5.83 (5.04)</td>
<td>-</td>
</tr>
</tbody>
</table>
**Post-Goal Depletion (Anagram Task)**

<table>
<thead>
<tr>
<th></th>
<th>806 (335)</th>
<th>923 (309)</th>
<th>885 (301)</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anagram Time (sec)*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anagram Correct</td>
<td>11.57 (3.14)</td>
<td>12.36 (2.62)</td>
<td>11.87 (2.87)</td>
<td>-</td>
</tr>
</tbody>
</table>

* significant (*p* ≤ .05)

- not applicable
Table 6

*Study2: Indirect Effect Estimates (Mediation)*

<table>
<thead>
<tr>
<th>Mediation Model</th>
<th>Est $ES$</th>
<th>$SE_{ES}$</th>
<th>$Z$</th>
<th>$p$-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Model (Choice/Post Choice Depletion-SSD)</td>
<td>0.24</td>
<td>0.56</td>
<td>0.44</td>
<td>.66 (NS)</td>
</tr>
<tr>
<td>Structural Model (Choice/Post Choice Depletion-SSRT)</td>
<td>-0.41</td>
<td>0.70</td>
<td>-0.59</td>
<td>.66 (NS)</td>
</tr>
<tr>
<td>Process Model (Temptation/Post-Goal Depletion-Time)</td>
<td>0.56</td>
<td>1.59</td>
<td>0.35</td>
<td>.72 (NS)</td>
</tr>
<tr>
<td>Process Model (Temptation/Post-Goal Depletion-Correct)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>.95 (NS)</td>
</tr>
<tr>
<td>Process Model (Temptation/Goal Performance-Time)</td>
<td>-0.44</td>
<td>0.30</td>
<td>-1.50</td>
<td>.13 (NS)</td>
</tr>
<tr>
<td>Process Model (Temptation/Goal Performance-Errors)</td>
<td>-0.02</td>
<td>0.04</td>
<td>-0.11</td>
<td>.68 (NS)</td>
</tr>
</tbody>
</table>

Table 7

*Study2: Mediation Regression Results*

<table>
<thead>
<tr>
<th>Model &amp; Regression Analyses</th>
<th>$r^2$</th>
<th>$b$</th>
<th>SE</th>
<th>$\beta$</th>
<th>$F$</th>
<th>$p$-val</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural Model (Choice/Depletion-SSD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a4(XM) Publicness/Choice</td>
<td>0.00</td>
<td>-0.06</td>
<td>0.09</td>
<td>-0.06</td>
<td>0.42</td>
<td>.52 (NS)</td>
</tr>
<tr>
<td>b4(MY) Choice/Post Choice</td>
<td>0.01</td>
<td>-3.99</td>
<td>3.69</td>
<td>-0.09</td>
<td>1.17</td>
<td>.28 (NS)</td>
</tr>
<tr>
<td>Depletion^a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c4(XY) Publicness/Post Choice</td>
<td>0.00</td>
<td>-1.01</td>
<td>4.10</td>
<td>-0.02</td>
<td>0.47</td>
<td>.81 (NS)</td>
</tr>
<tr>
<td>Depletion^a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Structural Model (Choice/Depletion-SSRT)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a4(XM) Publicness/Choice</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.42</td>
<td>.52 (NS)</td>
</tr>
<tr>
<td>b4(MY) Choice/Post Choice</td>
<td>0.04</td>
<td>6.44</td>
<td>2.73</td>
<td>0.20</td>
<td>5.57</td>
<td>.02*</td>
</tr>
<tr>
<td>Depletion^a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c4(XY) Publicness/Post Choice</td>
<td>0.02</td>
<td>5.58</td>
<td>3.04</td>
<td>0.15</td>
<td>3.37</td>
<td>.07±</td>
</tr>
<tr>
<td>Depletion^a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Process Model (Temptation/Post-Goal Depletion-Anagram Time)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a5(XM) Commitment/Temptation</td>
<td>0.02</td>
<td>0.06</td>
<td>0.04</td>
<td>0.13</td>
<td>2.23</td>
<td>.14 (NS)</td>
</tr>
<tr>
<td>b5(MY) Temptation/Post-Goal</td>
<td>0.00</td>
<td>16.18</td>
<td>23.57</td>
<td>0.06</td>
<td>0.69</td>
<td>.49 (NS)</td>
</tr>
<tr>
<td>Depletion&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c5(XY) Commitment/Post-Goal</td>
<td>0.03 21.08 10.15 0.17 4.32 .04*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Model (Temptation/Post-Goal Depletion-Anagram Correct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a5(XM) Commitment/Temptation</td>
</tr>
<tr>
<td>b5(MY) Temptation/ Post-Goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depletion&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>c5(XY) Commitment/Post-Goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Model (Temptation/Goal Performance-StroopTime)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a6(XM) Commitment/Temptation</td>
</tr>
<tr>
<td>b6(MY) Temptation/Goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>c6(XY) Commitment/Goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Model (Temptation/Goal Performance-Stroop Errors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a6(XM) Commitment/Temptation</td>
</tr>
<tr>
<td>b6(MY) Temptation/Goal</td>
</tr>
<tr>
<td>c6(XY) Commitment/Goal</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
</tbody>
</table>

