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RESEARCH ARTICLE

The different roads not taken: Considering diverse foregone alternatives motivates future goal persistence

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Abstract

Decisions are rarely made in isolation. Instead, deliberation often occurs in the context of prior related choices. This article finds that goal-inconsistent foregone alternatives, options that were previously considered but not chosen, shape how consumers subsequently pursue their goals. Going beyond previous research on foregone alternatives and consumer satisfaction, the current research suggests that how consumers mentally construe foregone goal-inconsistent alternatives impacts how they evaluate their prior goal-consistent choices, which will, in turn, impact their motivation to continue making goal-consistent choices. Specifically, we find the *foregone alternative diversity effect:* consumers who consider having previously foregone diverse (vs. similar) goal-inconsistent alternatives in favor of a goal-consistent action then believe that they have made a greater sacrifice, which had more of an impact on their focal goal. As a result, they are then more likely to subsequently make goal-consistent choices. Our findings hold across different types of goals (exercise: Study 1, healthy eating: Studies 2, 3, and 5, weight loss: Study 4), and both real and hypothetical choices. We also identify theoretically motivated boundary conditions for the observed effect of considering foregone alternatives.

KEYWORDS
foregone alternatives, goals, motivation, variety

INTRODUCTION

Imagine that you've recently set a goal to eat healthier, and you are now deciding which to have for dinner, either a spring salad or deep-fried chicken. You think back to your snack this afternoon when you had chosen a healthy option, a green apple. How would you interpret this prior goal-consistent choice, and how would that interpretation affect the current decision?

We propose that how the previous healthy choice is assessed depends on which foregone alternatives to the choice are actively considered. You might look back and see the green apple as a healthy choice made from a diverse set of alternatives, such as a chocolate chip cookie, a glazed donut, or a bag of crisps. Alternatively, you might view the same choice in light of a narrow range of foregone alternatives that are more similar to each other, such as a set consisting of a chocolate chip cookie, a peanut butter cookie, or an M&M cookie. The situation in which only a few goal-consistent options are available in a broader set of mostly goal-inconsistent options is not uncommon. Vegetarians will commonly find only a few options available on a menu of meat-based options. Dieters might be presented with one fruit option among many high-fat desserts. Movie goers might find one thoughtful drama among superhero and action movies.

A goal-consistent choice objectively constitutes one step of progress toward the goal, regardless of the unchosen alternatives. However, we propose that whether people construe the same goal-consistent choice as

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either passing up a diverse set or a similar set of *goal-inconsistent alternatives* (or *temptations*) will affect how they subjectively assess the prior choice, with consequences for subsequent goal-relevant choices that they face. In the current paper, we refer to foregone goal-inconsistent alternatives as "diverse" when they have relatively few overlapping features, primarily sharing the commonality of goal-inconsistency, and as "similar" if they belong to a common subordinate category.

This research advances previous literature on motivation and goal-related perceptions by showing how the diversity of foregone temptations can influence consumers' evaluations of their previous goal-relevant choice, including perceived sacrifice and goal impact, and their subsequent motivation. Prior research has investigated how previous goal-relevant choices can affect subsequent motivation (e.g., recall of self-control success or failure: Mukhopadhyay et al., 2008, Nikolova et al., 2016; sequences of past behaviors or "streaks"; Silverman & Barasch, 2023). However, the ways in which previous "unchosen" alternatives may impact consumers' ongoing goal pursuit remains an open question. Making consistent, repeated choices to forego goal-inconsistent alternatives in favor of a goal-consistent option is a key strategy for successful goal attainment. It is, therefore, critical to understand whether and how considering different types of foregone alternatives influences subsequent decisions, beyond how it affects the evaluations of the current choice.

More specifically, the current article suggests the diversity of foregone goal-inconsistent alternatives as a novel and potentially pervasive factor affecting consumer's motivation to continue making goal-consistent choices. Previous research has largely explored how the presence or absence of goal-inconsistent alternatives in a current choice affects an individual's choice-making and their post-choice evaluation. Presenting alternatives that fulfill a competing goal in a choice set has been shown to reduce commitment to the focal goal, decreasing purchase intention for a target (Friedman et al., 2018), or increasing goal-inconsistent, indulgent food choices (Wilcox et al., 2009). Making a goal-consistent choice despite the presence of a goal-inconsistent alternative (e.g., when choosing a virtuous option from a set that includes vice options) increases consumers' satisfaction with their choice (Dhar & Wertenbroch, 2012). This prior research only studies the goal-inconsistency of concurrent alternatives. Going beyond these findings, we investigate the effect of *diversity* among the goal-inconsistent alternatives (i.e., not the mere presence of these alternatives) on *subsequent* motivation and goal-related decisions.

In addition, unlike prior research that explored the effect of multiple means for goal attainment, representing goal-consistent alternatives (e.g., protein bars with different flavors in pursuit of a fitness goal; Etkin & Ratner, 2012, 2013; Han & Gershoff, 2019), our research focuses on the variety among *goal-inconsistent* alternatives that might have hindered goal attainment if chosen (e.g., unhealthy snacks with different flavors). We suggest that diversity of foregone goal-inconsistent alternatives increases the perceived impact of a prior goal-consistent choice on overall goal pursuit because people feel they have passed over and sacrificed more when they resisted temptations with diverse, rather than similar, attributes. To the degree that people perceive their prior goal-consistent choice as having had a greater impact on the goal, we predict that they will be more motivated to persist in goal pursuit and make subsequent goal-consistent choices (Figure 1 for the full conceptual model). In this article, we call this positive effect of considering diverse (vs. similar) goal-inconsistent alternatives on subsequent motivation the *foregone alternative diversity effect* (or *foregone diversity effect*, for short).

This research provides implications for consumers and marketers, particularly in industries closely tied to goal achievement, where commercial success depends on consumers' sustained motivation to make goal-consistent choices, ranging from physical health and financial well-being to personal growth and learning. These companies, through products, services, and apps designed to support goal pursuit, often focus on tracking and communicating consumers' past behaviors (e.g., sending push notifications when a daily exercise goal has been completed, visually displaying consecutive days in which learners finished a lesson, or encouraging users to log what they have eaten). However, the current

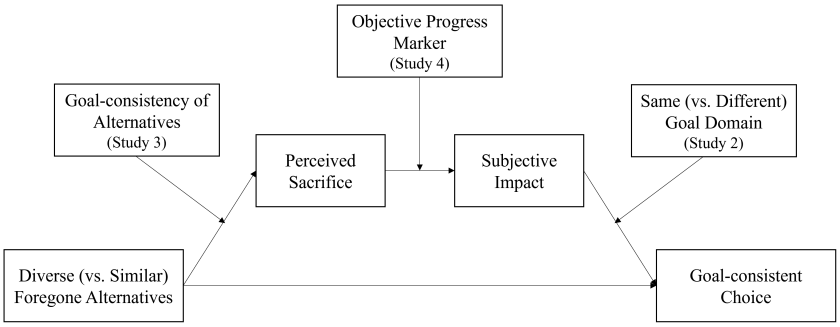

FIGURE 1 Conceptual framework.

research suggests emphasizing what has gone unchosen. Specifically, prompting consumers to consider the diverse goal-inconsistent alternatives that have been foregone while sticking to their goals could serve as a powerful motivator to continue goal pursuit.

THEORETICAL DEVELOPMENT

Foregone alternatives and perceived sacrifice

The structure and composition of a choice set impacts how consumers evaluate the current choice (e.g., choice satisfaction or regret; Carmon et al., 2003; Kim et al., 2014; Schrift & Parker, 2014). For example, as the number of alternatives in a choice set increases, consumers feel greater loss after choosing between the alternatives (Carmon et al., 2003). This is because choosing one option from a choice set tends to feel like foregoing *all* the other possible alternatives that were available, not just foregoing the *one* next-best alternative that would have been chosen instead (Schwartz, 2004). For instance, when consumers need to make a choice and forego other available options due to an extraneous constraint, such as a time or budget limitation (e.g., choosing one event to attend among different events taking place at the same time), the illusion that they could have utilized all of the foregone options leads them to perceive their choice as missing out on multiple options, inflating the perceived loss caused by the choice (Weiss & Kivetz, 2019).

In particular, prior literature has demonstrated that not only the number of alternatives under consideration, but also the degree and nature of shared vs. unique features of a given number of alternatives can systematically impact how people evaluate their choice (see Sherman et al., 1999 for a review). For example, when evaluating alternatives, shared features among alternatives are underweighted, whereas unique features receive greater attention (Dhar & Sherman, 1996). Because unique features tend to be overweighted relative to shared features, consumers would feel greater loss when foregoing diverse alternatives with distinct types of desirable features compared with when foregoing a set of identical or similar alternatives.

For example, in one study from Sagi and Friedland (2007), participants made a blind choice without knowing what the alternatives were, and all participants were informed they had chosen a $50 bill. The participants who discovered that the unchosen alternatives were dissimilar items with few overlapping features (e.g., mini-stereo set and microwave oven) regretted their choice more than participants who found out the unchosen items were more similar to each other (e.g., mini-stereo set and videotape player/recorder). These results suggest that the diversity of the foregone alternatives affects the perception of the sacrifice involved in making a choice–"how much" has been foregone.

Building on this literature, we predict that the nature of foregone goal-inconsistent alternatives will impact goal pursuit. Specifically, we predict that when foregone temptations are all similar to one another, choosing a goal-consistent option over the goal-inconsistent alternatives will feel like having given up one type of consumption (e.g., cookies). By contrast, when consumers instead consider having foregone diverse alternatives, as long as each of the distinct positive features associated with each alternative is sufficiently salient, the prior choice will be experienced as giving up multiple types of consumption (e.g., cookies, donuts, and muffins), which would lead to perceptions of having passed over more (e.g., in terms of the number or scope of foregone options). Formally, we hypothesize:

> **H1.** Considering diverse (vs. similar) foregone goal-inconsistent alternatives increases perceptions of sacrifice from a prior goal-consistent choice.

Perceived sacrifice and subjective goal impact

Diversity of foregone goal-inconsistent alternatives can also increase perceptions of how much impact the prior goal-consistent choice has had on overall goal pursuit. Consumers perceive foregoing multiple food types as helping a weight-related health goal more than just foregoing a single type of food with the same amount of calories (Haws & Liu, 2016). Similarly, consumers are relatively insensitive to reducing consumption of the same food but perceive changes in consuming a different food type as affecting their health goal more (Liu et al., 2019). We theorize that a higher level of perceived sacrifice when foregoing diverse (vs. similar) temptations leads to a higher subjective feeling of goal impact, especially when objective goal progress is difficult to track.

Goal pursuit often involves conflict between goal-consistent options (which yield progress towards the goal) and goal-inconsistent options that are appealing for non-goal reasons (i.e., temptations). Crucially for our argument, the degree of actual goal progress is determined by the chosen option, regardless of the unchosen tempting alternatives. For example, objective progress towards achieving a weight loss goal is determined by calories actually consumed, and progress towards a savings goal is determined by the amount of money actually saved, regardless of what the alternatives were in either case. Without clear objective markers, however, it can be difficult for people to assess how much actual progress toward the goal has been caused by a single goal-consistent action. Instead, people may monitor their goal progress using other available cues, including invested effort (Zhang et al., 2011) and salient counterfactual actions (Dhar & Wertenbroch, 2012).

Therefore, we propose that people will be affected by the diversity of foregone temptations, representing greater effort and sacrifice in making a prior goal-consistent choice, as an important cue to evaluate how much impact the prior choice has made on overall goal pursuit.

Choices involving sacrifice are effortful, and effort is one of the primary heuristics people use for outcome judgments. Consumers often show enhanced evaluations of items when they perceive having invested their own effort (Kim & Labroo, 2011; Norton et al., 2012), and they infer higher quality from a product and pay more when they believe that greater effort was invested in the process (Cho & Schwarz, 2008; Kruger et al., 2004; Morales, 2005). Further, goal research has documented an effort-outcome link, such that people perceive the effort as a signal of the impact of target action in fulfilling their goal. Consumers may perceive they have made more progress on their goal when they exerted more effort to initiate a goal-consistent action, for example, when it took more time to get to the gym or when they were not in the mood for exercise (Rafieian & Sharif, 2021). Also, a target object is viewed as more useful for achieving a goal when it is associated with more effort, even when the effort is not directly relevant to goal pursuit (Labroo & Kim, 2009).

Building on these findings, we suggest that among people making the same goal-consistent choice, which yields the same objective progress on goal pursuit, greater variety among the foregone goal-inconsistent alternatives will make people feel that their choice involved greater effort and sacrifice to persist, and in turn, as having yielded a greater impact on their goal pursuit. In particular, this greater subjective impact inferred from the feeling of greater sacrifice should be attenuated when there is an objective marker to evaluate the exact progress made by the goal-consistent action. Prior research on "feelings-as-information" suggests that the information value of subjective feelings decreases when the feelings are perceived to be less diagnostic to the judgment or when objective information becomes more accessible (Pham, 2004; Schwarz, 1990, 2012). Thus, when consumers have access to an objective progress marker, they would be less likely to rely on their feeling of greater sacrifice to gauge how much impact they have made on the focal goal. In summary:

> **H2a.** Considering diverse (vs. similar) foregone goal-inconsistent alternatives increases the subjective impact of a prior goal-consistent choice on overall goal pursuit.

> **H2b.** Greater subjective impact due to considering diverse (vs. similar) foregone goal-inconsistent alternatives is attenuated when an objective progress marker is present.

Motivational consequences of subjective goal impact

The subjective impact is one of the central drivers of goal pursuit. Initial research in animal behavior (Hull, 1932; Miller, 1944) and more recent research on human decision-making (Cheema & Bagchi, 2011; Kivetz et al., 2006; Nunes & Dreze, 2006) has demonstrated a goal gradient, such that motivation increases with progress toward a goal's end. In particular, Kivetz et al. (2006) demonstrated that consumers invest more effort in goal pursuit (e.g., repurchasing coffee sooner) with greater accumulated progress toward the goal, and even cues signaling an illusion of goal progress (e.g., providing free loyalty program stamps while holding total requirements constant) boost motivation. This heightened motivation occurs because the perceived marginal impact of a goal-consistent action increases with each consecutive action toward a goal's end (Heath et al., 1999).

During goal pursuit, people are more motivated when their attention is directed to cues that make the marginal impact of their action appear relatively larger (Bullard & Manchanda, 2017; Wallace & Etkin, 2018). For example, focusing on a smaller area of goal progress (i.e., accumulated progress at the beginning of goal pursuit, or remaining progress at the end of goal pursuit) increases motivation because a single goal-consistent action seems more impactful for goal achievement (Koo & Fishbach, 2012). Based on the general principle that higher perceived marginal impact translates into higher motivation, we predict that even when making the same goal-consistent choice, considering diverse (vs. similar) foregone goal-inconsistent alternatives yields greater subsequent motivation by increasing the perceived marginal impact of the goal-consistent action.

Although our account incorporates past findings on behavioral consistency, in which perceptions of greater past goal impact lead individuals to do more of the same behavior, some contrasting findings do exist. Specifically, licensing and coasting effects have been documented, in which a positive initial behavior, and resulting positive affect, can sometimes liberate individuals to behave in the opposite direction subsequently (Carver, 2003; Effron et al., 2012; Khan & Dhar, 2006; Krishna & Hagen, 2019; Seo & Patall, 2020). Recent research has suggested various moderators that predict whether past goal-consistent behavior will promote consistency and further engagement, or lead to licensing and disengagement from the initial action. These factors include the relevance of the target behavior to one's values or identity (Clot et al., 2016; Effron et al., 2009; Fishbach & Dhar, 2005; Kristofferson et al., 2014), the salience of competing goals (Orehek et al., 2011), and optimistic expectations regarding future outcomes (Yang & Urminsky, 2015).

In particular, our prediction of goal persistence hinges on the feeling of sacrifice, which arises from

considering what was previously foregone to make a goal-consistent decision. Gneezy et al. (2012) suggest that the costliness of the initial goal-consistent action is a critical moderator determining behavioral consistency or licensing. People are more likely to continue to engage in goal-consistent behavior when the initial action involves genuine personal effort or sacrifice (e.g., making a monetary donation deducted from their payment). However, they tend to disengage from the goal when the initial action is costless (e.g., a monetary donation made on behalf of the participant, without any deduction from their payment).

Extending this notion to our framework, the costliness of the initial goal-consistent action will be judged based on what has been given up to remain consistent with the goal—the foregone goal-inconsistent alternatives. When considering having foregone diverse (vs. similar) temptations, which involves greater sacrifice, the initial goal-consistent action would seem *more* costly. Consequently, people will then be more likely to make goal-consistent choices. To summarize:

> **H3a.** Considering diverse (vs. similar) foregone goal-inconsistent alternatives in a prior goal-consistent choice increases subsequent motivation to make an additional goal-consistent choice.

> **H3b.** Perceived sacrifice and subjective impact of a prior goal-consistent choice mediates the effect of foregone-alternative diversity on subsequent motivation.

These hypotheses are based on the assumption that the consumer has adopted a goal that is relevant to the choices in question. For a consumer not pursuing a weight-loss goal, for example, choosing a lower-calorie option instead of higher-calorie foods may not necessarily represent goal consistency. Our pilot studies confirm this assumption, finding that the diversity of foregone alternatives increases subjective goal impact only among individuals who endorse the focal goal (see Studies A1 and A2 in Online Appendix J). Therefore, in our studies, we either employed widely shared goals that most people endorse (healthy eating goal in Studies 3 and 5; see Online Appendix A for pre-test evidence) or recruited people currently endorsing the focal goal (exercise goal in Study 1, healthy eating goal in Study 2, weight loss goal in Study 4).

Next, we present seven experimental studies (five pre-registered, see links for pre-registrations in Online Appendix B) that collectively test the entire proposed conceptual framework (Figure 1). Study 1 demonstrates that a greater diversity of actual foregone goal-inconsistent alternatives to an actual goal-consistent behavior (exercise) increased related goal-consistent consequential snack choices in a field setting (H2a and H3a). Study 2 tests a boundary condition predicted by our framework, showing that considering diverse foregone goal-inconsistent alternatives increases subsequent motivation only when the subsequent decision is in the same domain as the initial goal-consistent action because it is only then that the subjective impact of the initial action is goal-relevant (H2a and H3a). Study 3 provides more complete evidence for the suggested mechanism by demonstrating a three-step process: foregone alternative diversity increases perceived sacrifice, which leads to increased subjective impact, which in turn increases goal persistence (H1, H2a, H3a, and H3b). Studies 4 and 5 provide further tests of the proposed mechanism. In particular, Study 4 demonstrates that the increased goal persistence when considering diverse foregone goal-inconsistent alternatives is mitigated when an objective progress marker exists, which decouples the relationship between perceived sacrifice and inferred subjective impact (H2b). Study 5 tests between inferential processes, suggesting that foregoing diverse goal-inconsistent alternatives is perceived as passing up multiple opportunities. This perception, in turn, leads to greater perceived sacrifice (5A), greater subjective impact (5B), and ultimately increases subsequent goal-consistent choices (5C). Across the studies, we rule out multiple alternative explanations involving changes in perceptions of own self-control ability and inferred goal commitment. Full survey stimuli for all studies and all data are available via OSF (https://osf.io/5y9wt/?view_only=861e3af5c59648d1aa40293e80bd0d78).

