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Patient Inertia and the Status Quo Bias: When an Inferior Option Is Preferred

Gaurav Suri[1], Gal Sheppes[2], Carey Schwartz[1], and James J. Gross[1]
[1]Stanford University and [2]Tel Aviv University

Abstract

Medical noncompliance is a major public-health problem. One potential source of this noncompliance is *patient inertia*. It has been hypothesized that one cause of patient inertia might be the status quo bias—which is the tendency to select the default choice among a set of options. To test this hypothesis, we created a laboratory analogue of the decision context that frequently occurs in situations involving patient inertia, and we examined whether participants would stay with a default option even when it was clearly inferior to other available options. Specifically, in Studies 1 and 2, participants were given the option to reduce their anxiety while waiting for an electric shock. When doing nothing was the status quo option, participants frequently did not select the option that would reduce their anxiety. In Study 3, we demonstrated a simple way to overcome status quo bias in a context relevant to patient inertia.

Keywords

choice, status quo bias, decision making, patient inertia, emotions, health

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Many people fail to take active steps to protect their health. Diabetic patients frequently let years pass between their first diagnosis and insulin initiation (Harris, Kapor, Lank, Willan, & Houston, 2010); many high-risk heart patients resist initiating lifestyle changes despite physician recommendations (Van Steenkiste et al., 2004); and year after year, at-risk individuals fail to follow their doctors' recommendations to get a flu shot (John & Cheney, 2008).

Medical-noncompliance rates in developed countries are as high as 50% (Morris & Schulz, 1992). This results in a great deal of preventable human suffering and premature mortality. Medical noncompliance is estimated to increase health care costs in the United States alone by $100 billion per year and is responsible for 10% of hospital admissions and 23% of nursing-home admissions (Vermeire, Hearnshaw, ValRoyen, & Denekens, 2001). Thus, patient noncompliance with prescribed medical interventions is a major public-health problem.

More than four decades of research has shown that the causes of medical noncompliance are many. They include the quality of the doctor-patient relationship, the number of medications prescribed, the complexity of regimens, side effects, social norms regarding compliance, a lack of medication or physician access, and unaffordable medical costs (Vermeire et al., 2001). One additional cause of medical noncompliance is *patient inertia*—which prevents patients from initiating and sustaining physician contact or adhering to recommended drug regimens (Joyner-Grantham et al., 2009).

One potential cause of patient inertia is hypothesized to be the status quo bias (SQB; Panidi, 2008), which is the tendency to maintain a previous decision either by actively choosing the default or by doing nothing (Samuelson & Zeckhauser, 1988). The SQB has often been said to underlie real-world decisions. One example concerns a choice between an expensive car-insurance plan that protected a subscriber's rights to sue versus a cheaper plan that restricted rights to sue. The expensive plan was offered as the default in Pennsylvania, and the cheaper plan was offered as the default option in New

Corresponding Author:
Gaurav Suri, Department of Psychology, Jordan Hall, Building 01-420, Stanford University, 450 Serra Mall, Stanford, CA 94305
E-mail: rsuri@stanford.edu

Jersey. It was found that users in each case stuck with the default option (Johnson, Hershey, Meszaros, & Kunreuther, 1993)—which, barring mysterious state-based preferences in suing other people, suggests a role for the SQB. The SQB has also been cited as a mechanism underlying other decision contexts, including choices involving electrical-service providers (Hartman, Doane, & Woo, 1991), organ donation (Johnson & Goldstein, 2003), 401(K) plans (Beshears, Choi, Laibson, & Madrian, 2006), investment portfolios (Ameriks & Zeldes, 2000), and choices in health plans (Samuelson & Zeckhauser, 1988).

One difficulty in establishing the SQB as a potential cause of patient inertia is that prior demonstrations of the SQB have relied on decision contexts in which the outcomes were largely indistinguishable in value (e.g., Samuelson & Zeckhauser, 1988). This is not the case in patient inertia, in which choice outcomes have significantly different values. For example, maintaining the default state of not commencing one's heart medication is much worse than the alternative (taking one's medication and lessening the risk of a heart attack). Thus, most prior demonstrations of SQB do not readily apply to patient inertia.