Performance\(^c\)

Note: For regressions reported in a previous analysis, only F-test and significance are reported on the relevant line. All regressions performed with a \(df = (1, 140)\). As in Study 1, mediation and regression analyses performed on experimental (goal) conditions only.

\(^a\) Post choice depletion measured by SST task performance, assessed using the Stop Signal Delay (SSD) which estimated as the delay time required for a participant to achieve 50% correct score as well as recording participants’ reaction times (SSRT; Verbruggen, Logan, & Stevens, 2008; Schachar, Mota, Logan, Tannock, & Klim, 2000).

\(^b\) Post-goal depletion measured by puzzle task performance, assessed using total time persisting on task in seconds (Time) and performance as measured by number of correct answers (Correct).

\(^c\) Goal performance measured by Stroop task performance, assessed using total time in seconds (Time) and performance as measured by number of errors (Error).
Figure 1

*Study 1: Mediation Models*

![Diagram of mediation models](image)

**Fig 1a. Structural Model (Commitment)**

**Fig 1b. Structural Model (Choice)**

**Fig 1c. Commitment (Emotion)**
Figure 2

Study 2: Mediation Models

![Diagram showing mediation models with nodes labeled for choice, temptation, and publicness.](image)
APPENDIX I.

UNIQUE ID CODE CREATION
[Completed in the lab]

As mentioned in the study description, we will also contact you in about 6 weeks to ask about your goal progress. Questions will not include any information about your actual goal, but just whether or not you have stuck to your plan and strategy. You will use a code to log-in so your answers will be tracked by a code that will not be identifiable as linked to you.

Participation is completely voluntary, and there are no consequences if you change your mind later. If you choose to participate in the follow-up electronic survey, your data will be identified using this unique code. You do not have to remember the code; a reminder will be given so that you can reenter it when you click to participate in the survey, but we need to record your code now to give you access later if you choose to participate.

So let’s generate your unique code now. This is to protect your privacy. The code is made by taking the last two letters of your first name, the two numbers of the day you were born, and the first two letters of the name of the city in which you were born.

For example, Jane Doe, born on May 28th in the city of Tuscaloosa would be: NE28TU. John Doe, born on January 1st in the city of Albany would be: HN01AL.

Please enter your unique code now. (It should be in an: AB-12-CD format.)

[NOTE: Participants will be contacted via their SONA email accounts and asked if they wish to participate in an optional, short 5-question survey evaluating goal progress via email. Those that choose to participate in the follow-up survey will simply click on a link to participate. They will be asked to generate/enter their unique code and then complete the survey. Survey will be posted on Survey Monkey website, where data will be kept private in a locked, password protected database.]
APPENDIX II. Goal-Setting Task (Study 1)

Goal Selection & Strategy Worksheet (Part I)
Step 1: Generate & Choose Overall Goal

<table>
<thead>
<tr>
<th>SOME EXAMPLE GOALS:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase fitness</td>
<td>Recycle more</td>
</tr>
<tr>
<td>Healthy eating</td>
<td>Get more sleep</td>
</tr>
<tr>
<td>Weight loss/dieting</td>
<td>Control temper</td>
</tr>
<tr>
<td>Quit/reduce procrastination (schoolwork,</td>
<td>Improve social</td>
</tr>
<tr>
<td>work, paying bills, creative projects,</td>
<td>interactions (less</td>
</tr>
<tr>
<td>etc.)</td>
<td>snarky to friends,</td>
</tr>
<tr>
<td>Being more organized</td>
<td>less</td>
</tr>
<tr>
<td>Being on time (class, appointments, etc.)</td>
<td>sarcastic, more open,</td>
</tr>
<tr>
<td>Quit/reduce smoking/drinking/other</td>
<td>etc.)</td>
</tr>
<tr>
<td>substance</td>
<td>Spend more quality</td>
</tr>
<tr>
<td>Improve GPA (or specific course grade)</td>
<td>time with specific</td>
</tr>
<tr>
<td>Spend less/save money</td>
<td>people (family, pets,</td>
</tr>
<tr>
<td></td>
<td>etc.)</td>
</tr>
<tr>
<td></td>
<td>Improve dental hygiene</td>
</tr>
<tr>
<td></td>
<td>(e.g., brush/floss/</td>
</tr>
<tr>
<td></td>
<td>mouthwash regularly)</td>
</tr>
<tr>
<td></td>
<td>Keep house/room clean</td>
</tr>
</tbody>
</table>

Goals can be hard to live up to, but you can work towards attaining them. There are many temptations that can get in the way of fully living up to one’s goals. **Now it’s YOUR TURN!**

**Instructions:** Please make a list a top ten of goals that are hardest for you to follow through with, and that you consider most important to you personally. These should be goals that you would like to improve on; try to describe each one using one word or a short phrase. They can be inspired by the examples above, or completely original.

