

How Self-Control Shapes the Meaning of Choice

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Self-control is an important driver of choice, but might it also change choice's meaning, making it seem less indicative of preference? Decades of research suggest that preference and choice are often intertwined. Choice often originates from one's preferences. As a result, choice is often seen as a reflection of preference, leading people to infer their preferences by observing their own choices. We suggest that self-control attenuates this process. Because self-control often overrides personal desires in favor of external constraints, norms, and long-term considerations, we propose that self-control is associated with a sense of attenuated correspondence between choice and individual preference. Five experiments suggest that when the notion of self-control is salient, people are less likely to see their choices as reflecting their preferences or to infer preference from previous choices. As a result, evoking the notion of self-control attenuates the tendency to view choice as indicative of preference, even in contexts unrelated to where self-control was originally evoked. Thus, self-control shapes not only choice itself, but also the perceived meaning of choice.

Keywords: self-control, inferences, choice, preference, self-perception

The notion that choice conveys information about one's attitudes and preferences is hardly controversial. Choice is often seen as originating from one's preferences, goals, and values (Markus and Kitayama 2003). In turn, choice is typically seen as an indication of those same inner states, leading people to infer their preferences and valuations by observing their own choice experiences (Amir and Levav 2008; Bem 1972; Chaiken and Baldwin 1981; Festinger 1957; Yoon and Simonson 2008). Picking a Toyota over a Honda, for example, may lead people to

infer they like Toyota, and thus increase subsequent evaluation of the brand.

But is the tendency to draw such inferences fixed? Or might certain cognitive or motivational states make people see choice as less indicative of their preferences?

We suggest that when the concept of high self-control is salient, people are less likely to draw inferences about their preferences from their choices. We suggest this possibility based on prior work suggesting that self-control may override, interrupt, and otherwise alter the link between preference and choice (Baumeister, Vohs, and Tice 2007; Muraven, Tice, and Baumeister 1998; Wegner and Pennebaker 1993). Consequently, we propose that self-control may lead choice to be seen as less reflective of preferences. Further, once activated, these perceptions may impact inferences even in seemingly unrelated contexts. Thus, whether people consciously exert self-control, make plans to use self-control, reflect on prior self-control experiences, or do anything else that makes the notion of self-control accessible, it can make *other* choices seem less indicative of preferences, even in domains unrelated to the one in which self-control was evoked.

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This article makes several contributions. First, it demonstrates an important exception to the widely accepted notion that, in the absence of external confining factors and incentives, people view choice as indicative of their preferences (Bem 1972; Festinger 1957). The attenuating effect of self-control on inferences is unique in that, unlike external constraints and incentives, self-control is self-imposed and controlled by the individual.

Second, this article examines an unexpected downstream consequence of self-control. Whereas a great deal of research has focused on how self-control is used to regulate behavior and resolve the conflict between “want” and “should” (Haws, David, and Dholakia 2016), we demonstrate that self-control shapes not only choice itself, but also the perceived meaning of choice. Self-control is associated with a notion of attenuated choice–preference correspondence, which can be activated by situational cues related to self-control; once activated, it may influence the extent to which people see their choices as reflective of their preferences and the inferences they draw from even unrelated choices. Thus, self-control has implications beyond choice regulation, affecting consumer judgment and inference making more broadly.

Third, we integrate two hitherto unrelated research streams: consumer self-control and inferences from choice (i.e., self-perception processes). To our best knowledge, this is the first work to combine these two areas and examine how one might impact the other. That is, because thinking of self-control makes choice seem less like a direct reflection of one’s preferences, it also changes the tendency to draw inferences about preferences from choice.

In the next sections, we develop our proposition regarding how thinking about self-control may influence consumer inferences. Five experiments test our predictions, examining inferences from the act of choosing as well as downstream consequences of such inferences. We conclude with a discussion of the theoretical and practical implications of our findings.

INFERRING PREFERENCE FROM CHOICE

The relationship between preference and choice is bidirectional. Particularly in middle-class Western cultural contexts, choice is seen as driven by one’s preferences (Markus and Kitayama 2003; Markus et al. 2006), defined as one’s “tendency to consider something desirable or undesirable” (Warren, McGraw, and Van Boven 2011, 194). Although preference and choice are conceptually and empirically distinct (Simonson 1990), people tend to see their preferences as driving their choices, in much the same way that they see their attitudes as driving their behavior (Ajzen and Fishbein 1977). Consumers choose a particular shirt presumably because they like the way it looks or because it

communicates an identity they want to signal (Berger and Heath 2007). Undergraduates pick the major that they feel best reflects who they are and the goals they have for themselves.

Because people tend to see their preferences as driving their choices, they tend to infer that their choices also reflect their preferences. People often learn their own preferences, attitudes, and other internal states by observing their own behavior (Bem and McConnell 1970; Festinger and Carlsmith 1959). If people choose a particular option, for example, they tend to assume that they like that option better than an unchosen alternative, thereby inferring preference from choice (Bem 1972). Similarly, classic social psychological research on free choice and the spread of alternatives demonstrates that choosing between two similarly attractive items leads people to later evaluate the chosen option more positively and the rejected option less positively (Heine and Lehman 1997; Kitayama et al. 2004; Litt and Tormala 2010; Snibbe and Markus 2005; Steele, Spencer, and Lynch 1993). Having chosen an option leads people to infer that they like it more.

A great deal of research, then, suggests that people often infer preference from choice. But might self-control moderate the tendency to draw such inferences? We suggest this possibility based on how self-control salience may shape accessible lay theories about the choice–preference link, or whether people see their choices as reflecting their preferences.

SELF-CONTROL AND THE CHOICE–PREFERENCE LINK

Self-control is defined as “restraint exercised over one’s own impulses, emotions, or desires” (Merriam-Webster.com). One way this restraint can be used is to override a personal desire in favor of an external constraint. Self-control is often used to align behavior with external or social standards, norms, morals, or others’ preferences (Baumeister 2008; Gailliot et al. 2012). Someone may prefer to wear shorts and a T-shirt to the office, for example, but overrides their personal desire and wears a suit and tie to fit with the external norm. Another way this restraint can be used is to override impulses to pursue long-term personal goals. Here, self-control is used to inhibit immediate desires, delay gratification, and maximize one’s long-term best interests (Barkley 1997; Hayes 1989; Mischel 1996; Muraven and Baumeister 2000). Someone may want a cheeseburger, but they know a salad is healthier, so they override their current desire and order the salad to meet their long-term goal to be healthy. In both cases, rather than going with their first instinct, consumers exert inhibitory control to do something else.