To demonstrate the potential relevance of the SQB to patient inertia, one must first demonstrate decision contexts in which participants stay with the status quo even though it is unambiguously worse than the available alternatives. Such decision contexts go well beyond known instances of the SQB. We thus decided to attempt to create a laboratory context in which participants stuck with the status quo even though it was clearly not in their self-interest to do so. We reasoned that such a setting would serve as an analogue to decision contexts relevant to patient inertia.

When we embarked on these studies, we believed that we were unlikely to find a decision context that fully satisfied these conditions. Much to our surprise, however, we found that it is indeed possible to demonstrate instances of the SQB in which inertial forces prevail over ostensibly better outcomes (Study 1 and Study 2). In Study 3, we required participants to overcome inertia in a single early trial. This simple manipulation reduced SQB and suggested an approach that could be useful in decreasing patient inertia.

Study 1: The SQB Extends to Decisions With Inferior Defaults

Does the SQB occur in contexts in which the default option has a clearly inferior value to the alternative option? To answer this question, we used the threat of electric shock, which enabled personally salient, differentiable decisions. Prior studies have shown that given the choice of waiting for a shock versus getting it over with quickly, most people choose the latter (Berns et al., 2006). This is presumably because they consider the dread of waiting for the shock to be worse than the shock itself. In the present study, we tested whether forming the SQB would further the default state and thus prevent participants from pressing a button that would reduce their waiting time for a shock.

Our initial intuition was that most people would choose to proactively press a button to reduce their waiting time to get shocked. To assess how widely shared this intuition was, we conducted prestudy surveys of nonpsychologists (80 responders) and psychologists (25 responders with a graduate degree in psychology). Most responders on both surveys believed that given an option to do so, study participants would proactively opt to shorten the trials. In both groups, more than 80% of respondents said that shortening the trial was not a difficult decision and that there was no rational reason not to do it. Both groups expected more than 80% of participants to choose to shorten the waiting period in at least 75% of the trials. This suggests that in the eyes of these external observers, there would be no rational reasons to stay with the status quo.

In the laboratory component of the study, we contrasted choices in two groups of participants: Both could choose between reducing their waiting time or keeping it the same, but only one group was actually forced to make this choice. Reducing the waiting time required a proactive button press, and not pressing this button resulted in the waiting time remaining unchanged.

Method

Forty-one students (20 women, 21 men) were randomly assigned to either a forced-choice group (20 participants; 9 women, 11 men) or a proactive-choice group (21 participants; 11 women, 10 men). All participants were calibrated on the maximum level of electrical shock that they could tolerate. The calibrated intensity caused high anxiety in all participants. Participants were told that trials would be of varying lengths and that a single shock (at the calibrated level) could be administered at any time during each trial. Participants were informed that a large majority of, but not all, trials would contain a shock. Trials containing a shock would end with the administration of the shock.

Participants were instructed to monitor their subjective-anxiety levels during the trial. At the end of every trial, they were asked to record their anxiety levels (on a scale from 1 to 7). As a cover story, participants were told that their subjective evaluations of anxiety would be compared with their physiological responses (obtained via a finger-pulse monitor). This comparison was not an actual objective of the study—rather, it was used as a vehicle for obscuring our real interest, namely participants' choice

behavior. Participants were informed that experimenters were indifferent to whether they reduced their waiting times because our focus was the link between subjective anxiety and physiological responses and that we were indifferent to the absolute level of anxiety.

At the start of every trial, participants in the forced-choice group were presented with a choice of pressing two buttons. Pressing one would shorten the waiting time to the shock by 10 s, and pressing the other would keep the waiting time unchanged. Participants in the proactive-choice group had the option of pressing a trial-shortening button at any time in the trial. Pressing this button reduced the waiting time by 10 s. If the participant elected not to press the button, the waiting time remained unchanged. In both conditions, if a participant pressed the trial-shortening button, a differently colored screen lasting 10 s appeared at the end of trial informing the participant that had he or she not elected to shorten the trial, those 10 s would have been a part of the trial. In this way, the total trial time was kept constant; however, the button press would mean that the shock-anticipation period was lessened.