1. ______________________________________  6. ______________________________________
2. ______________________________________  7. ______________________________________
3. ______________________________________  8. ______________________________________
4. ______________________________________  9. ______________________________________
5. ______________________________________ 10. ______________________________________
Goal Selection & Strategy Worksheet (Part II)
Step 2: Generate & Choose Strategy (Examples)

Instructions: Fill in each blank with a strategy. For example, “to complete X goal, I will do Y strategy.”

Your strategies should be in the format, “to complete X, I will do Y” where X is a goal you have and Y is the specific action you will take to achieve that goal. Think of Y as the specific strategy you will commit to use to avoid a temptation that could interfere with your goal. Pick a temptation that you feel is hard to resist, that you and that you encounter frequently.

EXAMPLES:

Overall Goal (X): Improve fitness
Temptation/Challenge: Being lazy
Specific Strategy (Y): Work out weekdays at 6am for 30min
Goal Statement: “To improve my fitness, I will work out weekdays at 6am for 30min”

Overall Goal: Quit/reduce my procrastination so that I complete homework on time
Temptation/Challenge: Going out with friends
Specific Strategy: “I will check my planner to see what is due the next day before going out with friends, and I will only go out if my homework for the next day is complete.”
Goal Statement: “To quit/reduce my procrastination so that I complete homework on time, I will check my planner to see what is due the next day before going out with friends, and I will only go out if my homework for the next day is complete.”

Overall Goal: Control anger
Temptation/Challenge: Get angry
Specific Strategy: Walk out of the room and take a 5 minute walk to cool down
Goal Statement: “To control my anger, I will walk out of the room and take a 5 minute walk to cool down.”
Goal Selection & Strategy Worksheet (Part II)
Step2: Generate & Choose Strategy (Actual)

Specific goals and strategies: Now that you’ve chosen your top overall goal, pick one (or multiple) specific goals that could help you achieve your overall goal. Then come up with one particular strategy to fill in each blank section below, each designed to combat a specific temptation to help reach a specific goal which contributes to your overall goal.

**Overall Goal (X):**

**Temptation/Challenge:**

**Specific Strategy (Y):**

**Goal Statement:** “To ____________________________________________,
I will __________________________________________________.”

---

**Overall Goal (X):**

**Temptation/Challenge:**

**Specific Strategy (Y):**

**Goal Statement:** “To ____________________________________________,
I will __________________________________________________.”

---

**Overall Goal (X):**

**Temptation/Challenge:**

**Specific Strategy (Y):**

**Goal Statement:** “To ____________________________________________,
I will __________________________________________________.”
APPENDIX III. Facebook & Task Manipulation Checks (Study 1 and Study 2)

Goal-Setting Manipulation Checks (Study 1 & Study 2)

*Strategy commitment:* Rate the following statements as to how well they describe your approach to using a specific plan to accomplish your chosen goal/task using the following rating scale.

0 (N/A) 1 (Not at all) 2 (A little) 3 (Somewhat) 4 (Very much) 5 (Extremely)

1. I plan to stick to my plan/strategy.
2. I am proud of my plan/strategy.
3. I think my plan/strategy is run of the mill. (R)
4. I think my strategy will be effective.

*Goal commitment:* Statements will be rated on a 5-point scale from 1) not at all, 2) slightly, 3) moderately, 4) quite a bit, to 5) extremely (in Study 1 & Study 2), based on the KUT Commitment Measure (Klein, Molloy, Cooper, & Swanson, 2011; as cited in Kline et al., 2012).

1. How committed are you to [your/the/this] goal?
2. To what extent do you care about [your/the/this] goal?
3. How dedicated are you to [your/the/this] goal?
4. To what extent have you chosen to be committed to [you/the/this] goal?