STUDY 1: PROMPTING CONSIDERATION OF DIVERSE FOREGONE ALTERNATIVES MOTIVATES HEALTHY FOOD CHOICE IN THE FIELD

Study 1 tests the foregone diversity effect: Whether consumers are more motivated to maintain goal pursuit by making a goal-consistent choice if they consider *diverse* (as opposed to *similar*) goal-inconsistent alternatives they could have chosen instead of the goal-consistent choice they had previously made. We tested the effect in a natural setting, at a school gym, among people who had spontaneously made an actual prior goal-consistent choice to exercise. This study tests the foregone diversity effect on a real, incentive-compatible choice.

The current study includes a control condition in which people did not consider any alternative activities they could have done instead of exercising. This was to test the proposition that considering diverse options enhances subsequent motivation, as opposed to consideration of similar options reducing people's motivation. The study also provides an initial test of the effect of foregone-alternative diversity on subjective impact.

Method

We recruited 234 participants who were leaving the gym on the campus of a large Midwestern university after exercising. Prior to analysis, we excluded 24 participants who were at the gym for pre-scheduled activities (taking physical education classes or training for varsity teams), and whose decision to go to the gym therefore reflected a long-standing commitment, rather than a specific discretionary choice. After this exclusion, we had 210 participants for analysis (107 males, $M_{age}=23.40$). This study employed a between-subjects design with two foregone alternative conditions (considering similar alternatives vs. diverse alternatives) and a no-alternative control condition.

In the foregone alternative conditions, participants first wrote down one activity they could have done instead of exercising. On the next page, they were asked to write down two additional ways they could have spent their time instead of exercising, either very similar to or very different from the first, in the similar alternatives and diverse alternatives conditions, respectively. Participants then explained why the three ways of spending their time were either similar or dissimilar to each other, depending on the condition.

On the next page, participants rated three measures of subjective impact on their exercise goal: how much of (1) an achievement, (2) contribution, and (3) progress they think they had made towards their exercise goal (1=*Not at all*, 7=*A lot*). Participants in the control condition answered the subjective impact measures without being prompted to consider any alternatives. After the subjective impact measures, participants were told that they would receive an energy bar as a "thank-you" gift for completing the survey. The participants indicated which of the two energy bars ("wholesome mix of healthiness: KIND almond, walnut & macadamia" vs. "sweet and salty indulgence: KIND dark chocolate & peanut butter") they would like to receive. A pre-test confirmed that the first energy bar was perceived as healthier and more congruent with pursuing a health goal than the second (see Online Appendix C).

On the final page, participants described briefly what they had done at the gym and, as control measures, they indicated how long they had worked out (in minutes), how often they worked out (1=*Less than 1 time a month*, 5=*Almost every day*), how much they enjoyed working out, how committed they were to working out, and how important it was to them to work out regularly (1=*Not at all*, 7=*Very much*). They reported their gender and age for demographic information. Upon the completion of the survey, each participant was given the energy bar they had selected in the survey.

Results

Subjective impact on an exercising goal (H2a)

A one-way ANOVA on the subjective impact measure ($\alpha=0.68$) revealed a significant main effect of the experimental condition ($F(2, 207)=5.05$, $p=0.007$, $\eta_p^2=0.02$). Participants in the diverse foregone-alternatives condition felt their decision to go to the gym had made a greater impact on their exercise goal than either (1) those in the similar foregone-alternatives condition ($M_{diverse}=4.86$, $SD_{diverse}=1.03$, $M_{similar}=4.50$, $SD_{similar}=1.07$; $t(141)=2.04$, $p=0.043$, $d=0.35$) or (2) than those in the control condition ($M_{control}=4.27$, $SD_{control}=1.22$; $t(139)=3.09$, $p=0.002$, $d=0.53$). Participants in the similar foregone-alternatives condition did not significantly differ in their assessments of the subjective impact from those in the control condition ($b=0.23$, $t(134)=1.15$, $p=0.25$).

These results rule out the possibility that considering similar alternatives reduces the subjective impact of the prior goal-consistent choice on the overall goal. Instead, the results suggest that considering diverse foregone alternatives enhances subjective impact. The effect of foregone alternative diversity on subjective impact remained significant after including control measures, including exercise duration, frequency of gym visits and, to account for potential confounds or alternative explanations, enjoyment, goal commitment, and goal importance ($F(2, 193)=4.47$, $p=0.013$, $\eta_p^2=0.01$). Further, we found no significant difference across conditions in participants' goal commitment and goal importance perceptions (p's>0.18).

Effect of foregone diversity on subsequent food choice (H3a)

A logistic regression analysis on the subsequent energy bar choice revealed significant differences between (1) the diverse and similar foregone-alternatives conditions ($b=1.00$, $z=2.89$, $p=0.004$), and (2) the diverse foregone-alternatives and control conditions ($b=0.76$, $z=2.22$, $p=0.027$). Specifically, participants who were prompted to consider diverse foregone alternatives were significantly more likely to select the healthier option than those asked to recall similar alternative activities they could have chosen instead of exercising (64% vs. 39%, $\chi^2=7.55$, $p=0.006$, $\varphi=0.23$). Likewise, participants in the diverse condition were more likely to select the healthier bar than those in the control condition, who were not prompted to consider any alternatives at all (64% vs. 45%, $\chi^2=4.25$, $p=0.039$, $\varphi=0.18$). Choices of the healthy option did not differ between the similar foregone alternative and control conditions ($p=0.62$).

We further tested whether the subjective impact on exercise goal mediated the subsequent food choice (PROCESS, Model 4; Preacher & Hayes, 2004). However, it did not show a significant mediation effect ($b=0.0378$, se$=0.0434$, 95% CI [−0.0385, 0.1336]), although the direction of the effect was consistent with our prediction (see Online Appendix E). We discuss this null result in the following section.

Discussion

Study 1 provides initial evidence consistent with the foregone diversity effect: considering diverse foregone goal-inconsistent alternatives *increases* subsequent motivation to make a choice consistent with the relevant health goal. In the current study, participants generated alternatives to the past goal-consistent choice retrospectively, not necessarily involving actual prior rejection of the alternatives. Therefore, these results suggest that the type of foregone alternatives constructed post hoc can affect the evaluation of the past choice and motivation to make subsequent goal-consistent choices.

In addition, to control for any potential confounding effects due to the different composition of self-generated alternatives across conditions, we conducted a follow-up study (Study A3 in Online Appendix J), in which we instead provided a fixed set of foregone alternatives and manipulated the perceived diversity using categorization. We presented the same set of goal-consistent and goal-inconsistent alternatives relative to a health goal (i.e., workout and entertainment videos). Goal-inconsistent alternatives were grouped into a single category (i.e., "Entertainment") in the similar alternatives condition, or multiple categories (e.g., "heartwarming & inspiring", "ominous & dark", and "witty & quirky") in the diverse alternatives condition. After considering having foregone multiple categories of goal-inconsistent alternatives, which were seen as more different from each other, participants were more likely to choose a lower-calorie food option, subsequently, persisting in their health goal.

We also replicated the foregone diversity effect in a different goal context, a savings goal (Study A4 in Online Appendix J). When consumers freely generated how they could have spent the money they had saved, those who spontaneously considered a more diverse set of foregone alternatives were subsequently more motivated to save instead of to spend and indicated a lower amount they were willing to spend. These results further suggest that without any implicit or explicit cues to direct consumers' attention to the diversity among alternatives, perceiving greater diversity among the foregone temptations can lead to goal persistence.

In the present study, the subjective impact of the initial goal-consistent action did not mediate the subsequent choice, although the indirect effect was directionally consistent. The study employed two distinct health-related goal domains, an *exercise* goal for the initial choice and subjective impact evaluation, and *food* for the subsequent choice. The distinction between these two different goals may account for the absence of significant mediation. Previous research on goal pursuit involving multiple subgoals suggests that the pursuit of one subgoal can lead to the pursuit of another subgoal only when a superordinate goal is activated. Conversely, when a superordinate goal is not activated, initial success in one subgoal tends to reduce the need to pursue another congruent subgoal (Fishbach et al., 2006). Building upon these findings, we conjecture that the mediation effect in the current study could have been weak due to some participants who had not strongly associated the two subgoals (exercise and healthy eating) with the overarching goal of fitness. To address this limitation, in the next study, we directly manipulated the goal domains and tested the mediating role of subjective impact.

STUDY 2: THE FOREGONE DIVERSITY EFFECT IN SAME-GOAL-DOMAIN CHOICE IS MEDIATED BY SUBJECTIVE IMPACT

Study 2 was conducted with two major purposes. First, we directly test subjective goal impact as the proposed mechanism via both moderation and mediation. Specifically, we manipulated the goal domain of the subsequent choice, having participants make a choice either in the same domain as the prior goal-consistent choice or in an unrelated goal domain. The proposed goal impact mechanism predicts that the increase in current goal-consistent choices from considering diverse (vs. similar) foregone temptations will replicate only when the current choice is in the same goal domain, but not when the choice involves a goal unrelated to the prior choice. In addition, we tested the subjective impact on goal progress as a mediator.

Second, the current design allows us to examine two potential alternative explanations—inferred ability to exercise self-control in general and inferred goal commitment. Considering having foregone diverse (vs. similar) temptations might increase self-perceptions of being able to exercise self-control in general. The inferred self-control ability account would then predict that people would be more likely to subsequently make a virtuous choice (i.e., one that requires exerting self-control) even in a new domain, unrelated to the initial domain of goal pursuit. However, our suggested mechanism, involving the subjective impact on a specific goal, predicts goal persistence only in the same goal domain. An inferred commitment account may argue that foregoing diverse (vs. similar) goal-inconsistent alternatives can increase inferred commitment to the focal goal, motivating future goal-consistent behavior. To test this, we measured inferred goal commitment using an established measure.

Method

Study 2 employed healthy eating as a widely shared goal. A separate pretest confirmed that 89% of people (126 out of 142) were pursuing healthy eating as an active goal (see Online Appendix A). This pre-registered study

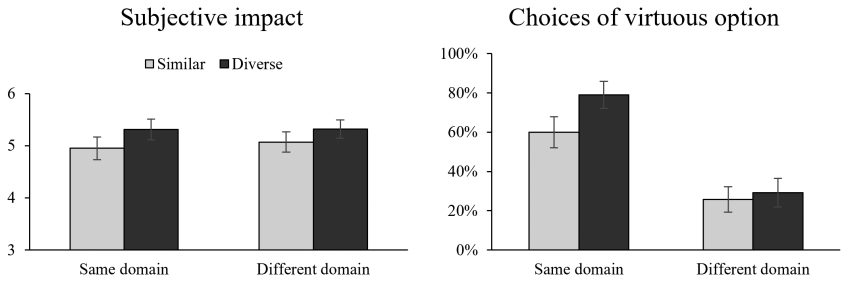

FIGURE 2 The effect of foregone alternative diversity × subsequent goal domain on subjective impact and subsequent choice in Study 2. Error bars represent 95% CI.

employed a 2 (foregone alternative diversity: similar vs. diverse) × 2 (subsequent goal domain: healthy eating vs. saving) between-subjects design. We recruited 600 participants from Prolific in the United States, and excluded four records with duplicate IP addresses or from participants who failed an attention check and didn't follow instructions, prior to analysis, leaving 596 valid surveys for analysis (164 male, $M_{age} = 35.22$). The same exclusion criteria were applied to all the online studies conducted in this paper unless noted otherwise.

We asked people to participate if they were currently pursuing a healthy eating goal, and confirmed their goal using agreement to two screener questions in the survey ("Healthy eating is one of my personal goals" and "I try to eat healthy as much as I can").

Next, participants read a short description of what a "healthy diet" means (e.g., high consumption of plant-based foods, low consumption of processed meat, and low consumption of sugar; WHO, 2020). Then, we asked participants to recall and write about a recent experience when they had made a healthy food choice that met at least one of the criteria stated above. Depending on the condition, participants then generated either three similar or three diverse unhealthy alternatives they could have chosen instead of the healthy food that they did choose.

After describing how the three alternatives were similar or dissimilar to one another, participants rated three measures of subjective impact: how much of (1) an achievement, (2) impact, and (3) progress they think their goal-consistent choice made towards their health goal (1 = *None*, 7 = *A great deal*). Participants also rated five measures of inferred goal commitment (Klein et al., 2001) regarding the healthy eating goal. Sample items included "I am strongly committed to pursuing this goal" and "It wouldn't take much to make me abandon this goal" (reverse-coded) (1 = *Strongly disagree*, 7 = *Strongly agree*).

Participants were then told about an opportunity to participate in another (hypothetical) study. In the same goal domain condition, to be relevant to the same healthy eating goal, they read about a food-tasting survey and were asked whether they would prefer to evaluate either a pack of snacks or salad cups. In the different goal domain conditions, we instead employed a savings goal as a widely shared goal that likewise involved self-control, but that was irrelevant to the healthy eating goal implicated in the prior choice. Participants were asked to choose between evaluating either a new shopping app or a new banking app for installment savings. Because participants had generated foregone alternatives on their own, the attractiveness of alternatives could be different when instructed to generate similar or diverse alternatives. To control this potential difference, we measured the attractiveness of each alternative on a 7-point scale (1 = *Not at all*, 7 = *Very much*). Please note that we measured alternative attractiveness also in Study 3, Study 4, and Study 5c, but we do not report the results in the main text as we found no difference (see Online Appendix F). Finally, participants reported their gender and age for demographic information.

Results

Subjective impact (H2a)

Because subjective impact was measured prior to manipulating the goal domain, we collapsed the goal domain conditions and conducted a *t*-test on the composite score of subjective impact ($\alpha = 0.87$). Replicating the results of Study 1, participants who were prompted to consider diverse (vs. similar) unhealthy alternatives to their prior healthy choice felt that they had achieved a greater impact on their healthy eating goal ($M_{diverse} = 5.31$, $SD_{diverse} = 1.17$, $M_{similar} = 5.01$, $SD_{similar} = 1.28$; $t(594) = 3.02$, $p = 0.003$, $d = 0.25$; Figure 2). By contrast, participants' inferred goal commitment did not differ depending on the diversity of foregone alternatives ($\alpha = 0.81$; $M_{diverse} = 5.59$, $SD_{diverse} = 1.01$, $M_{similar} = 5.47$, $SD_{similar} = 1.03$; $t(594) = 1.36$, $p = 0.17$), suggesting that considering diverse foregone alternatives does not affect decisions by increasing the inferred goal commitment.

Subsequent choice (H3a)

A logistic regression analysis predicting the subsequent choice revealed a significant interaction between foregone

alternative diversity and subsequent goal domain ($b=-0.75$, $z=-2.04$, $p=0.042$). Supporting our predictions, in the same goal domain conditions, participants who were prompted to consider diverse (vs. similar) unhealthy alternatives to their prior healthy choice were subsequently more likely to choose the healthier and goal-consistent option, evaluating salad cups, rather than the goal-inconsistent alternative, evaluating snacks (79% vs. 60%, $\chi^2=11.87$, $p=0.001$, $\varphi=0.20$). By contrast, in the different goal domain conditions, the diversity of foregone unhealthy alternatives had no effect on subsequent savings-related choices. The likelihood of choosing a banking app, the virtuous option unrelated to healthy eating, over a shopping app did not differ depending on the diversity of the foregone unhealthy alternatives (29% vs. 26%, $\chi^2=0.28$, $p=0.60$).

Mediation analyses

We conducted a moderated mediation analysis to test our proposed framework. Specifically, we test whether the subjective impact on goal progress mediated the effect of foregone alternative diversity on goal-consistent (e.g., virtuous) choice, only when making a subsequent choice in the same goal domain but not for a choice in a different goal domain (PROCESS, Model 15). The analysis revealed a significant moderated mediation via subjective impact ($b=-0.14$, se=0.07, CI=[−0.3205, −0.0285]). The indirect effect was significant only when making a choice for the same domain ($b=0.16$, se=0.06, CI=[0.0513, 0.3029]), but not when making a choice for the different domain ($b=0.02$, se=0.04, CI=[−0.0598, 0.0944]; see Online Appendix E for details of all the mediation analyses).

In contrast to the significant mediation by subjective impact, in a separate mediation analysis, we found no evidence that inferred goal commitment, an alternative mechanism, mediated the option diversity effect (Model 15; $b=-0.05$, se=0.05, CI=[−0.1540, 0.0218]).

Discussion

Study 2 demonstrated that thinking about diverse (vs. similar) foregone alternatives increases people's perceptions of how much impact their goal-consistent choice had on goal pursuit, which in turn increases subsequent motivation to persist. Importantly, the foregone diversity effect occurred only for a subsequent choice in the same goal domain as the prior goal-consistent choice, but not when the subsequent choice involved a goal unrelated to the prior goal-consistent choice.

The results of the current study also tested and ruled out two alternative explanations, involving perceptions of self-control ability and inferred goal commitment. In particular, if the foregone diversity effect was due to consideration of diverse alternatives boosting perceptions of general self-control ability, the effect should occur for any subsequent choice requiring self-control (e.g., increasing virtuous choices in both the savings and healthy eating context). Instead, consistent with our proposed framework and inconsistent with the inferred self-control explanation, the foregone diversity effect did not occur in the unrelated goal domain (i.e., savings).

Furthermore, foregone option diversity only impacted subjective impact, but not inferred goal commitment and only subjective impact mediated the foregone diversity effect. These results are consistent with our proposed account, that the diversity of foregone alternatives increases consumers' motivation to make another virtuous choice specifically for the same goal, because of their perception that they have made greater impact on a specific goal, not because of inferences about general self-control ability or goal commitment.

