

Copy-Paste Prompts: A New Nudge to Promote Goal Achievement

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ABSTRACT Consumers often struggle to achieve self-set, life-improvement goals. We introduce a novel, psychologically wise nudge—the *copy-paste prompt*—that encourages consumers to seek out and mimic a goal-achievement strategy used by an acquaintance. In a large ($N = 1,028$), preregistered, longitudinal study, participants randomly assigned to receive a copy-paste prompt spend more time exercising the following week than participants assigned to either a quasi-yoked or simple control condition. The benefits of copy-paste prompts are mediated by the usefulness of the adopted exercise strategy, commitment to using it, effort put into finding it, and the frequency of social interaction with people who exercise regularly. These findings suggest that further research on the potential of this virtually costless nudge is warranted.

Many consumers struggle to achieve life-improving goals, even ones that they set for themselves. For example, although most Americans want to be slim, 72% are either overweight or obese, and only 60% of students who begin pursuing a college degree will graduate within 6 years (Nosek et al. 2006; National Center for Health Statistics 2016; National Center for Education Statistics 2019). In this article, we present and test a new nudge to bolster goal achievement. The *copy-paste prompt* encourages consumers to identify and emulate a goal-achievement strategy used by an acquaintance.

Previous research has shown that information gaps about how to approach goals can hinder achievement (Clark, Maki, and Morrill 2013). Mentoring and training programs can remedy this problem (Schotter 2003; Dappen and Isernhagen 2006; Sanchez, Bauer, and Paronto 2006; Underhill 2006; Clark et al. 2013). However, pairing mentors with mentees is often difficult, and providing information sometimes backfires when it contradicts an advisee's own opinion or highlights goal difficulty (Fitzsimons and Lehmann 2004; Dappen and Isernhagen 2006; Beshears et al. 2015).

There are several reasons that copy-paste prompts may be more effective than other methods for bolstering goal achievement. First, they may have social benefits. Behaviors are more appealing when learned from observation (Foster and Rosenzweig 1995; Cialdini and Trost 1998; Gelman 2008), and learning from models increases both a person's expectations of their own abilities and their likelihood of using information (Bandura 1977; Borgida and Nisbett 1977). Furthermore, peer norms shape behavior in many domains, including academic performance (Carrell, Fullerton, and West 2009), physical fitness (Scarapicchia et al. 2013), and emotional states (Barsade 2002). However, we posit that consumers may not take full advantage of opportunities to observe and emulate others in their social network. If, indeed, consumers fail to notice or mimic strategies deployed by peers that could help them achieve their goals, copy-paste prompts may add value by helping consumers better take advantage of this resource.

Another benefit of copy-paste prompts: the information is more customized and goal-relevant, since consumers select peers whose behavior they want to emulate. For instance,

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a consumer who wants to run more regularly can ask for advice from a peer who runs a lot rather than one who frequently goes to yoga class. Because consumers value designing and customizing products (Franke, Schreier, and Kaiser 2010), they may be more likely to adopt a customizable strategy obtained via a copy-paste prompt.

Finally, copy-paste prompts may increase perceived autonomy. People prefer self-made products and evaluate them more positively (Troye and Supphellen 2012; Dohle, Rall, and Siegrist 2014). Feelings of autonomy can also increase the perceived value of a creative experience (Dahl and Moreau 2007). Thus, actively searching for information themselves may lead consumers to value it more than if they had received the same advice passively.

In a large ($N = 1,028$), preregistered longitudinal experiment (<https://aspredicted.org/kh2w7.pdf>), we tested whether copy-paste prompts could increase the amount of time spent exercising among those hoping to work out more, and we found that they indeed did. We included two control conditions in our experiment: one in which participants received an exercise strategy found by someone else using a copy-paste prompt in a prior study (a quasi-yoked control) and one in which no strategy was provided (a simple control). All participants were asked about their intended exercise strategies in order to hold constant the formation of implementation intentions across conditions (Gollwitzer 1999).

Our appendix (available online) includes three earlier studies showing that copy-paste prompts add value. We found that copy-paste prompts improved exercise outcomes more than providing top-rated exercise hacks (study A1) or prompting study participants to find and mimic an unrelated strategy—in this case, a fashion strategy (study A2). Copy-paste prompts also increased students' preparedness for class more than being prompted to seek out and tell friends an unrelated fun fact (study A3).