*Decision Task Manipulation Checks:*

1. How much effort did you exert during the decision task?
2. How much energy did the decision task require?
3. How frustrating was the decision task?
4. How much did you like the decision task?
5. How boring was the decision task?
6. How much were you engaged while working on the decision task?
7. How interested were you in the decision task?
8. How much did you have to control the urge to choose other goals during the decision task?
9. How much did you have to control your thoughts from wandering to other goals during the decision task?
10. How torn did you feel while deciding between goal options?
11. How tempting was it to choose other goals when deciding?
12. How much did self-control did you need to use during the decision task?
13. How much did you feel pressure to do well on the decision task?
14. How carefully did you consider other options while deciding?
15. How difficult was it to avoid thinking goal options once you had already decided against choosing them?
16. Did you seriously consider other goal options?
17. How easy was it for you to chose this particular goal over other goals you could have chosen?
18. How thoroughly did you think through your goal versus other possible goals when deciding?

**Goal Difficulty Rating (Study 1):**

Rate the following statements as to how well they describe your experience during the decision task using the following rating scale.

0 (N/A) 1 (Not at all) 2 (A little) 3 (Somewhat) 4 (Very much so) 5 (Extremely)

1. How difficult do you think your goal will be to achieve? (self-rated)
2. How tempting will it be to give up on your goal? (R) (self-rated)
3. How difficult is this goal and/or strategy? (independent rating)
4. How often have you attempted to pursue this goal in the past?
5. How much would you say you are far from achieving this goal currently?
6. How much would you say you are close to achieving this goal currently? (R)

**Public/private manipulation check:** Rate the following statements as to how well they describe you using the following rating scale.

0 (N/A) 1 (Not at all) 2 (A little) 3 (Somewhat) 4 (Very much) 5 (Extremely)

1. Do you think that anyone could possibly know your goal and strategy?
2. How private do you feel your goal and strategy are? (R)
3. How anonymous do you feel your goal and strategy are? (R)
4. How much do you feel that others are aware of your goal and strategy?
5. How much do you feel that people who are close to you are (or will become) aware of your goal and strategy?
6. How much do you think others will pay attention to and care about your goal and strategy?

**Goal-Setting Manipulation Checks Cont’d (Study 1 & Study 2)**

[At the end of the study:] Rate the following statements as to how well they describe you using the following rating scale.

0 (N/A) 1 (Not at all) 2 (A little) 3 (Somewhat) 4 (Very much) 5 (Extremely)

7. Which of the following statements best describes your approach to creating a specific plan for how you will accomplish your chosen goal?
   a) I have a goal and strategy that is known to others. (2)
   b) I have a goal and strategy that is known only to me. (1)
   c) I have no goal or strategy. (0)
Task Understanding Manipulation Checks:

8. I understood instructions for the decision task clearly. (Study 1 & Study 2)
9. I understood the instructions for the concentration task clearly. (Study 1)
10. I understood the instructions for the color-naming task clearly. (Study 2)
11. I understood the instructions for the computer task clearly. (Study 2)
12. I understood the instructions for the word puzzle task clearly. (Study 2)

**Goal Task Manipulation Checks (Debriefing Questions: Study 1 & Study 2)**

[At the end of the study:]

Please think back to the decision-task at the start of the study when you created a goal and strategy. (If you did not create a goal/strategy, please select N/A).

*Additional Goal Strategy Manipulation Checks:* Rate the following statements as to how well they describe your experience during the decision task using the following rating scale.

0 (N/A) 1 (*Not at all*) 2 (*A little*) 3 (*Somewhat*) 4 (*Very much so*) 5 (*Extremely*)

7. How carefully did you consider/select your goal?
8. How committed are you to following through on your goal?
9. Do you take this commitment seriously?
10. Do you intend to follow through with this commitment?
FACEBOOK PUBLIC CONCERN MANIPULATION CHECKS

For the following questions, please choose an actual Facebook friend. They will not be contacted, and only you will know who you indicate. We do ask that you identify the individuals by their initials, as we may need to refer back to them later in the study to ask you other questions about these friends.

1. Who, of your Facebook friends, do you think will be most surprised by your post?
2. Who, of your Facebook friends, do you think will be most supportive of your post?
3. Who, of your Facebook friends, do you think will be least supportive of your post?

For the following questions, please do you best to estimate approximate (we know that these are your best guess, so don’t worry about being exact).

1. How long do you think it will take until at least one friend likes your post?
2. How long do you think it will take until at least one friend comments on your post?
3. Approximately how often do you check Facebook?
4. Approximately how often do you update your Facebook statuses?
5. Approximately what percentage of your close friends are you friend with on Facebook?
6. Approximately what percentage of your family are you friends with on Facebook?
7. Other social media questions follow.
8. How many friends do you have on Facebook (look up & write down the exact number) __
9. Do you use any other social media programs currently? (Y/N)
10. If so, what other social media programs do you currently use? (Twitter, Tumblr, Flickr, Pinterest, LinkedIn, Google+, MySpace, Other __________(write in))
11. What other services do you have linked to your Facebook account? (YouTube, Pandora, Twitter, Tumblr, Flickr, Pinterest, LinkedIn, Myspace, Other __________(write in))
CPT Task Manipulation Check Questionnaire

Answer the following questions as to how well they describe your experience during the concentration task using the rating scale provided.