STUDY 3: THE ROLE OF PERCEIVED SACRIFICE AND SUBJECTIVE IMPACT IN CONSEQUENTIAL CHOICE

Study 3 was conducted to test the full conceptual framework, including the proposed underlying mechanism for why diversity of foregone alternatives increases subjective impact, in a consequential choice. According to the conceptual framework, foregone diverse (vs. similar) goal-inconsistent alternatives will make people feel they have sacrificed more to make a goal-consistent choice, which would increase perceptions of how much impact the prior goal-consistent choice has had on overall goal pursuit. Higher subjective goal impact would, in turn, lead to greater motivation to continue making subsequent goal-consistent choices. We measure perceived sacrifice in Study 3 as the proposed link between foregone alternative diversity and subjective impact.

In addition, Study 3 tests the necessity of perceived sacrifice for the foregone diversity effect. If perceived sacrifice underlies the effect, as our framework suggests, the diversity of foregone alternatives should not have an effect when the alternatives considered are instead goal-*consistent*. Because choosing between goal-consistent alternatives does not involve as much of a tradeoff (Dhar & Wertenbroch, 2012), considering these alternatives would not prompt a sense of having sacrificed to stick to the goal, and the diversity of foregone goal-consistent alternatives should not affect subjective goal impact or subsequent goal-related choices.

Method

Study 3 employed a 2 (foregone alternative diversity: similar vs. diverse) × 2 (goal inconsistent vs. goal-consistent

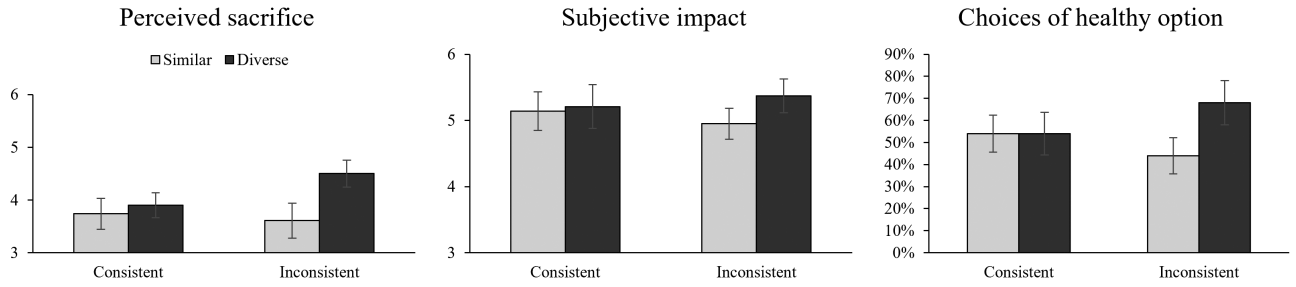

FIGURE 3 The effect of foregone alternative diversity × goal consistency of alternatives on perceived sacrifice, subjective impact, and subsequent choice in Study 3. Error bars represent 95% CI.

alternatives) between-subjects design. We recruited 495 participants from Mturk in the United States. Applying the same exclusion criteria as in Study 2, we had 457 valid completed surveys (206 male, M_{age}=40.04).

First, to confirm the endorsement of the healthy eating goal among participants, we asked them to indicate the extent to which they agreed with the following statements on a 7-point scale (1=*Strongly disagree*, 7=*Strongly agree*): (1) "I am highly conscious of what I am eating," (2) "I try to eat healthy as much as I can."

Next, participants considered a prior healthy choice they had made (as in Study 2) and then generated three similar or three diverse alternatives that were either unhealthy (in the goal inconsistent condition) or healthy (in the goal-consistent condition). Participants rated the subjective impact of their prior goal-consistent choice using the same measures in Study 2, and also indicated the perceived sacrifice by answering the following questions on a 7-point scale (1=*None*, 7=*A great deal*): how much (1) sacrifice they think they made, (2) enjoyment they think they gave up, and (3) temptation they think they overcame. We additionally measured the attractiveness of foregone and chosen alternatives, respectively, and self-control ability perceptions.

Participants were then informed that once the data collection was finished, the research team would randomly select participants for the survey and send them an e-voucher for a box of KIND bars. The participants indicated which flavor ("Wholesome mix of healthiness: KIND almond, walnut & macadamia" vs. "Sweet and salty indulgence: KIND dark chocolate & peanut butter") they would like to receive if they were selected. Participants reported their gender and age for demographic information. After the survey was completed, five participants were selected as winners and sent e-vouchers.

Results

Goal endorsement

Confirming our pretest result, the composite score of healthy eating goal importance (α=0.80) revealed that, on average, participants were pursuing eating healthy as an important and active goal (M=5.37, SD=1.23; t(456)=23.89, p<0.001, compared to 4, the midpoint of the scale). A 2 (foregone alternative diversity: similar vs. diverse) × 2 (goal-consistent vs. goal inconsistent alternatives) ANOVA found no difference in participants' goal endorsement across conditions (all p's>0.50).

Perceived sacrifice (H1)

A 2 (foregone alternative diversity: similar vs. diverse) × 2 (goal inconsistent vs. goal-consistent alternatives) ANOVA was conducted on the composite score of perceived sacrifice (α=0.84). Results indicated a significant interaction (F(1, 453)=6.30, p=0.012, η_p^2=0.01), as well as main effects of foregone alternative diversity (F(1, 453)=3.82, p=0.05, η_p^2=0.01) and goal consistency of the alternatives (F(1, 453)=12.92, p<0.001, η_p^2=0.03; Figure 3). The main effect of goal consistency of the alternatives confirms that participants perceived less sacrifice when they have given up goal-consistent alternatives (M=3.68, SD=1.63) than when they have given up goal inconsistent alternatives (M=4.19, SD=1.46).

Importantly, confirming our prediction, a simple-effect analysis revealed that when participants considered unhealthy (goal-inconsistent) foregone alternatives, they reported greater sacrifice when thinking about diverse alternatives than when thinking about similar alternatives ($M_{diverse}$=4.50, $SD_{diverse}$=1.43, $M_{similar}$=3.90, $SD_{similar}$=1.43; t(453)=3.13, p=0.002, d=0.42). By contrast, when participants considered healthy (goal-consistent) alternatives, the diversity of the considered alternatives did not affect the consistently lower level of perceived sacrifice ($M_{diverse}$=3.61, $SD_{diverse}$=1.70, $M_{similar}$=3.74, $SD_{similar}$=1.57; t(453)=−0.58, p=0.56).

Subjective impact (H2a)

We then examined whether the diversity of the foregone goal-consistent alternatives increased the subjective impact of the prior goal-consistent choice. The same 2×2 ANOVA on the subjective impact revealed a

significant main effect of foregone-alternative diversity ($F(1, 453)=4.42$, $p=0.036$, $\eta_p^2=0.01$). No other effect was significant (p's>0.16) We tested whether our previous findings replicated, and found that participants who considered unhealthy (goal inconsistent) alternatives felt that they had achieved significantly greater impact on their healthy eating goal when considering diverse alternatives compared to similar alternatives ($M_{diverse}=5.27$, $SD_{diverse}=1.30$, $M_{similar}=4.95$, $SD_{similar}=1.42$; $t(453)=2.48$, $p=0.014$, $d=0.24$). When participants considered which healthy (goal-consistent) alternatives they could have chosen instead, there was no difference between the similar vs. diverse condition ($M_{diverse}=5.21$, $SD_{diverse}=1.30$, $M_{similar}=5.14$, $SD_{similar}=1.35$; $t(453)=0.37$, $p=0.71$). However, we lacked sufficient statistical power to detect a significant interaction.

Subsequent choice (H3a)

A logistic regression analysis predicting the subsequent choice revealed a significant interaction between foregone alternative diversity and goal consistency of the alternatives ($b=0.81$, $z=2.12$, $p=0.034$). Supporting our predictions, when participants were prompted to consider unhealthy alternatives they had foregone (i.e., goal-inconsistent conditions), considering diverse (vs. similar) unhealthy alternatives to a prior healthy choice yielded more choices of a healthy option (68% vs. 54%, $\chi^2=4.43$, $p=0.035$, $\varphi=0.13$). By contrast, the diversity of foregone alternatives had no effect on choices when participants instead were prompted to consider healthy alternatives, in the goal-consistent conditions (48% for diverse alternatives vs. 54% for similar alternatives, $\chi^2=0.48$, $p=0.49$). The interaction between foregone alternative diversity and goal consistency of the alternatives remained significant after controlling for perceptions of self-control ability and the attractiveness of the alternatives ($b=0.80$, $z=2.01$, $p=0.045$).

Serial mediation analyses (H3b)

We conducted a moderated serial mediation analysis to test our proposed framework. Specifically, we predict that greater diversity of forgone goal-inconsistent (but not goal-consistent) alternatives results in more perceived sacrifice and, thereby, greater subjective impact of the goal-consistent choice, leading to greater motivation to make further goal-consistent choices. The moderated mediation model (PROCESS, Model 85) included foregone alternative diversity as the independent variable (0=similar, 1=diverse alternatives), goal consistency of the foregone alternatives as the moderator (0=inconsistent, 1=consistent), perceived sacrifice and subjective impact as two serial mediators, and consequential food choice as the dependent variable. The analysis confirmed a significant conditional indirect effect of the interaction between option diversity and goal-consistency on choice through perceived sacrifice (mediator 1) and subjective impact (mediator 2) ($b=-0.05$, se=0.03, CI=[−0.1091, −0.0071]). Specifically, consistent with our predictions, participants prompted to consider more diverse foregone goal inconsistent alternatives were more likely to choose the healthy option, via higher perceived sacrifice and subjective impact on goal progress ($b=0.04$, se=0.02, CI=[0.0097, 0.0846]). However, when considering goal-consistent alternatives, perceived sacrifice, and subjective impact did not mediate an effect of alternative diversity on the subsequent goal-related choice ($b=-0.01$, se=0.02, CI=[−0.0426, 0.0239]). Alternative mediation models that include only the perceived sacrifice ($b=-0.002$, se=0.05, CI=[−0.1130, 0.1075]) or subjective impact ($b=-0.04$, se=0.07, CI=[−0.1872, 0.0855]) were not significant.

Discussion

The detailed process findings in Study 3 provide evidence consistent with the proposed framework (Figure 1) for how foregone alternative diversity impacts goal persistence. Study 3 confirmed that thinking about diverse (vs. similar) foregone goal inconsistent alternatives increases people's perception of their sacrifice when making a prior goal-consistent choice, which again increases the subjective impact that sacrifice had on goal pursuit. The current study further demonstrated that this effect of foregone alternatives on perceived sacrifice and subjective goal impact, in turn, leads people to make more goal-consistent choices in a subsequent decision.

Further supporting the framework, we confirm an important necessary condition. The effect of foregone alternative diversity was observed only when participants considered having foregone goal-*inconsistent* alternatives that could have hindered goal progress. When they instead considered foregone goal-*consistent* alternatives, they perceived little sacrifice regardless of the diversity of alternatives, and the diversity of the foregone alternatives did not affect subjective impact or subsequent goal-related choices.

STUDY 4: PRESENCE OF OBJECTIVE PROGRESS MARKERS ATTENUATES THE FOREGONE DIVERSITY EFFECT

Study 4 tests an important boundary condition of the foregone diversity effect, which is predicted by our account. In the studies thus far, participants did not have objective markers to track their degree of progress towards the goal. Our theorization suggests that in the absence of clear objective cues showing how much actual

progress towards the goal has been made, people would be more likely to judge their perceived goal progress based on the available cues, specifically their subjective feeling of how much sacrifice they had incurred in making the prior goal-consistent choice. However, when the progress made by their goal-consistent action is easy to evaluate, people would no longer need to make an inference, and would, therefore, no longer use perceived sacrifice as a cue to evaluate their goal progress, breaking the linkage between perceived sacrifice and subjective impact. As a result, we predict that evaluable goal progress (operationalized as available progress markers) reduces the extent to which perceived sacrifice affects subjective impact, consequently attenuating the foregone diversity effect.

Method

Study 4 employed weight loss as a focal goal. This study employed a 2 (foregone alternative diversity: similar vs. diverse) × 2 (objective marker: absent vs. present) between-subjects design (see Online Appendix H for stimuli). We recruited 1075 participants on Prolific in the United States, leaving 1001 valid, complete surveys after excluding participants who had failed to follow instructions (509 male, M_{age} = 39.61; pre-registered).

We asked people to participate if they were currently pursuing a weight loss goal and confirmed their goal endorsement using the following three statements: (1) "I am highly conscious of physical fitness," (2) "I try to exercise regularly to keep my body fit and healthy," (3) "Losing weight is one of my personal goals" (1 = *Strongly disagree*, 7 = *Strongly agree*; α = 0.74). Because weight loss is not a pervasive goal that the majority of people are pursuing (unlike the healthy eating goal in our previous studies), participants who did not currently endorse a weight loss goal (scoring below four out of seven on the three-item scale) were screened out and did not proceed with the rest of the study.

Next, participants imagined that they had recently set and had been following a fitness goal to lose fat and build muscle and had started to work out. Participants then wrote down three activities they would enjoy doing instead of exercising, specified as either three similar or three diverse activities, depending on the condition, and wrote about how the activities were similar to or different from each other. Next, they were told that they had found unexpected free time and had decided to go to the gym, instead of doing any of the three other activities they generated previously. Participants then rated the same perceived sacrifice measure used in Study 3.

To manipulate the availability of objective information about goal progress, participants were presented with a picture of the calendar, with "Today" marked on the last day of the week. In the objective-marker conditions, participants were told that because they routinely check their weight at the end of the week, they had just found out that they had lost 1 pound this week. In the no-objective-marker conditions, however, participants were told that because they routinely check their weight at the beginning of the week, they did not know yet exactly how much weight they had lost this week. Participants then rated the subjective impact of their prior decision to exercise on their goal progress.

Next, participants were told that they had received a message from the gym about an upcoming promotion for personal training sessions. They could get training sessions at a discounted price if they booked in advance, but there would be a penalty if they did not show up. Next to the same calendar picture presented earlier, an additional picture of a calendar was presented, with "Promotion Week" marked on the first week of the next month. As the main dependent variable measuring subsequent goal-consistent behavior, participants indicated their likelihood of booking the training sessions (1 = *Not at all*, 7 = *Very much*). As an additional exploratory variable, they also indicated how many sessions they would like to book (0 = *None*, 8 = *More than 7*). After making their decisions, participants rated the attractiveness of the foregone alternatives they had generated earlier and reported their gender and age.

Results

Perceived sacrifice (H1)

Because we measured perceived sacrifice before manipulating the presence of an objective marker, we collapsed across objective marker conditions and conducted a *t*-test on the composite score of perceived sacrifice (α = 0.80). Consistent with our findings in previous studies, participants in the diverse (vs. similar) conditions indicated greater perceived sacrifice from the initial goal-consistent choice to exercise ($M_{diverse}$ = 4.49, $SD_{diverse}$ = 1.34, $M_{similar}$ = 4.25, $SD_{similar}$ = 1.48, $t(999) = 2.73$, $p = 0.006$, $d = 0.17$).

Subjective impact (H2a, H2b)

A 2 (foregone alternative diversity: similar vs. diverse) × 2 (objective marker present vs. absent) ANOVA on subjective impact (α = 0.94) revealed a significant interaction ($F(1, 997) = 4.12$, $p = 0.043$, $\eta_p^2 = 0.004$) and a significant main effect of foregone alternative diversity ($M_{diverse}$ = 4.74, $SD_{diverse}$ = 1.36, $M_{similar}$ = 4.56, $SD_{similar}$ = 1.38; $F(1, 997) = 4.07$, $p = 0.044$, $\eta_p^2 = 0.004$). No main effect of the objective marker ($p = 0.73$) was found. Replicating our prior results, participants indicated greater subjective impact on their weight loss goal when

considering diverse (vs. similar) foregone alternatives in the no-objective-markers conditions ($M_{diverse}$=4.81, $SD_{diverse}$=1.24, $M_{similar}$=4.46, $SD_{similar}$=1.32; $t(997)=2.86$, $p=0.004$, $d=0.28$). However, there was no effect of foregone alternative diversity when the objective marker was present ($M_{diverse}$=4.67, $SD_{diverse}$=1.46, $M_{similar}$=4.66, $SD_{similar}$=1.43; $t(997)=-0.02$, $p=0.98$).

Subsequent decision (H3a)

The same ANOVA on intentions to get training sessions revealed a significant interaction ($F(1, 997)=5.30$, $p=0.022$, $\eta_p^2=0.01$) and no significant main effects (p's>0.12). Replicating our previous findings, in the no-objective-marker conditions, participants who considered diverse (vs. similar) goal-inconsistent alternatives reported a higher likelihood to get personal training sessions ($M_{diverse}$=4.26, $SD_{diverse}$=1.80, $M_{similar}$=3.79, $SD_{similar}$=1.93; $t(997)=2.73$, $p=0.006$, $d=0.25$). No such effect of considering diverse goal-inconsistent alternatives was found in the objective-marker conditions ($M_{diverse}$=3.80, $SD_{diverse}$=1.91, $M_{similar}$=3.89, $SD_{similar}$=2.02; $t(997)=-0.50$, $p=0.61$). The same pattern of results was found for the alternative outcome measure, the number of personal training sessions participants chose to book (see Online Appendix G).

Serial mediation analyses (H3b)

Finally, we conducted a moderated serial mediation analysis (PROCESS, Model 91). The model included foregone alternative diversity as the independent variable (0=similar, 1=diverse alternatives), perceived sacrifice and subjective impact as sequential mediators, and the objective marker (0=absent, 1=present) as a moderator of the relationship between the two mediators, predicting subsequent goal-related decision as the dependent variable. The analysis revealed a significant moderated mediation ($b=-0.02$, se=0.01, CI=[−0.0433, −0.0035]). The indirect effect was significant only when an objective marker was absent ($b=0.02$, se=0.01, CI=[0.0049, 0.0412]), but not when an objective marker was present ($b=0.001$, se=0.005, CI=[−0.0087, 0.0106]).

Discussion

Study 4 provides converging evidence supporting the proposed framework. Replicating Study 3, we find that, in the absence of goal progress information, perceived sacrifice and subjective impact sequentially mediated the positive effect of foregone option diversity on subsequent motivation for goal pursuit. Furthermore, the current study identified a theory-based moderator, such that the presence of an objective marker to indicate goal progress eliminates the effect of foregone alternative diversity on subsequent motivation. When provided with an objective marker with which to evaluate goal progress, participants' perceptions of sacrifice due to the diversity of foregone alternatives no longer significantly affected their evaluation of how much impact they had made on the focal goal, delinking the diversity of foregone alternatives and subsequent motivation.

