

1. Kivetz, Ran, Oleg Urminsky, and Yuhuang Zheng (2006), "The Goal-Gradient Hypothesis Resurrected: Purchase Acceleration, Illusionary Goal Progress, and Customer Retention," *Journal of Marketing Research*, 43 (1), 39-58.

Main hypothesis: In reward programs, people tend to accelerate toward the goal as the perceived distance from the goal decreases.

This article makes an important finding that the goal-gradient hypothesis is universal; it can be applied to visit rates, quantity decisions, to effort persistence. The goal-gradient hypothesis is also related to retention and reengagement, which stresses its importance. The finding of the illusionary goal progress is interesting and meaningful in that it provides an easy and convenient way to motivate people in reward programs or incentive systems.

The studies in this article involved several modeling approaches, some of which I found hard to fully understand. First, I am not sure how to interpret the coefficients of the discrete-time proportional hazard rate model in equation (5). I get that the probability of purchase for customer i on a given day t ($\Pr(t, X_{it})$) increases as g increases. In, if I let $g = \exp\{g^*\}$, then g increases as g^* increases. Thus, $\Pr(t, X_{it})$ increases as g^* increases. The problem is, g^* includes a quadratic term of d_{it} . It is not clear to me how negative β_1 implies an increase in the probability of purchase as goal distance gets smaller when there is a quadratic term of d_{it} . As a matter of fact, $\frac{dg^*}{dd_{it}} = \beta_1 + \beta_2 d_{it} - 2\beta_2 \bar{d}_i$. It is also unclear to me why the authors used mean-centered proportion as a quadratic term instead of just d_{it}^2 . Would the result change if d_{it}^2 were used as the quadratic term instead? I also have a question with the interpretation of the negative quadratic term coefficient. It is interpreted as the diminishing return in the article but I wonder if this interpretation holds for all d_{it} , given any β_1 and \bar{d}_i (each in its possible range).

Second, I wonder why the time interval was set as 0-0.5, 0.5-1.5,... in the café RP experiment. I guess it could be due to the time at which the RP cards were distributed. If the cards were distributed in the afternoon, setting the time interval like that to make it account for each day seems reasonable. I wish there were some explanation about it. Third, I don't understand how including a variable for the number of visits it took to complete each certificate rules out the aggregate bias (p.50). At first, I didn't even know what the aggregate bias is, so I looked it up online. I found out that it refers to a bias that occurs because you assume that the trend that appears in the group (aggregate level) will also apply to individuals. I understand the concept of aggregate bias but do not understand how it fits into the context. Fourth, I learned in the other course that the coefficients size of the logit model cannot be interpreted directly. It would have been helpful if marginal effects were also presented in the result.

Next, I wonder what differences defectors and redeemers have. There could be numerous factors that distinguish defectors and redeemers, but among those, is there anything that we can change? How can you change defectors into redeemers? I don't enjoy collecting coupons because I always lose them and I am too lazy to look up the coupon in my wallet each time. Carrying coupons is especially tiresome given that I do not need to carry a wallet a lot anymore when I have Samsung pay. Recently, many cafés offer to keep the coupons on behalf of the customers. This motivates me to enjoy the reward program. However, I do not really see the progress and do not feel involved deeply so I doubt that it changes my behavior. I wonder if the goal-gradient hypothesis applies to this kind of reward program as well. If not, how can the managers with such RP take advantage of the findings of this study? For example, if they showed the process of adding a stamp on the coupon visually to the consumers each time they make a purchase, would it accelerate the consumer's purchase behavior as they approach the goal?

Lastly, I wonder if goal-gradient acceleration has an unexpected detrimental effect. The fatigue effect was found in the Jaboom case, so there is a chance that people rate more music as they approach the goal but pay less attention to each music. In the café case, people may visit the café more frequently but purchase less each time. I also wonder how the purchase pattern will change once the coupon service is removed. I think highly motivated consumers (redeemers) will be affected negatively. However, compared to before coupons, would they purchase less or more? They might purchase less

because they got demotivated from the removal of the coupon. I primarily wondered if the coupon could decrease the overall enjoyment in the consumer experience by making them focus on the reward (like the measurement effect from last week), but it seems unconvincing given that consumers actually smiled more when participating in RP. There is a chance that customers will buy more compared to before coupons. They might have gotten used to making frequent visits or participation in the RP made them more loyal to the place.