1 (None at all) 2 (A little) 3 (Some) 4 (A lot) 5 (Very Much)
1 (Not at all) 2 (A little) 3 (Some) 4 (A lot) 5 (Very Much So)

1. How tempting was it for you to pay attention to the movie instead of the concentration task?
2. To what extent were you able to resist paying attention to the movie while conducting the concentration task?
3. Did you find it necessary to ignore your thoughts during the concentration exercise?
4. How much did you have to control the urge to concentrate on the numbers instead of paying attention to the video?
5. How difficult was it to complete the concentration task?
6. How well did you think you would be able to perform the concentration task?
7. How hard did you try during the concentration task?
8. How much effort did you exert on the concentration task?
9. How much did you like the concentration task?
10. How much energy did completing the concentration task require?
11. How much did you feel pressure to do well on the concentration task?
12. How much did self-control did you have to use during the concentration task?
13. How much were you engaged while working on the concentration task?
14. How interested were you in the concentration task?
15. How much did you feel pressure to do well on the concentration task?
16. How much did you like the concentration task?
17. Rate your performance on the concentration task

1 (Worse than most)
2 (A little below average)
3 (Average)
4 (A little above average)
5 (Better than average)
APPENDIX IV. Anticipated Emotion Questions (Study 1)

Anticipated Emotional Cost Questions

1) Please list 3 words that describe how you would feel if you successfully completed the task in the way that you just planned out. [Open-ended write-in response.]

______________________________

2) Please list 3 words that describe how you would feel if you failed to complete the task in the way that you just planned out. [Open-ended write-in response.]

__________________________________

3) Please rate how much you feel completing your chosen strategy for this goal is motivated by

| duty    | xxxxx | interest |
| obligation | xxxxx | excitement |
| requirement | xxxxx | enjoyment |

Instructions: You will be asked to rate some emotion related words in two scenarios. First, you will be asked to imagine how you would feel if you were to complete this goal/task as you stated in your plan. Second, you will be asked to imagine how you would feel if you failed to complete this goal/task as you stated in your plan. This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and chose the appropriate answer. Indicate how you think you might feel in the scenario indicated.

Rating Scale:

1 Very slightly 2 A little 3 Moderately 4 Quite a bit 5 Extremely or not at all

[Repeated prompt on screen.]
Part I: If you were to complete this goal/task as you stated in your plan, how would you feel?

Happy, joyful, delighted, cheerful, excited, enthusiastic, lively, energetic; proud, strong, confident, bold, daring, fearless; calm, relaxed, at ease; enthusiastic, inspired; satisfied, contented, quiet, pleased, elated.

[Repeated prompt on screen.]
Part II: If you failed to complete this goal/task as you stated in your plan, how would you feel?

Afraid, scared, jittery, frightened, nervous, shaky; guilty, ashamed, blameworthy, angry at self, disgusted with self, dissatisfied with self; irritable, upset, distressed; unsatisfied, embarrassed, disappointed, dejected, tense, agitated, sad; agitated.
APPENDIX V. CPT Instructions (Study 1)

CPT Instructions (With Distractor)

PRACTICE I: The next part of the experiment consists of a number task. For this task, you will be presented with a series of random numbers. You will see the numbers flash across the screen. Pay close attention to those numbers. Every time you see the number 6 or the number 4 on screen, please press the spacebar. That is, when you see a 6 or a 4, you need to press the space bar. Press the space bar hard to ensure that your response is recorded. [Note: Participants will first conduct a practice session in which 6 & 4 will be pressed every time they appear.]

PRACTICE II: To make it a bit more challenging, the next part of the experiment consists of a concentration task. For this task, you will also be presented with a series of random numbers. You will see the numbers flash across the screen. Pay close attention to those numbers. Every time the number 6 is followed by the number 4 on screen, please press the spacebar. That is, when you see a 6 and then a 4, you need to press the space bar. As before, press the space bar hard to ensure that your response is recorded.

You will now answer a series of questions to make sure you understood the instructions. Please click “continue” when you have read them thoroughly and understand what to do.

Check on Learning:

1. For this task, you are concentrating on the numbers being presented. You are looking for a specific number, followed by another. What is the first number in the pair?
   0   1   2   3   4   5   6   7   8   9

2. What is the second number in the pair?
   0   1   2   3   4   5   6   7   8   9

3. What key do you press when you see a 6 followed by a 4?
   Enter Key   Down Arrow   Spacebar   Letter F   F1 Key

[Note: Participants will then conduct a brief practice session to ensure they understand the instructions before beginning the task.]