We argue that this inhibitory control has important implications for the perceived relationship between choice

and preference more generally. In particular, we suggest that self-control salience often weakens perceived choice–preference correspondence.

Choice is usually seen as driven by personal preferences, but in situations that involve self-control, other aspects start to play a role. This is easy to see for instances of self-control that involve external norms or demands. When someone wears a suit to follow the external norm, for example, it is clear that the choice is less reflective of their personal preference: they overrode their preferences to fit with an external constraint (Kruglanski and Webster 1991). Similarly, someone may like action movies, but if they pick a drama instead because that is what their spouse prefers (Finkel and Campbell 2001; Fitzsimons and Finkel 2010), we argue that this may weaken their perception that what they chose was driven by their personal preference in that domain.

Consistent with this notion, prior research finds that the choice–preference link is weakened when other, salient external attributions exist for choice. People are less likely to infer preference from choice, for example, when they are paid to choose a particular option (Festinger and Carlsmith 1959) or when choice is externally constrained (Bem 1972; Kelley 1973). In such contexts, choice is seen as driven by these external factors, rather than personal preferences. Similarly, in cultural and socioeconomic contexts where choice is seen as driven less by one's preferences and more by external and societal considerations (e.g., Southeast Asia or working-class America), people are less likely to attribute their choices to their preferences (Savani, Markus, and Conner 2008; Snibbe and Markus 2005; Stephens, Fryberg, and Markus 2011; Stephens, Markus, and Townsend 2007).

The choice–preference link should also be weakened when current desires conflict with long-term goals (e.g. eat the cake vs. stay healthy). First, even when self-control is not strictly aimed at meeting societal norms, it often requires external monitoring: eating healthy, for example, requires people to monitor their behavior, as if they were outside observers, through counting calories and portions (Ward and Mann 2000). Such experiences are often perceived as an attempt to meet an obligation (Laran and Janiszewski 2011), which may make such choices seem further from the self. Second, the fact that people often need external devices to help them stick to their long-term goals (Ariely and Wertenbroch 2002) is consistent with the notion that they may be experienced as further from preferences. People reward themselves with a treat for going to the gym, or use a commitment device like meeting a friend there. The presence of such extrinsic factors can reduce perceptions of intrinsic motivation (Lepper, Greene, and Nisbett 1973), or the notion that behavior was driven by the self. Third, resisting temptations requires people to alter their spontaneous behavioral patterns and inhibit their dominant response (Muraven and Baumeister 2000). Self-control dilemmas are often referred to as conflicts between

“want” and “should,” and while both may in some sense be consistent with aspects of the self, wants are associated with the present self, whereas shoulds are associated with a more distant, hypothetical, and psychologically disconnected self (Bartels and Rips 2010; Bartels and Urminsky 2011). Indeed, priming self-expression increases choice of hedonic wants over utilitarian shoulds (Maimaran and Simonson 2011), consistent with the notion that wants are perceived as more closely tied to the self. This, combined with the fact that people's spontaneous response to pick wants must be reined in to pick shoulds, may make people feel that choices made under self-control are less driven by their preferences.

A pilot study supports our suggestion that self-control makes choices seem less indicative of one's preferences. Participants ($N = 104$) were randomly assigned to one of three conditions. We asked them to recall a choice they had made where they had high self-control, low self-control, or neither (i.e., they did not think about either high or low self-control). Then, we asked them how much that choice reflected their preferences (1 = not at all, 7 = very much). As expected, compared to those who recalled a low self-control choice ($M = 5.30$, $SE = .26$) or a choice unrelated to self-control ($M = 5.34$, $SE = .25$), participants who recalled a high self-control choice felt that their choice was less reflective of their preferences ($M = 4.39$, $SE = .32$; $t = 2.26$, $p = .026$, and $t = 2.44$, $p = .016$, respectively; $F(2, 101) = 3.66$, $p = .03$, $\eta_p^2 = .068$).

These effects hold for both types of self-control described previously. Independent coders determined whether participants' descriptions in the two self-control conditions pertained to choosing between personal desires and external/societal norms (e.g., “I was with friends at a restaurant and really wanted wine, so I had wine even though no one else was having wine or beer”), or between vice/impulse and virtue/long-term goals (e.g., decisions related to excessive spending, eating, drinking, and smoking). As expected, recalling a high self-control choice decreased perceptions that choice was reflective of preference both among participants who wrote about vice/impulse versus virtue/long-term conflict ($F(1, 60) = 4.27$, $p = .04$, $\eta_p^2 = .055$) and among participants who wrote about individual versus external/societal conflict ($F(1, 60) = 3.41$, $p = .07$, $\eta_p^2 = .044$).¹ Taken together, these results provide preliminary evidence that self-control weakens the perceived link between choice and preferences, regardless of the specific type of conflict evoked.

THE CURRENT RESEARCH

Building on this analysis, we propose that self-control tends to be associated with an attenuated

1 Of the responses, 10.6% could not be classified (e.g., “making plans for this evening”).

choice–preference link. Moreover, self-control salience can have broader effects, going beyond the specific context in which it is evoked. Specifically, we propose that the mental accessibility of self-control may cast doubt on the lay theory that choices reflect one’s preferences. This, in turn, can make people less likely to view choice as indicative of preference, even outside of the original context in which the notion of self-control was evoked.

While people frequently exert self-control, the construct can also become accessible in other ways. We contemplate using self-control in the future (e.g., “I will complete 40 laps in the pool this afternoon”), reflect on prior self-control experiences (e.g., “I am glad I resisted the urge to have dessert”), and observe others exercising self-control (e.g., “Susan stifled a laugh while watching a funny video during class”). Regardless of the specific trigger, the notion of self-control is often salient in people’s minds.

Once salient, if self-control is associated with an attenuated choice–preference link, as we suggest, it may spill over to shape inferences in other, even unrelated domains. Prior research demonstrates that inferences and attributions often shift as a function of changes in the accessibility of underlying lay theories and social schemata. These can be temporarily activated or deactivated by situational cues in one context, subsequently shaping inference in another (Schwarz 2004). Experiencing cognitive effort while recalling childhood memories, for example, can lead people to infer that their childhood was pleasant if they are first exposed to information according to which pleasant events are purged from memory. The same experience of recall difficulty, however, can lead people to infer that their childhood was unpleasant if they are exposed to information suggesting that unpleasant events tend to be repressed (Briñol, Petty, and Tormala 2006; Labroo and Kim 2009; Winkielman and Schwarz 2001). In line with this view, we suggest that because self-control is often associated with diminished correspondence between choice and preference, activating the notion of self-control may reduce the tendency to infer preference from choice, even outside the original domain in which self-control was evoked.