2. Soman, Dilip and Amar Cheema (2004), "When Goals Are Counterproductive: The Effects of Violation of a Behavioral Goal on Subsequent Performance," *Journal of Consumer Research*, 31 (1), 52-62.

Main hypothesis: The violation of an all-or-nothing type of goal (where there is no chance to broaden the scope of the goal or make up for the goal) deteriorates the overall performance.

This article has a lot of implications in that it points out that goals can have detrimental effects, given that we usually only focus on the positive aspects of setting goals. It also provides several explanations for the underlying mechanism with some explanatory findings and specific experimental design, which can contribute to further understanding of the proposed phenomenon.

There are some questions I have regarding the experiments. In the first experiment, six conditions were divided into three groups according to the combination of the goal and previous discretionary spending. It focused on the differences between the groups to address the main research question. I wonder if there was any significant difference in the group among different conditions. According to Table 1, it seems that willingness to spend is lower for conditions with bigger previous discretionary spending within the group. I wonder if these differences are significant. If it is, then why? It may be related to budget constraints since participants were told that it is March 28th (still a few days until the end of the month). The participants with higher previous discretionary spending (especially those with \$8,500) could have felt pressure about spending \$1,500. An alternative explanation could be related to the feeling of guilt. The participants with higher previous discretionary spending could have felt more guilty about spending money, although this explanation will require more probing about why they spend more compared to other groups despite the guilt.

Next, in the second experiment, I believe there might be some measurement errors with FINISH-GOAL and DAYS measures due to the time difference between actual completion and submission. The participants were informed that the deadline is only for their own reference so they do not have any motivation to submit early even if they finished it early. In fact, they only have the motivation to do it more accurately, which could have rather encouraged them to submit as late as possible (within 30 days). The participants could have thought, "I already finished it but its due date is far away so I better keep it until the deadline and take one more look when I have free time." Moreover, the participants had to go to the office during office hours for submission, which could have also increased the gap between completion and submission dates. I understand that this experiment was conducted nearly 20 years ago. If it were conducted nowadays, it could have used online assignments by which the experimental can access when and how much actual time was invested. In addition, I wonder if giving additional incentives for submitting early would have contaminated the result. I believe that it would have decreased the measurement error of FINISH-GOAL and DAYS since the participants would have been motivated to submit as soon as they finish the task. However, there could be more effects that can be induced by this additional incentive. I wonder what could be such other effects.

Lastly, I want to discuss the implication of the findings. Specifically, the authors suggest that moderately difficult goals may result in the best performance (p.g.60). I think this suggestion is too vague and not practical since many times you do not really know what is the 'moderately' difficult goal beforehand. Therefore, I would like to suggest a more concrete, feasible way of setting goals alongside the research design to confirm its effectiveness. I propose that setting several nested goals can enhance the performance than setting just one goal. For instance, I set three goals for my daily work. One is a minimum goal that only includes the things that I really must finish today. This usually

consists of one or two tasks and is not hard to achieve. Then I have a middle goal that is usually one or two more tasks added to the minimum goal. It is what I would like to achieve today and is possible but challenging. The last goal, the maximum goal, includes the middle goal and some other tasks that I can do if I achieve my middle goal. This goal is very hard to achieve (almost impossible) and if I achieve it, it means that I have done much more than enough and deserve some rest. I begin to set three goals since I used to feel really bad when I failed the only goal I have. Having the minimal goal keeps me away from the negative feelings since I can almost always achieve at least one of the three goals I have. I get affected by emotion a lot (especially negative ones) so I think this way keeps me motivated. To examine the effectiveness of setting several nested goals, one can replicate experiment 2, with an additional two-goal condition. Specifically, the participants in the two-goal condition could be informed to set two goals, one before 15 days and the other between 15 days and 30 days. That is, they will have one proximal goal and one distant goal. One can then compare the performance result of the two-goal condition and one-goal condition. Specifically, comparing the 1) failing proximal goal but achieving distance goal in the two-goal condition and 2) failing both goals in the two-goal condition with one goal violator group will provide insights on the effectiveness of the proposed goal-setting method.