4. We are also interested in what catches people’s attention, and how well you can control your attention. To find out, during the concentration task, we are adding a video that you will need to listen to at the same time as the other task. Please put on the headphones so that you can hear the audio. The video will also appear, but it is important that you try to focus on the numbers instead of the video so that you can complete the concentration task.
   [A video clip from the animated movie “Up” will be playing in the background. Clip will be started.]
5. Concentration Task Reminder Instructions: Remember, please pay careful attention to the numbers during the concentration task. Try to press the spacebar every time you see the number 6 followed by the number 4, but ONLY when 6 is followed by the number 4. Do this as quickly and accurately as possible.

Please click the “start” button when you are ready to begin.
APPENDIX VI. Video Quiz (Study 1)

VIDEO CONTENT QUIZ

1. Main characters included all of the following EXCEPT:
   a. Cat
   b. Old man
   c. Young boy
   d. Old woman
   e. Young girl

2. The old man and old lady had a child (True/False).
3. The old man and old lady had a daughter (True/False).
4. The old man became friends with a young boy (True/False).
5. The old man became friends with a young girl (True/False).
6. When the old man was a young boy he became friends with a young girl (True/False).
7. The young boy and young girl in the beginning of the clip later get married and grow old (True/False).
8. The young girl from the start of the film eventually dies. (True/False)
9. The young boy who befriends the old man eventually dies. (True/False)
10. The old man eventually dies. (True/False)
APPENDIX VII. Goal Completion Survey (Study 1)

EMAIL INVITATION TO PARTICIPATE IN FOLLOW-UP SURVEY

Hello, __________ (Participant)!

You are invited to participate in a brief five-question survey about goal attainment. You participation is completely voluntary, and you may choose to end the survey at any time if you change your mind. The survey should take you less than five minutes to complete, and will help us learn more about how social media affect people’s ability to follow through with their personal goals.

We won’t ask you about your personal goals, but rather how well you have been able to stick to goals that you made in the past (as part of our previous study). You data will be identified by a unique identification code that you create, so your responses will remain anonymous and protected. The information will be used for scholarly research.

This is a follow-up from the study that you participated in earlier in the semester called, “Face(book) your goals: A social media study” in the Psychology Department at the University at Albany, State University of New York. If you have any questions about your participation in this study, please contact the Primary Investigator, Rebekah Layton (rlayton@albany.edu).
To participate, click here: https://www.surveymonkey.com/s/CDRN8D6

[NOTE: Contact information generated automatically by SONA Systems. SONA-provided email addresses will be used to send the electronic invitations from a lab email account to participants.]
FOLLOWUP GOAL DEBRIEFING SURVEY (sent 6 weeks later)

Thank you for participating in our short follow-up survey! This should take you less than 5 minutes to complete. When you have completed the survey, you will be eligible to win a variety of prizes. By completing this 5-minute survey, you will have the chance to win prizes including third place cash prizes ($25 each), second place cash prizes ($50 each), or a grand prize Apple iPadMini ($300 value). Click “continue” to begin.

To protect your privacy, your data will be labeled using a unique code that cannot be traced back to you. The code is the last two letters of your first name, the two numbers of the day you were born, and the first two letters of the name of the city in which you were born.

For example, Jane Doe, born on May 28th in the city of Tuscaloosa would be: NE28TU.

John Doe, born on January 1st in the city of Albany would be: HN01AL.

Please enter your unique code now. It should be in the format: AB12CD (a 6-digit code).

[If entered incorrect format this message will be displayed:]
Please be sure you entered a 6-digit unique identifier according to the instructions above. It should be in the format: WX01YZ.

Okay, you are ready to begin!

Rate the following statements as to how well they describe your experience over the past six weeks using the following rating scale. (If you did not create a goal/strategy in the study, please select N/A).

0 (N/A) 1 (Not at all) 2 (A little) 3 (Somewhat) 4 (Very well) 5 (Extremely well)

1. Please rate how well you remember the overall goal and specific strategy you chose for yourself in the psychology research study you participated in about 6 weeks ago.
2. Please rate how well you stuck to your overall goal over the past 6 weeks.
3. Please rate how well you stuck to your specific strategy over the past 6 weeks.
4. Please rate how well you resisted the temptation you chose as hardest to resist over the past 6 weeks.
5. Please rate how committed you feel to the goal now.