Four practice trials were conducted in which the actual shock was replaced with an audio beep. The audio beep was used (instead of the shock) so that participants' anxiety would not prevent them from fully understanding the task. There were 14 experimental trials. All except 1 of these trials (Trial 4) ended with the administration of a shock. The exact number of trials was not revealed to participants.

Results and discussion

Participants in the forced-choice condition chose to shorten the trial 74.7% of the time. Participants in the proactive-choice condition chose to shorten the trial 40.7% of the time (Fig. 1). The between-conditions difference was significant, $t(39) = 3.2$, $p = .003$, and demonstrates that on many trials, subjects chose to keep the shock-anticipation time unchanged when this was presented as the status quo option; however, they often did not make the same selection when this option was not the status quo.

To better understand the effects of our manipulation, we divided participants in each group into low (0–4 button presses), medium (5–9 button presses), and high (10–14 button presses) button pressers. The proactive-choice group consisted of 52% low-button pressers, 19% medium-button pressers, and 29% high button pressers. The forced-choice group consisted of 25% low button pressers, 0% medium button pressers, and 75% high button pressers. The between-groups difference was significant, $\chi^2(2, N = 41) = 10.09$, $p = .006$. Neither sex nor average levels of anxiety were predictive of a participant being in the low, medium, or high subgroup.

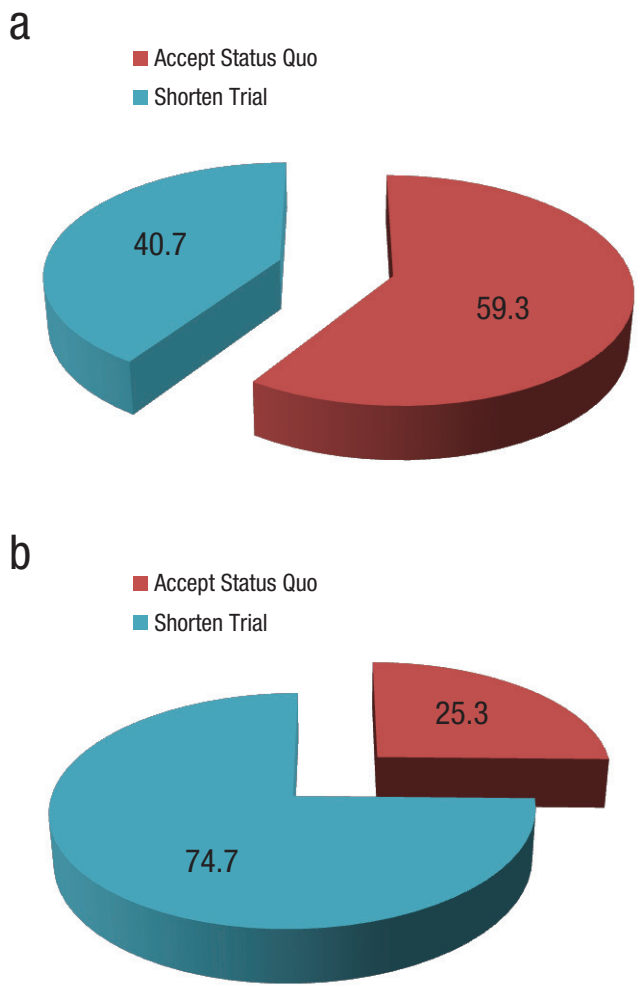

Fig. 1. Results from Study 1: mean percentage of trials on which participants in (a) the proactive-choice group and (b) the forced-choice group chose to either shorten the trial (reducing their waiting time to an expected shock) or allow the trial to continue (i.e., accept the status quo). Participants in both groups could press a button to shorten the trial if they chose, but only participants in the latter group were forced to make this decision.