Importantly, examining how thinking about self-control in one context affects inferences in other, unrelated contexts (rather than in the same context in which self-control was evoked) is particularly useful for testing our theory. Specifically, it allows us to test our proposition that self-control salience affects a generic lay theory or schema regarding the choice–preference link, rather than local beliefs about a specific decision in a specific context. Rather than examining inferences regarding the decision in which self-control was evoked, testing unrelated contexts allows us to examine the role of a more fundamental and thus generalizable process.

We test our theorizing in five experiments. Experiment 1 tests whether priming self-control weakens the choice–preference link, decreasing people’s tendency to perceive

unrelated prior choices as reflecting their preferences. Experiment 2 examines this question using a different operationalization of self-control salience (i.e., making decisions involving self-control) and tests the downstream consequences for brand attitudes. Experiments 3 and 4 begin to test the underlying process. Experiment 3 investigates the hypothesized role of lay theories, testing whether the effect is more pronounced among people who view self-control as overriding their preferences. Experiment 4 tests the mediating role of activated perceptions regarding the choice–preference link. Finally, experiment 5 extends the findings to the classic “free choice” spread-of-alternatives effect, testing whether making self-control salient, even in an unrelated context, attenuates the spread of alternatives. In all of the experiments, we excluded participants who entered bogus responses (e.g., “wer,” “nice,” “2020,” “I like this”), did not pass standard attention checks, or had previously participated in a similar experiment.

EXPERIMENT 1: SELF-CONTROL SALIENCE AND INFERENCES FROM CHOICE

Experiment 1 provides a preliminary test of whether self-control salience reduces the tendency to see choice as reflecting preference, even in an unrelated context. First, participants made a choice in a domain unrelated to self-control (i.e., choosing a car). Then, in a purportedly unrelated task, we primed them with high or low self-control. Finally, we examined how much they thought their prior car choice reflected their preferences. We predict that making high self-control salient (through the unrelated priming task) would lead participants to see the car they chose as less reflective of their preferences.

Here, and in all subsequent experiments, we manipulate self-control salience *after* the initial choice and before measuring perceived choice–preference correspondence. This ensures that the self-control salience manipulation does not affect what people choose initially. Instead, we predict it will influence whether participants see their prior choices as reflecting their preferences.

Method

Participants ($N = 150$; collected on MTurk, mean age = 36.5; 49% women) were randomly assigned to one of two between-subjects self-control salience conditions (high vs. low). First, as part of a “consumer preferences” study, all participants saw five similarly priced mainstream sedans from different brands (Toyota Camry, Honda Accord, Nissan Altima, Kia Optima, and Hyundai Sonata; see web appendix A) and selected their preferred option.

Second, we manipulated the salience of self-control by asking participants to complete an ostensibly unrelated

sentence-unscrambling task (adapted from prior work, Sela and Shiv 2009; Srull and Wyer 1979). Participants were told they were participating in a language skills evaluation and given 16 scrambled sentences. In the high self-control condition, 13 sentences contained words related to high self-control (e.g., willpower, disciplined, grit). In the low self-control condition, 13 sentences contained words related to low self-control (e.g., indulge, impulsive, spontaneous; see web appendix A). Pretests confirmed that the manipulation increased self-control salience (web appendix A).

Third, we measured our key dependent variable, how much participants thought the car model they had selected earlier reflected their preferences and how much it represented their personal taste in cars (1 = not at all, 7 = very much; $r = .82$; combined to an index).

Results

As predicted, making self-control salient weakened the choice–preference link. It reduced participants' belief that the car they chose previously reflected their preferences ($M_{\text{High SC}} = 5.02$, $SE = .17$ vs. $M_{\text{Low SC}} = 5.58$, $SE = .11$; $F(1, 148) = 8.03$, $p = .005$, $\eta_p^2 = .051$).

Alternative Explanations. Ancillary analyses rule out a number of potential alternative explanations. First, manipulating self-control *after* car choice rules out alternative explanations based on self-control changing the actual car options people chose.

Second, one might wonder whether priming self-control, rather than activating general notions of how choice is related to preferences, primed a specific goal that shifted preferences away from the previously chosen option or from the choice set as a whole. Though it didn't change what people actually chose, if activating self-control changed what type of car people prefer (e.g., minivans over sports cars), it could make their prior choice seem less reflective of what they now = currently think they like. However, a pretest demonstrated that the manipulation did not change people's preferences among cars in the choice set ($\chi^2(4) = 4.10$, $p = .39$, see web appendix A). Further, the manipulation had no effect on the extent to which participants thought about car options or car attributes other than the ones represented in the experimental choice set ($F_s(1, 108) \leq .55$, $p_s \geq .46$), how attractive cars in the choice set seemed in comparison to any other type of car they could think of ($F(1, 108) = 1.29$, $p = .26$), or how similar participants' "ideal car" was to options in the choice set ($F(1, 108) = .59$, $p = .44$). This casts doubt on the notion that priming self-control undermined the choice–preference link because it directly changed what type of car people preferred.

Third, self-control salience's effect on inferred preference was not influenced by the specific car option selected

in the first task. A 2 (self-control salience) \times 5 (chosen car model) ANOVA revealed the same effect of self-control salience ($F(1, 140) = 5.96$, $p = .016$, $\eta_p^2 = .038$) with no interaction ($F(4, 140) = .34$, $p = .85$) or main effect ($F(4, 140) = 1.76$, $p = .14$) involving initial car choice.

Discussion

Experiment 1 provides preliminary evidence that self-control salience influences the degree to which people infer preference from choice, even in an unrelated context. Consistent with our theorizing, priming self-control (through a sentence-unscrambling task) weakened the choice–preference link, leading people to feel that a choice (unrelated to self-control) was less reflective of their preferences. Further, ancillary analyses cast doubt on a number of alternative explanations for the effect: the prime did not change choice or change preferences, and the specific item chosen did not moderate the effect.

EXPERIMENT 2: GENERALIZABILITY AND DOWNSTREAM CONSEQUENCES

Experiment 2 has three main goals. First, we use a different manipulation of self-control salience (i.e., choice) to test the generalizability of the effect. People often face self-control dilemmas (e.g., deciding which entrée to pick), and making such choices should make self-control accessible. We asked participants to choose among the same car options used in experiment 1, and then gave some of them self-control dilemmas in unrelated contexts. If making self-control salient attenuates the general tendency to infer preference from choice, as we suggest, then compared to participants who did not consider self-control dilemmas, those that did should see their earlier car choice (which by itself is unrelated to self-control) as less indicative of their preferences.

