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Szu-chi HUANG

Stephanie C. LIN
Singapore Management University, stephanielin@smu.edu.sg

Ying ZHANG

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STEPHANIE C. LIN

YING ZHANG

Szu-chi Huang (huangsc@stanford.edu) is an associate professor of marketing and Graduate School of Business Trust Faculty Scholar for 2018-2019 at the Stanford Graduate School of Business, 655 Knight Way, Stanford, CA 94305. Stephanie C. Lin (stephanielin@smu.edu.sg) is an assistant professor of marketing at the Lee Kong Chian School of Business, Singapore Management University, 50 Samford Road, #05-01, Singapore 178899. Ying Zhang (zhang@gsm.pku.edu.cn) is a professor of marketing and behavioral science at Guanghua School of Management, Peking University, 5 Yiheyuan Rd, Beijing, 100871. Correspondence: Szu-chi Huang.

ABSTRACT

People working toward individual goals often find themselves surrounded by others who are pursuing similar goals, such as at school, in fitness classes, and through goal-oriented network devices like Fitbit. This research explores when these individual goal pursuits can turn into competitions, why it happens, and the downstream consequences of this pseudo-competition on goal pursuers. We found that people were more likely to treat their goal pursuit as a competition when they were near the end (vs. at the beginning) of their individual goal and thus prioritized relative positional gain (i.e., performing better than others sharing similar pursuits) over making objective progress on their own goal, sabotaging others when they had the opportunity to do so (Studies 1–3B). Further, we provided evidence that certainty of goal attainment at a high (vs. low) level of progress drove this shift in focus, leading to such sabotage behaviors (Studies 3A, 3B). Ironically, success in gaining an upper hand against others in these pseudo-competitions led individuals to subsequently reduce their effort in their own pursuits (Studies 1–5). Six experiments captured a variety of competitive behaviors across different goal domains (selecting games that diminished others' prospects, selecting difficult questions for fellow students).

Keywords: competition, social comparison, sabotage, goal pursuit, self-regulation, motivation

From training for a marathon to getting good grades in school, people constantly set and pursue goals. Even when these goals are strictly individual, people are rarely alone in their pursuits. When trying to master a language, for example, people are often in a class with others who are trying to do the same; when striving to hit a weight target, people might join a program or sign up for online platforms that connect them with others who are also working on weight-loss goals. These social exchanges and interactions can occur in person through meetings and support groups (e.g., Weight Watchers, boot camp classes), as well as virtually through mobile apps and online platforms (e.g., Endomondo, Fitbit, www.stickK.com).

Both conventional wisdom and prior scholarly investigation suggest that pursuing goals with others can build relationships that help each person succeed. For example, people in support programs like Weight Watchers can provide companionship to their groupmates while also exchanging tips about how to best stay on track to achieve their goals (Huang, Broniarczyk, Zhang, & Beruchashvili, 2015). Indeed, the perception of greater social influence in group weight loss programs has been shown to predict more successful weight loss (Leahey, Kumar, Weinberg, & Wing, 2009). Partners pursuing goals together can mutually benefit from each other's encouragement, monitoring of behavior, and emotional support (Fitzsimons, Finkel, & vanDellen, 2015).

However, in this research, we document an important deviation that occurs over the course of goal pursuit—namely, that pursuing individual goals together with others can at times lead to counterproductive behaviors that not only harm others but also harm oneself. To this aim, we build on the growing literature on social dynamics in self-regulation (Aarts, Gollwitzer, & Hassin, 2004; Converse & Fishbach, 2012; Fitzsimons & Finkel, 2010; Fitzsimons & Shah, 2009; Hofmann, Baumeister, Förster, & Vohs, 2012; Huang et al., 2015), social comparison

(Blanton, 2001; Festinger, 1954; Tesser, 1988), competitive behaviors (Epstein & Harackiewicz, 1992; Garcia, Tor, & Schiff, 2013), and longitudinal dynamics in individual goal pursuit (Amir & Ariely, 2008; Fishbach, Dhar, & Zhang, 2006; Huang, Zhang, & Broniarczyk, 2012; Koo & Fishbach, 2008; Louro, Pieters, & Zeelenberg, 2007) to theorize when and why negative social interactions occur, and identify their downstream consequences on goal pursuers. Empirically, we let people pursue and make progress toward their individual goals alongside others who were making progress on their own similar individual goals. At different time points, we presented people with choices that would allow them to sabotage their fellow goal pursuers, sometimes at the expense of their own progress. This empirical paradigm allowed us to observe people's shifting preference regarding sabotage behaviors over time and capture their motivation on their own goals afterward.

Our findings contribute to the growing literature on social dynamics in self-regulation processes by demonstrating an important psychological shift that accounts for competitive (and negative) behaviors in parallel individual goal pursuits. In addition, our findings connect the social comparison and competition literatures with self-regulation frameworks that illustrate longitudinal dynamics at an individual level, showing that when social information is available and interaction is possible, the way people treat others can also produce imperative, temporal-based consequences on their effort exertion. As a result, self-regulation is not only dynamic temporally—continuously changing from the beginning to the end—but also dynamic socially, altering how people view and treat each other from one stage to another.

Last, to our knowledge, this is the first research to examine the downstream consequences of sabotage on saboteurs' own motivation. We suggest that a successful act of sabotage can paradoxically harm saboteurs' effort exertion to achieve their own goals. Our

proposition thus meaningfully expands literature on competitive behaviors in zero-sum contexts (e.g., Garcia, Tor, & Gonzalez, 2016; Garcia et al., 2013; Vandegrift & Holaday, 2012) to apply to goal strivings in non-zero-sum situations, showing that competitive behaviors captured in prior research can manifest even when one's goal attainment does not objectively depend on others' performance.

Pursuing Individual Goals in a Social World

By definition, the pursuit of an individual goal concerns reducing the discrepancy between one's current position and an objective desired end point (Carver & Scheier, 2002; Higgins, 1987; Locke & Latham, 2006). For example, the pursuit of a weight-loss goal concerns reducing the difference between one's current and one's desired weight, and the pursuit of an academic goal concerns studying hard to get 100% on an exam. The attainment of an individual goal thus only involves reducing the distance between one's current status and an objective end point, and does not involve any social aspects such as outperforming others: an individual goal may be to complete a marathon under four hours, whereas a goal to place in the top 50% of runners in one's age group would be a competitive goal.

Although completing a marathon under a set time or getting 100% on an exam are strictly individual, we are rarely alone in these pursuits. We join online communities with other people who are training to run the same marathon, or share a classroom with other students and professionals who hope to pass the same bar exam. When working on our individual goals (of individually defined discrepancies), we are often surrounded by others, both in person and virtually, who are working on goals similar to our own.

It is well documented that others can have a powerful impact on our effort exertion, self-regulation, and performance (for a review, see Fitzsimons et al., 2015). Feeling socially

supported can lead people to be healthier and protect people against stressors (Uchino, 2004), as well as encourage people to pursue their valuable goals (Brunstein, Dangelmayer, & Schultheiss, 1996). People rely on others for goal success to the extent that they automatically categorize others as instrumental or noninstrumental (Fitzsimons & Shah, 2009); when a goal is activated, people seek others who will help them achieve it (Fitzsimons & Shah, 2008), and they draw closer to instrumental others when they experience a lack of progress on these associated goals (Fitzsimons & Fishbach, 2010). Leveraging others in individual goal pursuit, both significant others and strangers, hence has rich benefits for one's well-being and eventual goal success.

In contrast to these positive effects, our research suggests that pursuing individual goals in parallel with others can at times lead to counterproductive interactions and negative consequences. This is because, although others pursuing goals similar to our own can serve as a positive source of support to facilitate success (e.g., Weight Watchers members, Moisio & Beruchashvili, 2010), their progress also becomes an easy target for comparison, and people's desire to excel in these comparisons may determine how they behave.

The social comparison literature abounds with evidence showing that people look to others for information about their own performance (Blanton, 2001; Buunk & Gibbons, 2007; Festinger, 1954) and feel better about themselves when they outperform others (Taylor & Lobel, 1989; Wheeler & Miyake, 1992; Wills, 1981). Feedback based on social comparisons can seem even more important than objective progress (Klein, 1997). This is why people prefer to have less income in absolute terms but more than others in relative terms than vice versa (Solnick & Hemenway, 1998). Drawing from this literature, we posit that even though individual goal pursuit is not a zero-sum competition—others' comparative progress has no actual impact on a person's success in completing a marathon under a set time or getting 100% on an exam—people

nonetheless care about how their performance stacks up against that of their peers and may at times view their individual pursuit through a lens that is best described as a competition: people want not only to make progress to achieve their own goal but also to make more progress than others.

Two important questions arise: First, when does this feeling of competition dominate a person's view and behavior during the course of goal pursuit? And second, how does it affect their interaction with others, and their own effort exertion in achieving their goal?

When Does an Individual Pursuit Turn into a Competition?

