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It is well known that norms influence behavior. Beyond simply shaping what people do, we argue that norms constrain what behaviors even come to mind as options, effectively excluding counternormative behaviors from consideration. We test this hypothesis across five primary and multiple supplementary studies using diverse methods ($N_{total} = 5,488$). In Study 1, people reported that behaviors that were counternormative in a situation, even behaviors that could satisfy a motivational drive, were far less likely to come to mind and less desirable than behaviors that were norm-consistent. Going beyond self-report measures, Studies 2a–2c found that people even misrepresented norm-violating behaviors as "impossible," suggesting they are not considered. Using a change-blindness paradigm, Study 3 found that people were less likely to track changes in goal-relevant objects that would be counternormative (vs. normative) to engage with. Studies 4 and 5 explored implications for problems of temptation and self-control. Study 4 found that members of a clinical population striving to eat healthier reported that the very same unhealthy but tasty food items would be less tempting and would trigger less self-control conflict if they encountered the food in a context where its consumption would be counternormative (vs. normative). Study 5, a field study, shows that introducing a norm prohibiting laptop use in class reduced students' temptation to multitask (as well as actual multitasking) over the term, whereas encouraging individual self-control did not. Discussion addresses how norms can be harnessed to lighten the burdens of temptations and help people achieve their goals.

Keywords: social norms, social cognition, self-regulation, self-control, policy

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At any given moment, countless behaviors are possible, yet only some come to mind and are considered as behaviors one could actually enact. In a bank lobby, for example, it may be physically possible to sing aloud, to remove one's shoes, to ask someone to dance, to urinate on a potted plant, or to stretch out on a couch for a nap. Yet, even if one is bored, uncomfortable, or sleepy, these possibilities may never come to mind. Why not? We argue that it is because such behaviors would violate social norms: They would generally be seen as socially inappropriate for the situation and are rarely observed. If carried out, they might be met with stares, awkward laughter, shock, or retribution.

This observation may seem obvious. However, our claim is not just that people do not typically engage in strange and norm-violating behavior; it is that people often do not even *consider* behaviors that would be counternormative in a situation, even behaviors that could

meet their needs. In this research, we propose a novel yet primary mechanism by which social norms influence behavior—namely, that norms structure people's *awareness* and *consideration of* the behavioral options available to them within a context. This process effectively excludes many counternormative behaviors from the set of behaviors that people would consider doing within a situation. It's not just that counternormative behaviors often fail to come to mind. If raised, these behaviors may seem undesirable or even impossible to do (e.g., peeing on a potted plant), even if they would be so common as to be automatic in another situation (e.g., peeing in a bathroom). Through structuring people's representations of behavioral affordances, we argue that social norms powerfully shape people's basic cognition and psychological experience of the world.

Our thesis applies to behavior generally, which our first studies examine. It is also of specific relevance to problems of self-control.

If social norms can indeed reduce the extent to which specific acts come to mind, then they may offer a particularly powerful lever for shifting thought and behavior away from temptations and toward desired goals. Testing this aspect of our theory, our final two studies explore how norms can reduce temptation and self-control conflict and, indeed, be harnessed intentionally to help people reach their goals in health and academic contexts.

Social Norms

Social norms are consensually held beliefs about what behaviors are common and appropriate in a setting (Bicchieri et al., 2018; Legros & Cislaghi, 2020). They often take the form of formal or informal rules (Cialdini & Trost, 1998). They have long been recognized for their influence on individuals (Bem, 1970; Deutsch & Gerard, 1955; Pepitone, 1976) and as strong predictors of behavior across a wide variety of domains (Azjen, 1991; Cialdini & Goldstein, 2004; Walton & Wilson, 2018).