In postexperiment debriefings, 100% of participants indicated that they did not feel that either the status quo option or its alternative were favored by the experimenters. More than 85% of the participants reported that the opportunity to shorten trials was personally salient to them, and more than 78% of the participants indicated that they saw a clear difference between the status quo option and its alternative. Additionally, all participants reported that they understood that pressing the button could not hurt them—at worst, their waiting time would remain unchanged.

Thus, contrary to our initial expectations—as well as those of our prestudy survey participants—these findings indicated that the SQB is evident even in decision

contexts that involve an unfavorable default option (e.g., medical noncompliance). In Study 2, we sought to "break" this effect by making the difference between the status quo option and its alternative even starker. Our intent was to find a condition that would be strong enough to eliminate the SQB.

Study 2: Status Quo Persistence Despite Strong Opposing Incentives

In Study 2, we tested whether the SQB would persist if participants were provided with an option that was even more obviously superior to the status quo. We reasoned that the SQB would be extinguished under these circumstances. Using the same paradigm as in Study 1, we provided an option to press a button that would drastically reduce the probability of getting shocked. We were confident that the SQB would disappear; our plan was to gradually make the reward less salient until the SQB reappeared once again.

Method

As in Study 1, we conducted prestudy surveys with nonpsychologists (100 responders) and psychologists (30 responders with graduate degrees in psychology). Findings from these surveys showed that both groups expected more than 90% of participants to proactively press the button that reduced the shock probability on at least 75% of the trials. In both groups, more than 95% of respondents said that pressing the button was not a difficult decision, and there was no rational reason not to press it.

In the laboratory component of the study, we contrasted choices made by two groups of participants: Both could choose between reducing the probability of being shocked or keeping it the same, but only one group was forced to make this choice. In the forced-choice group, reducing the probability of being shocked required a proactive button press, and not pressing this button resulted in the probability of being shocked remaining unchanged.

Forty students (22 women, 18 men) participated in a study involving electrical stimulation. Twenty students (11 women, 9 men) were randomly assigned to the proactive-choice group; the remaining 20 students (11 women, 9 men) were randomly assigned to the forced-choice group.

In procedures identical to those used in Study 1, participants in both groups were calibrated, informed about the trial structure, and asked to monitor and record their subjective anxiety so it could be compared with physiological measures (which, as in Study 1, was merely a cover story to observe choice behavior). The number of practice trials (4) and experimental trials (14) was identical to that in Study 1 for both groups.

At the start of every trial, participants in the forced-choice group were required to choose between pressing two buttons. Pressing one would reduce the probability of being shocked in that trial by 90% (while keeping the magnitude of the shock unchanged). Pressing the other button would keep the probability of getting shocked in that trial unchanged. Participants in the proactive-choice group had the option of pressing an identical button to reduce the shock probability at any time in the trial. Pressing this button reduced the probability of being shocked in that trial by 90% (while keeping the magnitude of the shock unchanged). If the participant elected not to press the button, the probability of getting shocked in that trial remained unchanged.

All participants were told that there was a small minority of trials during which they would not be shocked whether or not they pressed the shock-probability-reducing button. However, for most of the trials, pressing the button meant that the shock would not be administered, whereas not pressing the button meant that they definitely would be shocked. To ensure that participants fully understood, we provided an explicit example: "If you press the button every time in a set of 10 trials, then on average you will not be shocked for nearly all of those trials. If you do not press the button in any of the 10 trials, then on average you will be shocked for nearly all the trials."

One concern was that participants might believe that choosing not to be shocked would have a detrimental effect on the study. To address this concern, we reminded participants that even if they pressed the button every time, they would still have some anxiety in each trial because the probability of receiving the shock was reduced but not eliminated. They were told that this would be sufficient to compare their ratings with their physiological measures (which was the ostensible objective of the study). Thus, subjects were explicitly assured that whether or not they pressed the button was entirely up to them and that the experimenters were completely indifferent to their choice.

Another concern was that participants would—despite being instructed to the contrary—believe that pressing the button would increase the probability of being shocked in shock-absent trials. However, none of the participants reported this belief in debriefings (they were specifically asked if they suspected this were the case). Further, as will be discussed, participants in the forced-choice group pressed the button on most trials—even though this misunderstanding should have equally applied to them.