Second, while the results of experiment 1 are supportive, one could argue that it is not clear whether they are driven by high self-control salience decreasing inferences of preference from choice (as theorized) or low self-control salience increasing such inferences. To clearly identify the effect, experiment 2 contrasts high self-control with two neutral control conditions.

Third, experiment 2 examines the downstream consequences of this effect for marketing outcomes. If making self-control salient leads people to see their car choices as less indicative of their preferences, as we suggest, then this might also spill over to undermine attitudes toward the brand. We test this possibility.

Method

Participants ($N = 158$; collected on MTurk; mean age = 33; 58% women) were randomly assigned to one of three

between-subjects conditions: self-control dilemma versus neutral dilemma versus no dilemma. The “neutral dilemma” and “no dilemma” conditions served as controls.

First, as part of a “consumer preferences” study, participants saw the same five mainstream sedans used in experiment 1 and selected their preferred option.

Second, we manipulated the accessibility of self-control by asking participants to make some seemingly unrelated decisions. In the self-control dilemma condition, participants selected one of several areas of life in which they often find themselves having to exert self-control (e.g., eating right, shopping and spending). Then, they made two self-control-related decisions in that domain (e.g., “Imagine you are choosing an entrée at a restaurant. What would you choose if you were using self-control: pasta with a rich and delicious Alfredo sauce or green salad?” See web appendix B). The purpose of these self-control vignettes was to bring to mind the notion of self-control, so we were not interested in what participants actually chose. That said, as we show in the Alternative Explanations section, what they chose does not moderate the effects.

There were two control conditions. In the neutral dilemma condition, participants made two decisions unrelated to self-control (i.e., choosing between pasta and sushi and between apples and pears). In the no-dilemma condition, participants simply moved on to the next task.

Next, we measured our key dependent variable: how much participants thought the car model they had selected earlier reflected their preference.

Finally, to examine downstream consequences, we measured attitudes toward the selected car brand. Three measures captured brand attitudes (i.e., how much participants felt like fans of the brand, how much they liked other models from the same brand, and to what extent they thought it was a good brand; 1 = not at all; 7 = very much; $\alpha = .81$).

Results

Choice–Preference Link. As predicted, making self-control choices in an unrelated domain weakened the choice–preference link ($F(2, 155) = 7.34, p < .001, \eta_p^2 = .086$). Planned contrasts indicate that, compared to the neutral dilemma ($M = 5.48, SE = .17$) and no-dilemma condition ($M = 5.09, SE = .16$), making self-control salient led participants to think their choice in an unrelated domain was less reflective of their preferences ($M = 4.44, SE = .24; t = 3.81, p < .001$, and $t = 2.42, p = .016$, respectively). The neutral dilemma and no-dilemma conditions did not differ ($t = 1.50, p = .13$).

Downstream Consequences—Brand Attitudes. Further, the effect of self-control carried over to influence brand attitudes ($F(2, 155) = 4.82, p < .009, \eta_p^2 = .059$). Compared to the neutral dilemma ($M = 5.34, SE = .17$) and no-dilemma condition ($M = 5.55, SE = .13$), making

self-control salient weakened attitudes toward the previously chosen car brand ($M = 4.87, SE = .18; t = 2.06, p = .041$, and $t = 3.07, p = .003$, respectively).

As expected, this was driven by self-control salience’s impact on the choice–preference link. A bias-corrected bootstrapping mediation analysis (Hayes 2013, 5,000 samples), combining the two control conditions, shows that the effect of self-control choices on brand attitudes was mediated by inferred preference for the chosen option ($a \times b = -.35, 95\% \text{ CI } [-.67, -.13]$).

Alternative Explanations. Ancillary analyses cast doubt on a range of potential alternative explanations (see web appendix B for more detail). First, similar to experiment 1, one might wonder whether making self-control decisions directly changed preferences (e.g., by activating a specific goal for safety). However, a pretest demonstrates that the manipulation did not change people’s preferences among cars in the choice set ($\chi^2(8) = 3.75, p = .88$). The manipulation also had no effect on the extent to which participants thought about car options or car attributes other than the ones represented in the experimental choice set ($F(1, 134) \leq 1.57, ps \geq .21$), how attractive cars in the choice set seemed ($F(1, 134) = .05, p = .82$), or how similar participants’ “ideal car” was to options in the choice set ($F(1, 134) = .27, p = .60$).

Second, the effects were not moderated by the specific car option participants selected. A 3 (self-control accessibility) \times 5 (car choice option) ANOVA revealed the same main effect of self-control accessibility ($F(2, 143) = 9.78, p < .0001, \eta_p^2 = .120$) with no main effect ($F(4, 143) = .86, p = .49$) or interaction ($F(8, 143) = 1.44, p = .18$) involving initial car choice. A similar analysis on brand attitudes revealed a similar main effect of self-control ($F(2, 143) = 4.14, p < .018, \eta_p^2 = .055$), with no main effect or interaction involving car choice ($F(5, 143) < .75, ps > .62$).

Third, licensing (Khan and Dhar 2006) has trouble explaining the results. Such an argument would suggest that choices in the high self-control condition were somehow more difficult, leading people to prefer a more indulgent car, thereby weakening the choice–preference link. Pretest results, however, cast doubt on this possibility. Participants in the high self-control condition did not find the choices to be any more difficult ($F(1, 94) = .57, p > .45$).

Fourth, responses did not depend on the particular options selected in the self-control task. What people picked (e.g., pasta over salad or necessities over indulgences) had no effect on the choice–preference link ($F(5, 143) < 1.46, ps > .23$). This casts further doubt on a licensing account.

Finally, additional pretests cast doubt on the possibility that the effects were driven by differences between conditions in cognitive depletion ($F(2, 178) = .57, p = .57$) or positive ($F(2, 178) = 1.61, p = .20$) or negative mood ($F(2, 178) = 1.14, p = .32$).

Taken together, these ancillary analyses suggest that making the idea of self-control accessible, rather than some other factor, is driving the results.

Discussion

Experiment 2 further supports our theorizing, examining both how self-control impacts inferences from choice and demonstrating the marketing relevance of this effect. Consistent with our theorizing that self-control undermines the choice–preference link, making choices involving self-control led people to feel that a choice—in a different context that was not connected to self-control—was less reflective of their preferences.

This weakened choice–preference link, in turn, undermined brand attitudes. Making self-control salient led participants to have less positive attitudes toward the brand they chose.