STUDIES 5A–C: FOREGOING DIVERSE ALTERNATIVES IS PERCEIVED AS PASSING UP MULTIPLE OPPORTUNITIES

Study 5 investigates the specific nature of the underlying inferential process when considering foregone alternatives. In our framework, foregoing diverse (vs. similar) goal inconsistent alternatives is perceived as greater sacrifice because giving up multiple, distinct types of attributes combined in a diverse set (as opposed to giving up similar attributes in a similar set) is perceived as passing over more. However, this could occur for one of two different reasons: either because foregoing diverse options feels like passing over a greater number of opportunities or because it feels like passing up a single but larger opportunity.

Specifically, because consumers often feel like they are giving up all available alternatives when making a choice from a given set (Weiss & Kivetz, 2019; Schwartz, 2004), foregoing diverse options might be perceived as making multiple goal-consistent decisions by repeatedly rejecting goal-inconsistent alternatives (e.g., "I've resisted temptations *three times*, by foregoing a donut, *and* a cake, *and* a cup of ice cream"). Alternatively, people may perceive foregoing diverse alternatives as foregoing a larger, superordinate category (e.g., "I've resisted eating *dessert*"). Categorization is often based on the perception of similarity–the extent to which alternatives have shared features, and thus, when the alternatives have less prominent overlapping features at a superficial level, they tend to be grouped into a broader category (Murphy, 2004; Ratneshwar et al., 2001). Consequently, when the primary commonality among alternatives is their goal-inconsistency, foregoing diverse goal-inconsistent alternatives may be perceived as giving up the entire goal inconsistent superordinate category as a whole.

To determine which inferences from foregone alternative diversity underlie the effect, we employed six different scenarios (see Online Appendix H for stimuli), differing in how people made a goal-consistent choice, in which participants imagined foregoing similar vs. diverse alternatives either (1) in a single direct choice as in the prior studies (base condition), (2) sequentially by making separate choices (sequential condition) or (3) by foregoing a superordinate category and only later finding out that the included alternatives were either similar or diverse (superordinate condition).

As summarized in Table 1, the sequential account predicts that the foregone diversity effect occurs in the base condition because more diverse foregone alternatives are spontaneously interpreted as a sequence of decisions to reject different goal-inconsistent options. The sequential manipulation would therefore increase perceived sacrifice for the similar foregone alternative condition to the level of the diverse foregone alternative condition, by framing both as involving multiple goal-consistent choices. Conversely, the superordinate manipulation would reduce the perceived sacrifice for the diverse condition to the level of the similar condition, by framing both as involving only a single goal-consistent choice.

The superordinate account, by contrast, predicts that the effect occurs in the base condition because more diverse foregone alternatives are spontaneously interpreted as a single superordinate choice to reject the entire goal-inconsistent category. The superordinate manipulation would therefore increase the perceived sacrifice for the similar condition to the level of the diverse condition, by framing both as foregoing a superordinate category regardless of the diversity of foregone alternatives. However, the sequential manipulation would not change the difference in perceived sacrifice between the similar and diverse conditions, because foregoing similar alternatives would still be perceived as foregoing subordinate categories, while foregoing diverse alternatives would be perceived as foregoing a superordinate category.

To summarize, the sequential account predicts that the foregone diversity effect should replicate in the base condition only and should be eliminated in both the sequential and superordinate conditions. By contrast, the superordinate account predicts that the effect should be replicated in both the base and the sequential conditions and only eliminated in the superordinate condition.

In the prior studies, we measured goal perceptions and subsequent choices in the same study to examine our conceptual framework, particularly to test the mediating role of goal perceptions on subsequent goal pursuit. However, it is worth noting that the act of measuring perceptions could potentially influence the later measurement of intentions or behaviors (Feldman & Lynch, 1988). To conduct a more robust examination of the foregone diversity effect, Studies 5A–C investigate each component in our framework independently (perceived sacrifice in Study 5A, subjective impact in Study 5B, and subsequent choice in Study 5C).

Study 5A method

Study 5A employed a 2 (foregone alternative diversity: similar vs. diverse) × 3 (account: base vs. superordinate vs. sequential) between-subjects design. We recruited 1000 participants from Prolific in the United States. Prior to analysis, we excluded 71 records from participants who failed an attention check or who indicated dietary restrictions that had affected their answers, leaving 929 surveys for analysis (457 male, M_{age} = 35.79; pre-registered).

To confirm the participants' endorsement of a healthy eating goal, we asked them to indicate the extent to which they agreed with the following statements on a 7-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*): (1) "I am highly conscious of what I am eating," (2) "I try to eat healthy as much as I can," (3) "Eating healthy is one of my important personal goals." Participants in Studies 5A–C indicated, on average, that they were pursuing a focal goal (5A: $\alpha = 0.83$, $M = 4.87$, $SD = 1.38$, $t(928) = 22.58$; 5B: $\alpha = 0.86$, $M = 4.87$, $SD = 1.74$, $t(937) = 20.25$; 5C: $\alpha = 0.85$, $M = 4.87$, $SD = 1.74$, $t(937) = 20.25$, all p's < 0.001 compared to the midpoint of the scale).

Participants were then asked to imagine that they had recently set a personal goal to avoid having unhealthy, high-sugar foods as much as possible. We used a scenario involving choosing a dessert among four options. In all conditions, participants imagined they had chosen a goal-consistent option, a fresh fruit cup, instead of one of the three other goal-inconsistent alternatives. In the similar condition, all three goal-inconsistent alternatives were the same kind of dessert (either all donuts, all ice cream, or all cakes, randomly assigned). By contrast, in

TABLE 1 Study 5: predictions by suggested account.

	Perception		Perceived sacrifice & subjective impact		Goal consistent choices	
	Similar	**Diverse**	**Similar**	**Diverse**	**Similar**	**Diverse**
Sequential account predictions						
Base	One choice	Multiple	Low	High	Low	High
Sequential	Multiple	Multiple	High	High	High	High
Superordinate	One choice	One choice	Low	Low	Low	Low
Superordinate account predictions						
Base	Small category	Big category	Low	High	Low	High
Sequential	Small category	Big category	Low	High	Low	High
Superordinate	Big category	Big category	High	High	High	High

the diverse condition, the alternatives were three different kinds of dessert (a donut, a cup of ice cream, and a cake).

We employed three different choice scenarios, varying the way in which the decision had been made. In the base condition scenario, participants had chosen a goal-consistent option (i.e., a fruit cup) from a dessert bar where a fruit cup and (either similar or diverse) goal-inconsistent, high-sugar dessert options had been displayed. In the sequential condition scenario, participants were told that waiters carrying a tray of desserts had offered the (either similar or diverse) goal-inconsistent dessert options sequentially, but they had repeatedly rejected the goal-inconsistent desserts and finally chose the fruit cup (i.e., making multiple goal-consistent decisions against goal-inconsistent dessert). In the superordinate condition scenario, participants instead imagined they had decided to have the fruit cup and to not look at a dessert menu, which they later discovered consisted of the (either similar or diverse) goal-inconsistent options (i.e., making a single, superordinate goal-consistent decision against goal-inconsistent dessert).

After answering an attention check question about their prior goal-consistent choice in the scenario, participants rated their perceived sacrifice, using the same questions as in Study 3. We measured perceived diversity of the alternatives using the following two statements: (1) "How similar do you think these options are?" (reverse-coded), (2) "How different do you think these options are?" (1 = *Not at all*, 7 = *Very much*). They also reported dietary restrictions, if any, that affected their answers, gender and age.

Study 5B method

We recruited 1000 participants from Prolific in the United States. Applying the same exclusion criteria as in Study 5A, we excluded 48 records, leaving 952 surveys for analysis (509 male, M_{age} = 38.55; pre-registered). Study 5B used the same stimuli and procedure as Study 5A, except that we measured participants' assessment of the subjective impact of their goal-consistent choice, using the same questions as in Study 3.

Study 5C method

We recruited 1000 participants from Prolific in the United States. Applying the same exclusion criteria as in Study 5A, we excluded 63 records, leaving 937 surveys for analysis (491 male, M_{age} = 36.96; pre-registered).

Study 5C used the same stimuli and scenario as Study 5A. After a comprehension check question confirming the choice they had made in the scenario, participants read the remainder of the scenario, in which they were now at a restaurant for dinner and were asked to choose their side dish. In the scenario, the main dish they had chosen came with assorted fritters, but they could substitute the side dish with lower-calorie, healthier options, such as garden salad or grilled vegetables. Participants indicated whether they would change the side dish to a lower-calorie option, and after the choice, participants rated the attractiveness of the foregone desserts in the initial choice and reported their gender and age.

Study 5A results

Manipulation check

Participants indicated greater diversity when they imagined having foregone alternatives in the diverse conditions than in the similar conditions, indicating a successful manipulation of alternative diversity ($M_{diverse}$ = 4.10, $SD_{diverse}$ = 1.55, $M_{similar}$ = 3.19, $SD_{similar}$ = 1.42; $t(927) = 9.39$, $p < 0.001$).

Perceived sacrifice

We first report an ANOVA to test overall differences across the conditions in the effect of diverse foregone alternatives (Figure 4). A 2 (forgone-alternative diversity: similar vs. diverse) × 3 (account: base vs. sequential vs. superordinate) ANOVA on the composite score of perceived sacrifice (α = 0.86) revealed a significant main effect of the alternative diversity ($F(1, 923) = 4.37$, $p = 0.037$, $\eta_p^2 = 0.01$; $M_{diverse}$ = 4.54, $SD_{diverse}$ = 1.51, $M_{similar}$ = 4.33, $SD_{similar}$ = 1.57), a significant main effect of the account ($F(1, 923) = 7.19$, $p = 0.001$, $\eta_p^2 = 0.02$; M_{base} = 4.34, SD_{base} = 1.66, M_{seq} = 4.70, SD_{seq} = 1.48, M_{sup} = 4.26, SD_{sup} = 1.47), and a marginal interaction ($F(1, 923) = 2.52$, $p = 0.08$).

To precisely test each of the two theoretical possibilities, we conduct targeted analyses that test the specific comparisons predicted by the sequential and superordinate accounts. To reiterate, the sequential account predicts greater perceived sacrifice when forgoing diverse (vs. similar) goal-inconsistent alternatives only in the base condition, not in the sequential nor superordinate conditions. The superordinate account predicts the forgone diversity effect in the base and sequential conditions, not in the superordinate condition (see Table 1).

First, we tested the sequential account, which predicts the foregone diversity effect only in the base conditions, by conducting a 2 (forgone-alternative diversity: similar vs. diverse) × 2 (account: base vs. pooled sequential and superordinate) ANOVA on perceived sacrifice. The analysis revealed a significant interaction ($F(1, 925) = 4.80$, $p = 0.029$, $\eta_p^2 = 0.01$), a significant main effect of the alternative diversity ($F(1, 925) = 4.32$, $p = 0.038$, $\eta_p^2 = 0.01$), and a non-significant main effect of account ($p = 0.17$). Replicating our prior results, participants indicated greater perceived

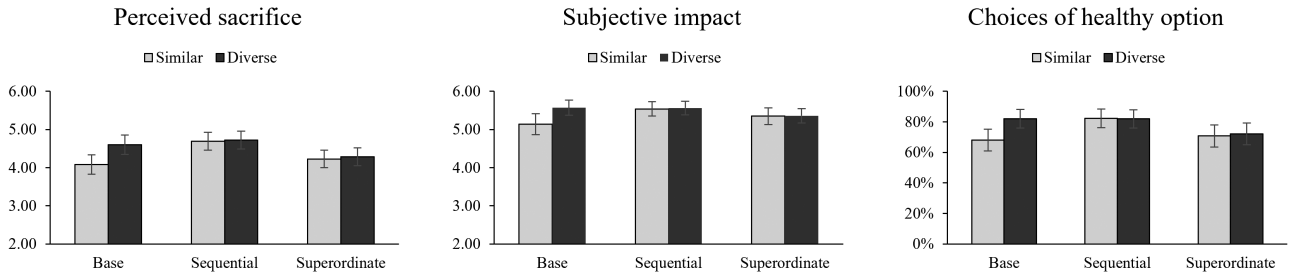

FIGURE 4 Perceived sacrifice (Study 5A), subjective impact (Study 5B), and subsequent choice (Study 5C) as a function of foregone alternative diversity and suggested account. Error bars represent 95% CI.

sacrifice when foregoing diverse (vs. similar) set of alternatives in the base condition ($M_{diverse}$=4.60, $SD_{diverse}$=1.58, $M_{similar}$=4.08, $SD_{similar}$=1.70; $t(925)=2.99$, $p=0.003$, $d=0.32$). Consistent with the sequential account, and contrary to the superordinate account, perceived sacrifice did not significantly differ in the pooled sequential and superordinate conditions ($M_{diverse}$=4.51, $SD_{diverse}$=1.49, $M_{similar}$=4.46, $SD_{similar}$=1.49; $t(925)=0.42$, $p=0.68$).

Second, we tested the superordinate account, which predicts the foregone diversity effect both in the base and sequential conditions, by conducting a 2 (forgone-alternative diversity: similar vs. diverse)×2 (account: pooled base and sequential vs. superordinate) ANOVA. The analysis revealed significant main effects of alternative diversity and account ($F(1, 925)=4.59$, $p=0.018$, $\eta_p^2=0.01$; M_{pooled}=4.52, SD_{pooled}=1.58, M_{super}=4.26, SD_{super}=1.47). No significant interaction was observed ($p=0.29$), contrary to the superordinate account.

To further evaluate the sequential account, we conducted tests of specific predicted comparisons from the two accounts. Consistent with the sequential account and contrary to the superordinate account, when forgoing similar alternatives, participants reported greater perceived sacrifice in the sequential (vs. base) condition ($t(923)=3.49$, $p<0.001$, $d=0.38$). Conversely, contrary to the superordinate account, perceived sacrifice did not differ between the superordinate and base conditions when foregoing similar alternatives ($t(923)=0.90$, $p=0.37$). Instead, consistent with the sequential account, perceived sacrifice was higher in the pooled sequential conditions than in the pooled superordinate conditions ($M_{seq\ pooled}$=4.70, $SD_{seq\ pooled}$=1.48 vs. $M_{sup\ pooled}$=4.26, $SD_{sup\ pooled}$=1.47, $t(926)=3.56$, $p<0.001$, $d=0.30$). In addition, foregone alternative diversity did not affect perceived sacrifice in either the sequential ($M_{seq\ div}$=4.61, $SD_{seq\ div}$=1.48 vs. $M_{seq\ sim}$=4.51, $SD_{seq\ sim}$=1.60; $t(923)=0.18$, $p=0.86$) or superordinate conditions ($M_{sup\ div}$=4.28, $SD_{sup\ div}$=1.53 vs. $M_{sup\ sim}$=4.21, $SD_{sup\ sim}$=1.50, $t(923)=0.32$, $p=0.75$), which provides additional empirical support for the sequential account.

Study 5B results

The same overall 2×3 ANOVA on the composite score of subjective impact (α=0.91) revealed marginal main effects of foregone alternative diversity ($F(1, 946)=3.41$, $p=0.07$; $M_{diverse}$=5.50, $SD_{diverse}$=1.21, $M_{similar}$=5.35, $SD_{similar}$=1.35) and accounts ($F(1, 946)=2.51$, $p=0.08$; M_{base}=5.35, SD_{base}=1.32, M_{seq}=5.55, SD_{seq}=1.21, M_{sup}=5.35, SD_{sup}=1.31), and a marginal interaction ($F(1, 946)=2.63$, $p=0.08$). Again, to further investigate the underlying theoretical accounts, we tested the sequential and superordinate accounts, which predicts the foregone diversity effect only in the base condition, and both in the base and sequential conditions, respectively.

First, testing the sequential account, a 2 (forgone-alternative diversity: similar vs. diverse)×2 (account: base vs. pooled sequential and superordinate) ANOVA on subjective impact (α=0.91) revealed a significant interaction ($F(1, 948)=5.11$, $p=0.024$, $\eta_p^2=0.01$), a marginal main effect of foregone alternative diversity ($F(1, 948)=3.40$, $p=0.07$), and a non-significant main effect of account ($p=0.28$). As in 5A, participants indicated greater subjective impact when foregoing diverse (vs. similar) alternatives only in the base condition ($M_{base\ div}$=5.57, $SD_{base\ div}$=1.20, $M_{base\ sim}$=5.14, $SD_{base\ sim}$=1.40, $t(948)=2.89$, $p=0.004$, $d=0.33$). Consistent with the sequential account, and contrary to the superordinate account, subjective impact did not significantly differ in the pooled sequential and superordinate conditions ($M_{diverse}$=5.47, $SD_{diverse}$=1.22, $M_{similar}$=5.44, $SD_{similar}$=1.31; $t(948)=0.26$, $p=0.80$).

Second, testing the superordinate account, a 2 (forgone alternative diversity: similar vs. diverse)×2 (account: pooled base and sequential vs. superordinate) ANOVA revealed no significant effects (p's>0.22) except the marginal main effect of the foregone alternative diversity observed above.

Further supporting the sequential account and contrary to the superordinate account, when foregoing similar alternatives, subjective impact in the sequential condition was higher than the base condition ($t(946)=2.71$, $p=0.007$, $d=0.30$), whereas superordinate and base condition did not differ ($t(946)=1.42$, $p=0.16$). In addition, consistent with the sequential account, participants in the pooled sequential conditions reported greater subjective impact than those in the pooled superordinate conditions ($M_{seq\ pooled}$=5.55, $SD_{seq\ pooled}$=1.21 vs. $M_{sup\ pooled}$=5.35, $SD_{sup\ pooled}$=1.31, $t(949)=1.99$, $p=0.047$, $d=0.16$). Again, supporting the

sequential account, subjective impact did not differ either in the sequential ($M_{seq\ div}=5.57$, $SD_{seq\ div}=1.22$ vs. $M_{seq\ sim}=5.54$, $SD_{seq\ sim}=1.20$; $t(946)=0.21$, $p=0.84$) or superordinate conditions ($M_{sup\ div}=5.36$, $SD_{sup\ div}=1.21$ vs. $M_{sup\ sim}=5.35$, $SD_{sup\ sim}=1.40$, $t(946)=0.08$, $p=0.93$).

Study 5C results

An overall 2×3 logistic regression predicting the subsequent choice revealed marginal interactions of (similar vs. base)×(base vs. sequential) ($b=-0.75$, $z=-1.87$, $p=0.06$) and (similar vs. base)×(base vs. superordinate) ($b=-0.66$, $z=-1.79$, $p=0.07$). We then conduct the theory-motivated targeted analyses to test the sequential and superordinate accounts.