We answer the first question by applying a longitudinal dynamic analysis—a conceptualization that allows changes in perceptions and behaviors to emerge over time during the course of goal pursuit. Prior literature has shown that when people first start to work on a goal, they experience high uncertainty about whether they should commit to the pursuit, and whether they can ultimately attain the goal (Huang & Zhang, 2013; Koo & Fishbach, 2008). Because of this uncertainty, they seek support from others and focus on achieving progress toward the end point (Moisio & Beruchashvili, 2010; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2009). In return, they offer social support (e.g., sharing helpful tips) to those others (Huang et al., 2015). Thus, even though social comparison might still occur at these early stages of goal pursuit, people use the positive example of others to motivate and help them learn (as social comparisons can provide concrete steps to help people advance toward their goals; Taylor & Lobel, 1989; Wood 1989). Their focus remains on seeking social support to help alleviate the uncertainty in their own pursuit.

However, as people make high progress on their individual goal, they are afforded greater certainty about the goal's attainment (Huang & Zhang, 2013; Huang, Zhang, & Broniarczyk,

2012; Koo & Fishbach, 2008). We argue that at these times, people might take their eyes off the prize and turn their attention to their relative progress against others, leading to behaviors that deviate from the effective pursuit of the individual goal. This occurs because when there is high certainty in the pursuit, social support is no longer needed. Instead, people's fundamental desire to self-enhance by outperforming others takes over (Taylor & Lobel, 1989; Wills, 1981; Wood 1989), and begins to dominate their perception of and behavior toward others.

In line with this, earlier work has shown that people distance themselves from others as they make progress toward their goal (Huang et al., 2015). These authors found that, as people become more certain of their goals, their need for social support diminishes, and thus they become primarily focused on their own goal progress—for instance, attending Weight Watchers meetings for their own weigh-ins instead of for giving and receiving social support; as a result, people demonstrate decreased friendliness and become less willing to help others. But is this simply distancing, or does it represent something more sinister? Our work importantly adds new insight to this framework by theorizing that people's distancing may be due to an increased competitive spirit: Instead of paying less attention to those around them, people actually become invested in others' performance, acting to pull them down in order to get ahead.

Importantly, as our second question delineates, shifting the focus from making individual progress to outperforming others as people move closer to completing their individual goal has profound implications for how they interact with each other as well as whether they continue to exert effort in their own pursuit. While prior literature suggests that competitions can be adaptive and motivating, we posit that adopting a competitive perspective in parallel individual pursuits may lead to negative behaviors toward others and, paradoxically, result in reduced motivation.

Sabotage for Relative Positional Gain

Viewing an individual goal as a competition can have a positive impact on motivation. Competition increases personal investment and involvement in a task (Epstein & Harackiewicz, 1992; Harackiewicz, Abrahams, & Wageman, 1987), the eagerness with which people pursue personal goals (Converse & Reinhard, 2016), and the perceived attractiveness of goal attainment (Hollenbeck & Klein, 1987). Goal pursuit platforms, devices, and mobile apps (e.g., Endomondo, Fitbit, Nike+) are presumably designed to leverage this sense of competition to increase individuals' motivation; for instance, Fitbit allows users to not only "cheer" for but also "taunt" others who share similar walking goals.

However, competition differs from individual goal pursuit in an important way: Whereas the pursuit of an individual goal concerns reducing the discrepancy between one's current position and an objective desired end point, competition focuses people on their relative standing against others, and elicits efforts directed at maximizing the distance between oneself and one's opponent (Epstein & Harackiewicz, 1992; Harackiewicz et al., 1987; Norton, Lamberton, & Naylor, 2013). To achieve this relative positional gain over others, people face two options: to increase effort in their own pursuit, or to engage in actions directed at slowing others down. To slow others down, people can sabotage their opponents (i.e., perform actions for the sole purpose of reducing others' performance; Ambrose, Seabright, & Schminke, 2002; Harbring & Irlenbusch, 2011), independently from their own goal pursuit efforts.

Indeed, it has been documented that people engage in harmful, unethical behaviors in order to come out ahead of their rivals (Kilduff, Galinsky, Gallo, & Reade, 2016). Furthermore, prior research has demonstrated that people invest effort into pulling others down when they feel competitive against them (Poortvliet, 2012), when they feel threatened by them (Tesser, 1988), and when they are put in a disadvantaged position (Halevy, Chou, Cohen, & Bornstein, 2010). In

particular, when people get closer to a performance threshold or a tangible standard, they become more concerned about comparisons and are more likely to show competitive facial expressions and behaviors (Chen et al., 2012; Garcia et al., 2013; Garcia et al., 2016; Vandegrift & Holaday, 2012). This competitiveness increases as one approaches a reference point, even when one is trying to focus on one's own personal mastery of skills rather than on outperforming others (Poortvliet et al., 2009).

Putting it together, we posit that when people are nearing the end of their own individual goal, the excessive focus on outperforming others leads people to put more weight on relative, rather than objective, progress, leading to actions performed with the sole purpose of reducing others' performance success. The sense of positional gain can be mistaken as actual progress toward one's own goal, and thus weakens saboteurs' subsequent effort exertion in their individual pursuit, despite the fact that the sabotage behavior has provided no objective gain.

To fully illustrate our hypotheses, we offer the following example. A Weight Watchers member gets near her target weight and begins to view the goal pursuit as a competition and focuses more on outperforming her fellow dieters. To "win" this pseudo-competition, she might decide to share misleading nutrition information in an attempt to slow others down. Even though this action does nothing to help her achieve her target weight, she may feel more comfortable resting on her positional gain and hence skip a gym session.

Importantly, in the context of individual goal pursuit, others' performance has no meaningful impact on one's own success. Hence, there is no rational reason to engage in sabotage to get ahead—everyone in Weight Watchers can achieve their desired goal weight, and all students who work hard can get 100% on their individual assignments; these are not zero-sum competitions in which one has to defeat others to get the prize. We argue that people do not

behave rationally, however; as goal pursuers shift their focus from making individual progress to outperforming others, they begin to behave as if they were in a competition, choosing to hurt others to achieve relative positional gain, and relaxing after obtaining an upper hand. We tested our hypotheses in six experiments.[1,2]

Study 1: Sabotage Toward the End of Individual Pursuit

We designed Study 1 to test whether people approaching the end of their individual pursuits are more likely to sabotage others who are pursuing similar goals. We also tested whether participants would relax their own strivings toward their goals after sabotaging (i.e., whether they would "coast"). Participants completed five rounds of a verbal creativity task ostensibly alongside another student who was pursuing the same individual goal. After one, two, three, or four rounds of the task, they were given the opportunity to determine the difficulty level of the next round for the other student. After making their decision, we captured participants' effort exertion in their own task.

Method

Participants and design. This study employed a Progress Level (1, 2, 3, 4) between-subjects design. We aimed to recruit 50 subjects per condition, totaling 200 participants. A total of 201 undergraduate and graduate students (52 male, $M_{age} = 26.22$, $SD = 7.63$, Median = 24)

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[1] Target sample sizes for each experiment were determined in advance of data collection based on consideration of participant availability (e.g., subject pool size), study design, and collection method. We aimed for at least 50 observations per condition (Simmons, Nelson, & Simonsohn, 2011) for all studies. We reported all data exclusions, manipulations, and conditions for each study. Materials, detailed procedures, and measures for the three studies conducted in 2017 were preregistered and are available on *Open Science Framework* (https://osf.io). The other three (older) studies were not preregistered; we have reported procedures and analyses with full details in the paper and Online Supplemental Materials, and will make all datasets available for readers.

[2] Following Kawakami (2015) and Kitayama (2017), we note that our samples included both genders and a range of age groups across the six studies reported here, including university affiliates (primarily undergraduate and graduate students, and also including some staff members) and online participants, and with one study (Study 2) conducted in China. We also replicated the key patterns observed in Study 3B with a separate group of college students in China, further enhancing the cultural inclusiveness of our empirical evidence (see Online Supplemental Materials).

participated in this study described as a "word creativity task" in exchange for $5 compensation.

Procedure

Participants arrived at the experiment session alongside other participants, and were told that they would be virtually paired with a student for some portions of the task. They indicated their gender, age, and initials, and were then shown the information about their purported partner, who was the same gender, one year older, with the initials SMM. They then exchanged a message with this pseudo-partner to enhance credibility; all participants received a message from this partner: "testing 123 . . . I wonder what we're gonna do." They were asked to indicate whether they could read the message from their partner (yes/no), to complete the cover story.

After the pairing process, participants read that the researchers were studying joint vs. individual performance on certain cognitive skills tasks; hence, some pairs would be assigned to complete tasks together and some would be assigned to complete tasks separately. All participants advanced to the next screen and read that they had been assigned the "**separate"** condition.

They then read that they would be completing five sections of a verbal creativity task in which they would create words using letters out of letter strings (e.g., for the letter string RSLALHT, rash, salt, and thralls are all possible solutions). They read that if they made 100 points in the five rounds, they would win a $5 Amazon gift card. We made it clear that everyone who scored over 100 points would receive the gift card and there was no limit to how many people could get the reward, emphasizing that the 100-point goal was strictly individual.