EXPERIMENT 3: THE MODERATING ROLE OF LAY THEORIES

Experiment 3 begins to test the hypothesized process behind these effects. We have argued that self-control salience weakens the choice–preference link by evoking the notion that choice does not always fully reflect one’s preferences. If our theorizing is correct, then these effects should be moderated by individual differences in lay theories regarding the role of self-control. They should be most pronounced among people who generally associate self-control with preference suppression (i.e., going against the self). Among people who do not hold such association, however, these effects should be mitigated.

In addition, to further bolster the generalizability of our findings, we used yet another manipulation of self-control salience.

Method

Participants ($N = 214$; collected on MTurk, mean age = 37; 49% women) completed this study as part of a session including several unrelated studies. They were randomly assigned to one of two between-subjects self-control conditions (high vs. low).

First, everyone completed an “art preference” survey. They saw several pictures of paintings by renowned artists and were asked to choose one (see web appendix C).

Second, in a purportedly unrelated “life experiences” survey, we primed high or low self-control. In the high self-control condition, participants were asked to “think about a decision you made, in any area of life, where you used strong self-control or willpower.” In the low self-control condition, participants were asked to “think about a decision you made, in any area of life, in which you decided or chose impulsively.” Participants in both

conditions were asked to take a moment to think deeply about such a choice and then write about the decision they had in mind. Pretests confirmed the effectiveness of this manipulation (see web appendix C).

Third, we measured the dependent variable. We asked participants to think about the artwork they had chosen earlier and to indicate on seven-point scales the extent to which they felt that their choice reflected their preferences in art, personal taste, and liking for the artist (1 = not at all; 7 = very much; $\alpha = .78$; combined to an index of perceived preference).

Fourth, after collecting demographic information, we measured our moderator, the extent to which self-control is seen as suppressing one’s preferences. Specifically, we asked participants to rate on a seven-point scale the extent to which they felt they typically used self-control primarily to resist their wants and desires (7) as opposed to resist external temptations and distractions (1). The rationale underlying this moderator is as follows: using self-control not to stop at McDonalds, for example, could be construed in one of two ways. Consumers could see it as using self-control to go *against* the self (i.e., resisting one’s desire to eat fast food) or as using self-control to go *with* the self (i.e., resisting external persuasion and sticking to one’s health goal). The former would result in higher scores on the scale, while the latter would result in lower scores. Note that responses on this measure were not influenced by the experimental manipulation ($F(1, 212) = .90, p > .34$), indicating that the measure captured fundamental individual differences in lay theories related to self-control. Further, the mean level of this measure ($M = 4.58, SD = 1.59$) was higher than the scale midpoint ($t(213) = 5.36, p < .0001$), consistent with our suggestion that, on average, people’s spontaneous notion of self-control is a sense of going against the self.

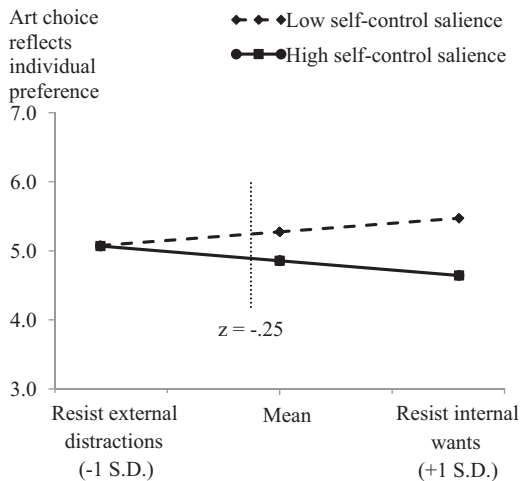
Results

First, a self-control salience (low vs. high) \times beliefs regarding the role of self-control (continuous) regression analysis on perceived preferences revealed a main effect of self-control salience ($B = -.42, SE = .18, p < .02$). On average (i.e., at the mean level of the moderator), priming self-control weakened the choice–preference link, leading even choice in an unrelated domain to seem less reflective of preferences. This is consistent with our prior studies, which showed that, on average, priming self-control weakened the choice–preference link. There was no main effect of the moderator, lay theories regarding self-control, on perceived preference ($B = -.004, SE = .05, p = .94$).

Further, the main effect of self-control salience was qualified by the predicted interaction ($B = -.26, SE = .10, p = .01$). Examining the results one standard deviation above and below the mean provides more insight into the pattern of results (see figure 1). Among participants who

FIGURE 1

THE MODERATING EFFECT OF THE PERCEIVED ROLE OF SELF-CONTROL (EXPERIMENT 3)



NOTE.—The vertical dotted line represents the low boundary of the Johnson-Neyman region of significance ($p < .05$).

believed self-control involved resisting personal impulses and desires, priming self-control weakened the choice–preference link, leading choice even in an unrelated domain to seem less reflective of preference ($B = -.83$, $SE = .25$, $p = .001$). Among participants who believed self-control involved resisting external distractions, however, the effect disappeared ($B = -.007$, $SE = .23$, $p = .98$).

Alternative Explanations. As in prior studies, the self-control manipulation had no effect on which art option people chose ($\chi^2(4) = 3.98$, $p = .41$, web appendix C). Further, there were no main effects or interactions of the artwork chosen on the dependent variable (all t s $< .72$, p s $> .47$).

Discussion

Experiment 3 bolsters our suggestion that self-control salience undermines the choice–preference link, and provides evidence for the process underlying this effect. First, consistent with the prior studies, on average, priming self-control weakened the tendency to infer preference from choice. Although it was activated in an irrelevant context (i.e., thinking about a prior choice), making self-control salient led people to perceive a separate choice (unrelated to self-control) as less reflective of their preferences.

Second, consistent with our theorizing more generally, quantitative analysis of the moderator suggests that on average, people’s spontaneous notion of self-control is closer to the definition of suppressing one’s inner desires than to

the alternative definition of sticking to one’s inner goals and resisting external temptations.

Third, the results support our theorizing regarding the underlying process behind these effects. Consistent with the notion that they are driven by people’s lay theories concerning the self-control and the choice–preference link, the effect of self-control salience on inferred preference was moderated by the extent to which people perceived self-control as a means of resisting wants. Self-control salience undermined inferences of preference from choice among people who associate self-control with suppression of preferences, but not among people who associate self-control with self-determination in the face of external distractions.

EXPERIMENT 4: THE MEDIATING ROLE OF ACTIVATED LAY THEORIES

Experiment 4 further tests the underlying process through mediation. We examine whether thinking about self-control in one choice context leads people to view that particular choice as less reflective of their preferences, and whether this local perception, in turn, spills over to influence whether preferences are inferred from an unrelated choice.