Results and discussion

Participants in the forced-choice condition chose to reduce the probability of being shocked in 85.3% of the trials. By contrast, participants in the proactive-choice

condition chose to reduce the probability of being shocked in only 52.1% of the trials (Fig. 2). The between-conditions difference was significant, $t(38) = 3.3$, $p = .002$.

To better understand the effects of our manipulation, we divided participants in each group into low (0–4 button presses), medium (5–9 button presses), and high (10–14 button presses) button pressers. The proactive-choice group consisted of 40% low button pressers, 10% medium button pressers, and 50% high button pressers. The forced-choice group consisted of 0% low button pressers, 10% medium button pressers, and 90% high button pressers. The between-groups difference was significant, $\chi^2(2, N = 40) = 10.29$, $p = .005$. Neither sex nor average levels of anxiety were predictive of a participant being in the low, medium, or high subgroup.

In postexperiment debriefings, 100% of the subjects acknowledged that they expected that almost everyone would frequently press the button that reduced the shock probability. They could not explain why they themselves had not used this option on every trial.

Like our participants, we too were puzzled at this unexpected result. It seemed that the SQB existed not only in cases with slightly inferior default options, but also that it extended to options akin to those found in medical noncompliance, in which sticking to the default led to personally harmful outcomes. In Study 3, we sought to find ways to reduce the SQB.

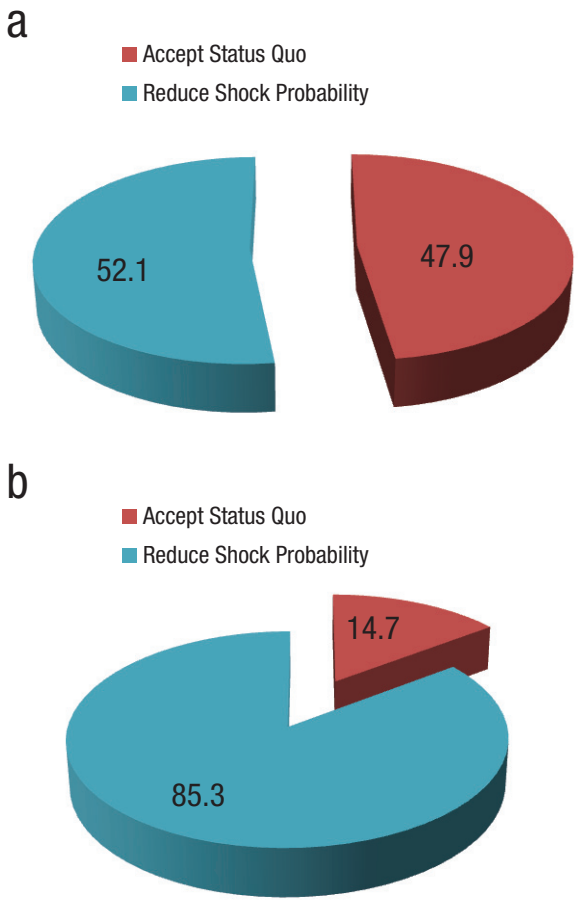

Fig. 2. Results from Study 2: mean percentage of trials on which participants in (a) the proactive-choice group and (b) the forced-choice group chose to either press a button that would reduce the probability of being shocked on that trial or allow the trial to continue (i.e., accept the status quo). Participants in both groups could press the button to reduce the shock probability, but only participants in the latter group were forced to make this decision.

Study 3: An Intervention to Reduce the SQB

Studies 1 and 2 demonstrated that participants chose to stay with default options despite the fact that they could have been better off by proactively taking action (i.e., pressing a button). This parallel with patient inaction suggests that the SQB could underlie some instances of patient inertia. It is thus important to demonstrate manipulations that were successful in reducing the SQB.