After completing either one, two, three, or four rounds of the verbal creativity task, participants entered a feedback page and were informed that they had earned either 22, 42, 62, or 82 points, and that the student with whom they were paired had accumulated 25, 45, 65, or 85

points, respectively. Participants then read that before they began the next task, they and their partner would be assigned to different roles; while they were assigned to be the "chooser," their partner SMM was assigned to be the "receiver." We highlighted that as the chooser, they would select three questions, "one of which WILL BE the word used for the next round of the receiver's test." To make explicit the impact of the participants' choice on the partner, participants read that their partner would likely do better on the task if easier questions were chosen. They were also assured that their own letter string would be randomly selected by the computer (from a separate set), ensuring no expected reciprocation from their partner. Each letter string was given a difficulty rating from 1.5 to 9.8 out of 10, and they were presented in order of difficulty, divided into four groups: very difficult, moderately difficult, moderately easy, and very easy. See Online Supplemental Materials for additional procedural details and for the screenshot of the choice page.

After submitting their three chosen letter strings for the other student, participants were given the letter string (RSLALHT), ostensibly selected randomly by the computer program, as their own next round of the task. They were told that each of the 50 blanks on the answer sheet represented a possible word (although in reality there were about 35 correct answers, depending on the dictionary used), and they were told to spend as much or as little time on this round as they desired. The number of words they formed in this subsequent round served as the proxy of their motivation at this moment to reach their individual goal for the prize. Upon finishing the task, participants were probed for suspicion, paid a $5 bonus, and debriefed.

Results and Discussion

Sabotage. To examine the hypothesized increase of competitive behavior (i.e., sabotage, determined by the sum of the difficulty levels of the letter strings chosen for the other student) as

participants accumulated progress on their individual goal, we contrast-coded the four progress level conditions from level 1 to level 4. We submitted the following contrasts to regression analyses: (−1, −1, −1, 3), which contrasted level 4 with the other stages combined; (−1, −1, 2, 0), which contrasted level 3 with levels 1 and 2 combined; and (−1, 1, 0, 0) which contrasted level 2 and level 1. These contrasts thus tested whether each stage contained more sabotage than the stages before it. We found a significant effect of the first and second codes, $B = 9.26$, $t(197) = 3.00$, $p = .003$, and $B = 8.16$, $t(197) = 3.73$, $p < .001$, and a marginal effect of the third code, $B = 2.33$, $t(197) = 1.90$, $p = .060$. The students who had accumulated 82 points selected the most difficult questions for the other student ($M = 16.65$, $SD = 6.17$), followed by those who had accumulated 62 points ($M = 16.28$, $SD = 6.77$), while those who had 42 points sabotaged marginally more ($M = 13.37$, $SD = 6.30$) than those who had 22 points ($M = 11.03$, $SD = 5.83$; see Figure 1). As an alternative analysis, we treated progress level linearly and regressed sabotage onto the progress level predictor; when progress level increased, people chose more difficult questions for the other student, $B = 1.91$, $t(195) = 2.10$, $p = .037$.

Coasting. To test whether sabotaging others reduced saboteurs' subsequent effort to advance toward their own goal, we regressed the number of words saboteurs formed in their own subsequent round onto their sabotage behavior. Because the number of words people could form might vary based on their skill, we included the number of words formed in prior rounds (before the feedback page) as covariates, to control for individual differences in ability. The analysis revealed a significant negative effect of sabotage on subsequent effort exertion, $B = −.45$, $t(195) = −7.61$, $p < .001$, such that the participants who gave more difficult words to the other student worked less hard on their own subsequent word task. Results held without controlling for the number of words participants created in the prior rounds, $B = −.46$, $t(199) = −8.25$, $p < .001$.

From progress, to sabotage, to coasting. To connect these two findings on sabotage and subsequent coasting, we conducted a bootstrapping mediation analysis (Hayes, 2013) with a 95% confidence interval (CI) and 5,000 simulations. When progress level and sabotage behavior were entered into a regression model to predict subsequent effort exertion, sabotage behavior remained significant, $B = -.44$, $t(194) = -7.35$, $p < .001$, while the effect of progress level on subsequent motivation changed from originally significant, $B = -1.81$, $t(195) = -2.11$, $p = .036$, to not significant, $B = -.97$, $t(194) = -1.26$, $p = .209$. The analysis of the indirect effect verified that sabotage behavior mediated the relationship between progress level and subsequent motivation (effect index = −.84, 95% CI = [−1.6902, −.1775]).

In this study, we manipulated four levels of progress during an individual task and found that people sabotaged the other student more as they made greater progress in their individual goal pursuit. This was true despite the fact that harming the other student would not bring them closer to their goal of earning 100 points for the $5 gift card. Importantly, a mediation analysis provided evidence that sabotaging others accounted for saboteurs' subsequent reduction of effort in their own task. In Studies 2, 3A, and 3B, we captured competitive behavior in another way—a choice between earning relative, positional gain over another person and earning objective gain toward reaching their individual goal (Halevy, Bornstein, & Sagiy, 2008; Halevy et al., 2010; Solnick & Hemenway, 1998). This paradigm helps demonstrate that people indeed prioritize relative gain over objective progress as they near the end of their individual pursuit.

Study 2: Capturing the Desire for Relative Positional Gain When Nearing the End

Study 2 used an online card game paradigm. We manipulated whether participants had accumulated a low or a high level of progress in an individual card game and then captured their desire of attaining their own goal versus gaining an upper hand over another player. Participants

chose between earning fewer objective points while hurting the other player (sabotage game) and earning more objective points while allowing the other player to earn even more (Solnick & Hemenway, 1998; see also Halevy et al., 2008; Halevy et al., 2010). To capture the downstream effect of sabotage, we also measured participants' subsequent motivation to earn more points toward their individual goal.

Method

Participants and design. This study employed a Progress Level (low vs. high) 2-condition design. Since the choice paradigm made sabotage quite obvious (a conservative test for our hypothesis) and this was the first test of the paradigm, we aimed to collect around 75 participants for each condition, totaling 150 participants. All participants who showed up at the university lab (located in China) for the session were allowed to participate, resulting in a total of 163 undergraduate student participants (62 male, $M_{age} = 20.7$, $SD = 2.26$, Median = 20).

Procedure. Similar to Study 1, participants read that they would be virtually paired with another student in case they were randomly assigned games that required them to interact with a partner. They indicated their gender, age, ethnicity, and leisure activities. They then viewed a profile of a student who had the same gender and age, worked at a department store, and enjoyed movies, live music, and trying new restaurants. This student's work and leisure activities differed from the participant's to ensure the credibility of the profile.

After the pairing, participants read that they were invited to help the researchers evaluate online card games. If they scored more than 100 points at the end of their game, they would earn a new game that was launched just that month to download to their laptop/tablet/phone. We emphasized that everyone who scored over 100 points in their own card game would get to download the new game and there was no limit to how many people could get the reward, again

making it clear that the 100-point goal was an individual goal.

Participants started the game session by entering a card-cutting page; they clicked the Next button to reveal the cards and received the first card in the deck (the one on top) while the computer got the second card in the deck; whoever got the larger number would win the round. We manipulated the card display and score progress so that all participants proceeded in the same way: Participants in the low-progress condition won the first round and earned 24 points, tied the second round, and then won the third round and reached 35 points; those in the high-progress condition additionally won the fourth round with a total of 54 points, lost the fifth round, won the sixth round with 77 points, and won the seventh round and reached 85 points. Standardizing the card display and score progression further helped us ensure that all participants in the same condition would have a similar experience.

After completing either three or seven rounds (i.e., low vs. high progress), participants viewed a feedback page, which told them their score (35 or 85 points), and that the other student had similar points as they did, earning either 31 points (low progress) or 81 points (high progress), respectively. Participants then read that they would enter a bonus round to play a different game to earn more points toward their 100-point goal. Under the cover story of fully testing all the algorithms developed for this game, participants read that there were two versions for the following round and they would choose which game they, as well as the other student, would play. In version 1 (sabotage game), their own expected outcome under Algorithm A would range between 0 and +5 points, with an average of +2.5 points, whereas the other student's expected outcome (under Algorithm B) would range from −5 to 0 points with an average of −2.5 points. In version 2, their own expected outcome under Algorithm A would range between +5 and +10 points, with an average of +7.5 points, whereas that of the other

student's expected outcome (under Algorithm B) would be between +10 and +15 points, with an average of +12.5 points. It was clear that while version 1 allowed participants to win in relative terms via sabotaging the other student's prospective performance, version 2 would help participants make greater actual progress toward achieving 100 points for the reward but would make them lose in relative terms. This design constituted a conservative test for our hypothesis because some participants who wanted to "win the competition" could be reluctant to sabotage in such a blatant context (all point spreads were presented side-by-side on the screen; see Online Supplemental Materials for additional procedural details and the screenshot of the choice page).

After participants selected a version of the game, we measured their subsequent motivation to earn more points toward their 100-point goal using the persistence paradigm from Huang, Etkin, and Jin (2017). Specifically, participants read that they would roll a unique set of digital dice, which have more faces than traditional dice, to earn more points for their reward. They read that the longer they waited before clicking the Roll button, the more sides these dice would have (8, 10, 12, 24, or 30), and the more sides the dice had, the greater the number of additional points they could potentially earn. This unique bonus round allowed us to control for any potential differences in perceived skill or luck from the prior rounds of the card game; the time participants spent waiting in this bonus dice round thus reflected how motivated they were at that moment to earn more points toward their 100-point goal for the reward. All participants were told that they rolled with a 10-sided dice regardless of their wait time, but were then given a system error while retrieving the dice roll. They then answered some filler questions (unanalyzed) about the games they played to maintain the cover story. Upon finishing the task, participants were probed for suspicion, debriefed, and exited the study.