Method

Participants ($N = 190$, collected on MTurk, mean age = 36; 49% women) completed this study as part of several unrelated studies. They were randomly assigned to one of two self-control conditions (high vs. low).

First, as in experiment 3, participants chose one of five paintings (web appendix C). The specific painting participants chose had no effect on the dependent variable ($F < .6$, $p > .68$).

Second, we manipulated self-control salience using the “life experiences” manipulation from experiment 3 (i.e., reflecting on a prior decision involving either high or low self-control).

Third, participants rated the extent to which the painting they had chosen earlier reflected their preferences ($\alpha = .92$; combined to an index).

Fourth, we collected demographic information on two consecutive screens (which also served as buffers), and then measured our mediator (i.e., the extent to which participants felt that the decision they had written about in the self-control priming task reflected their preferences). Participants saw the text they had written earlier in the priming task (i.e., the “life experiences survey”), where they described a prior decision in which they had either high or low self-control. Then, they rated on a seven-point scale the extent to which their choice in that specific situation reflected their preference at that time.

We expected the local level of perceived choice–preference correspondence in the “life experiences” task (i.e., the

prime) to carry over to influence perception of the choice–preference correspondence for the unrelated art chosen at the onset of the experiment.

Results

Art Preferences. An ANOVA on perceived preference for the chosen painting revealed the predicted effect ($F(1, 188) = 4.84, p < .029, \eta_p^2 = .025$). Making self-control salient in an unrelated context (i.e., through thinking about a prior choice) led participants to see the art they chose as less reflective of their preferences ($M_{\text{high_SC}} = 4.97, SE = .14$ vs. $M_{\text{low_SC}} = 5.42, SE = .15$).

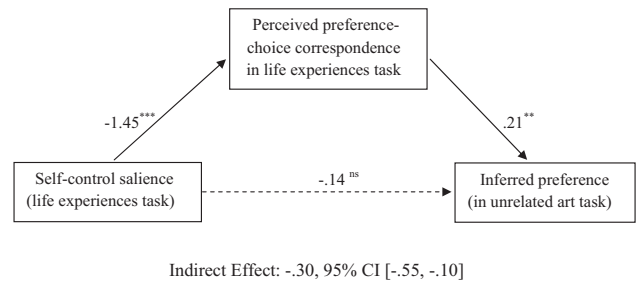
Effect on the Mediator. As theorized, and consistent with the pilot study data reported in the introduction, people tended to perceive choices made under self-control as less reflective of their preferences. Compared to participants who wrote about a decision they made impulsively in the “life experiences” task ($M = 5.52, SE = .12$), those who wrote about a decision where they used self-control saw the choice they made in that particular situation as less reflective of their preferences ($M = 4.07, SE = .17; F(1, 188) = 47.17, p < .0001, \eta_p^2 = .20$). This provides further evidence that, on average, people perceive choices made using self-control as less reflective of their preferences.

Mediation Analysis. Perceptions of choice–preference correspondence in the “life experiences” task carried over to influence choice–preference correspondence in the (unrelated) art selection task. Bootstrapping mediation analysis (Hayes 2013; model 4; 5,000 samples) revealed the predicted effect ($a \times b = -.30, 95\% \text{ CI } [-.55, -.10]$). Thinking about using self-control in one domain evoked the notion that choice in that particular situation was less reflective of preferences ($B = -1.45, SE = .21, p < .0001$). This, in turn, spilled over to affect the extent to which choice in an unrelated domain (i.e., art) was seen as reflecting one’s preferences ($B = .21, SE = .07, p < .003$). The residual effect of self-control on art preference perceptions was not significant ($B = .14, SE = .22, p = .52$). See figure 2.

Discussion

Experiment 4 provides further evidence for the process underlying the effect. As shown in the effects on the mediator, people tend to see choices involving self-control as less reflective of their preferences. Consequently, thinking about a prior decision involving self-control activated the local notion that this specific choice was not highly reflective of preference, which, in turn, led people to see even an unrelated choice as less reflective of their preference as well. This supports our proposition that self-control salience undermines general perceptions of choice–preference correspondence, which can influence inferences even

FIGURE 2
THE MEDIATING ROLE OF PERCEIVED CHOICE–PREFERENCE CORRESPONDENCE (EXPERIMENT 4)



beyond the context in which self-control was originally evoked.

EXPERIMENT 5: INFERENCES FROM “FREE CHOICE”

Experiment 5 extends our prior findings by using a classic empirical paradigm. As noted previously, decades of research on the spread of alternatives has shown that when choosing between two equally attractive options, people subsequently evaluate the chosen option more positively and the rejected option less positively than they did before the choice (Kitayama et al. 2004; Steele et al. 1993).² If self-control attenuates the perception of choice–preference correspondence, however, as we suggest, then making self-control salient should attenuate the spread-of-alternatives effect.

Further, the experiment uses two different self-control priming replicates. Finding convergent results would bolster the validity of the primed construct, self-control salience, showing that it has similar effects regardless of how it is evoked.

Method

Participants ($N = 276$; collected on MTurk, mean age = 32; 49% women) completed a version of the Free Choice procedure (Heine and Lehman 1997; Steele et al. 1993). They were told that they would complete a couple of

2 The original effect can be interpreted as reflecting either cognitive dissonance (Festinger 1957), where consumers strive to maintain consistency between their choices and preferences, or self-perception (Bem 1972), namely, inferring liking (vs. disliking) from the act of choosing (vs. rejecting). Regardless, the spread of alternatives reflects the lay belief that choice and preferences should be highly correlated. The free choice paradigm used in experiment 5 is unlikely to produce cognitive dissonance (i.e., no attitude–behavior inconsistency is evoked, let alone one that threatens the integrity of the self-concept; Festinger 1957), so any post-choice preference change is likely to reflect self-perception.

unrelated tasks posted from different researchers and were randomly assigned to a condition in a 2 (choice: free choice vs. no choice) \times 2 (self-control: high vs. low) \times 2 (self-control prime replicate: sentence unscrambling vs. life experiences) between-subjects design.

First, participants saw a list of 30 songs pretested to be popular and appeal to a wide range of tastes (including country, hip hop, and pop selections). They checked any songs that they already owned, and then, from the remaining options, selected 10 songs that they would most like to own.

Second, participants were shown the 10 selected songs (including title, album cover art, and artist's name) and ranked them from most to least preferred. They were told that these rankings would determine which song they would be given as a gift at the end of the study.