METHOD

Participants

Using Amazon's Mechanical Turk (MTurk), we recruited 1,230 participants who reported that they wanted to exercise more. Following our preregistered analysis plan, we excluded data from 161 individuals who failed to answer both dependent variable questions, 37 individuals who completed our surveys more than once, and 4 individuals who failed an attention-check quiz in our first survey. Our final sample consisted of $N = 1,028$ individuals (58.56% female, mean age = 38.30 years).

Unexpectedly, attrition from our control conditions (19.85% in our simple control, 17.87% in our quasi-yoked control) was higher than in our copy-paste prompt condition (11.41%; simple control vs. copy-paste: $\chi^2(1) = 10.36$, $p = .001$, quasi-yoked control vs. copy-paste: $\chi^2(1) = 6.30$, $p = .012$). Because our copy-paste prompt condition had less attrition and participants on the margin of completing a study are typically the least motivated, our differential attrition should actually bias us against finding a difference between conditions, making our study a particularly conservative test of our hypothesis. Notably, this pattern of differential attrition also suggests our copy-paste prompt condition increased an unanticipated measure of participants' motivation to achieve their goals: their rate of completing our study.

Design and Procedure

Participants completed three surveys over the course of 10 days. They earned \$0.05 per survey and \$10 if all three surveys were completed.

Figure 1 depicts the flow of our experiment. First, participants were asked how many hours they spent exercising in the last week and were randomly assigned to one of three conditions: the copy-paste prompt condition, the quasi-yoked control condition, or the simple control condition. All participants then read information about the bonus payment structure.

Next, in the copy-paste prompt condition, participants read the following:

In this study, we want to help you learn about **an effective hack or strategy that someone you know uses as motivation to exercise**. Over the next 2 days, we'd like you to pay attention to how people you know get themselves to work out. If you want, you can ask them directly for their motivational tips and strategies.

On the following screens, they were told that this hack should be something they did not already know but applicable to their lives.

In the quasi-yoked control condition, participants read the following:

In this study, we're hoping to help you learn about **an effective hack or strategy that motivates people to exercise**. Over the next 2 days, we'd like you to get ready to learn a new strategy to motivate you to exercise.

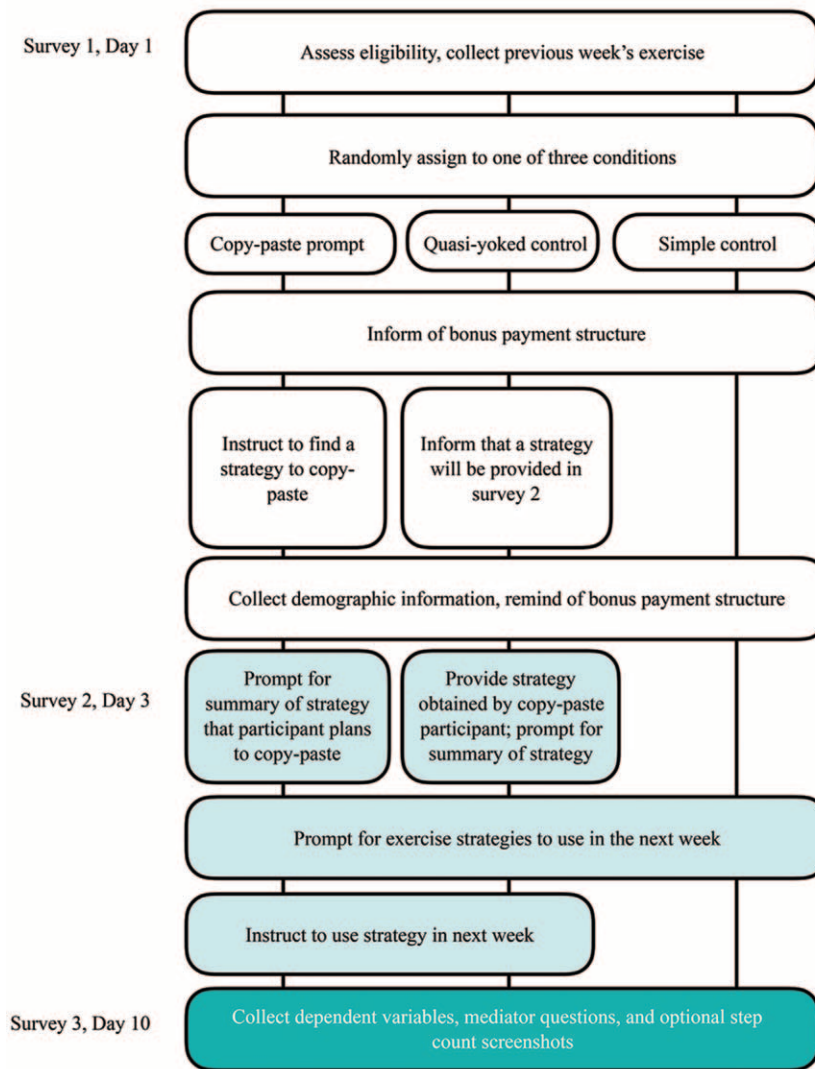


Figure 1. Survey design and what information was provided to participants in each condition in each survey.