Results and Discussion

Sabotage. We used a binomial logistic regression to analyze the impact of progress level on participants' choice of the version of the game for the bonus round. Consistent with the findings in Study 1, participants were more likely to choose the sabotage game when they had made high progress (45.0%) than when they had made low progress (27.85%), $B = .75$, $SE = .34$, $p = .026$; approaching the end of their individual goal led to a greater tendency to sabotage others sharing similar pursuits.

Coasting. To test whether sabotaging others reduced saboteurs' subsequent effort to advance toward their own goal, we used a regression model to analyze the effect of sabotage choice on subsequent motivation. We again found a significant negative effect of sabotage on subsequent effort exertion, $B = -67.34$, $t(157) = -4.16$, $p < .001$, such that the participants who chose the sabotage game were less motivated to gain more points for their own goal ($M = 44.47$ seconds, $SD = 61.17$) than those who did not sabotage ($M = 111.82$ seconds, $SD = 114.09$); sabotaging others, therefore, again reduced people's motivation to exert effort on their goal.

From progress, to sabotage, to coasting. The progress manipulation did not have a direct effect on subsequent motivation in this study ($M_{low\_progress} = 92.60$ seconds, $SD = 92.70$; $M_{high\_progress} = 81.97$, $SD = 112.92$), $B = -.10.63$, $t(157) = -.65$, $p = .52$; when sabotage choice was added to the equation, the coefficient became even weaker, $B = .95$, $t(160) = .060$, $p = .95$. As it is possible to observe indirect effects without direct effects, we tested whether the effect from progress to coasting was mediated through sabotage (Rucker, Preacher, Tormala, & Petty, 2011). Given that sabotage was a binary variable (instead of a continuous variable as in Study 1), we followed the procedure recommended for testing binary mediators (Iacobucci, 2012) and conducted a bootstrapping mediation analysis (5,000 simulations) using the Mediation package

(Tingley, Yamamoto, Hirose, Keele, & Imai, 2014) in R statistical software (R Core Team, 2014). Consistent with Study 1, sabotage marginally mediated the relationship between progress level and subsequent motivation, such that accumulating higher progress led people to sabotage more, which in turn led people to reduce effort in their own task, 93% CI does not include zero: [–25.140, –0.39] (95% CI = [−26.76, .78]).

This study provided further evidence that people start to view an individual pursuit as a competition as they approach the end of their individual goal; participants who got near their 100-point goal were more likely to trade off objective progress for relative positional gain than when they were still far from their goal. Since participants did not know how many rounds remained in the game and how many points they would be able to earn in those rounds, trading off objective progress for relative positional gain, even when having accumulated 85 points, could jeopardize their chance of receiving the prize at the end. Also important, sabotaging others led to a reduction of subsequent effort to advance toward their own goal, even when the reward was based purely on one's performance against the objective standard of 100 points. Finally, Study 2 extended our test to China, which is historically an interdependent culture. This suggests that our hypothesized effect could occur not only in independent cultures but also in interdependent cultures, in which people's self-construals reflect their relationships with others (Markus & Kitayama, 1991).

We theorized that individual pursuit turns into a competition when people approach the end of their own pursuit because they feel more certain about attaining their individual goal at this point; this feeling of certainty makes social support less necessary, allowing people's fundamental desire to compare and compete to dominate their behavior. Study 3 tested this mechanism by directly manipulating certainty in two ways: when the goal's attainment was still

uncertain at high progress (Study 3A), we expected that people would still focus on making absolute progress on their own goal rather than on earning relative gain against others, eliminating the effect of goal progress on sabotage, and thus mitigating the sabotage-then-coast effect observed so far. On the other hand, when the goal's attainment is made certain at low progress (Study 3B), people would shift to focus on creating relative gain early on, also eliminating the effect of goal progress on sabotage (and subsequent coasting).

Study 3A: Making Goal Attainment Uncertain at High Progress

Participants in this study first reviewed news articles to earn points for a reward. In addition to manipulating goal progress in the task, we manipulated participants' certainty of attaining their individual goal (low certainty, natural-certainty control). Then, as in Study 2, participants chose between two games for themselves (and for the person they were paired with) to earn more points in the task; one game allowed them to make more objective progress, whereas the other game would give them relative advantage. In the natural-certainty conditions, we expected to replicate the previous effect of goal progress such that those close to the goal would be more likely to view the task as a competition and prefer to gain relative advantage over others. However, we expected this effect to be eliminated in the low-certainty conditions, such that those with low certainty would generally prefer to make objective progress regardless of their current progress on the goal.

Method

Participants and design. This study employed a 2 (Progress Level: low vs. high) × 2 (Attainment Certainty: low vs. natural) between-subjects design. We aimed to collect around 50 participants per condition, totaling 200 participants. All participants who showed up at the university lab for the session were allowed to participate, resulting in a total of 217 university

affiliate participants (i.e., undergraduate students, graduate students, and staff; 70 male, M_{age} = 26.67, *SD* = 8.91, Median = 24).

Procedure. Following the procedures in Study 2, participants first provided their demographic information, their major and which university they attended, and leisure activities. They read that they would be virtually paired with another participant because some of the randomly assigned games may require them to interact with a partner. After pairing, participants were informed that they would be testing standardized tasks and games for future research studies. As compensation, participants earned points for their performance in each task and game, and if they earned 100 points, they would receive a $10 gift card for the campus bookstore. Everyone who scored over 100 points would receive the gift card; thus it was clear that the 100-point goal was an individual goal.

Participants started with an article review task, in which they earned points by reading news stories and providing their reviews through scale questions and open-ended questions. Participants in the low-progress conditions completed two articles and received 23 points, whereas those in the high-progress conditions completed an additional three articles and received 73 points. On the feedback page, they read their score. Following the paradigms in prior studies, participants also saw that "Participant #07 @ [Institution Name]" (i.e., their paired partner) earned either 25 points (low progress) or 75 points (high progress), placing them in similar stages as the participant.

After the feedback page, participants read additional information about the certainty of attaining their individual 100-point goal. In the low-certainty conditions, they read that, based on prior records, individuals who had accumulated more than 20 points (or more than 70 points, depending on the condition) at this stage of the task had a 20%–25% chance of reaching 100

points. Those in the natural-certainty conditions did not read any additional information.

After this feedback, participants were told that they had a chance to decide the paradigm for the next dice game: "Once you choose the set you want to play, you'll be given the game listed at the **TOP** of the set, while your partner plays the game listed at the **BOTTOM** of the set." Similar to Study 2, there were two versions of the next game. In version 1 (sabotage game), participants' own expected outcome was +5 points, whereas their partner's expected outcome was an average of −5 points. In version 2, their own expected outcome was +10 points, whereas that of their partner was an average of +20 points (see Online Supplemental Materials for the screenshot of the choice page). Again, version 1 allowed participants to win in relative terms, and version 2 helped them make greater actual progress toward the prize. After participants chose which version to play, we used the same digital-dice paradigm as in Study 2 to capture participants' subsequent motivation to earn more points toward their 100-point goal (Huang et al., 2017). Participants were probed for suspicion, debriefed, and exited the study.

Results and Discussion

Sabotage. We used a logistic regression model to analyze the impact of progress level, attainment certainty, and their interaction on participants' tendency to sabotage (i.e., choice of version 1). The analysis revealed a main effect of progress, $B = .50$, $SE = .16$, $p = .002$; consistent with Studies 1 and 2, participants were more likely to sabotage when they had reached a high level of progress (44.14%) than when they made low progress (20.75%). There was also a main effect of attainment certainty, $B = .51$, $SE = .16$, $p = .001$, such that participants were more likely to sabotage in the natural-certainty (44.55%) than low-certainty (20.56%) conditions. These main effects were qualified by the hypothesized Progress Level × Attainment Certainty interaction, $B = 1.40$, $SE = .64$, $p = .029$, odds ratio = 1.42.

To further examine this interaction effect, we dummy-coded the certainty variable to analyze the effect of goal progress in the natural-certainty and the low-certainty conditions. When there was no additional information on certainty, participants were more likely to sabotage when they had made high progress (62.71%) than when they had made low progress (23.53%), $B = 1.70$, $SE = .43$, $p < .001$, replicating the findings in prior studies. When attainment certainty was directly manipulated to be low, however, there was no significant difference between the high (23.08%) and low progress (18.18%) conditions, $B = -.30$, $SE = .48$, $p = .53$.

Decomposing this interaction another way, among the participants who had made low progress (accumulated 23 points), those who were informed of the low certainty of goal attainment sabotaged about equally to those who were not informed of low certainty, $B = .33$, $SE = .48$, $p = .50$; this reflects our assumption that those who were far from their goals were generally uncertain of their eventual goal attainment. However, among the participants who had made high progress (accumulated 73 points), those who were informed of the low certainty of reaching their individual goal sabotaged much less than those who were not given additional information, $B = 1.72$, $SE = .43$, $p < .001$ (means reported above; see Figure 2).