Thank you, you have completed the survey. Have a great day, and good luck with your goal! You can do anything you put your mind to.
This study is a follow-up to a study you previously took part in called, "Face(book) your goals: A social media study." You just completed a voluntary follow-up survey that will greatly help us evaluate how successful things like social media can be at helping people achieve their goals. This study was designed to examine decision-making and whether it matters if you make those decisions around other people or not. We told you that no one would know your strategy to make you believe that it was private. However, for those of you who created goals during this study, those goals were actually recorded as part of the study procedures (note that this information will remain identified only by your participant number which cannot be traced back to you). If you have any questions about your participation in this study, or would like to withdraw use of your data, please contact the Primary Investigator, Rebekah Layton (rlayton@albany.edu) in the Psychology Department at the University of Albany, State University of New York. Thank you again for your participation! Overall, the results of this study may help us to better understand how decision-making affects goal achievement.
APPENDIX VIII. Goal-Setting Task (Study 2)

Stroop Goal/Strategy Worksheet

Instructions: Fill in each blank with a strategy. For example, “as soon as I see the word I will ignore its meaning (for example, by concentrating on the second letter only) and I will name the color ink it is printed in.” Your strategies should be in the format, “if X, then Y” (e.g., if I see the word, then I will ignore it and state the color).

EXAMPLE:

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.

When I see the word, I will ignore its meaning by ________________________________, and I will name the color in it is printed in.
APPENDIX IX. SST Instructions (Study 2)

SST INSTRUCTIONS (INQUISIT)
(Millisecond, 2012)

WELCOME TO THE STOP SIGNAL TASK. On every trial, you will see an arrow pointing to the left or an arrow pointing to the right. Your task is to respond as fast and accurate as possible to these go stimuli: Press the 'D' key with the left index finger when the arrow is pointing to the left and press the 'K' key with the right index finger when the arrow is pointing to the right. Occasionally, the stimulus is followed by a sound, indicating that you have to stop your response on that trial. On approximately half of the trials, the sound will be presented soon after the presentation of the go stimulus and you will notice that it is easy to stop your response. On the other half of the trials, the sound will be presented rather late and it will become very difficult or even impossible to stop your response. Nevertheless, it is important that you DO NOT WAIT for a stop signal to occur, because if you start waiting, the computer will wait with presenting the stop signals. Press the 'Continue >>' button to start practice. [NOTE: One practice block & three experimental blocks are completed.]
APPENDIX X. Stroop Task Instructions (Study 2)

Color-Naming Task (Stroop)

For this task, I will present to you two lists of words that are printed in different colors. I would like you to go through the list and tell me, as quickly as possible, the color of the ink that each word is printed in. Do not tell me what the word says, but rather what color ink the word is printed in. Please do this as quickly and as accurately as possible. The first list will be for practice and the second will be the real trial. Do you have any questions about this task?

[Note: A practice round will be conducted after the instructions are read using a sheet of paper with color words printed in colored ink that does not match. When ready to begin, an experimenter will give participants the experimental sheet(s) of paper with the words printed in color ink. In both cases, the experimenter will have them read the ink color out loud; the experimenter will mark on a separate sheet which answers are correct or incorrect for the experimental rounds only. The experimenter will start a timer when the participant begins, and stop it when the last word is completed in the experimental round. Total time and number of errors/correct will be measured. Duration of task will be approximately 10 minutes.]
APPENDIX XI. Anagram Task Instructions (Study 2)

**Anagram Instructions**

This task has been shown to indicate intelligence level.

For this task you will be working on a list of anagrams. Anagrams are words that are created by rearranging the letters of that particular word. Unscrambling the letters and putting them in the right order gives you the correct spelling of a particular word. For example, if given the anagram “negal” the correct rearrangement of the letters would spell the word “angel.” When you have decided that you are done working on this task or if you want to stop, please ring the bell.

[Participants will be timed; those who have not finished after 30 minutes will be stopped.]

[Note: See attached stimuli for solvable and unsolvable anagrams; a selection of each category will be used in the anagram task.]
MUSE INTELLIGENCE TEST VERSION IIB
VERBAL SUBSECTION (ANSWER KEY)

Unscramble each set of letters to form a common English word.

1. CEFFET __________________________ (Effect)
2. TETLLI __________________________ (Little)
3. MSEDOL __________________________ (Seldom/Models)
4. GROADN __________________________ (Dragon)
5. OMCNMO __________________________ (Common)
6. SIVION __________________________ (Vision)
7. LENPTAE* __________________________
8. OPPEEL __________________________ (People)
9. LAELYV __________________________ (Valley)
10. UOLDIBLE* _________________________
11. FSNIIH __________________________ (Finish)
12. FSNAITE* _________________________
13. OECARDE* _________________________
14. IIDVED __________________________ (Divide)
15. UNSEST __________________________ (Sunset)
16. ROFAVL __________________________ (Flavor)
17. THATROE* _________________________
18. EMKONY __________________________ (Monkey)
19. SCULEM __________________________ (Muscle)
20. LTEUBLA* _________________________
21. CMBAOT __________________________ (Combat)
MUSE INTELLIGENCE TEST VERSION IIB
VERBAL SUBSECTION

Unscramble each set of letters to form a common English word.