One such manipulation could be to require participants to press the button that reduced the shock probability early in the experiment. This would remove participants' resting-state inertia and thereby reduce their SQB. Support for the potential effectiveness of such a manipulation was found in the pattern of early button pressing in Studies 1 and 2: Participants who pressed the button three or four times in the first four trials were more than 6 times likelier to press the button in subsequent trials, compared with participants who pressed the button less than two times in the first four trials (74% vs. 12%, respectively, $p < .001$). Further, the likelihood of choosing the "change" alternative increased with trial number: Regressing the number of button presses for participants in the proactive-choice group on the trial number yielded a positive slope of 0.39 (95% confidence interval = [0.07, 0.71]). These observations suggest that button presses in early trials facilitated a reduction in the SQB.

Method

Forty-three students (22 women, 21 men) participated in a study involving electrical stimulation. Twenty students (11 women, 9 men) were randomly assigned to the replication group, in which procedures identical to those used for the proactive-choice group in Study 2 were used. The remaining 23 students (11 women, 12 men) were assigned to the mandatory-button-press group. The mandatory-button-press group followed procedures identical to those of the replication group with one important exception, namely that there were two additional trials administered before the 14 experimental trials. Participants were instructed to press the button that

reduced the shock probability in one, but not both, of these two additional trials—they were free to choose the order. The additional trials were presented as routine training trials serving only to clarify the experimental structure. Participants were not biased because the additional trials were balanced—one required button pressing, and the other did not.

Results and discussion

As expected, the results of the replication group were nearly identical to those of the proactive-choice group in Study 2. Participants pressed the button that reduced the shock probability 48.6% of the time. More important, in the mandatory-button-press group, participants pressed the button that reduced the shock probability 77.64% of time (Fig. 3). This finding was significantly different from the results of the replication group, $t(41) = 2.71$, $p = .009$, and indistinguishable from the results of the forced-choice group in Study 2, $t(41) = 1.09$, $p = .28$.

Study 3 suggests that demand characteristics did not play a crucial role in determining participant behavior. If participants in Study 2 were avoiding reducing the probability of being shocked because they thought that was what the experimenters were hoping for, participants' behavior should have been unaffected by the two balanced extra trials in the mandatory-button-press group of Study 3. Similarly, Study 3 shows that participants were not acting on the misunderstanding that pressing the button would increase the probability of being shocked in shock-absent trials, or else the additional trials would not have affected participant behavior.

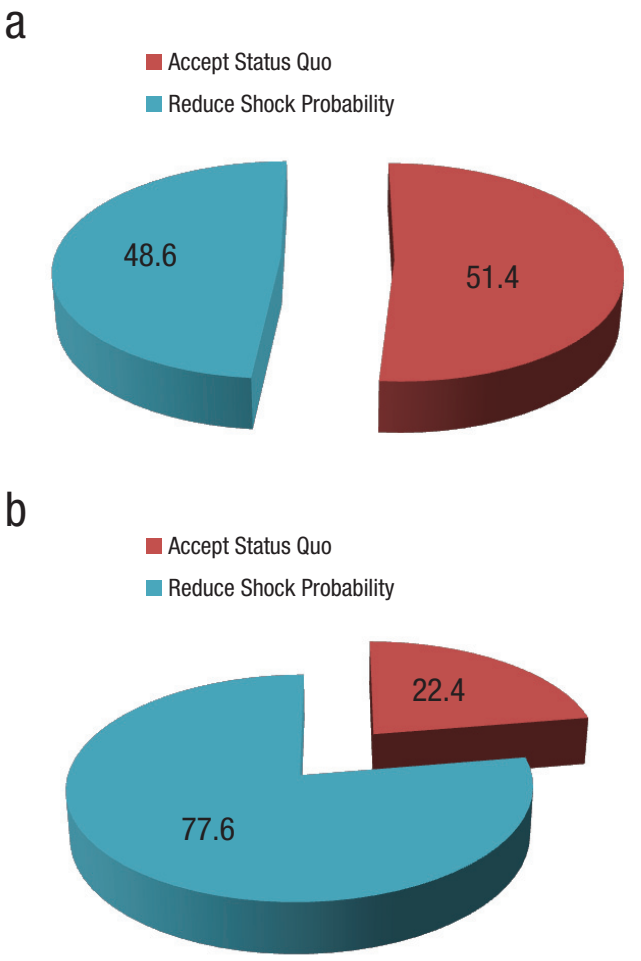

Fig. 3. Results from Study 3: mean percentage of trials on which participants in (a) the replication group and (b) the mandatory-button-press group chose to either press a button that would reduce the probability of being shocked on that trial or allow the trial to continue (i.e., accept the status quo). Participants in the latter group were given an additional two training trials in which they were forced to make this decision on one of those trials.