Next, in both the copy-paste prompt and quasi-yoked control conditions, participants completed a brief comprehension quiz, which they were required to pass within three tries to continue in the study. Finally, participants in all experimental conditions answered demographic questions and were reminded of the \$10 bonus payment they would receive if they completed all three study surveys over the next 10 days.

Two days later, all participants were sent the same reminder messages to complete our second survey. In all conditions, participants described strategies that they would use in the next week to exercise more. In addition to describing strategies, participants in the copy-paste prompt condition summarized the strategy they planned to copy-paste from an acquaintance. In the quasi-yoked control

condition, participants were provided with one of 358 exercise strategies (selected at random) that another participant had copy-pasted in a previous study (e.g., “For every hour that you exercise, allow yourself 15 minutes on social media”).¹ In addition to describing strategies, these participants summarized the strategy they had just received from the experimenter. Finally, all participants were reminded that they needed to complete a final survey in a week to earn \$10.

A week after completing our second survey (and 10 days after the start of the study), all participants were reminded

1. A week before conducting this experiment, we ran a pilot test of 400 different participants on Amazon’s MTurk. The purpose of this pilot was to collect strategies that could be given to participants in the quasi-yoked control condition of our main experiment.

to complete our final survey. Participants in all conditions were asked how many hours they had spent exercising in the past week (a drop-down menu allowed them to give answers ranging from “0” to “25 or more hours,” in half-hour increments) and how motivated they felt to exercise (on a 5-point scale ranging from 1 = “not at all motivated” to 5 = “extremely motivated”). Participants’ responses to these questions were our primary, preregistered dependent variables.

Participants then answered nine additional questions designed to explore why copy-paste prompts may be effective. Using a 7-point scale ranging from “not at all” to “extremely,” participants indicated how useful, new, customized, or appealing they found the strategies they used to exercise more over the past week, how committed they were to using these strategies, how much effort they put into finding them, how much feedback they received about them, how often they socialized with people who exercised a lot, and how many conversations they had about exercising. Finally, participants were invited to upload a screenshot of their step count over the past week for a \$1 bonus. Complete experimental stimuli are available in the appendix, and all data and analyses are available online (<https://osf.io/drwvh/>).

RESULTS AND DISCUSSION

Unfortunately, only 124 participants (12.06%) submitted screenshots of their step count during our study, so we focused on our primary preregistered outcomes (self-reported exercise and motivation) and included analyses of these limited step count data by condition in our appendix.² We did, however, find a significant, positive correlation between number of steps taken and self-reported time spent exercising ($r = .298, p = .0008$), lending support to the validity of our self-reported exercise measure in the full sample.

To determine if copy-paste prompts increased time spent exercising relative to the control conditions, we conducted a linear regression in which our primary predictors were an indicator for assignment to our copy-paste prompt condition and an indicator for assignment to our quasi-yoked control condition. We also included controls for participants’ age, gender, and self-reported time spent exercising the

week before the experiment began (collected before random assignment in survey 1). As shown in table 1, model 1, participants in the copy-paste prompt condition spent significantly more time exercising ($M = 4.32$, standard deviation (SD) = 3.44) than those in the simple control condition ($M = 3.37$, SD = 2.75; $p < .0001$). We also found that participants in our copy-paste prompt condition spent significantly more time exercising than those in our quasi-yoked control condition ($M = 3.64$, SD = 2.47; $p = .003$). On

Table 1. Impact of a Copy-Paste Prompts on Exercise Outcomes

	Dependent variable	
	Time spent exercising	Z-scored motivation to exercise
	Model 1	Model 2
Copy-paste prompt condition	.930*** (.181)	.278*** (.072)
Quasi-yoked control	.388* (.180)	.182* (.072)
Time spent exercising week before experiment began	.642*** (.029)	.119*** (.012)
Age	.011 (.007)	.003 (.003)
Female	-.550*** (.152)	-.184** (.061)
Wald test: Difference in means of copy-paste and quasi-yoked control conditions, standard error of differences	.542** (.231)	.096 (.083)
Observations	1,028	1,028
R ²	.352	.120

Note.— This table reports coefficient estimates from two ordinary least squares regressions estimating the impact of a copy-paste prompt on z-scored self-reported motivation to exercise and time spent exercising. Model 1 estimates the effect of the copy-paste prompt and quasi-yoked control condition on z-scored self-reported motivation to exercise, controlling for time spent exercising before the experiment began, age, and gender. Model 2 regresses the same independent variables on self-reported time spent exercising. Wald tests compare the effect of the copy-paste prompt to a quasi-yoked control. Standard errors are reported in parentheses.