1. CEFFET
2. TETLLI
3. MSEDOL
4. GROADN
5. OMCNMO
6. SIVION
7. LENPTAE
8. OPPEEL
9. LAELYV
10. UOLDIBLE
11. FSNIIH
12. FSNAITE
13. OECARDE
14. IIDVED
15. UNSEST
16. ROFAVL
17. THATROE
18. EMKONY
19. SCULEM
20. LTEUBLA
21. CMBAOT
APPENDIX XII. Rest & Relaxation Instructions

**Rest and Relaxation Instructions**
(Adapted from Tyler & Burns, 2008)

[NOTE: Participants will listen to relaxing music (e.g., Erik Satie’s Gymnopedie No. 1 and other classical music); additional similar selections will be included to reach a total of 6-10 minutes of relaxation time.]

*Instructions*: Please sit quietly and relax your mind and body. Sit comfortably in the chair. You may keep your eyes open or closed, whatever feels most natural to you. You will be listening to a selection of music to enhance your relaxation. Please place the headphones on now. An experimenter will return to assist you when your relaxation period is over.
APPENDIX XIII. Task Manipulation Checks (Study 2)

**Stroop Task Manipulation Checks**

Rate the following statements as to how well they describe your experience during the color-naming task using the rating scale provided.

0 (N/A)  1 (Not at all)  2 (A little)  3 (Somewhat)  4 (Very much)  5 (Extremely)

1. Internally, I felt motivated to try hard on the color naming task.
2. I felt motivated to try hard on the color naming task because I didn’t want to disappoint others.

Answer the following questions as to how well they describe your experience during the color-naming task using the rating scale provided.

1 (None at all)  2 (A little)  3 (Some)  4 (A lot)  5 (Very Much)
1 (Not at all)  2 (A little)  3 (Some)  4 (A lot)  5 (Very Much So)

1. How much effort did you exert on the color-naming task?
2. How much energy did the color task require?
3. How frustrating was the color task?
4. How much did you like the color naming task?
5. How boring was the color naming task?
6. How much were you engaged while working on the color naming task?
7. How interested were you in the color naming task?
8. How much did you have to control the urge to read the color word instead of the color ink during the color naming task?
9. How tempting was it to read the color word instead of saying the color?
10. How much did self-control did you need to use during the color naming task?
11. How much did you feel pressure to do well on the color naming task?

12. Rate your performance on the color naming task.

1 (Worse than most)  
2 (A little below average)  
3 (Average)  
4 (A little above average)  
5 (Better than average)
SST Manipulation Checks

Answer the following questions as to how well they describe your experience during the color-naming task using the rating scale provided.

1. How much effort did you need to use on the computer task?
2. How much energy did the computer task require?
3. How frustrating was the computer task?
4. How much did you like the computer naming task?
5. How boring was the computer task?
6. How much were you engaged while working on the computer task?
7. How interested were you in the computer task?
8. How much did you have to control the urge to keep pushing the button when you heard the tone during the computer task?
9. How tempting was it to keep pressing the button?
10. How much did self-control did you need to use during the computer task?
11. How much did you feel pressure to do well on the computer task?
12. Rate your performance on the computer task.

1 (Worse than most)
2 (A little below average)
3 (Average)
4 (A little above average)
5 (Better than average)
**Anagram Manipulation Checks**

Answer the following questions as to how well they describe your experience during the color-naming task using the rating scale provided.

1. \( \text{(None at all)} \) 2 \( \text{(A little)} \) 3 \( \text{(Some)} \) 4 \( \text{(A lot)} \) 5 \( \text{(Very Much)} \)
1. \( \text{(Not at all)} \) 2 \( \text{(A little)} \) 3 \( \text{(Some)} \) 4 \( \text{(A lot)} \) 5 \( \text{(Very Much So)} \)

1. How much effort did you exert on the word puzzle task?
2. How much did you have to control the urge to give up the word puzzle task?
3. How tempting was it to stop working on the word puzzle?
4. How much energy did the word puzzle task require?
5. How frustrating was the word puzzle task?
6. How much did you like the word puzzle naming task?
7. How boring was the word puzzle task?
8. How much were you engaged while working on the word puzzle task?
9. How interested were you in the word puzzle task?
10. How much self-control did you need to use during the word puzzle task?
11. How much did you feel pressure to do well on the word puzzle task?
12. Rate your performance on the word puzzle.

1 \( \text{(Worse than most)} \)
2 \( \text{(A little below average)} \)
3 \( \text{(Average)} \)
4 \( \text{(A little above average)} \)
5 \( \text{(Better than average)} \)