Social norms are a classic topic of study in the social sciences. Past work has sought to answer such questions as how norms are learned and detected (e.g., Crandall, 1988; Dannals et al., 2020; Savani et al., 2022); when norms will exert stronger or weaker influence on behavior (Cislaghi & Heise, 2018); how they spread through social networks (Paluck et al., 2016); and the processes that contribute to the emergence, maintenance, and dissipation of social norms (see Legros & Cislaghi, 2020). Previous work has also sought to understand the mechanisms behind the normative influence. Such work has primarily explored the underlying reasons why people adhere to norms, such as rational-choice calculations; motivations to express social identity; and inferences that a behavior will be effective or will garner social approval (see Cialdini & Goldstein, 2004; Morris et al., 2015, for reviews).

Building on this literature, we explore mechanisms, not in terms of *why* people adhere to social norms, but *how* norms impact behavior: the basic cognitive processes through which social norms have their influence. A primary way they do so, we suggest, is by shaping people's behavioral choice set. Uncovering the cognitive mechanisms involved in normative influence on behavior is an important step for research, as it is crucial for understanding the implications of norms for individual experience, motivation, and behavior.

How Social Norms Shape Cognition and Regulate Behavior

We theorize that once learned and internalized, norms about the actions one might take are baked into people's representation of situations and processed as features endemic to them. Through this process, norms constrain what behaviors come to mind in a situation, how possible they seem, and how desirable they are judged to be.

In our theory, the way in which social norms shape people's representation of situations and consideration of behavioral options is analogous to how the physical world constrains the consideration of behavioral options. People are unlikely to consider behaviors that are impossible: Robinson Crusoe does not consider becoming a bird and flying away from the island he has been cast upon. That behavior is not afforded to him physically. Likewise, we suggest, people tend not to consider behaviors that are strongly counternormative. Imagine

sitting in the audience at a theater performance: It might be physically possible to walk onstage and join the actors' conversation, yet the idea of doing so may never come to mind. And if it did come to mind, the action may be readily dismissed as "impossible" or at least as highly undesirable. It is not afforded socially.

In this way, we suggest that social norms fundamentally shape people's representation of situations and experience of their behavioral affordances (see also Pepitone, 1976; Markus & Kitayama, 2010). Moreover, such structuring of behavioral options may provide a powerful upstream mechanism through which behavior is regulated.

Consistent with this theorizing, past work has shown diverse ways in which social norms pervade basic cognition and the representation of behaviors in contexts. Social norms can guide patterns of accessibility such that context cues (e.g., a picture of a library) automatically activate mental representations of behavior consistent with the social norms of that context (e.g., to be quiet; Aarts & Dijksterhuis, 2003). Norms can also guide judgments of desirability, with people often endorsing normative behaviors, values, and preferences as their own (Cialdini & Goldstein, 2004; Jensen & Lieberoth, 2019; Newcomb, 1943). Finally, work within moral cognition has found that, under time pressure, people can readily mistake immoral but physically possible behaviors as impossible to do (Phillips & Cushman, 2017; Phillips et al., 2019).[1] We suggest that behaviors that are strongly counternormative, even if they are not necessarily immoral, might similarly be represented as impossible to do; that is, people may conflate a lack of physical and social affordances because both constrain the behavioral choice set.

While it is not the focus of the present research, it is important to note that in many situations, norms about how to behave are, in fact, reflected and reinforced by the *physical* affordances of constructed spaces (cf. Gibson, 1977). Libraries don't usually have trumpets lying around waiting to be played; Broadway theaters may not have stairs from the audience to the stage. Yet, we theorize that even when social norms are not manifest in physical features, they are still integral to how people represent a context's behavioral affordances. As *psychological* affordances, social norms may then guide what behaviors seem available, possible, or useful within a given context (see Walton & Yeager, 2020) and are responded to in much the same way as physical affordances.