* $p = 5\%$ level.

** $p = 1\%$ level.

*** $p = .1\%$ level.

2. Those select participants who shared step count data with us did walk directionally (but insignificantly) more total steps over the course of our entire 10-day study in the copy-paste prompt condition than in other conditions.

average, during our 1-week follow-up period, the regression-estimated impact of copy-paste prompts was 55.8 and 32.5 more minutes spent exercising than those in our simple control and quasi-yoked control conditions, respectively. We also found that men benefited more than women from receiving a copy-paste prompt ($p = .018$; see the appendix for more information).

As shown in table 1, model 2, participants in our copy-paste prompt condition reported feeling significantly more motivated to exercise ($M = 3.42$, $SD = 1.13$) than participants in our simple control condition ($M = 3.10$, $SD = 1.18$; $p = .0001$) but only directionally more motivated to exercise than participants in our quasi-yoked control condition ($M = 3.28$, $SD = 1.10$; $p = .189$).

In preregistered exploratory analyses, we examined possible mechanisms for the effect of the copy-paste prompt on time spent exercising. We conducted a bootstrapped multiple mediation analysis, comparing the copy-paste prompt condition to the quasi-yoked control condition. We found that the usefulness of the exercise strategy ($b = .218$, 95% confidence interval [CI] = [.069, .385]), commitment to using the exercise strategy ($b = .196$, 95% CI = [.080, .349]), effort put into finding the exercise strategy ($b = .147$, 95% CI = [.016, .283]), and social interactions with people who exercise regularly ($b = .089$, 95% CI = [.010, .205]) all mediated the relationship between the copy-paste prompt condition and reported time spent exercising. In the appendix, we include separate mediation models for each potential mediator measured that are consistent with this multiple mediation model.

GENERAL DISCUSSION

In a large, longitudinal, preregistered study of exercise behavior, we found that a brief and virtually costless copy-paste prompt improved goal-directed outcomes over the following week. Specifically, this nudge led to greater increases in the amount of time spent exercising than did passively receiving a strategy of similar quality, highlighting the value of actively finding goal-related strategies among one's peers. Exploratory mediation analyses suggested that autonomy, the opportunity to identify personally useful strategies, increased commitment to self-identified solutions, and positive peer influence all played a role in making copy-paste prompts effective. Taken together with our three studies in the appendix, we showed that copy-paste prompts routinely outperform control conditions.

While these early results are promising, our work has a number of important limitations. First, although we sought

to collect an objectively measured dependent variable, only a very small and nonrepresentative subgroup shared verifiable information on their behavior. Our self-reported measure of time spent exercising was highly correlated with objectively measured steps in this select subsample, but further research with objective measures of behavior are needed to confirm the benefits of copy-paste prompts. Second, there was differential attrition across conditions in our primary study. While the observed attrition—higher in the control groups than in the copy-paste group—actually implies that we conducted a conservative test of our hypothesis, and this problem was not present in other studies reported in our appendix (see studies A1 and A3), it would be ideal to replicate our findings without any attrition. Third, further research investigating why copy-paste prompts helped men more than women in our study would be useful. Finally, our 10-day study did not examine the long-term impact of copy-paste prompts. It would be valuable to conduct a study with a longer follow-up period.

In spite of these limitations, our findings suggest copy-paste prompts may be a valuable new policy tool. They are easy to implement, virtually costless, and widely applicable with the potential to improve outcomes ranging from healthy eating to academic success. Furthermore, it may be that once a consumer learns to copy-paste in one domain (e.g., exercise), she will be able to apply this technique in a way that improves many other outcomes (e.g., retirement savings).

