Impatient to Achieve Or Impatient to Receive: How the Goal Gradient Effect Underlies Time Discounting

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Prior research has often confounded goal-gradient and time discounting. We separate the timing of goal completion and reward receipt, observing separate and disassociated large goal-gradient and small time discounting effects. Goal-gradient effects provide a partial, but substantial, explanation of time discounting and, consequently, can inflate estimated discount rates.

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Time, Money, and Motivation: The Interplay between Goals and Personal Resources
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Paper #1: Pressed for Time? Goal Conflict Shapes How Time is Seen, Spent, and Valued
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Paper #2: Impatient to Achieve or Impatient to Receive: How the Goal Gradient Effect Underlies Time Discounting
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Paper #3: How Budgeting Helps Consumers Achieve Financial Goals
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SESSION OVERVIEW
Consumers’ goals and personal resource are inextricably intertwined. Our goals should determine how we spend our time and money, as well as how much “slack” (Zauberman and Lynch 2005) remains. Conversely, personal resource availability should determine how we go about pursuing our goals, including what goals seem to be in conflict. Despite these apparent connections, research on goals and research on personal resources have developed relatively independently to-date. Research on goals, for instance, has explored why consumers adopt and pursue goals (e.g., Heath, Larrick, and Wu 1999; Locke and Latham 1990) as well as factors that affect the level and intensity of motivation (e.g., Bonezzi, Brendl, and Angelis 2011; Etkin and Ratner 2012; Fishbach and Dhar 2005; Kivetz, Urminsky, and Zheng 2006; Zhang and Huang 2010). Research on perceived resource abundance has identified personal and situational factors that influence how much time (e.g., Mogilner, Chance, and Norton 2012; Rudd, Vohs, and Aaker 2012; Shu and Gneezy 2010; Vohs and Schmeichel 2003; Zhao, Lee, and Soman 2012; Zhang and DeVoe 2010) and money (e.g., Shah, Mullainathan, and Shafir 2012; Sharma and Alter 2012; Sussman and Alter 2012) people feel that they have, as well as psychological consequences of focusing on time versus money (Gino and Mogilner 2013; Mogilner 2010; Vohs, Mead, and Goode 2006). While emerging work is beginning to explore how goals and personal resources relate (Fernbach, Kan, and Lynch 2014; Jhang and Lynch 2014; Spiller 2011), many open questions remain. Helping to address this gap, this session explores the interplay between goals and personal resources.

Four papers tackle the following questions: How do people’s goals shape perceptions of resource abundance? How do people’s judgments of resource supply influence the goals they pursue? The first two papers explore the relationship between goals and time. First, Etkin, Evangelidis, and Aaker examine the role of subjective perceptions of goal conflict in making people feel pressed for time. Four experiments demonstrate that perceiving more conflict between goals affects how time is perceived, spent, and valued. Second, Urminsky disentangles the relationship between goal gradient and temporal discounting effects. The studies show that goal gradient-like effects uniquely explain some classic time discounting findings. Next, turning to the relationship between goals and money, Kan, Lynch and Fernbach explore how and why budgeting helps people pursue financial goals. The findings show distinct effects of budget setting and budget tracking in managing financial constraints. Finally, Lynch, Spiller, and Zauberman offer a comprehensive framework for understanding interconnections between goals, time, and money resources. They discuss how people perceive resource demands and resource supplies as a function of active goals and opportunity costs.

Together, these papers further understanding of the interplay between goals and personal resources. We hope this session stimulates further exploration of the connections between resource perceptions and goal pursuit. This session should have broad appeal to scholars interested in goal pursuit, time, money, and scarcity more generally.

Pressed for Time? Goal Conflict Shapes How Time is Seen, Spent, and Valued

EXTENDED ABSTRACT
People rarely feel that they have enough time. Yet, despite growing interest in the consequences of feeling time constrained (Darley and Batson 1973; Mogilner, Chance, and Norton 2012; Robinson and Godbey 1998; Roxburgh 2004; Rudd, Vohs, and Aaker 2012; Von Boven and Gilovich 2003), little is known about what affects people’s subjective sense of time in the first place. Why do people feel so pressed for time? And what consequences might this have for how consumers spend and value their time?

In this research, we propose that consumers’ perceptions of goal conflict shape how time constrained they feel. We argue that, aside from the number of goals that people pursue and the objective amount of time required to pursue these goals, simply perceiving greater conflict between goals should make people feel that they have less time.