Third, consistent with standard procedure, participants spent a few minutes completing a filler task (evaluating a short article about dolphins, purportedly as a pretest of materials for future studies).

Fourth, we manipulated the salience of self-control, using two different methods for generalizability. The first involved the sentence-unscrambling task from experiment 1.

In the alternate prime replicate, participants completed a version of the "life experiences" task described in experiment 3, with minor wording differences (see web appendix D). The manipulation made the notion of self-control accessible as intended and did so without altering people's lay theories regarding self-control or the perceived relationship between self-control and choice-preference correspondence (web appendix D).

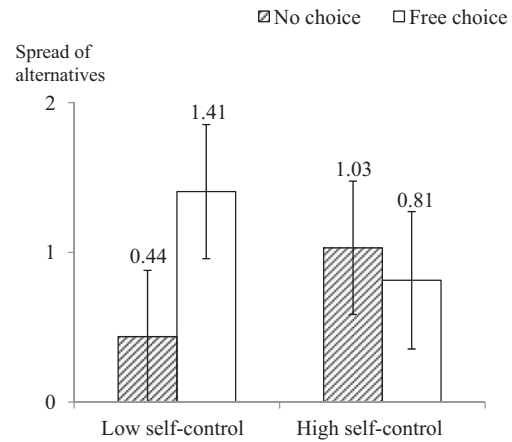
Fifth, we manipulated free choice. In the free choice condition, participants were told that they could choose a song to receive as a gift, based on their preferences. They were told that, of their 10 preferred songs, only two were currently available. Each participant then saw their fifth- and sixth-ranked songs. To eliminate self-assignment and ensure that all the participants selected an equally ranked option (Chen and Risen 2010; Risen and Chen 2010), we told participants that based on their ranking, they had chosen [their fifth-ranked option]. Each participant then checked a box to confirm that they had freely chosen that option ("I confirm that is my choice").

In the no-choice condition, participants were told that, of their 10 preferred songs, only one was currently available and were given their fifth-ranked song.

Finally, following standard procedures (Snibbe and Markus 2005), participants were told that we were interested in how they would rank the songs without visual information, based on how they were feeling at that moment. We assured participants that this was not a memory task and that they should not try to reproduce their first rankings of the songs. Participants then reranked their 10 preferred songs.

FIGURE 3

THE EFFECT OF SELF-CONTROL ON SPREAD OF ALTERNATIVES FOLLOWING FREE CHOICE (EXPERIMENT 5)



NOTE.—Error bars represent 95% confidence intervals.

Our focal dependent variable was the change in rank difference between the chosen or received option and the unchosen option or its equivalent. That is, we calculated the change in the spread between the options initially ranked five and six.

Results

As expected, a 2 (choice: free choice vs. no choice) \times 2 (self-control: high vs. low) \times 2 (prime replicate: sentence unscrambling vs. life experiences) ANOVA on the spread of alternatives revealed only the predicted free choice \times self-control interaction ($F(1, 268) = 6.70, p = .01, \eta_p^2 = .024$). Prime replicate had no effect on this choice \times self-control interaction ($F(1, 268) = .13, p = .72$), nor did it interact with either independent variable (all F s $< .41, p$ s $> .52$), so it is not discussed further. See figure 3.

As predicted, participants in the low self-control condition showed the classic spread of alternatives: free choice increased the preference gap between the focal (chosen) option and a reference (unchosen) option ($M_{\text{free_choice}} = 1.41, SE = .22$ vs. $M_{\text{no_choice}} = .44, SE = .24; F(1, 268) = 9.08, p = .003, \eta_p^2 = .033$). Under high self-control, however, the effect of free choice on preference disappeared ($M_{\text{free_choice}} = .81, SE = .20$ vs. $M_{\text{no_choice}} = 1.03, SE = .24; F(1, 268) = .44, p = .51$). The same pattern emerged whether self-control was primed using sentence unscrambling (low self-control: $F(1, 140) = 4.40, p = .04, \eta_p^2 = .030$, vs. high self-control: $F(1, 140) = .58, p = .45$) or the "life experiences" manipulation (low self-control: $F(1, 128) = 4.79, p = .03, \eta_p^2 = .036$, vs. high self-control: $F(1, 128) = .03, p = .86$). Further,

compared with low self-control, priming high self-control attenuated the spread of alternatives in the free choice condition (.81 vs. 1.41, $t(133) = 1.97, p < .05$), decreasing it to a level similar to the no-choice/low self-control condition (.81 vs. .44, $t(135) = 1.19, p = .24$).

Discussion

Using a classic “free choice” paradigm, experiment 5 underscores the notion that self-control salience undermines the perceived link between choice and preference. Consistent with prior work, participants’ relative preference for a chosen over an unchosen option (i.e., spread of alternatives) increased when the options were perceived to be freely chosen (vs. assigned). This spread of alternatives effect was attenuated, however, when the general notion of self-control was made salient in an unrelated context.

GENERAL DISCUSSION

Self-control is a ubiquitous and important driver of consumer behavior, helping people to make better choices, achieve their goals, and control their responses. But in addition to regulating choice, might self-control also change the inferences people draw from their choices?

We theorized that thinking about high self-control leads people to view their choices as less indicative of their preferences. Consistent with this proposition, when self-control was salient, people were less likely to perceive a previously chosen option as reflecting their preferences and tastes (experiments 1–4) and no longer displayed the classic spread of alternatives, failing to increase their preference for chosen options (experiment 5).

Further, we demonstrate the underlying mechanism behind these effects. Activating self-control in one context made people feel that this specific choice was less reflective of their preferences, and once activated, this notion spilled over to affect inferences in even unrelated domains (experiment 4). Further, the effects were moderated by individual differences in lay theories associated with self-control (experiment 3). Ancillary data also demonstrate that self-control tends to be associated with low choice–preference correspondence. Taken together, these findings support the notion that activating the concept of self-control in one domain can increase the accessibility of the general notion that choice may not indicate preference, which, in turn, can then carry over to influence perceptions of choices in other, unrelated domains.

Using various operationalizations of self-control salience bolsters the generalizability of the effects. The findings held regardless of whether self-control was made salient through sentence unscrambling (experiments 1 and 5), making unrelated choices involving self-control (experiment 2), or recalling a prior decision in which self-control was used (experiments 3–5).