General Discussion

When doing nothing was the status quo, for most trials in Study 1, participants chose not to press a button that would have reduced their time waiting for a personally salient and highly aversive shock. When they were forced to make a choice, a large majority of participants preferred to reduce their waiting time. In Study 2, many participants persisted with the status quo despite having the option to eliminate the possibility of being shocked in nearly every trial. These findings were a surprise to us, and they demonstrated that the SQB exists even in decision contexts in which the status quo option is unambiguously less attractive than the alternatives. In Study 3, we showed that requiring participants to make an early button press could reduce their SQB in later trials.

One implication of our findings is that it may be necessary to reexamine traditional explanations for the SQB. Many behavioral economists favor loss aversion—the tendency of people to prefer avoiding losses to acquiring gains—as an underlying mechanism for the SQB (Kahneman, Knetsch, & Thaler, 1991). Yet loss aversion is not relevant to the decision contexts in Study 1 and Study 2 because there was nothing but gain associated with leaving the default option in those studies. Another mechanism hypothesized to underlie the SQB is omission predisposition (Ritov & Baron, 1992). The idea here is that people generally prefer inaction over action and thus choose options that are weighted toward inaction, which is often the default choice. However, the results of Study 3 are not consistent with the omission-bias account because mandating a button press in the practice trials should not have affected the omission predisposition in later trials.

In our studies, it was the level of decision support provided to the participant that seemed to drive

participant choice. The forced-choice group in Studies 1 and 2 was presented with repeatedly marked choice points. No such support was provided to the proactive-choice group—and the results between the two groups were markedly different. In Study 3, a different kind of support was provided to the mandatory-button-press group—namely, participants were given behavioral experience with pushing the button that reduced the shock probability. This seemingly minor support was enough to overcome the SQB.

In their influential book, *Nudge*, Thaler and Sunstein (2008) identified several decisions in which individuals could be nudged to select more optimal options as long as these options were made to be the default options. However, this is frequently not possible. For example, it is difficult to mandate that people get flu vaccinations or get medical checkups on a regular basis. In such cases, it is important to provide individuals with sufficient support to overcome their inaction inertia (or other default state). Our findings from Study 3 suggest an effective way to do this would be to focus resources to induce individuals to try the recommended option once. After they have completed the activity for the first time, their psychological inertia (Gal, 2006) would make it easier for them to repeat the action. This suggests, for example, that it may be better to invest scarce resources to induce people to get the flu vaccine once, for the first time, rather than spend money on a broader campaign aimed both at potential first-time and repeat vaccine recipients. More broadly, efforts focusing on getting individuals to commence taking their medications as prescribed, go for their first medical checkup, or go for a first run may lead to the overcoming of patient inertia and the initiation of lasting compliance behavior.

It will be important for future studies to extend the present work by demonstrating the SQB in actual (rather than laboratory) decision contexts, particularly in the context of medical noncompliance. Further, future studies must also be designed to test whether the manipulation in Study 3 (mandating compliance outcomes in early trials) can affect patient compliance behavior.

Author Contributions

G. Suri, G. Sheppes, and J. J. Gross created the study concept. G. Suri and C. Schwartz developed the detailed study design. Testing and data collection were performed by G. Suri and C. Schwartz. G. Suri analyzed and interpreted the data under the supervision of J. J. Gross. G. Suri drafted the manuscript, and G. Sheppes and J. J. Gross provided critical revisions. All authors approved the final version of the manuscript for submission.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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