3. Ariely, Dan and Klaus Wertenbroch (2002), "Procrastination, Deadlines and Performance: Self-Control by Pre-commitment," *Psychological Science*, 13 (May) 219-24.

Main hypothesis: People are willing to self-impose deadlines to overcome procrastination even when it's costly but fails to set the deadlines optimally.

This article is meaningful in modern society where people have to deal with multiple tasks at a time and time management is critical. Especially, considering that procrastination happens to anyone for any task, this article, which reveals what strategy people use to prevent procrastination and how the strategy works, has many implications. It is both surprising and interesting that failure in setting the deadlines directly leads to decrease performance quality, instead of just affecting whether the due is met.

I would like to propose an alternative explanation for participants with self-imposed deadlines performing worse than participants with externally forced deadlines. The participants in the self-imposed deadlines section had a choice while the externally forced deadlines group did not. This could have affected the performance. While doing the assignments (or any other given tasks), people often have to fight the inner-self who does not want to do it right now. In that situation, participants with self-imposed deadlines could regret setting the deadline earlier than required. On the other hand, participants with designated deadlines have no regret since they were not allowed to choose in the first place. Regretting could disturb and demotivate the participants from doing the task. I recognize that the difference in performance between the evenly spaced group and the self-imposed group with evenly spaced deadlines turns out to be insignificant in the study. However, considering that the number of participants is small, I believe that there is a chance that regret has a negative impact on the self-imposed deadlines group.

Next, I wonder what could be the moderator between the relationship of self-imposed/given deadlines and performance quality. I suggest the total time given until the final due could be a moderator. Specifically, I argue that the proposed relationship attenuates as the total time until the final due gets shorter. When due is shorter, people have a clearer idea of their schedule during the time, which allows them to set deadlines more efficiently. Moreover, with shorter due, flexibility might enhance the performance. For instance, if we were to submit a thought paper every two days for each article instead of submitting a thought paper for four articles each week (like we do now), I would be short of time on the weekdays. Given the freedom to set my own deadlines, I can leverage my weekend, when I have plenty of free time. If total time moderates the proposed relationship, there would be a maximum length of time during which self-imposed deadlines work better. Would this period vary a lot among people or would it be universal? Would it differ for different types of tasks?

Here, I would like to note that the idea of total time working as a moderator supports the superior performance of the evenly spaced deadlines. Let's say there is a time length t that satisfies the following conditions. 1) Self-imposed deadlines are efficient if the total time is less than t . (The effect of the total time is identical for any total time $< t$) 2) If the total time is bigger than t , then people get lousier and lousier in setting efficient deadlines. (Longer total time leads to worse performance when total time $> t$.) This implies that the longer the total time you have ($> t$), the worse you are likely to perform. Now, in the experiments, participants each have three deadlines (either given or self-imposed). These deadlines are now fixed and should be met. During each period, students may set a virtual deadline before the fixed deadline to prevent procrastination. That is, all participants are in (weaker) self-imposed deadlines case if we zoom in for each task, where the time length given equals the time period between consecutive deadlines. If time length were a moderator, then having a shorter time period between consecutive deadlines will positively influence the performance. Note that the maximum time period between the deadlines is the shortest for the evenly spaced deadlines. That is, if you have unevenly spaced deadlines, you should have at least one long time period between the deadlines (longer compared to that of evenly spaced deadlines'), which deteriorates the performance. Thus, it is probable that evenly spaced deadlines are optimal indeed if the total time were a moderator.