Goal conflict refers to the sense that pursuing one goal interferes with pursuing others (Riediger and Freund 2004). Although some goals naturally conflict more than others (Emmons and King 1988; Hofmann, Vohs and Baumeister 2012), perceptions of goal conflict are largely subjective. For example, conflict between the same goals may seem higher on some occasions than others. When missing dinner to stay late at the office, for example, one may feel more conflict between goals to succeed at work and be a good parent than when working from home.

Why would perceiving conflict between goals reduce feelings of time affluence? We argue that perceiving greater conflict between goals has an impact on experienced emotions. Prior work shows that perceiving conflict between goals is often accompanied by negative affect (Emmons and King 1988); particularly, stress and anxiety (Lazarus and Folkman 1984). Stress and anxiety, in turn, are linked to people’s subjective sense of time (Lehto 1998; Robinson and Godbey 1998; Roxburgh 2004). Integrating these findings, we hypothesize that perceiving more conflict between goals should increase stress and anxiety, and consequently, make people feel more pressed for time.

Note, one might expect that perceiving more conflict between goals would decrease perceived time affluence only when goals compete for time – for example, when one has a goal to perform well at work, but also spend quality time with family. However, we reason that even when goal conflict is unrelated to time (e.g., money), per-
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Research on both the goal gradient (Kivetz et al. 2006) and intertemporal choice and discount rates (Frederick et al. 2002, Zauberman and Urminsky 2015) has shown that outcomes are more valued when they are closer in time. While intertemporal choices have been linked to goal conflict (Urminsky and Kivetz 2011), the goal gradient and time discounting have generally either been studied separately or integrated by assuming that goal gradient effects are due to time discounting (Jain 2012). In this paper, we separate what is usually confounded in goal gradient and intertemporal choices research, the timing of achieving task completion and the timing of receiving the associated outcome. This approach allows us to separate the effects of the goal gradient (distance to completing the task needed to earn a reward) from the effects of intertemporal preferences (time until actually receiving the reward). Across eight studies, we find that choices involving tradeoffs between smaller soon and later larger goals, holding reward timing constant, parallel time discounting findings, but are not explained by the time discounting of received benefits.

In the first study (N=406), participants allocated non-substitutable resources between two hypothetical projects (10 hours of access to research resources needed for two papers). Across four between-subjects conditions, we varied when the papers were due (i.e., the goal timing: the first in three weeks and the second in three or five weeks) and when the papers would be graded (i.e., the temporally discounted outcome: both in three weeks, one in three weeks and one in five weeks, or both in five weeks). Allocations were significantly higher for the first project when the first deadline was sooner (b=.11, \( p=.002 \)), consistent with the goal gradient, but the timing of the outcome did not have a significant effect (receiving the grade, b =-.038, p=.283), suggesting minimal time discounting in this context. These results were replicated in two similar studies.

In Study 2a (N=380), participants allocated 10 tickets between two hypothetical lotteries with equal probabilities of winning: Lottery A, which paid $10, or Lottery B, which paid $14. Participants would find out whether they won in either 1, 3 or 5 weeks, and winners would receive the prize in either 1, 3 or 5 weeks, yielding nine between-subjects conditions. Thus, the two lotteries could differ in the timing of the drawing (or not) and in the timing of the payment (or not). This design allowed us to separately quantify the effect of goal completion timing (goal gradient) and prize receipt timing (time discounting), in a regression analysis predicting allocation between the two lotteries based on the differences in timing.

Participants generally split their tickets, allocating 5.7 vs. 4.3 tickets to Lotteries A vs. B, averaging across the conditions. However, for each additional week that Lottery B’s drawing occurred later than Lottery A’s drawing, participants allocated .26 fewer tickets to Lottery B (p=.001), controlling for the timing of the payoffs. In contrast, for each additional week that Lottery B’s payoff was later than Lottery A’s payoff, participants only allocated .15 fewer tickets to Lottery B (p=.04), controlling for the timing of the drawings. Thus, we found significantly stronger goal gradient effects than time discounting effects. Estimating a traditional time discounting model (which ignores the timing of goal outcomes) for the data, yielded an overly impatient estimate of the weekly time discounting factor (.89 instead of .95). Study 2b (N=379) replicated these findings, using the same nine lottery scenarios but eliciting binary choices rather than allocations.

In Study 3 (N=171), participants read a scenario about choosing between plane tickets and thereby earning points in one of two dif-
ferent frequent flyer programs. We elicited their indifference point, via a series of choices, between one program in which they earned fewer points but also needed fewer points to earn a reward and another program in which they earned more points but had a higher point requirement to earn the same reward. We found that the way people made tradeoffs involving the timing of outcome resolution (e.g., completing the requirement for a free ticket) paralleled prior findings of hyperbolic time discounting, even when the timing of receiving the reward benefit was fixed. For example, earning 500 points in the first program was equivalent to earning more points in the second program when it was the last 500 needed than when it was 500 out of 1000 (p < .01), even if the free flight would have been used at the same time in either case.