Coasting. To test whether sabotage led participants to reduce subsequent effort in their own pursuit, we followed the procedure in Study 2 and analyzed the effect of sabotage choice on saboteurs' subsequent motivation. We again found a significant effect of sabotage on subsequent effort, $B = -272.45$, $t(215) = -3.27$, $p < .001$. Participants who sabotaged were less motivated to gain points toward their own goal ($M = 45.71$ seconds, $SD = 64.09$) than those who did not sabotage ($M = 318.16$ seconds, $SD = 700.42$).

From progress, to sabotage, to coasting. To connect the two sets of results, we again followed the procedure recommended for testing binary mediators (Iacobucci, 2012) and

conducted a bootstrapping moderated mediation analysis (5,000 simulations) using the Mediation package (Tingley et al., 2014) in R statistical software (R Core Team, 2014). This analysis examined whether the effect of goal progress on motivation was mediated by sabotage choice, and whether this mediational path differed in the low- versus natural-certainty conditions. This moderated mediation was significant, 95% CI = [−235.11, −10.62]. In the natural-certainty conditions, the effect of goal progress on motivation was significantly mediated by sabotage, 95% CI = [−232.55, −49.9], such that people sabotaged more when they neared the end of their individual goal, resulting in coasting afterward. However, when certainty was externally manipulated to be low regardless of progress, the mediational path from progress to motivation through sabotage behavior was no longer significant, 95% CI = [−83.27, 44.86].[3]

This study replicated Study 2 using a different task, different subject pool, different progress manipulation, and different point distribution of the sabotage choice. More important, this study underscored the driving role of attainment certainty. By directly manipulating the perceived certainty of attaining the individual goal, we showed that sabotage behaviors could be reduced when people had attained high progress if they felt low certainty about their chance of achieving their individual goal. This is particularly notable because a reasonable alternate hypothesis might predict that uncertainty in goal attainment would instead heighten competition and sabotage behavior, perhaps due to a desire to get ahead in any way possible. However, in line with our theory, uncertainty curbed the desire to sabotage, as participants had to prioritize

[3] We also examined the effect of Progress Level, Attainment Certainty, and their interaction on motivation (i.e., the direct effects). We did not observe a main effect of certainty, $t(213) = -.254$, $p = .80$, but we observed a main effect of progress such that those who made high progress were more motivated ($M = 312.20$ seconds, $SD = 786.28$) than those who made low progress ($M = 151.90$, $SD = 226.55$), $t(213) = 2.18$, $p = .03$. This is consistent with a classic goal gradient effect. We did not observe a significant interaction, $B = -245.79$, $SE = 158.73$, $p = .12$ (Natural certainty: $M_{low\_progress} = 195.20$, $SD = 292.89$, $M_{high\_progress} = 245.18$, $SD = 429.51$; Low certainty: $M_{low\_progress} = 92.47$, $SD = 123.28$, $M_{high\_progress} = 388.24$, $SD = 1054.78$). We hence examined the moderated mediation (through sabotage choice) under the assumption that indirect effects can occur without direct effects (Rucker et al., 2011).

their own progress. This study further allowed us to rule out the alternative explanation that participants sabotaged in Study 2 because they had exerted more effort in the high progress condition; in this study, those in the high-progress conditions who had low certainty of attaining their goal sabotaged as little as those who were in the low-progress conditions.

For comprehensiveness, we conducted Study 3B to directly manipulate goal attainment in the opposite direction—making it certain even when people had accumulated only low progress on their individual goal—to examine whether sabotage behavior (and subsequent coasting) could be induced early on.

Study 3B: Making Goal Attainment Certain at Low Progress

Study 3B employed the same design as Study 3A, except that, instead of manipulating certainty to be low (vs. natural), we manipulated certainty to be high (vs. natural). We expected to again replicate our finding that people would sabotage more after making high (vs. low) progress when not given any additional feedback about the certainty of obtaining their individual goal. However, we expected this effect of individual goal progress to be eliminated in the high-certainty conditions, such that those with high certainty would generally prefer to sabotage others regardless of their current progress on the goal.

Method

Participants and design. This study employed a 2 (Progress Level: low vs. high) × 2 (Attainment Certainty: high vs. natural) between-subjects design. We aimed to collect at least 50 participants per condition. All participants who showed up at the university lab for the session were allowed to participate, resulting in a total of 405 university affiliate participants (i.e., undergraduate students, graduate students, and staff; 115 male, M_{age} = 25.21, *SD* = 9.01, Median = 22).

Procedure. Participants engaged in the exact same task as in Study 3A. However, in the high-certainty conditions, participants were told that people who accumulate more than 20 points (or more than 70 points, depending on the progress level condition) at this stage of the task have a 70%–75% chance of reaching 100 points. As before, those in the natural-certainty conditions did not read any additional information about goal attainment certainty.

Results and Discussion

Sabotage. We again used a logistic regression model to analyze the impact of progress level, attainment certainty, and their interaction on participants' tendency to sabotage (i.e., choice of game version 1). The analysis revealed a main effect of progress, $B = .29$, $SE = .10$, $p = .005$; consistent with Studies 1 through 3A, participants were more likely to sabotage when they had reached a high level of progress (46.77%) than when they made low progress (33.33%). There was no main effect of attainment certainty, $B = .15$, $SE = .10$, $p = .14$. We again observed the hypothesized Progress Level × Attainment Certainty interaction, $B = -.36$, $SE = .10$, $p < .001$, odds ratio = .24.

Following the procedures in Study 3A, we dummy-coded the certainty variable to examine the effect of goal progress in the natural-certainty and high-certainty conditions. When there was no additional information on certainty, participants were more likely to sabotage when they had made high progress (52.13%) than when they had made low progress (22.94%), $B = 1.29$, $SE = .31$, $p < .001$, again replicating prior studies. However, when attainment certainty was directly manipulated to be high, there was no significant difference in sabotage behavior between the high (42.06%) and low progress (45.26%) conditions, $B = -.13$, $SE = .28$, $p = .65$.

Looking at the interaction another way, among the participants who had made high progress (accumulated 73 points), those who were informed of a high certainty of reaching their

goal sabotaged about the same as those who were not given additional information about attainment certainty, $B = -.41$, $SE = .28$, $p = .15$. This reflects our proposition that those who were close to their goals already felt quite certain about their chance of attaining the goal; thus, the high certainty manipulation did not affect sabotage tendency. However, when participants had made low progress (accumulated 23 points), those who were informed of the high certainty of goal attainment sabotaged more than those who were not informed of a high certainty, $B = 1.02$, $SE = .31$, $p < .001$ (means reported above; see Figure 2).

Coasting. We followed the same procedure as in prior studies and analyzed the effect of sabotage choice on saboteurs' subsequent motivation. We again found a significant effect of sabotage on subsequent effort, $B = -261.02$, $t(403) = -4.56$, $p < .001$. Participants who sabotaged were less motivated to gain points toward their own goal ($M = 68.65$ seconds, $SD = 161.77$) than those who did not sabotage ($M = 329.67$ seconds, $SD = 715.48$).

From progress, to sabotage, to coasting. To connect the two sets of results, we followed the procedure from Study 3A to examine whether the effect of goal progress on motivation was mediated by sabotage choice, and whether this mediational path differed in the high- versus natural-certainty conditions. Consistent with Study 3A, this moderated mediation was significant, 95% CI = [−166.90, −23.67]. In the natural-certainty conditions, the effect of goal progress on motivation was again significantly mediated by sabotage [−139.38, −34.8], such that people sabotaged more when they neared the end of their individual goal, resulting in coasting afterward. However, when certainty was externally manipulated to be high regardless of progress level, the mediational path from progress to motivation through sabotage was no longer

significant [−34.61, 56.48]. [4,5]

Studies 3A and 3B provided evidence of our underlying mechanism of certainty in the effect of goal progress on sabotage. Gaining certainty is a natural experience as people move from early to late stages of a goal pursuit, as people learn and gain confidence in their ability to achieve their goals; this, based on our theory, underlies the relationship between goal progress and sabotage observed in Studies 1 and 2. As a result, when certainty was externally altered to be low (Study 3A) or high (Study 3B), the relationship between goal progress and certainty disappeared. People instead sabotaged depending only on their certainty levels, sabotaging more when they were highly certain relative to those who were less certain.