Another moderator for the main finding of this article could be related to individual differences. Some people are good at managing time while others struggle with time management. Those who are good at self-control are likely to perform better with self-imposed deadlines. I wonder if the relationship of self-imposed/externally forced deadlines and performance would reverse for people who are very good at self-control. In other words, for those who excel at self-control, which is better among giving the evenly spaced deadline and giving them the flexibility to choose their own deadline?

Lastly, I would like to mention one alternative explanation for experiment 1. In experiment 1, every student submits at the same time in the evenly spaced deadline section, while students have different deadlines in the self-imposed deadline section. The students in the evenly spaced deadline section could have been more motivated since they have fellow students working on the assignments with the same due date. I recognize that the class was online, but there still is a chance that students contact each other and talk about the assignments, which leads to increased motivation. However, such colleague effect is unlikely to occur in experiment 2, so I think the authors successfully rule out this alternative explanation although they did not mention it explicitly.

4. Bonezzi, Andrea, C. Miguel Brendl, and Matteo De Angelis (2011). "Stuck in the Middle: The Psychophysics of Goal Pursuit," *Psychological Science*, 22(5), 607-612

Main hypothesis: The motivation of goal-pursuit is higher in the beginning and in the end compared to the middle due to the shift of reference point from the initial state to the desired end state.

This article furthers the understanding of how people behave in goal-pursuit from the classical goal gradient by addressing how motivation changes according to the reference point and how people shift the reference point during the task. It is also impressive how the authors designed experiment 2 with charity to prove that different motivational goal gradient can occur depending on the reference point, even without depletion.

There are some lingering thoughts that I would like to discuss. First, I wonder if there is a difference in the performance for to-date, to-go, and no frame conditions. According to the result of experiment 3, it seems that the average performance of three points is the highest for no frame condition and similar for to-date and to-go conditions. I wonder if this difference is significant. If it is, what is the boundary condition for it? In other words, it is always the case that no frame condition works the best, or is it only true for some tasks? I wonder if changing the reference point boosts people's efficiency in achieving the goal.

Second, I wonder why and when people alter the reference point. Is the shift of reference point a kind of (subconscious) strategy that people use to increase efficiency? Is there an optimal switching point? The third article of this week showed that people set deadlines to prevent procrastination but

lack the ability to set the optimal deadlines. Likewise, is there a chance that people change the reference point to enhance efficiency but fail to set the shifting point optimally? For instance, if we use to-date frame before the middle point and to-go frame afterward, would people be more motivated in general?

Third, I wonder how to prevent being stuck-in-the-middle. I often break down the task to make sub-tasks to keep myself motivated. I think this strategy may have worked out because I used the sub-tasks as reference points and frequent changes of reference points allowed me to stay close to the reference point at any time. I wonder if dividing the task really helps to keep you motivated. If it does, what is the optimal number of subtasks? With too many subtasks, the idea of having to go through all the subtasks itself could be demotivating. Moreover, I wonder if break time works as a reference point too. If it does, then a short break in the middle can be a good strategy to keep people motivated since it refreshes the reference point and also reduces fatigue.

Fourth, I wonder if the modeling result of the first article of this week can actually be consistent with the proposed U-shaped gradient. It had significant coefficients for both quadratic and linear terms of d_{it} and I have doubted if it is really the monotone increasing function of d_{it} . Is there a chance that the model indicated a slight U-shape? On the other hand, the model in paper 1 might have shown a monotonic increasing pattern since RP intrinsically evokes a to-go frame (with a reward at the end).

Lastly, I wonder what shape the motivational gradient will have with consecutive goals. People often encounter consecutive goals. Graduate students often have a meeting every week and employees usually have project after project. In these cases, would motivational gradient have a W-like shape with peaks at every reference point (e.g. meeting)? In reality, I observe that many people show a classical goal-gradient behavior, including post-reward resetting (I guess presenting in the meeting safe and sound could work as a reward for graduate students). Why is this? Do people usually employ a to-go frame when given an explicit deadline? What can attenuate this post-reward resetting behavior?