First, testing the sequential account, a logistic regression of (similar vs. diverse)×(base vs. pooled sequential and superordinate) revealed a significant interaction ($b=-0.68$, $z=-2.08$, $p=0.037$), again consistent with the sequential account. Specifically, we replicated the foregone diversity effect only in the base condition: participants who imagined having foregone diverse (vs. similar) alternatives were more likely to choose a goal-consistent option (82% vs. 68%, $\chi^2=6.84$, $p=0.009$, $\varphi=0.16$). However, the effect was eliminated in the pooled sequential and superordinate conditions (77% vs. 76%, $\chi^2=0.02$, $p=0.89$).

Second, testing the superordinate account, a logistic regression of (similar vs. diverse)×(pooled base and sequential vs. superordinate) revealed no significant interaction ($b=-0.34$, $z=-1.06$, $p=0.29$). The result was again contrary to the prediction of the superordinate account.

Furthermore, in line with the sequential account, when foregoing similar alternatives, participants in the sequential (vs. base) condition showed greater goal persistence (82% vs. 68%, $\chi^2=8.00$, $p=0.005$, $\varphi=0.16$), whereas no difference between the superordinate and base condition (71% vs. 68%, $\chi^2=0.20$, $p=0.66$). Again, consistent with the sequential account, participants were more likely to make a goal-consistent choice in the pooled sequential conditions than in the pooled superordinate conditions (82% vs. 71%, $\chi^2=9.82$, $p=0.002$, $\varphi=0.13$). The foregone diversity effect was eliminated in both the sequential choice condition (82% vs. 82%, $\chi^2=0.003$, $p=0.95$) and in the superordinate condition (72% vs. 71%, $\chi^2=0.07$, $p=0.79$).

Studies 5A–C discussion

These studies specifically focused on the underlying inferences about foregoing diverse goal-inconsistent alternatives. Three studies provide converging evidence consistent with the predictions of the sequential account, and inconsistent with the superordinate account. These results indicate that foregoing diverse temptations does not necessarily result in the perception of having foregone the entire superordinate category of goal-inconsistent items. Instead, these findings support the conclusion that when individuals forego diverse (vs. similar) goal-inconsistent alternatives, it is perceived as having made a sequence of choices, each involving the rejection of a goal-inconsistent alternative. This perception seems to amplify the psychological impact of a single, objective decision to choose a goal-consistent option from a given set, increasing the perceived sacrifice and subjective impact, and subsequently increasing the likelihood of making a goal-consistent choice.

In essence, these findings offer new insights into how foregoing diverse alternatives within a set can create an illusion of sequential decision-making, influencing subsequent goal-related perceptions and enhancing motivation. In addition, we identify an important and theoretically derived boundary condition: when the context conveys the distinct number of choices involved in foregoing alternatives (either multiple sequential choices or one superordinate choice), consumers' sensitivity to the diversity of the alternatives is eliminated.

GENERAL DISCUSSION

The present research suggests that even when people make the same goal-consistent choice, how they perceive the foregone goal-inconsistent options can influence their subsequent goal-related decisions. We demonstrated this *foregone alternative diversity effect* in multiple different goal contexts, including exercise, healthy eating, weight loss and savings. Across five studies (and four supplemental studies reported in the Online Appendix J), we found that when consumers considered diverse (vs. similar) goal-inconsistent alternatives that they could have chosen instead of the goal-consistent choice they made, they believed that they had sacrificed more to be consistent with their goal, making a greater impact on their goal progress. They were then more likely to stick to the goal in subsequent consequential or hypothetical choices.

Our framework suggests that diversity among the foregone alternatives increases subjective impact of the prior goal-consistent choice in goal pursuit, because foregoing diverse (vs. similar) alternatives is perceived as involving greater sacrifice. Supporting our framework, we demonstrate that the foregone diversity effect (shown in Studies 1 and 2) is mitigated when perceptions of sacrifice are lessened by considering goal-consistent alternatives (Study 3), when an objective marker makes perceptions of sacrifice irrelevant for assessing subjective impact (Study 4), and when the sequence of choices is made explicit, eliminating the effect on perceived sacrifice (Study 5). Mediation models (in Studies 3 and 4)

provide process evidence that foregone alternative diversity increases perceived sacrifice, which leads to greater subjective impact, which then boosts subsequent motivation to persist in goal pursuit. Across the studies we also test but do not find support for a variety of other goal-related inferences and processes as alternative explanations (e.g., in Studies 1–3).

Theoretical contributions

The current research makes multiple contributions to the literature on goals and motivation. First, this research contributes to the literature on the role of perceived impact in ongoing goal pursuit. A large body of research has demonstrated that motivation increases with a greater sense of impact and has suggested various cues that influence the perceived impact, including visual cues representing proximity to the goal's ending or starting point, reference points to monitor goal progress, and even spatial distance to a donation recipient in a prosocial goal context (Cheema & Bagchi, 2011; Kivetz et al., 2006; Koo & Fishbach, 2012; Nunes & Dreze, 2006; Touré-Tillery & Fishbach, 2018). Building on this research, we suggest the diversity of foregone alternatives as a novel factor that individuals may use to assess how much impact their goal-consistent action has made on overall goal pursuit process, particularly in the absence of other means for judging goal impact.

Second, this research advances our understanding of how choice sets impact goal-directed decisions. Considering that goal attainment often requires repeated goal-consistent choices over time, not just a single success at a static snapshot in time, it is important to understand how one's past choices and the context of those past choices, such as foregone alternatives, influences people's subsequent motivation. Although previous research has primarily focused on how the composition of *current* choice alternatives affects evaluations of and preferences between those alternatives, we investigate the effect of choice sets in sequential choices, demonstrating that the type of foregone alternatives from a *prior* decision influences subsequent goal pursuit behavior.

The current findings shed new light on the role of memory in goal pursuit, exploring how the content of consumers' recollections of past goal-related decisions shape their subsequent decisions. While prior studies have focused on how memories of *chosen* actions (e.g., self-control success or failure; Mukhopadhyay et al., 2008) affect subsequent motivation, the current paper demonstrates the motivating effect of the diversity of *unchosen* alternatives. Further, although prior research investigated the effect of the actual composition of alternatives in a choice set, the present research suggests that the *mental representation* of foregone alternatives can impact how consumers evaluate their past choice and change their future goal-related decisions. Specifically, in most of our studies, participants simply recalled alternatives they could have chosen, constructing the choice set retrospectively. This suggests that merely considering diverse goal-inconsistent alternatives afterwards, rather than actually foregoing more diverse options at the time of choice, can influence subsequent goal persistence.

Managerial implications

This finding is particularly meaningful from a practical perspective. Companies or organizations generally cannot directly influence which alternatives consumers actually consider and forego at the time of choice-making. However, they can encourage consumers to reconstruct their counterfactual alternatives in a particular way afterwards, by direct messaging or framing, which our findings suggest could result in a positive boost in their motivation. A simple external cue inducing people to look back at various alternatives they have foregone thus far to stick to their goal may help people stay motivated.

For example, when goal tracking apps interact with their users, sending messages emphasizing users' past success in resisting diverse temptations for goal-pursuit (e.g., "You overcame so many different temptations to get this far…") could be more helpful to encourage behavioral consistency than merely tracking their past success or failure. Alternatively, when users log their goal-consistent choices, they can be prompted to name goal-inconsistent alternatives and then the diversity among the alternatives can be highlighted to them. However, it is important to keep the moderators we have found in mind: this strategy is likely to be less effective when people don't already hold the goal, when the goal relevance of the behavior is not obvious, or when salient markers of goal progress are present.

Supplemental study A3 further suggests a simple way to harness the foregone diversity effect, increasing perceived diversity among alternatives via categorization. According to Mogilner et al. (2008), splitting options into more categories signals greater variety among the available alternatives. In study A3, we used a fixed set of foregone alternatives and manipulated the perceived diversity only using categorization (e.g., the same alternatives grouped into a single category vs. split into multiple categories). Multiple categorization increased participants' perceptions of the diversity of the same set of alternatives and, more importantly, enhanced their motivation for further goal pursuit. Marketers may be able to leverage this strategy to help consumers get over the "stuck in the middle" effect (e.g., Bonezzi et al., 2011), especially when the objective impact of past choices on goal progress is unclear.

Future research directions

Our findings offer interesting possibilities for future research. First, the current studies focus on the role of alternatives specifically when individuals have made a goal-*consistent* choice. It would be interesting to investigate the effect of foregone alternative diversity when participants have made a goal-*inconsistent* choice, failing to follow their goal, foregoing multiple goal-*consistent* alternatives. After succumbing to a temptation, would the diversity among the foregone goal-consistent options impact the perceived severity of the goal-pursuit failure and influence subsequent decisions? Extending our theorizing in the current work, we would tentatively predict that when people choose a goal-inconsistent option over more diverse goal-consistent alternatives, they may perceive they have failed multiple times, evaluating their previous goal-inconsistent choice as more of a setback to goal attainment.

Second, our framework raises the question of whether individuals might strategically generate diverse foregone alternatives as a self-control device. Consumers often show motivated reasoning, selectively interpreting ambiguous information in ways that are consistent with their preferred future choice. Particularly in a goal-pursuit context, consumers exaggerate or downplay perceived progress, depending on their goal status, to increase motivation (Huang et al., 2012). In contrast, consumers also distort their memories about past indulgence to license the present indulgence such that they understate the past goal-inconsistent behavior (e.g., decreased calorie estimate of previous candy consumption; May & Irmak, 2014). Future research can examine whether consumers tend to construe foregone alternatives as more diverse or attempt to recall more diverse alternatives to exaggerate the impact of the prior goal-consistent choice and maintain their motivation to persist towards their goal.

In sum, our findings suggest that considering the diverse roads not taken motivates people to stick to their path. When people consider having foregone diverse (vs. similar) goal-inconsistent alternatives, they are likely to perceive that they have made a greater sacrifice when choosing a goal-consistent option, with greater impact on overall goal pursuit, motivating subsequent goal-consistent choices.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in OSF (https://osf.io/5y9wt/?view_only=861e3af5c59648d1aa40293e80bd0d78).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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Online Appendix

The different roads not taken: Considering diverse alternatives motivates future goal persistence

Online Appendix A: Pre-test of goal endorsement

A pretest (N = 142) was conducted to explore the prevalence of each goal: exercising regularly (Study 1), eating healthy (eating more vegetables, less processed meat, less sugar; Studies 2 and 3), and saving (supplemental study A4). At the end of an unrelated survey, participants indicated whether they currently endorse each goal or not. The order of goals was randomized. The percentages of participants who indicated they were endorsing each goal are as below.

	Endorsement rate (# of yes/n)
Exercising regularly	87% (123/142)
Eating healthy	89% (126/142)
Saving	96% (135/142)

Online Appendix B: Pre-registrations

Study 2: https://aspredicted.org/HCN_7JG

Study 4: https://osf.io/9m8vz/?view_only=330f776cb94343c2ba3fb9063b1f7954

Study 5A: https://osf.io/r6jx4/?view_only=c65b412c94204ee8a0365fa26c247f58

Study 5B: https://osf.io/prt3w/?view_only=6a2af2d5b4ff493eaaca4338be9a6796

Study 5C: https://aspredicted.org/LJ7_W6Y

Online Appendix C: Pre-test of energy bars for Study 1

We conducted a pretest (N = 45) on MTurk about the two energy bars we planned to use in our studies – wholesome mix of healthiness: KIND almond, walnut & macadamia" vs. "sweet and salty indulgence: KIND dark chocolate & peanut butter. We wanted to confirm that people evaluate the two energy bars differently, in terms of perceived healthiness, indulgence, and congruence with a health goal.

We presented pictures, side-by-side, of the two energy bars and the same descriptions that would be used in main studies. Participants evaluated how well each adjective (tasty, healthy, enjoyable, and indulgent) described the energy bars, using a 10-point scale (1 = *Not at all*, 10 = *Extremely*). They also estimated the retail price on a sliding bar from $0 to $10. In addition, participants imagined that they were considering eating one of the energy bars after exercising and indicated 1) how guilty they would feel, 2) how much it would ruin their goal of being fit, 3) how much it would be inconsistent with their goal of being fit if they ate each of the bars, using the same 10-point scale.

Results confirmed that people perceived the almond, walnut & macadamia energy bar as healthier (6.77 vs. 5.02, $p < .01$), less indulgent (5.82 vs. 7.39, $p < .01$), and less tasty (7.09 vs. 7.77, $p = .06$) than the dark chocolate & peanut butter energy bar. There was no significant difference in enjoyment (7.05 vs. 7.50, $p = .28$) or estimated retail price ($2.48 vs. $2.53, $p = .75$). Also, people indicated that eating the dark chocolate & peanut butter energy bar would make them feel guiltier (4.75 vs. 3.34), more negatively impact their health goal (4.70 vs. 3.41), and would be more inconsistent with the health goal (5.80 vs. 4.20, all p's < .01).

Online Appendix D: Study 2 results with control variables

[Subjective impact]

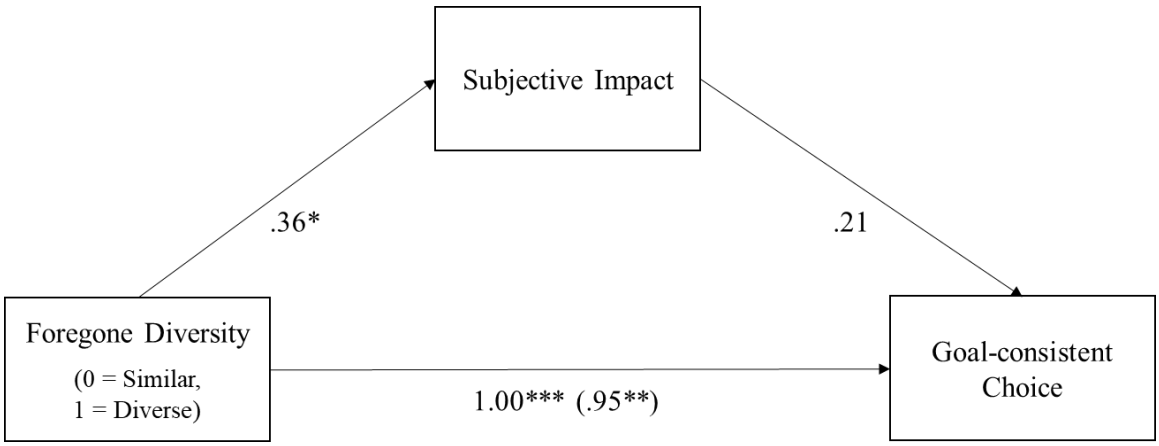
	b	SE	*t*	*p*	
Constant	2.61	.37	7.11	< .001	***
Alternative diversity (1 = Diverse)	.28	.10	2.70	.007	**
Commitment	.47	.05	9.14	<.001	**
Attractiveness	-.04	.04	-.91	.36	

[Subsequent choice]

	b	SE	*t*	*p*	
Constant	-1.59	.66	-2.40	.01	*
Alternative diversity (1 = Diverse)	.89	.27	3.36	< .001	***
Domain (1 = Different)	-1.53	.26	-6.01	< .001	***
Commitment	.38	.09	4.02	< .001	***
Attractiveness	-.01	.07	-.11	.91	
Alternative diversity*Domain	-.74	.37	-1.98	.048	*

Online Appendix E: Mediation models

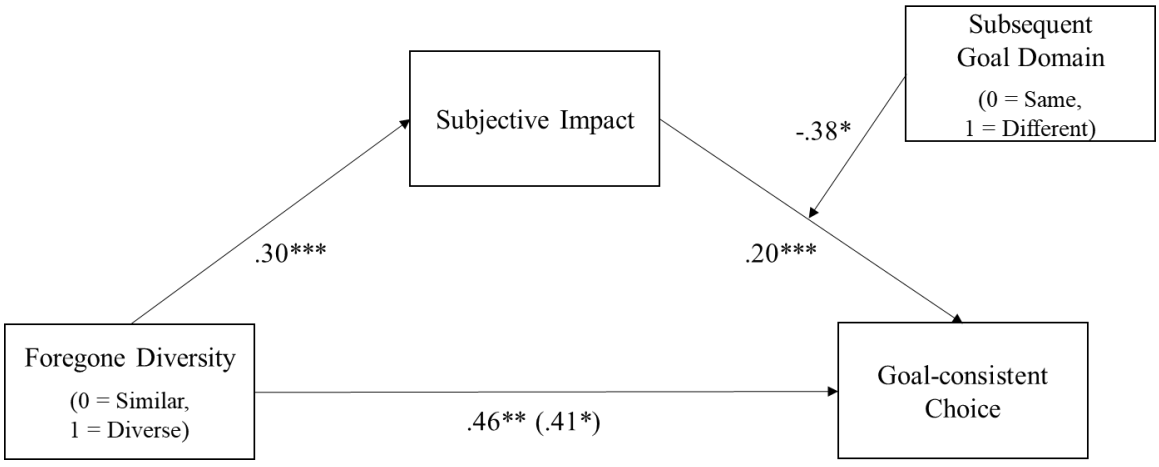
[Study 1]



Notes: Values indicate unstandardized regression coefficients. Value in parentheses indicates results when the proposed mediator is included in the model.

*p < .05, **p < .01, ***p < .005

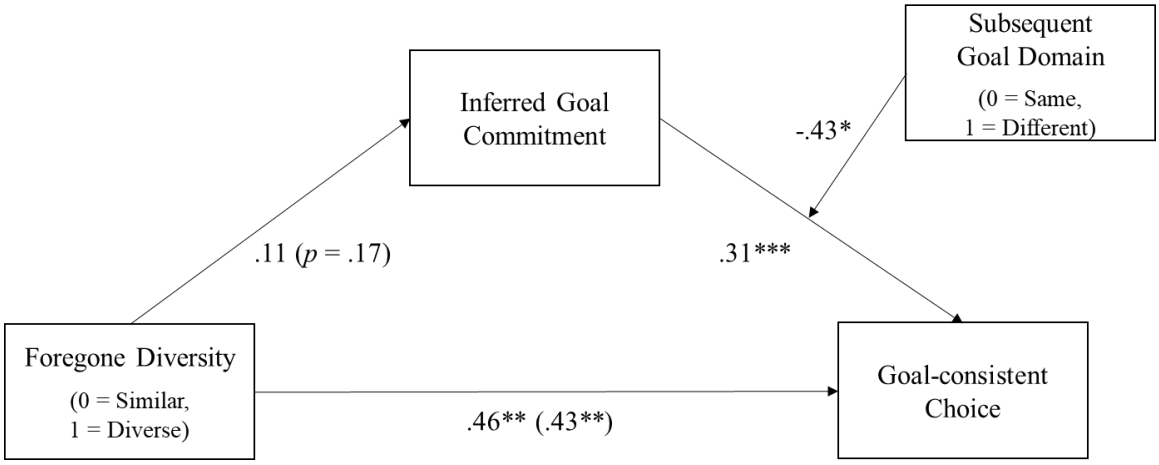
[Study 2]



Notes: Values indicate unstandardized regression coefficients. Value in parentheses indicates results when the proposed mediator is included in the model.