With four studies showing that sabotage behaviors occurred when people had attained a high level of progress (and thus naturally felt certain about goal attainment), in the next two studies, we placed all participants in high-progress situations and directly manipulated their sabotage behaviors. Doing so helps to rule out alternate explanations that were left open when we examined sabotage behavior as a mediating variable between goal progress and subsequent effort. For instance, perhaps high progress was fatiguing, leading people to be more likely to sabotage and less motivated (although this explanation does not fully explain results of Studies

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[4] We also examined the effect of Progress Level, Attainment Certainty, and their interaction on motivation (the direct effects). Similar to Study 3A, we did not observe a significant interaction, $B = -166.49$, $SE = 115.10$, $p = .15$ (Natural_certainty: $M_{low\_progress} = 178.03$, $SD = 473.00$, $M_{high\_progress} = 243.06$, $SD = 616.36$; High certainty: $M_{low\_progress} = 296.21$, $SD = 777.72$, $M_{high\_progress} = 194.74$, $SD = 406.53$). However, when sabotage choice was added into the regression, an interaction emerged, $B = -260.32$, $SE = 113.45$, $p = .022$, suggesting a suppression effect. We decomposed this interaction while controlling for sabotage choice. We found that in the natural certainty conditions, participants were marginally more motivated at high vs. low progress, $B = 149.56$, $SE = 80.86$, $p = .07$; this effect was nonsignificantly reversed for those with high certainty, $B = -110.76$, $SE = 79.18$, $p = .16$. This reflects a classic goal gradient effect in the natural certainty conditions that is suppressed by the sabotage choice; that is, those who made high progress were naturally more motivated than those who made low progress, but their sabotage behavior interestingly lowered this naturally occurring motivation. Following the procedures in Study 3A, we then examined the moderated mediation (through sabotage choice) under the assumption that indirect effects can occur without direct effects (Rucker et al., 2011).

[5] We ran another version of this study on a different population (in China). The results replicated present findings. See Online Supplemental Materials for details.

3A and 3B). Thus, in Studies 4 and 5 we placed all participants in high-progress situations and directly manipulated the extent to which they sabotaged in this stage of the pursuit to ensure that the observed coasting effect was a direct consequence of sabotage. Specifically, in the next study we used the same verbal creativity task paradigm as in Study 1 and manipulated sabotage behaviors by changing the social norm, nudging the participants to give either more difficult or easier questions to their partner.

Study 4: Directly Manipulating Sabotage to Capture Subsequent Coasting

In Study 4, we directly manipulated sabotage to cleanly capture the effect of sabotaging others on subsequent coasting. Participants completed five rounds of the same verbal task from Study 1 alongside a purported partner. After four rounds, all participants were told that they had attained a high level of progress and were given the opportunity to choose the difficulty of the final round for their partner. In addition, we manipulated whether participants were slightly behind or slightly ahead of the partner. Departing from the procedure in Study 1, we used social norm information to nudge participants to choose either more difficult or easier items for their purported partner. We expected that participants who were led to sabotage would show lower motivation in the final round of their own task.

Method

Participants and design. This study employed a 2 (Social Norm: sabotage vs. not) × 2 (Feedback Type: slightly behind vs. slightly ahead) between-subjects design. We manipulated feedback type to provide evidence that sabotage occurs both when another person's progress is slightly ahead of and slightly behind one's own, as in both cases, participants should feel they have achieved positional gain over their partner when they sabotage. We aimed to recruit 50 participants per condition, totaling 200 participants through a national online panel, Survey

Sampling International. A total of 217 participants (102 male, M_{age} = 45.77, *SD* = 16.53, Median = 44) completed the study for $3 compensation.

Procedure. Pairing and task description were the same as in Study 1. After completing four rounds of the task, participants entered a feedback page. In the slightly-behind conditions, participants were informed that they had earned 82 points and the person they were paired with had 85 points; in the slightly-ahead conditions, participants were told the opposite. As in Study 1, participants were again told they would choose letter strings for the other person, and the selection process was the same as in Study 1. However, they were additionally told, "The questions selected by past choosers (sample size = 213 college students) were around the difficulty level of **8.2** [**3.2]** / 10" in the sabotage-yes [sabotage-no] conditions. We used this social information to drive participants to follow the social norm and hence either sabotage by giving harder letter strings or not sabotage by giving easier letter strings to the other person.

After submitting their three chosen letter strings, participants were again given the last letter string (RSLALHT) in their own final round of the task and were told to spend as much or as little time on this round as they desired. Following the procedures in Study 1, the number of words participants formed in this final round served as the proxy of their motivation to reach their individual goal. Participants were probed for suspicion, debriefed, and exited the study.

Results and Discussion

Manipulation check. We first ensured that our social norm manipulation indeed led participants to choose more difficult letter strings for their partner. An ANOVA revealed that the difficulty level of the three questions chosen for the partner was indeed higher when they were told that the average difficulty level was high (*M* = 21.28, *SD* = 24.03) than when they were told that the average difficulty level chosen was low (*M* = 13.21, *SD* = 5.18), $F(1, 208) = 11.85$, *p*

= .001, η_p^2 = .054. As expected, there was no significant main effect of feedback type (slightly behind vs. slightly ahead), $F(1, 208) = 2.62$, $p = .107$, $\eta_p^2 = .012$, nor of the interaction between sabotage and feedback type, $F(1, 208) = 1.25$, $p = .265$, $\eta_p^2 = .006$.

Coasting. We next tested the effect of our sabotage manipulation, feedback type, and their interaction on subsequent motivation (i.e., the number of correct words completed in the last round of the task). Following the procedures in Study 1, we again included the number of words created in each of the first four rounds (before the feedback page) as covariates, to control for individual differences in skill and ability.

As expected, we found no effect of feedback type, $t(209) = -1.12$, $p = .27$, or effect of the interaction, $t(209) = .11$, $p = .91$. Importantly, we found the hypothesized main effect of sabotage on coasting such that those in the sabotage-yes conditions created fewer words in their own subsequent round ($M = 7.29$, $SD = 5.50$) than those in the sabotage-no conditions ($M = 10.52$, $SD = 8.61$), $t(209) = -3.22$, $p = .001$.

In this study, we directly nudged people to either sabotage or not sabotage fellow goal pursuers to provide evidence that sabotage leads people to subsequently coast on their own goals. This counters the alternate explanation that in prior studies individual differences in tendencies to sabotage caused subsequent coasting, and it supports our hypothesis that once people feel that they have made progress relative to others who are pursuing similar individual goals by sabotaging them, they feel they can now slack off on their own goals. We further found this effect of sabotage on subsequent coasting to occur regardless of whether the participants were slightly ahead of or slightly behind their partner.

However, this study still leaves open the question of whether coasting occurs because sabotage behavior itself feels like effort expended toward the goal, leading to fatigue, or because

saboteurs feel they have been successful in making relative progress through sabotaging others. That is, participants should coast only when their sabotage act was successfully executed (and thus successfully harmed their partner), giving the participant a perceived relative advantage over their partner. We tested this by directly manipulating the perceived success of sabotage in our final study.

Study 5: Sabotage for Successful Positional Gain

Participants engaged in the same verbal creativity task as in Studies 1 and 4 with two additions. First, we used a classic default-choice design (instead of social norm) to nudge participants to choose either more difficult or easier questions for their partner, to enhance the generalizability of the findings in Study 4. Second, half of the participants learned that their chosen question was indeed used in the last round of their partner's test, whereas the other half learned that their chosen question was entered into the lab's word database for future studies. If sabotage leads to coasting because saboteurs feel that they have invested effort for their goal, we would expect saboteurs to coast regardless of whether their sabotage effort was successful or not. Instead, our theory of coasting as a result of gaining an upper hand in a pseudo-competition would suggest that only participants who successfully sabotaged fellow goal pursuers would experience the positional gain and thus show lowered motivation in their own task.

Method

Participants and design. This study employed a 2 (Default Choice: sabotage vs. not) × 2 (Question Sent: successful vs. not) between-subjects design. We aimed to recruit around 50 subjects per condition, totaling 200 participants. A total of 202 adults (116 male, M_{age} = 34.41, *SD* = 11.08, Median = 31) from Amazon's Mechanical Turk participated in exchange for $1.

Procedure. Pairing and task description were the same as in Studies 1 and 4. After

completing four rounds of the task, participants entered a feedback page and were informed that they had earned 82 points and the person they were paired with had 85 points

As in Studies 1 and 4, participants were again told they would choose letter strings for their partner. However, instead of being told that the letter string would be given to the partner (the receiver), they were told that it would either be the letter string used for the last round of the receiver's test or that it would be entered into the researchers' word database for future studies. Importantly, they additionally read, "The first three questions are selected below as default options. However, you have the ability to change any of these options." In the sabotage-no conditions, the letter strings were presented in order from very easy to very difficult, with the three easiest ones chosen as the default options; in the sabotage-yes condition, the letter strings were presented from most difficult to easiest, with the three most difficult strings chosen as the default. We used this manipulation to drive people to give either harder or easier letter strings by either keeping the defaults or using the defaults as an anchor. See Appendix A for the screenshot of the choice page for each sabotage condition.

After submitting their three chosen letter strings, those in the question-sent successful condition read, "Your selected items have now been successfully sent to the receiver." Those in the unsuccessful condition read, "Your selected items will be entered into our word database for future studies, instead of being sent to the receiver." Participants were then given the last letter string (RSLALHT) in the final round of the task, and were told to spend as much or as little time on this round as they desired. The number of words they formed in this final round served as the proxy of their motivation to reach their individual goal. Participants were probed for suspicion, debriefed, and exited the study.

Results and Discussion

Manipulation check. Following the procedures in Study 4, we first ensured that the default-choice manipulation indeed led participants to send more difficult letter strings to their partner. An ANOVA revealed that the participants in the sabotage-no (easy default) conditions indeed chose easier letter strings (M = 11.71, SD = 6.98) than those in the sabotage-yes (difficult default) conditions (M = 13.97, SD = 7.50), $F(1, 198) = 4.85$, $p = .029$, $\eta_p^2 = .024$. As expected, question sent (successful vs. not) did not affect the difficulty level chosen, as this information was provided after the choice was made, $F(1, 198) = .11$, $p = .741$, $\eta_p^2 = .001$, nor was the interaction between sabotage and question sent significant, $F(1, 198) = .23$, $p = .634$, $\eta_p^2 = .001$.