We argue that the tendency to incorporate social norms into representations of the behavioral affordances of situations is often generalized, routinized, and automatic (cf. Morris et al., 2015). Yet, the content of norms varies widely across groups and situations (see Davidson & Kelly, 2020). Concretely, this means that which behaviors are, or are not, excluded from consideration will vary with the social norms specific to the context. A bored student may not consider singing out loud during class but might consider doing so while driving home with friends. Such generality of process, rather than any specific content, is adaptive for individuals as it

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[1] While a full discussion of the relationship between morality and social norms is beyond the scope of the present article, we see the two as distinct but overlapping constructs. Our empirical focus, validated in pilot studies, is on the normativity of behaviors (to what extent are they seen as common and appropriate? e.g., Study 1); however, we expect the processes described in this article to apply to behaviors that are both counternormative and immoral and perhaps especially strongly, such that counternormative immoral behaviors will be most likely to go unconsidered.

allows people to traverse changing situations and adapt to new norms while flexibly adjusting behavior to fit the norms of each context. It is also adaptive for groups, as it facilitates social coordination and allows human communities to implement different norms in different situations to support the pursuit of diverse goals.

Alternative Mechanisms of Social Norms

The thesis that norms affect behavior is, of course, not new. Our contribution is in proposing that social norms regulate behavior by effectively excluding counternormative behaviors from consideration: that counternormative behaviors will be less likely to come to mind and, even if they do come to mind, will be readily dismissed as impossible or undesirable. Why is it important to document that social norms affect the consideration of behavioral options above and beyond their impact on actual behavior?

The alternative to our account is that counternormative behaviors are considered, and may even be desired, but are ultimately decided against. In this process, counternormative behaviors enter into a decision set and compete against normative alternatives. Adherence to social norms would thus mean that normative behaviors prevail in an internal conflict to override potentially need-meeting but counternormative behavior. The difference between these accounts is not primarily in whether each can produce norm-congruent behavior. Rather, the difference lies in the experience of adhering to norms: Is it relatively natural and effortless? Or is it rife with conflict and efforts to inhibit thoughts of performing tempting but counternormative behavior?

There surely are instances where this alternative process, characterized by conflict and competition, does operate to produce norm-consistent behavior. However, we suggest that the degree to which norms shape representations of the behavioral affordances of situations has been underappreciated. It reflects a markedly different psychological experience and underlying process, and these differences have important downstream implications. For one, excluding counternormative behaviors from consideration from the start may produce larger and more robust effects on behavior than a process wherein counternormative behaviors are considered but then inhibited. Moreover, as we discuss next, the propensity for people to exclude counternormative behaviors from serious consideration has particularly important implications for problems of temptation and self-control.

How Social Norms Can Ease Burdens of Self-Control

A strong determinant of whether people reach their goals—to reduce drinking, to quit smoking, to eat healthier, or to stick to a studying plan—is how often and how strongly they experience countervailing temptations (Allen et al., 2008; Duckworth et al., 2016; Milyavskaya & Inzlicht, 2017; Witkiewicz, 2013). When temptations are encountered, they create self-control conflicts that pit the motivation to indulge against the motivation to adhere to higher order goals (Fujita, 2011; Kalkstein & Fujita, 2020; Kalkstein et al., 2018). The difficulty of resisting temptations means that an important question for goal pursuit is what factors can prevent temptations from arising in the first place; after all, people have no trouble resisting temptations that never arise. Our theory implies that social norms can obviate the need for in-the-moment self-control by transforming a potentially tempting course of action into one unconsidered altogether.

Consider a hungry dieter facing a delicious cookie on a communal plate. It is perfectly acceptable to take the cookie, and it might be difficult to resist. Yet, if the very same cookie sat on a stranger's plate, taking the cookie would violate social norms. Would taking it even come to mind? If it came to mind, would it be tempting?

This example illustrates several striking features of social norms as they relate to experiences of temptation. First, it may feel *easy* for the dieter to resist a neighbor's cookie, and this is true even if the cookie is visible and physically accessible. Second, this ease of behavior regulation is flexible and precise, easily turned on and off by cues relevant to the norms about behavior in the situation. If the cookie was offered by its owner, it might become difficult to resist. Third, the norm of not taking a stranger's food is powerful because it is both injunctively and descriptively strong. In many cases, injunctive and descriptive norms align; that is, behaviors are both widely proscribed and descriptively rare, or widely accepted and descriptively common. Such *strong norms* may regulate behavior with particular power (see also Cislaghi & Heise, 2018).