*p < .05, **p < .01, ***p < .005

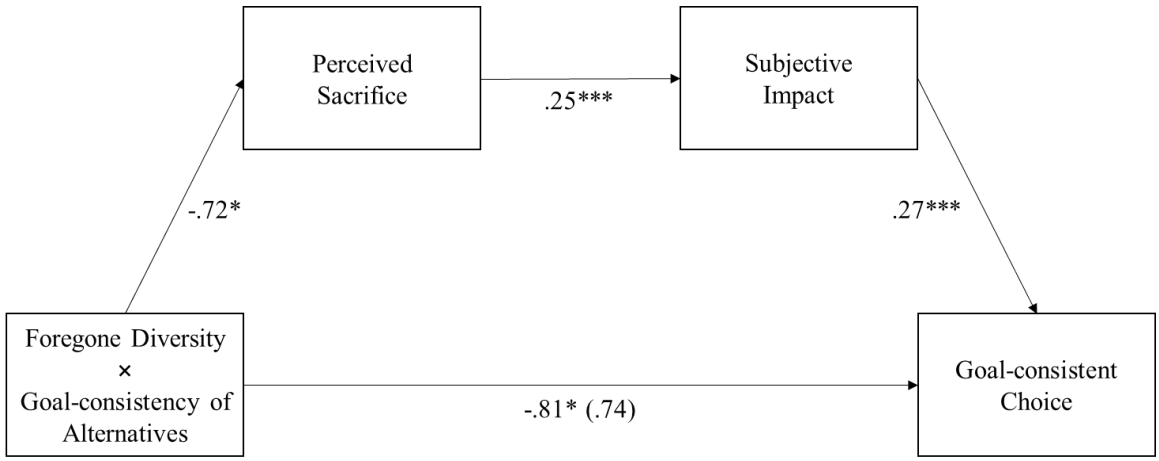
[Study 2]



Notes: Values indicate unstandardized regression coefficients. Value in parentheses indicates results when the proposed mediator is included in the model.

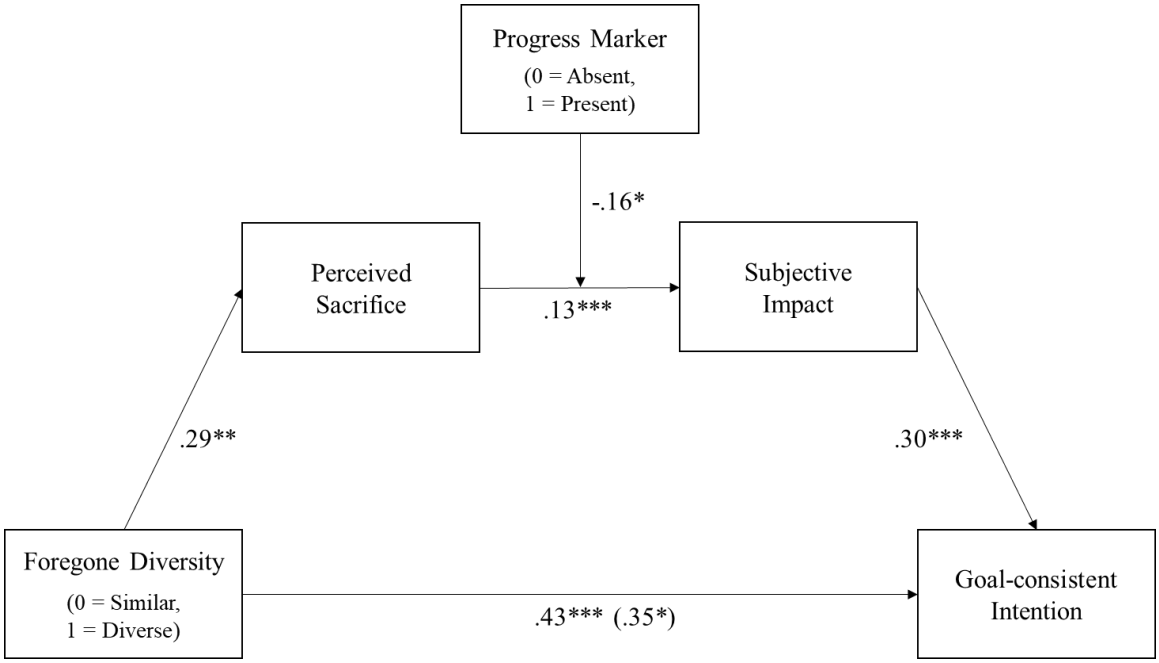
*p < .05, **p < .01, ***p < .005

[Study 3]



Notes: Foregone Diversity (0 = similar, 1 = diverse), Goal-consistency of Alternatives (0 = inconsistent, 1 = consistent); Values indicate unstandardized regression coefficients. Value in parentheses indicates results when the proposed mediators are included in the model.

[Study 4]



Notes: Values indicate unstandardized regression coefficients. Value in parentheses indicates results when the proposed mediators are included in the model.

*$p < .05$, **$p < .01$, ***$p < .005$

Online Appendix F: Control variables in Studies 3–5

[Study 3]

	Similar	Diverse
Self-control ability perception		
Goal-consistent alternatives	4.37 (1.33)	4.42 (1.38)
Goal-inconsistent alternatives	4.41 (1.22)	4.31 (1.31)
Foregone-alternative attractiveness		
Goal-consistent alternatives	5.23 (1.31)	5.42 (1.10)
Goal-inconsistent alternatives	5.25 (1.33)	5.24 (1.41)
Chosen option attractiveness		
Goal-consistent alternatives	6.03 (1.17)[a]	6.15 (1.14)[a]
Goal-inconsistent alternatives	5.39 (1.31)[b]	5.63 (1.16)[b]

Notes: Values in parentheses indicate standard deviation; Self-control ability perception was measured as follows: (1) "In general, I am good at controlling myself to pursue a health goal," (2) "In general, I am the type of person who indulges when it comes to food" (reverse-coded) (r = .64; 1 = *Strongly disagree*, 7 = *Strongly agree*); Values with different superscripts indicate a significant difference at $p < .05$.

[Study 4]

	Similar	Diverse
Foregone-alternatives attractiveness		
Progress marker absent	5.94 (.89)	5.90 (.91)
Progress marker present	5.93 (.84)	5.84 (.80)

Notes: Values in parentheses indicate standard deviation.

[Study 5C]

	Similar	Diverse
Foregone-alternatives attractiveness		
Base	4.65 (1.47)	4.74 (1.37)
Sequential	4.53 (1.52)	4.59 (1.37)
Superordinate	4.44 (1.46)	4.67 (1.33)

Notes: Values in parentheses indicate standard deviation.

Online Appendix G: Number of personal training sessions to book in Study 4

		Foregone alternatives	
		Similar	Diverse
Progress	Absent	2.79 (1.75)[a]	3.11 (1.85)[b, c]
Marker	Present	2.96 (1.94)[a]	2.91 (1.75)[a, c]

Notes: Values in parentheses indicate standard deviation. Values with different superscripts indicate a significant difference at $p < .05$.

Online Appendix H: Studies 4 and 5 Stimuli

Note: Full survey stimuli for all studies are available via OSF (https://osf.io/5y9wt/?view_only=861e3af5c59648d1aa40293e80bd0d78)

[Study 4]

In this study, you are going to imagine a situation where you pursue a goal to improve your health and physical fitness. Before we begin, please answer the following questions about your personal fitness goal.

(1 = Not at all, 7 = Very much)

- I am highly conscious of physical fitness.
- I try to exercise regularly to keep my body fit and healthy.
- Losing weight is one of my personal goals.

Please think about how you would like to spend about a couple of hours of free time, **not related with exercise or work.**

Write down **ONE activity** that you want to do, using a few words that you can recognize. It could be any activity that you enjoy.

Please make it as brief AND specific as possible (for example, *watching a movie*), as the words you write here will appear in the next steps.

[Similar / Diverse condition]

In the previous page, you wrote down: **goal-inconsistent alternative #1**

Please think about 2 other things that you enjoy doing in your free time. Again, something **NOT related with physical exercise or work.**

Please list activities that are **very SIMILAR / DIFFERENT** to / from what you wrote in the previous page. Please make it **as brief as possible**, as the words you write here will appear in the next steps.

#1

#2

Please explain **how** you think the **three activities** that you just provided are similar to / different from one another.

Please take a moment to imagine the following situation:

A couple weeks ago, you felt you really need to improve your health, so **you set a fitness goal (to lose fat and build muscle) and have followed the goal pretty well.**

Today you finished your work earlier than expected. You are thinking about what to do with this unexpected free time. **After some consideration, you decided to go to the gym although you wanted to do other things that you enjoy more.**

You could have spent your time doing other things, such as:

Alternative #1: **goal-inconsistent alternative #1**
Alternative #2: **goal-inconsistent alternative #2**
Alternative #3: **goal-inconsistent alternative #3**

However, you decided to follow your fitness goal.

Now, please indicate how you evaluate this decision. (1 = None at all, 7 = A great deal)

- How much sacrifice do you think you made when making the decision?
- How much enjoyment do you think you gave up when making the decision?
- How much temptation do you think you overcame when making the decision?

Again, please indicate how you would evaluate your previous decision to work out in the following situation.

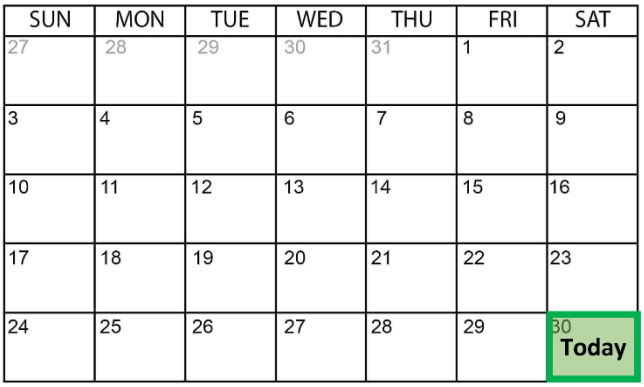
[Objective marker absent condition]

Earlier today, you could have spent your time doing other things that you enjoy, such as:

Alternative #1: **goal-inconsistent alternative #1**
Alternative #2: **goal-inconsistent alternative #2**
Alternative #3: **goal-inconsistent alternative #3**

However, you decided to follow your fitness goal and went to the gym.

Although your fitness goal is an ongoing goal for the year, you want to shed your fat first. However, because you routinely check your weight at the beginning of the week, you don't know yet exactly about how much weight you've lost.



[Objective marker present condition]

Earlier today, you could have spent your time doing other things that you enjoy, such as:

Alternative #1: **goal-inconsistent alternative #1**
Alternative #2: **goal-inconsistent alternative #2**
Alternative #3: **goal-inconsistent alternative #3**

However, you decided to follow your fitness goal and went to the gym.

Although your fitness goal is an ongoing goal for the year, you want to shed your fat first and you routinely check your weight at the end of the week. Today after you finished your workout, you checked your weight and found out that you had lost 1 pound this week.

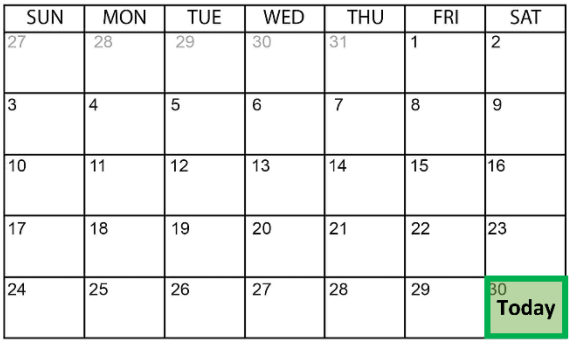
Please indicate how you would evaluate your decision to work out today. (1 = None at all, 7 = A great deal)

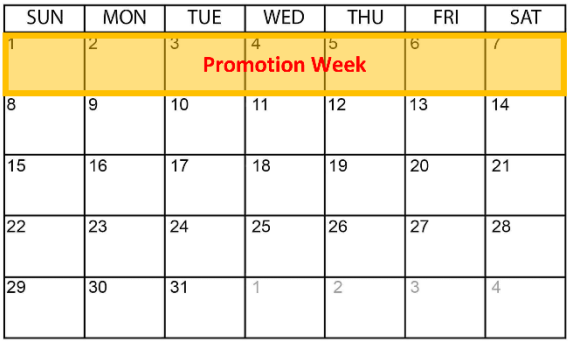
- How much impact do you think you made on your fitness goal?
- How much of an achievement do you think you made towards your fitness goal?
- How much progress do you think you made on your fitness goal?

Now, please take a moment to imagine the following situation:

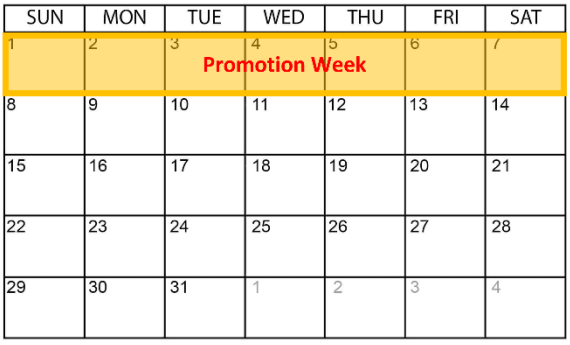
After completing your workout session at the gym, you received a message from the gym. They were offering an opportunity to experience personal training sessions at a discounted price. You have never got a PT before, so you were quite curious about it.

[Objective marker absent condition]





[Objective marker present condition]



The promotion starts next week. To get the PT sessions, you need to book in advance. There will be a penalty if you book a session and don't show up.

If you were in this situation, how likely are you to get PT sessions? (1 = Not at all, 7 = Very much)

How many PT sessions would you like to book? (0 = None, 8 = More than 7)

In the previous part of this survey, you have generated activities that you would like to do in your free time.

How attractive is the below activity to you? (1 = Not at all, 7 = Very much)

- goal-inconsistent alternative #1
- goal-inconsistent alternative #2
- goal-inconsistent alternative #3

[Study 5A]

In this study, you are going to imagine a situation where you pursue a healthy eating goal. Before we begin, please answer the questions below about your general interest in healthy eating.

(1 = Strongly disagree, 7 = Strongly agree)

- I am highly conscious of what I am eating.
- I try to eat healthy as much as I can.
- Eating healthy is one of my important personal goals.

Now you will read a series of scenarios.

Please imagine the scenarios as vividly as possible as if you are living the situation and making choices.

Please take a moment to imagine the following situation:

Imagine that **you recently have set a goal to eat healthy**. You like all kinds of snacks and desserts, including donuts, cakes, chocolates, and cookies. However, you **decided not to have unhealthy, high-sugar high-calorie foods as much as possible.**

[Base, similar condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, a dessert bar has been set up at a ballroom. You stood in front of the dessert bar for a moment.

They had fresh cut fruits, vanilla glazed donuts, double chocolate donuts, and strawberry-filled donuts. They all looked delicious.

After some consideration, you finally **decided to choose a fresh cut fruit cup** for your dessert.

Please indicate what you chose according to the scenario.

○ ○ ○ ○

[Base, diverse condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, a dessert bar has been set up at a ballroom. You stood in front of the dessert bar for a moment.

They had fresh cut fruits, vanilla & clotted cream ice cream, double chocolate donuts, and strawberry shortcake. They all looked delicious.

After some consideration, you finally **decided to choose a fresh cut fruit cup** for your dessert.

Please indicate what you chose according to the scenario.

○ ○ ○ ○

[Sequential, similar condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, waiters were carrying trays of desserts and offering them to attendees.

A waiter came to you and offered vanilla glazed donuts. They looked delicious but you passed.

After a few moments, another waiter offered double chocolate donuts and they also looked good, but you said "No, thank you".

You also passed the next tray of strawberry-filled donuts, which looked really good.

When a waiter offered a tray of **fresh cut fruit cups, you finally picked up one.**

Please indicate what you chose **according to the scenario.**

	Chose to have	Didn't choose
	○	○
	○	○
	○	○
	○	○

[Sequential, diverse condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, waiters were carrying trays of desserts and offering them to attendees.

A waiter came to you and offered vanilla & clotted cream ice cream. They looked delicious but you passed.

After a few moments, another waiter offered double chocolate donuts and they also looked good, but you said "No, thank you".

You also passed the next tray of strawberry shortcakes, which looked really good.

When a waiter offered a tray of **fresh cut fruit cups, you finally picked up one.**

Please indicate what you chose **according to the scenario.**

	Chose to have	Didn't choose
	○	○
	○	○
	○	○
	○	○

[Superordinate, similar condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, a waiter came to your table and offered a fresh cut fruit cup as a dessert. You were also told that if you wanted something more indulging the waiter could bring a dessert menu.

After some consideration, you **decided to have the fruit cup and not to see the dessert menu at all.**

Please indicate what you chose **according to the scenario.**

○

○

Please continue imagining the following situation:

Although you decided to have fresh cut fruits for your dessert, some of your party at the table asked the dessert menu.

When the waiter brought the menu, you found that they had vanilla glazed donut, double chocolate donut, and strawberry-filled donut for the additional dessert options. They all looked delicious.

[Superordinate, diverse condition] (Example)

One afternoon, you went to a conference in a different city that many people in your industry usually attend. There was a luncheon reception for attendees to socialize with others. After lunch at table, a waiter came to your table and offered a fresh cut fruit cup as a dessert. You were also told that if you wanted something more indulging the waiter could bring a dessert menu.

After some consideration, you **decided to have the fruit cup and not to see the dessert menu at all.**

Please indicate what you chose **according to the scenario.**

○

○

Please continue imagining the following situation:

Although you decided to have a fresh cut fruit cup for your dessert, some of your party at the table asked the dessert menu.

When the waiter brought the menu, you found that they had vanilla & clotted cream ice cream, double chocolate donut, and strawberry shortcake for the additional dessert options. They all looked delicious.

Below questions are about how you think of **<u>your choice to have a fruit cup</u>** for your dessert in the scenario.

(1 = None at all, 7 = A great deal)

- How much sacrifice do you think you made?
- How much enjoyment do you think you gave up?
- How much temptation do you think you overcame?

Below questions are about how you think of the dessert options that you did not choose in the scenario.

(1 = Not at all, 7 = Very much)

- How similar do you think these options are?
- How different do you think these options are from each other?