Coasting. We then analyzed the effect of the default choice, the question-sent condition, and their interaction on the saboteur's motivation. Following the procedures in prior studies, we again included the number of words created in the first four rounds (before the feedback page) as covariates, to control for individual differences in skill and ability.

The analysis revealed a significant Default Choice × Question Sent interaction, $F(1, 191) = 5.23$, $p = .023$, $\eta_p^2 = .03$, with no main effects. When participants' letter strings were successfully sent to their partner, participants who were led to sabotage invested less effort in the last round (M = 14.16, SD = 6.09) than those who were not led to sabotage (M = 18.06, SD = 12.14), $t(99) = 2.03$, $p = .045$, d = −.41. However, when participants' questions were not successfully sent to their partner to pull him or her back, participants' motivation was not significantly affected by whether or not they were led to sabotage ($M_{\text{sabotage-yes}}$ = 17.84, SD = 9.88 vs. $M_{\text{sabotage-no}}$ = 16.80, SD = 9.83), $t(99) = -.53$, $p = .598$, d = 0.11 (see Figure 3).

Decomposed differently, of the participants who were led to send difficult questions (sabotage-yes conditions), those who believed that their partner had received the selected

question formed fewer words in the last round than those who believed that their partner did not receive the selected question, $t(98) = 2.24$, $p = .027$, d = −.45. In contrast, among those who were led to send easy questions (sabotage-no conditions), their subsequent effort did not differ depending on whether or not their partner received the selected question, $t(100) = -.57$, $p = .567$, d = 0.11.

In this study, we led participants to sabotage by changing the default options for them to choose for their partner, and manipulated whether this attempt to sabotage was believed to be effective in creating positional gain. We found that only when the sabotage effort was believed to be successful did participants relax in their own task. This study again ruled out participants' dispositional tendency to sabotage, the perceived difficulty of their own questions, and fatigue as alternative accounts; even when people were manipulated to sabotage, only those who believed that their attempt was successful subsequently coasted in their own pursuit. This study thus provided further support that the main purpose of sabotage was to "take the opponent down" a notch; when this positional gain was plausibly realized, people relaxed their effort, even though their sabotaging act did nothing to advance their own individual goal.

General Discussion

Others who are pursuing the same goal represent a unique group of people around us: They may not be family or even friends, but the simple fact that we share the same desire allows them to nevertheless have a profound impact on us. On the one hand, shared-pursuit others may be more understanding regarding our challenges and struggles in the pursuit (Moisio & Beruchashvili, 2010); on the other hand, they are easy comparison benchmarks that may, at least psychologically, threaten us in our own pursuits.

Such competitive feelings can potentially be motivating, encouraging us to achieve our

goals better and faster than others (Converse & Reinhard, 2016; Epstein & Harackiewicz, 1992; Harackiewicz et al., 1987). However, these competitive feelings may also motivate us in an unproductive direction. We found that the sense of competition that occurs when people are close to (vs. far from) their goal can lead people to focus on pulling others down rather than advancing themselves forward, leading to sabotage behaviors and subsequent coasting.

Theoretical Implications

People are motivated by the rewards associated with goal attainment. They hit the gym to attain a "beach body," and work long hours to achieve good grades at school and reach performance goals at work. In the context of pursuing parallel individual goals, the fact that other people are striving for the same end point adds an extra layer of motivation: outperforming shared-pursuit others, even though the outcome (and the incentive) remains strictly individual. One might expect people to sustain motivation through focusing on how they perform relative to others, similar to motivation in explicitly competitive situations (Epstein & Harackiewicz, 1992; Garcia et al., 2013; Harackiewicz et al., 1987; Norton et al., 2013). In some contexts, this competitiveness can manifest in increased focus on their own progress, and this focus on bettering the self can be functional and productive. For instance, when people feel that winning is "in the bag" in a multiphase competition, they may start to slack off; focusing on self-relevant benchmarks (e.g., last year's superior performance) at this point of the competition can help to increase motivation once more (Huang et al., 2017). However, when people are neck and neck in parallel goal pursuits, we find that this sense of competition against others pursuing similar individual goals can shift people's focus from bettering themselves to defeating the pseudo-opponent, and thus misguide their efforts. This is unexpectedly counterproductive to the attainment of people's own individual goals.

Such evidence enriches the dialogue between the social comparison and self-regulation literatures. It has long been established that people compare themselves with others and are motivated to extract positive outcomes from these comparisons (Suls, Martin, & Wheeler, 2002; Taylor & Lobel, 1989; Wills, 1981). For instance, they downplay the importance of the domains in which they do not hold an advantage, distance themselves from others who are superior, or sabotage others to achieve superiority (Tesser, 1988). We documented when and why this behavior occurs during the shared goal pursuit journey and examined its downstream consequences, demonstrating how sabotage can stand in place of actual goal progress, thereby lowering the saboteur's motivation to continue his or her own pursuit.

At first glance, our findings seem to stand in contrast to the goal gradient literature, which finds that people become more motivated as they approach their goal (Hull, 1932; Kivetz, Urminsky, & Zheng, 2006). As our results in Study 3B suggest, however, these effects may be operating in opposition. We found that sabotage behavior actually suppressed a goal gradient effect; when controlling for sabotage, those with high goal progress were more motivated than those with low progress. Thus, accumulating high progress both motivates greater effort (a goal gradient effect) and also results in competitive behaviors, which can potentially lead to coasting (e.g., if sabotage is successful, Study 5), neutralizing the benefit of competition in social settings.

Our findings also contribute to growing research on interpersonal relationships in goal pursuit. Prior research has shown that people actively manage their social surroundings when pursuing goals; individuals categorize those in their social network based on how helpful they will be to their goal pursuits (Fitzsimons & Shah, 2008) and are more likely to accept advice from others who have the same motivational orientation (Righetti, Finkenauer, & Rusbult, 2011). We introduced a longitudinal and dynamic perspective to pinpoint *when* sharing a goal pursuit

journey with others could be detrimental rather than beneficial (Studies 1–3B), and *why* it occurs (Studies 3A, 3B, and 5). Although people often help each other toward the beginning of their journey (e.g., Huang et al., 2015), this relationship can take a negative turn once they have made significant progress and begin to focus on earning positional gain against others.

Limitations and Future Research

The present research represents an important first step in exploring the social component of parallel goal pursuit and its potential negative impact on motivation. This research operationalized these goals using well-controlled game paradigms in the lab or online to cleanly capture the hypothesized effects. It has been shown that performance on word games (e.g., anagrams) can trigger achievement needs (McClelland, Clark, Roby, & Atkinson, 1949) and social comparison concerns (Lyubomirsky & Ross, 1997). Furthermore, dynamics that play out in this type of lab- or online-based games have been shown to play out in real-world, large-scale, or long-term goal pursuit as well (e.g., at Weight Watchers, Huang et al. 2015; during donation drives, Koo & Fishbach 2008; Huang et al. 2017). Thus, we believe that our effects should hold in long-term parallel goal pursuit contexts. Given that great efforts have been invested by government agencies and organizations to unite people who share similar pursuits, both online (e.g., Endomondo, Fitocracy, Fitbit, Nike+) and offline (e.g., Weight Watchers meetings, boot camps), future research could focus on studying these effects on long-term goal pursuits in social environments.

Although we posit that the effects we found should take place even over long periods of time, it is possible that these effects will be moderated by goal importance. Since domain importance tends to increase social comparison concerns and competitiveness (Hoffman, Festinger, & Lawrence, 1954; Tesser, 1988), it is plausible that these effects of goal progress on

sabotage could be even more pronounced in highly relevant domains. However, when goal progress is negatively related to domain importance—for instance, when "getting ahead" may be more important to people in the beginning of their careers than toward the end—this may mitigate or even reverse the effect of goal progress on competitive behavior. We encourage researchers to study these important potential moderators.

Although we examine the negative consequences of sabotage on one's own goal pursuit, we have not examined potential negative interpersonal consequences. Clearly, harming others' performance might be considered a type of betrayal and is likely to lead to hurt feelings, anger, and distrust (e.g., Lemay, Overall, & Clark, 2012). Therefore, it is important that future research capture the interpersonal consequences of sabotage and explore situations in which sabotage can be reduced. For instance, emphasizing individual differences and providing individualized performance statistics might help reduce competitiveness, and mitigate its negative consequences.

Our findings usher in a set of exciting research questions on sabotage behaviors as well. For instance, are there particular types of sabotage that are more (or less) harmful to the saboteur's own effort? The extent to which saboteurs feel that they have agency in the outcomes may play an important role in determining the subsequent reduction of effort. In addition, sabotage by action (e.g., giving a misleading tip) may feel more effortful than sabotage by inaction (e.g., not warning someone about hidden calories in a meal). Higher perceived effort in earning the positional gain may create a greater negative impact on one's motivation.