Lastly, in Study 4, participants (N=72) allocated tickets between two real lotteries, which differed by a week in the timing of the drawing, but both paid a $50 prize at the same time. Participants varied in how far in the future the sooner drawing would be held (from 11 days away to 1 day away). Because both lotteries paid the prize at the same time, a time discounting account would predict no difference between the two lotteries. In contrast, the closer the drawings were when the participants made their choice, the more tickets they allocated to the lottery with the sooner drawing (r=-.29, p=.01), a goal gradient finding that parallels, but cannot be explained by, hyperbolic discounting.

In summary, in those situations where people learn about earning a reward at one time but actually receive the reward at another later time, we observe separate disassociated larger goal gradient and smaller time discounting effects. While time discounting may explain some goal gradient findings, our studies primarily find that goal gradient effects provide a substantial explanation of time discounting. Estimated discount rates are inflated when not separately accounting for goal gradient effects.

**How Budgeting Helps Consumers Achieve Financial Goals**

**EXTENDED ABSTRACT**

Many consumers experience financial constraints and struggle to achieve their financial goals, such as limiting spending, saving adequately and avoiding excessive debt. Budgeting can help people manage their financial constraints and avoid dysfunctional behaviors (Fernbach, Kan and Lynch, 2015), and a Gallup poll finds that a goal clarity of financial goals, while budget tracking increases pain of paying, and decrease subsequent purchases (Soman 2001). We propose that the explicit logging of purchases that occurs as part of expense tracking facilitates the allocation of costs to benefits, resulting in higher pain of paying and decreased enjoyment from spending, particularly under conditions of high constraint.

Study 2 explored the role of budget tracking in how financial constraints impact people’s enjoyment from spending money. A different set of mTurk workers completed this two-phase study over the Black Friday shopping weekend. Prior to Black Friday, participants began by reporting their perceived level of financial constraint (1=low constraint, 11=high constraint). Next, they were randomly assigned to one of four budget setting and expense tracking conditions. Participants either 1) set a budget for their Black Friday shopping and tracked expenses for their Black Friday shopping, 2) set a budget for their Black Friday shopping and tracked expenses for their regular shopping over the weekend, 3) set a budget for their regular shopping over the weekend and tracked expenses for their Black Friday shopping, or 4) set a budget for their regular shopping over the weekend and tracked expenses for their regular shopping. After the Black Friday shopping weekend, participants listed the purchases they made in both the Black Friday and regular shopping categories, and rated their enjoyment, satisfaction and pain associated with making each purchase.

We created two new variables that represent spending enjoyment for 1) the category that is tracked versus 2) the category that is untracked. For example, the tracked spending enjoyment variable represents enjoyment for Black Friday spending for people who were told to track their Black Friday spending, and represents enjoyment for regular spending for people who were told to track their regular spending. Higher constraint was associated with less enjoyment, but the relationship was stronger for tracked than untracked spending (Interaction: $F(1, 328) = 4.89, p = .028$). Tracked spending
enjoyment decreased as constraint increased \((b = -0.068, t = -2.15, p = .032)\), but untracked spending enjoyment did not \((b = -0.008, t = -2.86, p = .775)\). Taking the simple effects the other way, a floodlight analysis found that the simple effect of expense tracking was significant for all values of constraint above the Johnson-Neyman point of 8.67. For people facing higher financial constraint, tracking expenses decreased the enjoyment they derived from spending. Budget setting did not affect enjoyment, nor did it interact with constraint. This study suggests that budget tracking differs from budget setting to uniquely impact the pleasure that people receive from spending money.

Taken together, these studies provide evidence for the processes by which budgeting helps people manage monetary constraints and achieve their financial goals. Budget setting clarifies financial goals, while budget tracking limits temptations by increasing pain of paying.

**Resource Slack:**

**A Theory of Perceived Supply and Demand**

**EXTENDED ABSTRACT**

We provide a parsimonious framework that explains a range of intertemporal phenomena, from opportunity cost consideration to different forms of planning, to discounting, procrastination, the planning fallacy, and properties of financial decision-making. Our theory explains the relations among cognitive and motivational factors that determine when one will accept a given proposal \(P\) requiring the use of some resource. We also explain why one might be more open to the same proposal for the future than for now.

Resource slack is a perception of an absence of constraint, ranging from abundance to deficit. We account for perceived slack by cognitive and motivational factors that affect recruited supply of the resource and recruited competition for the same resources. Slack perceptions are affected by how one feels about the goals associated with some proposed activity and how one feels about competing goals that make use of the same resource.