[Similar condition] (Example)

You have foregone vanilla glazed donut, double chocolate donut, and strawberry-filled donut.

[Diverse condition] (Example)

You have foregone vanilla & clotted cream ice cream, double chocolate donut, and strawberry shortcake.

Online Appendix I: Supplemental statistical results

Variables used in the regressions:

Variable Names	Meaning
Alternative = Diverse	1 = Diverse foregone-alternative, 0 = Similar foregone-alternative
Domain = Different	1 = Different goal domain, 0 = Same goal domain
Goal-consistency = Consistent	1 = Goal-consistent alternatives recalled, 0 = Goal-inconsistent alternatives recalled
Objective marker = Present	1 = Objective progress marker present, 0 = Objective progress marker absent
Perceived sacrifice	Average of three items: “how much sacrifice you think you made”, “how much enjoyment you think you gave up”, and “how much temptation you think you overcame”, rated on a 7-point scale
Subjective impact	Average of three items: “how much of an achievement you think you made”, “how much impact you think you made”, and “how much progress you think you made”, rated on a 7-point scale

[Study 2: Regression predicting effect of alternative diversity on subsequent choice, in the same goal domain]

	b	SE	*t*	*p*	
Constant	0.4055	0.1667	2.433	0.014983	*
Alternative = Diverse	0.9227	0.2619	3.523	0.000426	***

[Study 2: Regression predicting effect of alternative diversity on subsequent choice, in the different goal domain

	b	SE	*t*	*p*	
Constant	-1.0549	0.1859	-5.674	1.40E-08	***
Alternative = Diverse	0.1717	0.2597	0.661	0.508	

[Study 2: Regression predicting effect of alternative diversity on subsequent choice, depending on goal domain]

	b	SE	*t*	*p*	
Constant	0.4055	0.1667	2.433	0.014983	*
Alternative = Diverse	0.9227	0.2619	3.523	0.000426	***
Domain = Different	-1.4604	0.2497	-5.849	4.95E-09	***
Alternative*Domain	-0.751	0.3688	-2.036	0.041731	*

[Study 2: Regression predicting effect of alternative diversity on subjective impact]

	b	SE	*t*	*p*	
Constant	5.009	0.0707	70.852	< 2e-16	***
Alternative = Diverse	0.3038	0.1005	3.023	0.00261	**

[Study 2: Regression predicting effect of alternative diversity and subjective impact on subsequent choice, in the same goal domain]

	b	SE	*t*	*p*	
Constant	-1.5096	0.5284	-2.857	0.004275	**
Alternative = Diverse	0.8273	0.2691	3.075	0.002105	**
Subjective Impact	0.3914	0.103	3.8	0.000145	***

[Study 2: Regression predicting effect of alternative diversity and subjective impact on subsequent choice, in the different goal domain]

	b	SE	*t*	*p*	
Constant	-1.2115	0.61101	-1.983	0.0474	*
Alternative = Diverse	0.1642	0.26118	0.629	0.5296	
Subjective Impact	0.03082	0.11434	0.27	0.7875	

[Study 2: Regression predicting effect of alternative diversity and subjective impact on subsequent choice, depending on goal domain]

	b	SE	*t*	*p*	
Constant	-1.4077	0.5182	-2.717	0.00659	**
Alternative = Diverse	0.4906	0.1866	2.629	0.00857	**
Domain = Different	0.1016	0.7999	0.127	0.89896	
Subjective impact	0.3999	0.1019	3.922	8.77E-05	***
Subjective impact*Domain	-0.3841	0.1533	-2.506	0.01223	*

[Study 3: Regression predicting effect of alternative diversity on subsequent choice, in the goal-inconsistent condition]

	b	SE	*t*	*p*	
Constant	0.1658	0.174	0.953	0.3407	
Alternative = Diverse	0.5761	0.2592	2.223	0.0262	*

[Study 3: Regression predicting effect of alternative diversity on subsequent choice, in the goal-consistent condition]

	b	SE	*t*	*p*
Constant	0.1752	0.1978	0.886	0.376
Alternative = Diverse	-0.2371	0.2836	-0.836	0.403

[Study 3: Regression predicting effect of alternative diversity on subsequent choice, depending on goal-consistency of alternatives]

	b	SE	*t*	*p*	
Constant	0.165792	0.174018	0.953	0.3407	
Alternative = Diverse	0.576145	0.259205	2.223	0.0262	*
Goal-consistency = Consistent	0.009412	0.263469	0.036	0.9715	
Alternative*Goal-consistency	-0.81323	0.384184	-2.117	0.0343	*

[Study 3: Regression predicting effect of alternative diversity on perceived sacrifice, in the goal-inconsistent condition]

	b	SE	*t*	*p*	
Constant	3.9048	0.1242	31.45	< 2e-16	***
Alternative = Diverse	0.5952	0.1788	3.33	0.000998	***

[Study 3: Regression predicting effect of alternative diversity on perceived sacrifice, in the goal-consistent condition]

	b	SE	*t*	*p*	
Constant	3.7379	0.1609	23.229	<2e-16	***

Alternative = Diverse	-0.1262	0.2311	-0.546	0.586	

[Study 3: Regression predicting effect of alternative diversity on perceived sacrifice, depending on goal-consistency of alternatives]

	b	SE	*t*	*p*	
Constant	3.9048	0.1321	29.565	< 2e-16	***
Alternative = Diverse	0.5952	0.1901	3.13	0.00186	**
Goal-consistency = Consistent	-0.1669	0.1999	-0.835	0.40426	
Alternative*Goal-consistency	-0.7214	0.2874	-2.51	0.01241	*

[Study 3: Regression predicting effect of alternative diversity and perceived sacrifice on subjective impact, in the goal-inconsistent condition]

	b	SE	*t*	*p*	
Constant	3.86871	0.25045	15.447	< 2e-16	***
Perceived sacrifice	0.27752	0.05719	4.853	2.13E-06	***
Alternative = Diverse	0.25071	0.16676	1.503	0.134	

[Study 3: Regression predicting effect of alternative diversity and perceived sacrifice on subjective impact, in the goal-consistent condition]

	b	SE	*t*	*p*	
Constant	4.34649	0.24338	17.858	< 2e-16	***
Perceived sacrifice	0.21207	0.05569	3.808	0.000187	***
Alternative = Diverse	0.09722	0.18121	0.537	0.592204	

[Study 3: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, in the goal-inconsistent condition]

	b	SE	*t*	*p*	
Constant	-1.4382	0.5686	-2.529	0.0114	*
Alternative = Diverse	0.4109	0.2687	1.529	0.1263	
Perceived sacrifice	0.1907	0.0965	1.976	0.0482	*
Subjective impact	0.1745	0.1	1.744	0.0811	.

[Study 3: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, in the goal-consistent condition]

	b	SE	*t*	*p*	
Constant	-1.00717	0.64226	-1.568	0.11684	
Alternative = Diverse	-0.29934	0.29235	-1.024	0.30587	
Perceived sacrifice	-0.1748	0.09511	-1.838	0.06608	.
Subjective impact	0.35942	0.12062	2.98	0.00289	**

[Study 3: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, depending on goal-consistency of alternatives]

	b	SE	*t*	*p*	
Constant	-1.69673	0.50961	-3.329	0.00087	***
Alternative = Diverse	0.07941	0.19687	0.403	0.686661	
Goal consistency = Consistent	0.93594	0.54307	1.723	0.084814	.
Perceived sacrifice	0.19177	0.09522	2.014	0.044012	*
Subjective impact	0.25451	0.07624	3.338	0.000843	***
Perceived sacrifice*Goal consistency	-0.33643	0.12931	-2.602	0.009276	**

[Study 4: Regression predicting effect of alternative diversity on subsequent choice, in the no-objective-marker condition]

	b	SE	*t*	*p*	
Constant	3.791	0.1195	31.726	< 2e-16	***
Alternative = Diverse	0.4732	0.1686	2.806	0.00521	**

[Study 4: Regression predicting effect of alternative diversity on subsequent choice, in the objective-marker condition]

	b	SE	*t*	*p*	
Constant	3.8902	0.1233	31.551	<2e-16	***
Alternative = Diverse	-0.08551	0.1742	-0.491	0.624	

[Study 4: Regression predicting effect of alternative diversity on subsequent choice, depending on objective-marker]

	b	SE	*t*	*p*	
Constant	3.79098	0.12288	30.851	< 2e-16	***
Alternative = Diverse	0.47324	0.17343	2.729	0.00647	**
Objective marker = Present	0.09921	0.1719	0.577	0.56396	
Alternative*Objective Marker	-0.55875	0.24273	-2.302	0.02154	*

[Study 4: Regression predicting effect of alternative diversity on perceived sacrifice]

	b	SE	*t*	*p*	
Constant	4.24651	0.06317	67.229	< 2e-16	***
Alternative = Diverse	0.24357	0.0892	2.731	0.00643	**

[Study 5: Regression predicting effect of alternative diversity on subjective impact, in the no-objective-marker condition]

	b	SE	*t*	*p*

Constant	4.45742	0.08189	54.431	< 2e-16	***
Alternative = Diverse	0.35307	0.11558	3.055	0.00237	**

[Study 4: Regression predicting effect of alternative diversity on subjective impact, in the objective-marker condition]

	b	SE	*t*	*p*	
Constant	4.662706	0.090343	51.611	<2e-16	***
Alternative = Diverse	0.002646	0.127639	0.021	0.983	

[Study 4: Regression predicting effect of alternative diversity on subjective impact, depending on objective-marker]

	b	SE	*t*	*p*	
Constant	4.45742	0.08739	51.005	< 2e-16	***
Alternative = Diverse	0.35307	0.12334	2.863	0.00429	**
Objective marker = Present	0.20529	0.12225	1.679	0.09342	.
Alternative*Objective Marker	-0.35042	0.17262	-2.03	0.04262	*

[Study 4: Regression predicting effect of alternative diversity and perceived sacrifice on subjective impact, in the no-objective-marker condition]

	b	SE	*t*	*p*	
Constant	3.44366	0.18588	18.527	< 2e-16	***
Perceived sacrifice	0.2396	0.03976	6.027	3.31E-09	***
Alternative = Diverse	0.29769	0.11199	2.658	0.00811	**

[Study 4: Regression predicting effect of alternative diversity and perceived sacrifice on subjective impact, in the objective-marker condition]

	b	SE	*t*	*p*	
Constant	4.590807	0.212551	21.599	<2e-16	***
Perceived sacrifice	0.016872	0.04514	0.374	0.709	
Alternative = Diverse	-0.00167	0.128267	-0.013	0.99	

[Study 4: Regression predicting effect of alternative diversity and perceived sacrifice on subjective impact, depending on objective-marker]

	b	SE	*t*	*p*	
Constant	3.50099	0.20006	17.5	< 2e-16	***
Alternative = Diverse	0.14497	0.08548	1.696	0.090206	.
Perceived sacrifice	0.24405	0.04329	5.638	2.24E-08	***
Objective marker = Present	1.03672	0.2765	3.75	0.000187	***
Perceived sacrifice*Objective marker	-0.23182	0.06023	-3.849	0.000126	***

[Study 4: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, in the objective-marker condition]

	b	SE	*t*	*p*	
Constant	2.14602	0.35648	6.02	3.44E-09	***
Alternative = Diverse	0.3454	0.16568	2.085	0.0376	*
Perceived sacrifice	0.0236	0.06054	0.39	0.6968	
Subjective impact	0.34664	0.06656	5.208	2.82E-07	***

[Study 4: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, in the no-objective-marker condition]

	b	SE	*t*	*p*	
Constant	2.42743	0.39054	6.216	1.07E-09	***
Alternative = Diverse	-0.08279	0.17016	-0.487	0.627	
Perceived sacrifice	-0.01403	0.05989	-0.234	0.815	
Subjective impact	0.32654	0.05886	5.548	4.66E-08	***

[Study 4: Regression predicting effect of alternative diversity, perceived sacrifice, and subjective impact on subsequent choice, depending on objective-marker]

	b	SE	*t*	*p*	
Constant	2.25383	0.31718	7.106	2.28E-12	***
Alternative = Diverse	0.12805	0.11869	1.079	0.281	
Perceived sacrifice	0.03176	0.06097	0.521	0.603	
Objective marker = Present	0.03886	0.38606	0.101	0.92	
Subjective impact	0.33927	0.04393	7.722	2.78E-14	***
Perceived sacrifice*Objective marker	-0.05268	0.08412	-0.626	0.531	

Online Appendix J: Supplemental studies

Study	Study characteristics	Purpose	Main findings
Study A1	Goal: diet (losing weight) IV: similar vs. diverse alternatives (provided) Moderator: goal endorsement (measured) DV: subjective impact	To test the moderating role of goal endorsement	Greater subjective impact in the diverse condition among those who actively pursuing a weight-loss goal
Study A2	Goal: donation IV: similar vs. diverse alternatives (self-generated) Moderator: goal endorsement (manipulated) DV: subjective impact	To test the moderating role of goal endorsement	Greater subjective impact in the diverse condition among those who were manipulated to think a donation goal important
Study A3	Goal: fitness IV: single vs. multiple categorization (manipulated perceived diversity) DV: subsequent food choice	To manipulate perceived diversity holding the alternatives constant	More likely to choose a healthier food option in the multiple (vs. single) categorization conditions
Study A4	Goal: savings IV: similar vs. diverse alternatives (self-generated) DV: subsequent goal-persistence	To test the effect in a different goal context	Less willing to spend money when considered foregoing diverse (vs. similar) ways of spending money

Study A1 – Moderation of the foregone diversity effect by weight loss goal endorsement

According to classic goal theories, individuals are motivated to invest effort in pursuing a goal when they find the goal important (Brehm and Self 1989; Mitchell 1982; Vroom 1964). More recent research has further suggested that goal endorsement not only drives cognitive effort but also influences how people cognitively process goal-related information (Kruglanski etl a. 2012; Ülkümen and Thomas 2013). For example, Ülkümen and Thomas (2013) suggests that when a goal is personally relevant, consumers tend to focus on and simulate goal-pursuit processes (e.g., the process of avoiding unhealthy foods) more than the outcome (e.g., the end benefits of achieving ideal body mass index).

These findings suggest that goal endorsement may be a necessary pre-condition for the foregone diversity effect. Specifically, people who endorse a focal goal and perceive it as personally more relevant may be more likely to focus on the process of a choice, which includes foregoing goal-inconsistent alternatives. Thus, considering a diverse set of foregone goal-inconsistent alternatives would enhance the subjective impact of a prior goal-consistent choice primarily among consumers who actively endorse the focal goal. In the current study, we employed a goal likely to vary in importance across people, weight-loss. A pretest revealed that a weight-loss goal, unlike the savings or health goal we employed in previous studies, is not universally held (only 62% endorsed weight-loss as an active personal goal).

Method

We collected 468 completed surveys from MTurk participants in the United States (248 male, M_{age} = 39.03). This study manipulated foregone-alternative diversity (similar or diverse) between-subjects, using a snacking scenario in which participants were randomly assigned to

different foregone alternatives. We measured perceived diversity of option sets and subjective impact, order counterbalanced. Given no significant differences based on order, the data was collapsed over the two orders. Participants rated weight-loss goal importance last.

Participants in all conditions were presented with eight sets of three different snacks. Participants rated how similar or diverse the snack items shown in a set were, using a 7-point scale (1 = *Absolutely different*, 7 = *Absolutely similar*).

Participants were then asked to imagine that they were currently on a diet and presented with a set consisting of one goal-consistent option and three goal-inconsistent alternatives. In the scenario, they had chosen the goal-consistent option, baked apple chips, instead of one of the three other (high-calorie) foregone alternatives. In the similar alternatives condition, all three foregone alternatives were the same kind of snack (either all donuts, all cupcakes or all chips, randomly assigned) but with different flavors (e.g., glazed, chocolate iced custard and powdered raspberry donuts). By contrast, in the diverse alternatives condition, the choice set consisted of three different kinds of snacks (a donut, a cupcake and a bag of chips). Each item appeared in exactly one similar-alternatives set and one diverse-alternatives set, so as to equalize the items, on average, across the conditions. As a manipulation check, participants rated how similar the three foregone alternatives were to one another on the same 7-point scale they used in the initial diversity evaluation phase.

Participants evaluated subjective impact by rating how much of (1) an achievement, (2) contribution, or (3) progress they thought their choice made towards their weight-loss goal (1 = *None*, 7 = *A lot*). We collected additional attitudinal variables, including how satisfied participants would feel with the decision, how good they would feel about themselves, and how

much difficulty they would feel when making the decision, on a 7-point scale (1 = *Not at all*, 7 = *Very much*).

Next, after an unrelated filler task, participants rated the attractiveness of the nine snack items used in the study. As the measure of goal endorsement, participants completed a slightly modified Concern for Dieting subscale of the Restraint Scale (RS; Herman & Polivy, 1975). Sample items included "Would a weight fluctuation of 5lbs affect the way you live your life?" (1 = *Not at all*, 4 = *Very much*) and "How conscious are you of what you are eating?" (1 = *Not at all*, 4 = *Extremely*). In addition to five items of the Concern for Dieting subscale, participants also rated how likely they were to consciously eat low calorie foods using a 4-point scale (1 = *Very unlikely*, 4 = *Very likely*). We averaged the measures to create a composite score reflecting the personal endorsement of weight-loss goals. Finally, participants indicated their height and weight, to enable us to calculate BMI, as well as gender and age.

Results

Manipulation check. Participants perceived the foregone alternative sets comprised of the different kinds of snacks (i.e., in the diverse condition) as being more diverse than the sets comprised of different flavors of the same kind of snack (in the similar condition) (M_{similar} = 3.35, $M_{\text{dissimilar}}$ = 5.28, b = -1.92, $t(466) = -12.06$ $p < .001$).

Moderating effect of goal endorsement. We conducted a regression analysis on the subjective goal-impact with three independent variables – foregone-alternative diversity (manipulated), goal importance (measured), and the interaction of the two, to test for moderation by goal endorsement. Results revealed a significant interaction between foregone-alternative diversity and goal endorsement (b = .55, $t(464) = 2.07$, $p = .039$). The interactive effect remained significant after controlling for participants' BMI, question order, and four additional covariates

(choice satisfaction, feeling good about oneself, decision difficulty, and averaged attractiveness of alternatives; b = .55, $t(458) = 3.07$, $p = .002$).