REFERENCES

- Bandura, Albert (1977), "Social Learning Theory," in *Social Learning Theory*, Englewood Cliffs, NJ: Prentice-Hall, 1–46.
- Barsade, Sigal G. (2002), "The Ripple Effect: Emotional Contagion and Its Influence on Group Behavior," *Administrative Science Quarterly*, 47 (4), 644–75.
- Beshears, John, James J. Choi, David Laibson, Brigitte C. Madrian, and Katherine L. Milkman (2015), "The Effect of Providing Peer Information on Retirement Savings Decisions," *Journal of Finance*, 70 (3), 1161–201.
- Borgida, Eugene, and Richard E. Nisbett (1977), "The Differential Impact of Abstract vs. Concrete Information on Decisions," *Journal of Applied Social Psychology*, 7 (3), 258–71.
- Carrall, Scott E., Richard L. Fullerton, and James E. West (2009), "Does Your Cohort Matter? Measuring Peer Effects in College Achievement," *Journal of Labor Economics*, 27 (3), 439–64.
- Cialdini, Robert B., and Melanie R. Trost (1998), "Social Influence: Social Norms, Conformity and Compliance," in *The Handbook of Social Psychology*, Vol. 1, ed. Daniel T. Gilbert, Susan T. Fiske, and Garden Lindzey, New York: McGraw-Hill, 151–92.
- Clark, Robert L., Jennifer A. Maki, and Melinda Sandler Morrill (2013), "Can Simple Informational Nudges Increase Employee Participation in a 401(k) Plan?" *Southern Economic Journal*, 80 (3), 677–701.

- Dahl, Darren W., and C. Page Moreau (2007), "Thinking Inside the Box: Why Consumers Enjoy Constrained Creative Experiences," *Journal of Marketing Research*, 44 (3), 357–69.
- Dappen, Leon, and Jody C. Isernhagen (2006), "Urban and Nonurban Schools: Examination of a Statewide Student Mentoring Program," *Urban Education*, 41 (2), 151–68.
- Dohle, Simone, Sina Rall, and Michael Siegrist (2014), "I Cooked It Myself: Preparing Food Increases Liking and Consumption," *Food Quality and Preference*, 33 (April), 14–16.
- Fitzsimons, Gavan J., and Donald R. Lehmann (2004), "Reactance to Recommendations: When Unsolicited Advice Yields Contrary Responses," *Marketing Science*, 23 (1), 82–94.
- Foster, Andrew D., and Mark R. Rosenzweig (1995), "Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture," *Journal of Political Economy*, 103 (6), 1176–209.
- Franke, Nikolaus, Martin Schreier, and Ulrike Kaiser (2010), "The 'I Designed It Myself' Effect in Mass Customization," *Management Science*, 56 (1), 125–40.
- Gelman, Susan A. (2008), "Learning from Others: Children's Construction of Concepts," *Annual Review of Psychology*, 60 (1), 115–40.
- Gollwitzer, Peter M. (1999), "Implementation Intentions: Strong Effects of Simple Plans," *American Psychologist*, 54 (7), 493–503.
- National Center for Education Statistics (2019), "Graduation Rate from First Institution Attended for First-Time, Full-Time Bachelor's Degree-Seeking Students at 4-year Postsecondary Institutions, by Race/Ethnicity, Time to Completion, Sex, Control of Institution, and Acceptance Rate: Selected Cohort Entry Years, 1996 through 2011," https://nces.ed.gov/programs/digest/d18/tables/dt18_326.10.asp.
- National Center for Health Statistics (2016), "Obesity and Overweight," <https://www.cdc.gov/nchs/fastats/obesity-overweight.htm>.
- Nosek, Marlene B., Lenny R. Vartanian, Brian A. Nosek, and Kelly D. Brownell (2006), "The Influence of One's Own Body Weight on Implicit and Explicit Anti-Fat Bias," *Obesity*, 14 (3), 440–47.
- Sanchez, Rudolph J., Talya N. Bauer, and Matthew E. Paronto (2006), "Peer-Mentoring Freshmen: Implications for Satisfaction, Commitment, and Retention to Graduation," *Academy of Management Learning and Education*, 5 (1), 25–37.
- Scarapicchia, Tanya M., Catherine M. Sabiston, Ross E. Andersen, and Enrique Garcia Bengoechea (2013), "The Motivational Effects of Social Contagion on Exercise Participation in Young Female Adults," *Journal of Sport and Exercise Psychology*, 35 (6), 563–75.
- Schotter, Andrew (2003), "Decision Making with Naive Advice," *American Economic Review*, 93 (2), 196–201.
- Troye, Sigurd V., and Magne Supphellen (2012), "Consumer Participation in Coproduction: 'I Made It Myself' Effects on Consumers' Sensory Perceptions and Evaluations of Outcome and Input Product," *Journal of Marketing*, 76 (2), 33–46.
- Underhill, Christina M. (2006), "The Effectiveness of Mentoring Programs in Corporate Settings: A Meta-Analytical Review of the Literature," *Journal of Vocational Behavior*, 68 (2), 292–307.