Critically, slack determines whether one engages in memory-based augmentation of the consideration set when an explicit proposal \(P\) is on the table. When a single yes or no proposal is on the table, the explicit choice is a yes or no choice \(\{P, \text{not } P\}\), with a yes response if \(P\) clears a sufficiently high utility threshold. When people realize \(P\) might interfere with attaining goals attached to competing resource use \(C\), they transform the choice to picking one or more from the set \(\{P, C\}\). If there is sufficient slack, however, even an ongoing goal may not be considered as competition \(C\), and so the decision remains one of \(\{P, \text{not } P\}\). Our resource slack theory explains when people spontaneously consider competition when evaluating a proposal.

When available slack seems insufficient to allow pursuit of both \(P\) and \(C\), one sometimes spontaneously generates a counterproposal \(P'\) that involves some mutation of the original proposal \(P\) that might allow both \(P'\) and \(C\) to fit within the resources available, such as delaying the proposal. We explain the slack processes that lead this delay to be repeated, producing procrastination (Shu and Gneezy, 2010).

Sometimes a counterproposal does not involve delay, but rather involves some other form of what Fershbach et al. (2014) call efficiency planning. Here, one mutates \(P\) to \(P'\) or \(C\) to \(C'\) in order to stretch one’s resources to avoid having to choose. When a perceived slack deficit is dire and slack seems clearly insufficient to cover both the proposed \(P\) and the salient competition, \(C\), one must consider priority planning. Priority planning entails explicit consideration of opportunity costs, sacrificing lesser priorities to attain higher ones. People are often overly optimistic about their ability to fit in both \(P\) and \(C\), in which case, prioritization sometimes happens too late to avoid painful losses of high-priority goals.

Our theory explains how factors affecting perceived resource supply now and in the future exacerbate these tendencies. It is relatively straightforward to assess resource supply in the present. But to predict resource supply for a future time period \(t\) involves a prediction of not just the per-period income of the resource at \(t\), but of any accumulated savings or debt of the resource between now and time \(t\). Selective recruitment of supply also distorts slack perceptions.

It is common to perceive more resource slack in the future than in the present and therefore to sharply discount the value of the resource in the future compared to the present (Zauberman and Lynch, 2005). This pattern of slack perceptions occurs if and only if one has more salient or more motivating goals for the present than for the future. We show that people perceive much more resource slack in the future than the present when they are close to attaining some goal in the present, but pursuing an interrupting proposal \(P\) might block attainment of that goal (Jhang and Lynch, 2015). The effects of goal proximity on intertemporal discounting explain many perplexing intertemporal phenomena such as hyperbolic discounting and impatience when deprived of some visceral reward like food or sleep.

We argue that any goal associated with focal competition \(C\) can produce similar effects—even subgoals whose completion could be delayed with no consequence (Jhang and Lynch, 2015). What makes these effects perplexing and difficult to anticipate is the fact that in pursuing a goal, one thinks implementationally about subgoals, but only when doing so becomes relevant. We are typically closer to a subgoal than to the overall goal of which it is a part. People have some apprehension for an overall goal-gradient effect, but do not anticipate the power of subgoals. Subgoal proximity has a strong effect on one’s perception of slack now versus at some point in the future, affecting whether that goal is represented as competition \(C\) in conflict with \(P\).

Our theory shows how implemental planning and subgoal formation cause perceptions of slack. Reciprocally, perceiving little slack triggers planning. Economic theory suggests every action bears opportunity costs and that people should consider such costs in any decision. But some recent papers have claimed broad opportunity cost neglect (e.g., Frederick et al., 2009), consistent with Slovic’s (1972) concreteness principle and Kahneman’s (2011) principle of What You See Is All There Is. We show opportunity cost consideration is triggered by feelings of constraint (Spiller, 2011) and by fundamental factors that affect the accessibility of both pools of resource supply and recruited competition.

When the sufficiency of slack is ambiguous and a proposal is attractive, one may make optimistic slack projections that lead to “yes” responses. Misforecasting future slack produces the “Yes…Damn!” effect of agreeing to a proposal for the future that one later regrets; one would have declined had \(P\) been proposed for the present. This “Yes…Damn!” effect makes people susceptible to a planning fallacy of underestimating time to completion of some task, particularly tasks with multiple steps. In the financial domain, resource slack theory can explain the positive effects of “Save More Tomorrow” on retirement savings, the unexpected negative effects created by payday loans, and differential spending with cash versus with credit.

**REFERENCES**