We conducted a floodlight analysis to identify the range of goal endorsement values for which the foregone-alternative diversity manipulation significantly increases the subjective goal-impact (Johnson and Neyman 1936; Spiller et al. 2013). The Johnson–Neyman point at $p < .05$ for the goal endorsement moderator was 2.06 (on the 4-point scale). For the 58% of participants whose weight-loss goal importance score was 2.06 out of 4 or higher, choosing a healthy option over a set of diverse unhealthy alternatives (rather than over a set of similar unhealthy alternatives) was perceived as having made a significantly greater impact on the focal goal. Conversely, among those who were not actively pursuing a weight-loss goal (below 2.06 on the weight-loss goal importance scale), the similarity or dissimilarity of the foregone alternatives did not significantly affect the perceived impact of the goal-consistent choice.

Study A2 – Moderation of the foregone diversity effect by donation goal endorsement

Method

We collected 382 valid completed surveys from US Mturk participants (47% male, M_{age} = 37.99). The experiment employed a 2 (foregone-alternative diversity: similar vs. diverse) × 2 (goal endorsement: high vs. low) between-subjects design.

First, we manipulated the personal importance of a donation goal by having participants read an article either stressing the importance of donations from all individual donors (high endorsement) or emphasizing the particular importance of wealthy donors (low endorsement). Participants in the high endorsement condition read the following passage that emphasized the impact and responsibilities of individual donors like our participants:

> *Charities need to raise donations to continue doing their important work. It is crucial that everyone chips in and contributes their share.*
>
> *A recent report from National Center for Charitable Statistics found that only about half of Americans donate to charity. Many people think their donation is too small to make a difference. However, even small donations can have a large impact on the lives of people in need. For example, a $2 donation can provide 7 children with micronutrient fortification they need for a year.*
>
> *Charities need the support of as many small individual donors as possible. When everyone participates and gives what they can, it helps charities to spread the word about their cause. Charities operate more effectively when they have a broad base of support, not just depending on a handful of wealthy donors.*

In contrast, participants in the low endorsement condition read the following passage that emphasized the responsibilities of a small number of wealthy people, who are different from most of our participants:

> *Charities need to raise donations to continue doing their important work. It is crucial that wealthy people chip in and contribute their share.*
>
> *A recent report from National Center for Charitable Statistics found that the wealthy give a smaller share of their income to charities than other people who earn less do. The wealthiest Americans, with earnings in the top 20 percent, donate only 1.3 percent of their income to charity. In comparison, middle-class and lower-income Americans donate more, 5.2 percent of their income.*
>
> *Charities need the support of as many wealthy donors as possible. When wealthy Americans give their fair share, it helps charities to reduce their operating expenses. Charities operate more effectively when they have sufficient support from wealthy donors, not just depending on chasing after small donations from people who can't afford to give more.*

To ensure that participants read and comprehended the passage, we asked participants to write a one-sentence summary of the passage they read. We excluded 7 participants who gave incorrect answers, leaving 375 complete surveys for further analysis. As a manipulation check, we measured the personal importance of the donation goal to our participants, using the sum of three ratings: (1) "Donating to charities is important to me personally"; (2) "I plan to donate more in the future than I have in the past"; (3) "I feel personally responsible to make charitable contributions" using a 10-point scale (1 = *Completely disagree*, 10 = *Completely agree*).

All participants were first asked to think about and write down how they would like to spend $100 for themselves. Next, participants were randomly assigned to one of two conditions. In the similar alternatives condition, they were asked to briefly list two similar alternative ways to spend the same amount of money, and explained why the three ways to spend the money are similar to one another. In the diverse alternatives condition, they listed two dissimilar alternatives and explained the dissimilarity of all three ways to spend the money. Participants then were asked to imagine that they had decided to donate an unexpected $100 windfall of income to a charity, instead of spending it on one of the previously listed alternatives. After reading the scenario, participants reported the subjective impact as our main dependent variable, and additional attitudinal variables as well as attractiveness of each option they provided in the alternative-listing phase, using the same measures in Study A1. Finally, participants indicated their gender, age, and personal annual income.

Results

Manipulation check. A 2 (foregone-alternative diversity: similar vs. diverse) × 2 (goal endorsement: high vs. low) ANOVA on the goal endorsement measure ($\alpha = .88$) revealed only a significant main effect of the goal endorsement manipulation ($M_{high} = 7.27$, $M_{low} = 6.70$; $F(1, 371) = 7.62$, $p < .01$; all other p's > .20), indicating a successful manipulation.

Subjective impact. We predicted that considering diverse foregone alternatives would result in higher perceived impact, but only among participants who perceived the focal goal as important. To test this prediction, we conducted a 2 (foregone-alternative diversity: similar vs. diverse) × 2 (goal endorsement: high vs. low) ANOVA on the composite measure of subjective impact ($\alpha = .91$). The results revealed a significant interaction ($F(1, 371) = 5.87$, $p = .016$) as well as a significant main effect of alternative diversity ($F(1, 371) = 6.26$, $p = .013$).

In the high goal-endorsement condition, when participants had been prompted to consider donating and helping charities as their responsibility, those who considered a set of diverse alternative ways of spending money felt they had made a greater impact by instead making the donation than did those who considered a set of similar alternatives ($M_{\text{similar high}} = 5.30$, $SD_{\text{similar high}} = 1.47$, $M_{\text{dissimilar high}} = 5.97$, $SD_{\text{dissimilar high}} = 1.12$; $t(192) = 3.55$, $p < .01$). However, in the low endorsement condition, when prompted to consider donation as someone else's responsibility, diversity of the foregone alternatives did not affect perceived impact of the choice on their goal ($M_{\text{similar low}} = 5.45$, $SD_{\text{similar low}} = 1.38$, $M_{\text{dissimilar low}} = 5.45$, $SD_{\text{dissimilar low}} = 1.28$; $t(179) = .02$, $p = .983$).

Control measures. We conducted the same 2 × 2 ANOVAs on control measures. Results indicated no significant interaction or main effects for choice satisfaction, good feeling about oneself, and attractiveness of alternatives (all p's > .10). Participants did view the donation decision as more difficult when the donation goal was not personally important ($M_{\text{high}} = 4.28$, $M_{\text{low}} = 4.82$; $t(371) = -2.98$, $p < .01$). Importantly, the effect of alternative diversity on subjective impact remained significant controlling for the control measures. In the high goal-endorsement conditions, considering diverse (vs. similar) alternatives led to higher subjective impact (= .59, $t(188) = 3.50$, $p < .001$) controlling for the other measures (including choice difficulty), whereas the diversity of considered alternatives did not yield a difference when the goal was not actively endorsed (= .17, $t(175) = 1.09$, $p = .277$).

Study A3 – Manipulating perceived diversity via categorization

In the current study, to control for any potential confounding effects due to differences in the alternatives generated across the conditions, we used a fixed set of foregone alternatives and instead manipulated the perceived diversity using categorization.

We manipulated the perceived diversity of the foregone alternatives to a goal-consistent choice via categorization in two ways, via more or less meaningful categorizations. We presented all participants with the same set of goal-inconsistent alternatives, which were either grouped into (1) a single category, (2) three different categories with attribute-based, meaningful labels, or (3) three different categories with alphabet-based, meaningless labels. According to Mogilner et al. (2008), splitting options into more categories signals greater variety among the available alternatives. They also showed that attribute-based categorization is more effective than alphabet-based categorization to identify distinguishing attributes of the options. Therefore, based on these previous findings, we expect that single categorization will signal less diversity among the foregone options than multiple-categorizations, particularly a meaningful attribute-based multiple categorization.

Method

This study employed a between-subjects design with three conditions: single category vs. multiple meaningless (alphabet-based) categories vs. multiple meaningful (attribute-based) categories. We collected 434 valid complete surveys from Prolific in the United States (161 male, M_{age} = 34.94; pre-registered at https://aspredicted.org/W91_P1D). We recruited participants who were currently pursuing and interested in exercise/fitness as a personal goal.

In the survey, participants were first asked to imagine that they had recently set two complementary health-related goals, to exercise regularly and to eat healthy, such that they needed to make progress on both to improve their health. In the scenario, they were deciding what to do with unexpected free time before going out for dinner. They were presented with a playlist consisting of 12 different videos, including 3 workout videos and 9 entertainment videos. The three workout videos were grouped together and labeled as "Home Workouts" in all conditions, but the entertainment videos were either grouped as a single, broad category ("Entertainment"), or divided into 3 categories with either meaningful labels or meaningless labels. The meaningful labels specified descriptive attributes of the videos, such as "heartwarming & inspiring", "ominous & dark", and "witty & quirky". The meaningless categorization was based on the first letter of each video, such as "Playlist: A to L", "Playlist: M to S", "Playlist: T to Z, Numbers".

After viewing one of the three types of playlists, the scenario specified that they had decided to play and follow a workout video instead of watching an entertainment video. After answering attention check questions, participants read the rest of the scenario, in which they were now at their favorite restaurant after completing their workout and could choose between a high-calorie option or a lower-calorie option for their side dish. Participants indicated how likely they were to change the high-calorie default (i.e., "assorted fritters") to a lower-calorie option (1 = *Definitely have fritters*, 7 = *Definitely change to a lower calorie option*).

Finally, to confirm endorsement of the health goals among participants, we asked them to indicate the extent to which they agreed with the following statements on a 7-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*): (1) "I am highly conscious of physical fitness," (2) "I try to exercise regularly to keep my body fit and healthy," (3) "Exercising is one of my important

personal goals," (4) "I am highly conscious of what I am eating," (5) "I try to eat healthy as much as I can," (6) "Eating healthy is one of my important personal goals." As a manipulation check of the perceived diversity, participants answered the following question: "How much variety do you think there was in the playlist?" (1 = *Very little variety*, 7 = *A lot of variety*). They also rated the attractiveness of each video and reported their gender and age.

Results

Goal endorsement. Both the composite scores of exercise goal (α = .90) and healthy eating goal (α = .88) confirmed that participants were generally pursuing exercise and healthy diet as important and active personal goals (exercise: $M = 5.09$, $SD = 1.90$; $t(433) = 16.44$, $p < .001$; healthy eating: $M = 5.24$, $SD = 1.79$; $t(433) = 19.32$, $p < .001$ compared to 4, the midpoint of the scale). One-way ANOVAs on exercise and healthy eating goal endorsement revealed no differences across conditions (all p's > .50).

Manipulation check on perceived foregone diversity. A one-way ANOVA revealed that participants perceived the variety of the same foregone alternatives differently depending on the categorization conditions ($F(2, 431) = 37.37$, $p < .001$, $\eta_p^2 = .15$), as intended. Participants perceived the alternatives presented as three categories with meaningful attribute-based labels as more diverse than the same set of alternatives presented as one category ($M_{attribute} = 5.19$, $SD_{attribute} = 1.33$, $M_{single} = 3.87$, $SD_{single} = 1.44$; $t(431) = 8.15$, $p < .001$, $d = .96$). The same set of alternatives categorized with meaningless alphabet-based labels was also perceived more diverse than the single category condition ($M_{alphabet} = 4.93$, $SD_{alphabet} = 1.35$; $t(431) = 6.57$, $p < .001$, $d = .76$). Perceived diversity did not significantly differ between the attribute-based and alphabet-based multiple categories conditions ($t(431) = .1.59$, $p = .11$).

Subsequent goal persistence. The same one-way ANOVA on the subsequent food choice revealed a weakly significant difference across the categorization conditions ($F(2, 431) = 3.09$, $p = .046$, $\eta_p^2 = .01$). In our focal comparison, participants who saw the foregone entertainment videos organized into multiple categories were more likely to choose a healthier option than participants in the single category condition ($M_{multiple\_pooled} = 5.35$, $SD_{multiple\_pooled} = 1.62$, $M_{single} = 4.97$, $SD_{single} = 1.71$; $t(432) = 2.25$, $p = .02$, $d = .23$). This effect was also significant comparing the meaningful attribute-based multiple categories condition to the single category condition ($M_{attribute} = 5.43$, $SD_{attribute} = 1.70$; $t(431) = 2.43$, $p = .02$, $d = .28$). While the effect was only directional in the meaningless alphabet-based multiple categories condition ($M_{alphabet} = 5.28$, $SD_{alphabet} = 1.54$; $t(431) = 1.67$, $p = .10$), it should be noted that there was no significant difference between the two multiple categories condition, attribute-based and alphabet-based ($t(431) = .76$, $p = .45$).

Study A4 – Effect of foregone diversity on savings goal persistence

Method

We recruited 306 participants in the United States (128 male, M_{age} = 39.61) on MTurk (pre-registered at https://osf.io/sjxvy/?view_only=4688c03d0f30405eb0fd375c6617874c). We excluded 20 records with duplicate IP addresses or from participants who failed an attention check and didn't follow the instructions, prior to analysis[1], remaining 296 valid complete surveys for analysis.

Participants first rated their endorsement of savings goal using the same measures used in Study A4. Participants were then asked to recall and briefly explain a recent experience in which they had been faced with a spending temptation involving a meaningful amount of money but had ultimately decided not to spend. Participants wrote down how they had wanted to spend the money and the approximate amount of money they had decided to not spend but to instead save. Next, they were asked to list two additional ways they could have spent the same amount of money for themselves. Thus, all participants recalled their own goal-consistent past choice (*saving*) and considered three goal-inconsistent options (*spending*) they could have chosen instead.

Participants were presented with a shopping scenario, in which they had gone to a mall with a specific spending budget and had found an item they had wanted to buy for a long time that was on sale, but beyond their planned budget. After reading the scenario, participants rated their intention to buy the item in the situation, using a 7-point scale (1 = *Never*, 7 = *Definitely*;

[1] For the current study, we also pre-registered to exclude participants who indicated below 4 out of 7 on the savings goal endorsement measure, but no participant recorded below 4.

reverse-coded to measure goal-consistent intention). Adopting from prior research for an exploratory measure of goal-consistent action (Nikolova et al., 2016; Lowe & Haws, 2019), we also asked how much participants would be willing to spend beyond the budget to buy the item, on a slider scale from $0 to $500 dollars.

Finally, as our primary predictive measure, participants rated the perceived diversity of the goal-inconsistent alternatives that they had spontaneously considered prior to making their spending decision. Participants were presented with the spending alternatives they had listed in the first part of the survey, and indicated the extent to which they agreed with the following statements on a 7-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*): (1) "Alternatives overlap in terms of what needs they meet" (reverse-coded); (2) "All of the alternatives are more or less the same" (reverse-coded); (3) "I have foregone diverse kinds of alternatives".[2] Participants also reported the attractiveness of each spending option they had provided on a 7-point scale (1 = *Not at all*, 7 = *Very much*). For demographic information, they indicated their gender and age.

Results

Goal endorsement. Consistent with the results of the pretest, the composite score of savings-goal endorsement ($\alpha = .79$) revealed that participants considered saving to be an important and active goal ($M = 5.97$ out of 7, $SD = .76$), rating it significantly above the midpoint of the scale (4) on average ($t(285) = 43.87$, $p < .001$).

Relationship between foregone diversity and subsequent choice. We first computed a composite score ($\alpha = .47$) reflecting the perceived diversity among the foregone alternatives that

[2] These measures are modified from the pre-registration to measure perceived diversity of alternatives more clearly. The last two items stated in the pre-registration were removed in the actual survey because they reflect the concept of "perceived sacrifice", which will be separately examined in our later studies.

participants generated.[3] Then we conducted regression analyses to predict participants' saving decision based on the diversity of the foregone alternatives. As predicted, participants who perceived they had foregone more diverse options had higher saving intentions (b = .30, $t(284) = 3.36$, $p < .001$, $f^2 = .04$). The relationship between foregone-alternative diversity and the subsequent motivation to save remained significant (b = .28, $t(282) = 3.04$, $p = .003$, $f^2 = .03$) controlling for the dollar amount saved and the attractiveness of the foregone alternatives.

Further, regression analyses predicting the amount of money participants intended to spend revealed the same effect of foregone-alternative diversity (b = -10.88, $t(284) = -2.10$, $p = .04$, $f^2 = .02$). Participants who viewed their foregone alternatives as more diverse indicated they would spend less money on the subsequent spending occasion. The effect was marginally significant when controlling for the dollar amount saved and the attractiveness of the foregone alternatives (b = -9.72, $t(282) = -1.86$, $p = .06$, $f^2 = .01$).

[3] Due to the low internal consistency of the combined measure, we also conducted 3 separate regression analyses on the saving decision using each perceived diversity measure. The first perceived diversity measure showed a marginal effect ($p = .087$) and the second and third measures showed significant effects on the saving decision (p's $< .01$).

Online Appendix K: A list of supplemental studies reported in OSF

Study	Study characteristics	Purpose	Main findings
Study A5	Goal: savings IV: similar vs. diverse alternatives (self-generated) DV: subjective impact	To test the effect in a different goal context	Greater subjective impact on a savings goal in the diverse (vs. similar) condition
Study A6	Goal: exercise IV: single vs. multiple categorization (manipulated perceived diversity) Moderator: subsequent choice as same vs. separate step DV: perceived sacrifice, subjective impact, subsequent workout choice	To test the moderating role of temporal distance of the subsequent choice (i.e., Studies A6-7: when the subsequent choice is perceived as parts of a single goal-consistent action; Study A8: when the subsequent choice is distant and perceived as unrelated) *Note: Our framework makes predictions under the assumption that people distinguish between the prior and current choice, but nevertheless perceive the two choices as components of the same goal pursuit process. This suggests that cues of the relationship between the choices, such as timing, may be relevant to the foregone diversity effect, as these three studies provide preliminary evidence for.*	1) Greater perceived sacrifice and greater subjective impact when the foregone alternatives were grouped into multiple categories (vs. single category) 2) No effect of foregone-alternative diversity on subsequent choice when it is considered as a part of the same goal pursuit step
Study A7	Goal: exercise IV: single vs. multiple categorization (manipulated perceived diversity) Moderator: subsequent choice as same vs. separate step DV: subjective impact, subsequent workout choice		
Study A8	Goal: healthy eating IV: similar vs. diverse alternatives (self-generated) Moderator: temporal distance of subsequent choice DV: subjective impact, subsequent food choice		1) Greater subjective impact in the diverse (vs. similar) condition 2) No effect of foregone-alternative diversity on subsequent choice when the subsequent choice is too far
Study A9	Goal: healthy eating IV: 2 (alternative diversity: diverse vs. similar) × 3 (account: base vs. sequential vs. superordinate) DV: perceived sacrifice	1) To determine which inferences from foregone-alternative diversity explain perceptions of greater sacrifice 2) To rule out an alternative explanation based on the perceived ease of future goal pursuit	1) Greater perceived sacrifice in the diverse (vs. similar) condition only in the base scenario (consistent with the sequential account) 2) No difference in perceived ease of future goal pursuit