Boundary Conditions and Moderators

Our findings indicate that, on average, people associate self-control with low choice–preference correspondence (pilot study, experiments 3–4, and web appendix D), but there is some heterogeneity in these associations. Indeed, our effects were stronger among people who generally viewed self-control as a means to resisting inner desires, or going against the self, as opposed to resisting external distractions and sticking to the self (experiment 3). Such views may be particularly characteristic of a 21st-century middle-class Western context, in which uncensored self-expression is often viewed as representing freedom and the authentic self (Markus and Kitayama 2003).

What might determine the extent to which people view self-control as weakening choice–preference correspondence? We suggest a few potential moderators and boundary conditions. First, our findings may be moderated by individual differences in the extent to which self-control goals and means are incorporated in the chronic self-concept or seen as a signal of one’s identity (Berger and Heath 2008). If someone sees themselves as a health nut, for example, choosing salad over pizza may just seem like a natural expression of the self, and consequently not undermine the perceived choice–preference link. The more self-control is a part of one’s identity, the less they should view it as undermining their preferences.

Second, the findings may be mitigated if self-control is effortless or becomes a habit. If dieting becomes second nature, for example, people may not even consider choosing unhealthy food and thus the decision may no longer evoke self-control to begin with. This, in turn, should make such decisions less likely to undermine the choice–preference link.

Third, the effects may be moderated by the cultural context in which people are embedded. As noted in the introduction, in contexts where choice is seen as driven less by one’s preferences and more by external and societal considerations (e.g., Southeast Asia or working-class America), people are less likely to attribute their choices to their preferences in the first place (Savani et al. 2008; Snibbe and Markus 2005). Our effects may be attenuated in such contexts.

Theoretical Implications and Future Research

This article makes several theoretical contributions. First, it advances understanding of self-control processes and their downstream consequences for judgment. Previous theorizing has suggested that self-control may lead people to feel confined and even coerced (Gal and Liu 2011), but our results go even further, suggesting that self-control may lead people to view their choices as less tied to their preferences. In other words, self-control may shape not only choice itself but also the perceived meaning of

choice, making it seem less about expression of personal wants and desires and more about generic or abstract notions of what constitutes virtuous behavior. Our findings suggest that when self-control is salient, people may be less committed to their choices and switch more often. Future research may examine further downstream consequences of self-control, such as how it affects preference consistency, switching behavior, choice confidence, and consumer satisfaction and pride.

Further, we have demonstrated that the association between self-control and attenuated choice–preference correspondence can be activated by situational cues, especially for people who hold it in the first place (experiment 3). Such cues include conceptual primes (experiments 1 and 5), choice dilemmas involving self-control (experiment 2), and reflections on prior self-control experiences (experiments 3–5). Future research may examine additional cues to self-control and its associated lay beliefs, such as observing others exerting self-control (e.g., Susan stifling a chuckle in class), products and options associated with guilt and conflict (e.g., a decadent chocolate cake), and environments associated with a vice–virtue conflict (e.g., a Las Vegas casino).

Second, a great deal of prior research on self-perception (Bem 1972; Kelley 1967) has suggested that, unless behaviors and experiences can be attributed to external constraints or incentives, people often draw inferences about their preferences by observing their own choices. Our findings underscore an important moderator of this broad phenomenon. Self-control is not an external factor, but an internal motivational process controlled by the decision maker him- or herself. Nevertheless, it can undermine the perceived diagnosticity of choice as a cue to preference. Thus, self-control may serve as a self-imposed confining factor, undermining certain inferences in a similar way to external constraints (e.g., stockouts or restricted choice). Even in the absence of such external confining factors, people may sometimes see “free” choices as less reflective of their preferences than previously assumed. Future research may investigate additional motivational or cognitive factors that influence the extent to which people perceive their own choices and behaviors as reflecting inner states.

Third, while our experiments focused on how self-control influences the inferences people draw from choice, might self-control also influence inferences from other subjective experiences accompanying choice? Research on metacognition shows that people often draw inferences about their preferences (e.g., how easy or difficult it is for them to form a preference, or how certain they are of their preference) from metacognitive cues such as the level of difficulty experienced while choosing (Schwarz 2004; Sela and Berger 2012). When people experience metacognitive difficulty while choosing (i.e., choice disfluency), for example, they often infer that they are having a hard time forming a preference, resulting in increased uncertainty and choice deferral (Novemsky et al. 2007).

If, as we have theorized, self-control salience undermines the notion that choice is indicative of one’s preference, then self-control may similarly affect any inference that relies on this lay theory, whether it is cued by the act of choosing (as in our current experiments) or by other subjective experiences that accompany choice, such as metacognitive perceptions of decision effort. For example, self-control salience may undermine the tendency to infer preference strength or whether one has a preference from the metacognitive experience of decision (dis)fluency (Novemsky et al. 2007). Indeed, preliminary data we have collected (Sela and Berger, work in progress) is consistent with this notion, suggesting that the effect of decision disfluency on the tendency to defer choice may be attenuated when self-control is made salient. While distinct, such effects are conceptually related to the effects examined in the current article in that they are all based on perceived links between a choice experience (i.e., the act of choosing, choice difficulty) and a corresponding inner state that is being inferred (i.e., preference for the chosen option, ability to form a preference).

Practical Implications

In addition to their theoretical significance, the findings have implications for consumer behavior, some of which are illustrated in the experiments. The notion that self-control undermines inferences of liking from choice, and as a result, decreases preference for previously chosen options and brands (experiment 2) has potential implications for brand loyalty. All else equal, associating certain products with self-control could influence whether choice impacts evaluation and likelihood of switching. For example, consumers may be less loyal to diet products than to equivalent products not framed as “diet” (at least until consumers have had a chance to form stable attitudes through repeated product experience).

These results also have potential implications for brands. A brand appearing next to self-control-related products on supermarket shelves, for example, may reduce brand loyalty. After wrestling with whether to get full- or reduced-fat ice cream, or buy water instead of soda, consumers may be less likely to rely on prior choices as indications of their underlying cravings. Consequently, they may be less likely to then stick with the same brand of frozen pizza or chips that they chose previously. This suggests a disadvantage to being downstream from self-control products, but one could also argue a potential upside for some brands. New products or brands might want to position themselves downstream from self-control products as consumers may be more willing to try something new. Future research might further examine this possibility more directly.

In conclusion, while different streams of research have separately examined self-control and inferences from choice, this article is one of the first to bring these two

deep and rich areas together. We hope it encourages further research on the intersection of these exciting and important domains.

DATA COLLECTION INFORMATION

Data for experiments 1–3 were collected and analyzed by the first author in fall and winter 2016–17. Data for experiments 4–5 were collected and analyzed by the third author, under supervision of the first author, in fall 2015 and in fall and winter 2016–17.

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