Other dimensions of shared-pursuit relationships also deserve attention. It is plausible that even if Weight Watchers members become competitive with other members in the program, they might remain helpful to their colleagues at work who are also on the diet—those who share

a diverse set of goals with them (e.g., both a career goal and a fitness goal). Because our studies deliberately positioned participants as sharing only one individual goal with the other participants, our findings may be constrained when the complexities that underlie each social other are made salient. In addition, what happens if the relationship is already strong to begin with (e.g., joining an exercise program with a close friend)? Will this extra layer of closeness attenuate the sense of competition, or might it conversely make the comparison more threatening and thus intensify competitive behaviors? Explorations along these lines are of great theoretical and practical importance because, after all, sabotaging hurts not only others but also oneself.

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Figure 1. Difficulty of questions selected for the other student predicted by goal progress in Study 1.

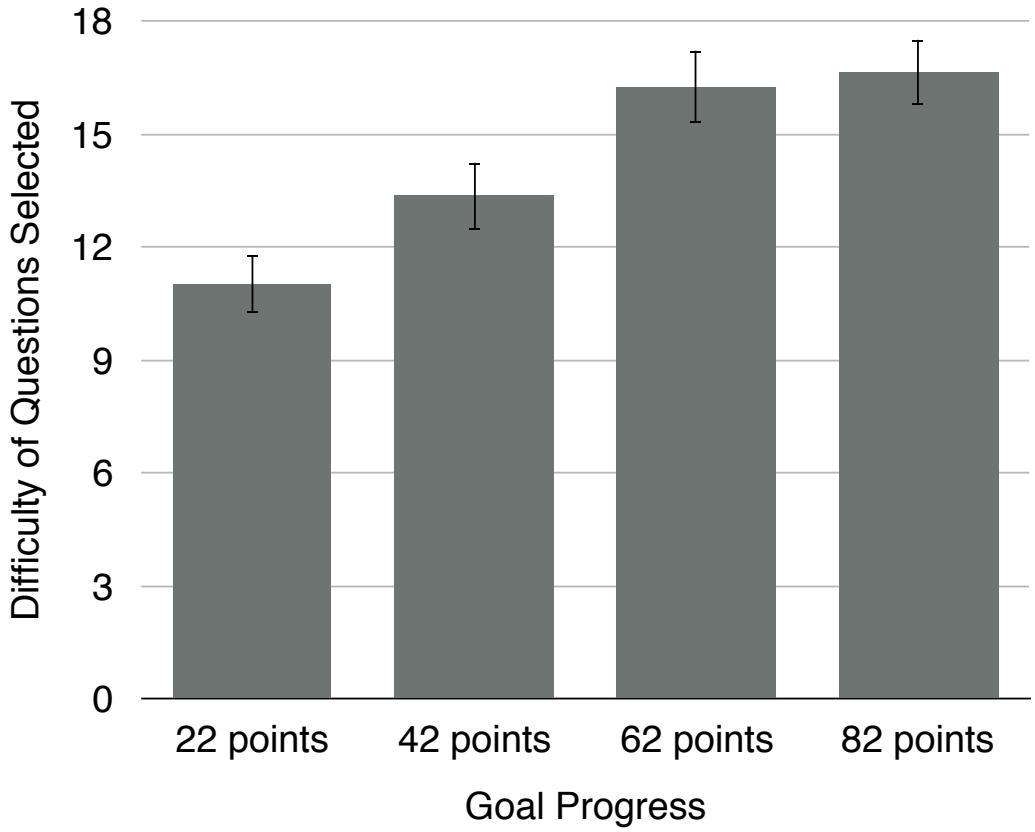


Figure 2. The impact of certainty and progress level on sabotage choice in Studies 3A and 3B.

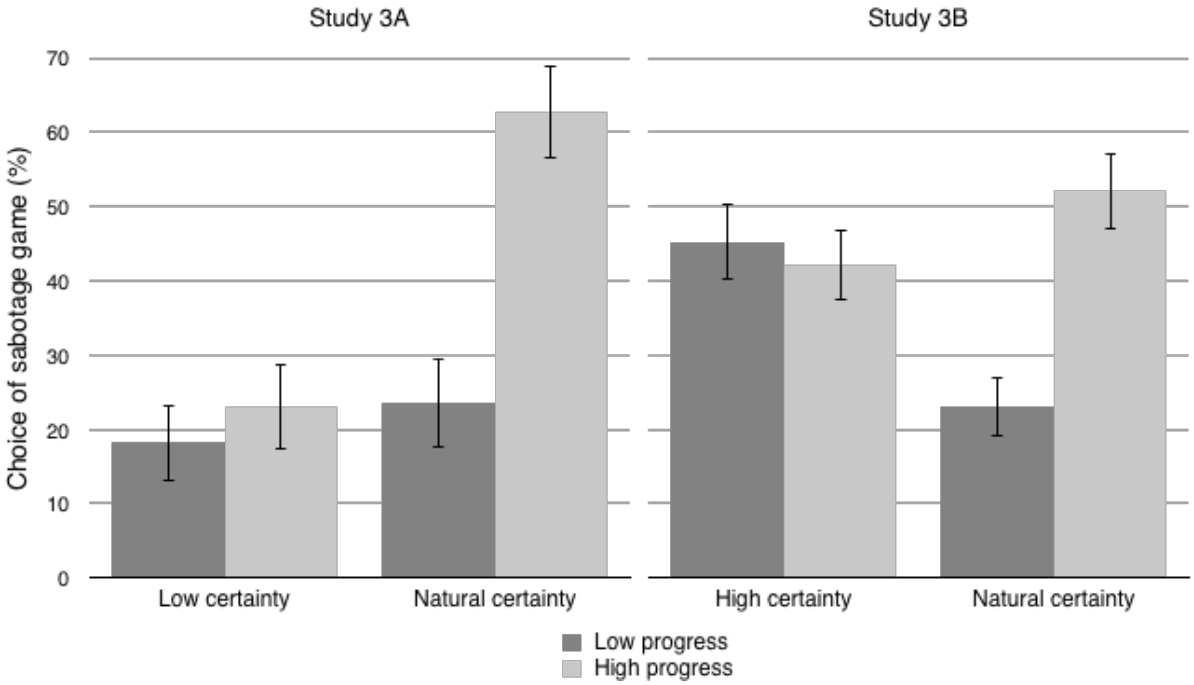
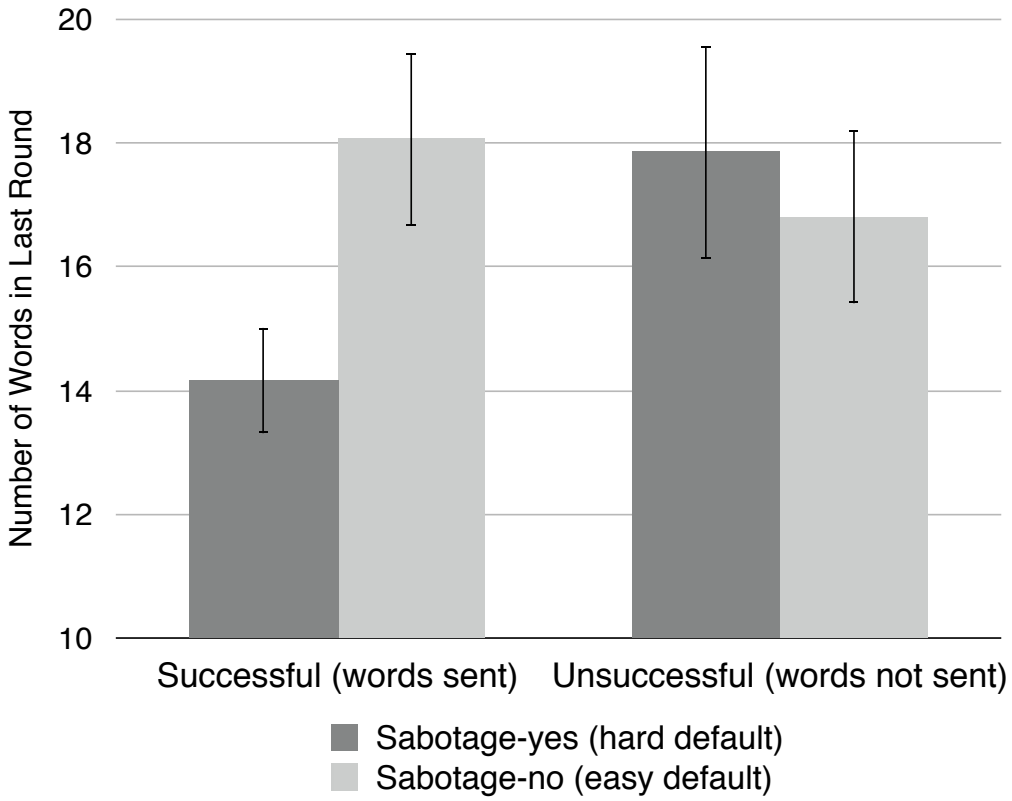


Figure 3. The impact of default choice and question sent on motivation in Study 5.



Appendix A

Direct manipulation of sabotage behavior in Study 5

Difficult default (sabotage-yes):

Easy default (sabotage-no):