By effectively removing temptations from consideration, we argue that social norms can ease the burdens of self-control and free people from the need to effortfully inhibit their impulses (which is liable to fail, see Muraven & Baumeister, 2000). Research shows that behavior can often be regulated more effectively "upstream," by selecting or changing aspects of the situation to prevent people from encountering temptations (Duckworth et al., 2016). For instance, moving a candy jar several feet away can reduce consumption (Maas et al., 2012). Social norms may make temptations similarly less likely to arise by reducing social or psychological affordances. Taking a cookie from a stranger's plate is physically possible, but, in most social circles, it is "unthinkable." The social context does not afford the behavior, and as a result, the cookie may go unconsidered. Even if the cookie came to mind, the idea of actually taking it may be quickly dismissed as untenable or undesirable and thus pose not much of a temptation at all.

Through this process, we propose that social norms can effectively "solve" potential self-control dilemmas by offloading what could have been a difficult personal choice to the social context. When the norms of a situation are aligned with people's goals, this process may free attention and other cognitive resources from efforts to inhibit impulses to indulge in the temptation and allow people to direct these resources instead toward more valued goals. In the best circumstances, this process may enhance goal pursuit and promote social cohesion by aligning individual goals and behaviors with social policies and contexts (cf. Fitzsimons et al., 2015).

Overview of Studies

First, we explore the effect of social norms on the consideration of behavioral options in general using self-report measures. Building on two earlier studies reported in the supplement, Study 1 examines common motivations often implicated in self-regulatory challenges (e.g., boredom, hunger, tiredness) across a wide range of diverse everyday situations. It shows that, despite these motivations, variability in the social norms across situations overwhelmingly predicts whether people report they would think of and would want to do a specific behavior that would satisfy a given motivation. Going beyond self-report measures, Studies 2 and 3 assess cognitive representations of counternormative behaviors. Using a classification task, Studies 2a–2c find that norm-violating behaviors can even

be misclassified as "impossible," suggesting that they are represented outside what is afforded by the context and are particularly unlikely to come to mind. Using a change blindness paradigm, Study 3 shows that people may remain attentionally "blind" to objects in the environment that would meet their needs when they would be counternormative to engage with.

If our theory is accurate, it would suggest new ways to solve persistent problems of self-control—namely by introducing strong norms that preclude tempting behaviors that hinder goal pursuit. As an initial test of these implications, in Study 4, we recruited a sample of participants for whom a healthy diet is a particularly important and clinically significant self-regulatory challenge. We tested whether the very same unhealthy foods would create less temptation and less self-control conflict for individuals when their consumption would be strongly counternormative than when consumption would be normatively acceptable.

Finally, Study 5 tests whether it is possible to introduce a norm in a classroom setting intentionally to promote goal-consistent behavior. Many students' goal to learn can come into conflict with lower order temptations to check social media or browse the internet during class. We reasoned that implementing a norm of not using laptops in class could reduce students' urges to multitask with laptops or cellphones, thus unburdening students from repeated experience of self-control conflict during class. We further hypothesized that changing norms would reduce temptation and multitasking more effectively than encouraging students to implement personal self-regulatory strategies to reduce this temptation. In so doing, Study 5 extends our theoretical account by testing whether new norms can be implemented with sufficient psychological effect to facilitate personal self-regulation. Thus, Study 5 tests the generality of the process and its flexibility to adapt to novel situations. Finally, in addition to examining students' experiences of temptation and behavior, we examined students' attitudes toward the "no-tech" policy, including whether they believed that such a policy would benefit future students, whether it would infringe too much on personal freedom, and whether they would endorse its implementation in future terms. If students who experience a norm constraining laptop use endorse it as beneficial and as not threatening their freedom, this would suggest the opportunity to harness social norms intentionally to support self-regulation and ease the burdens of temptation more broadly.

Study 1: Do Social Norms Rule Out Diverse Everyday Behaviors From Consideration?

We began by testing our theoretical claim that motivationally relevant behaviors, such as eating when hungry or checking social media when bored, are less likely to come to mind and seem less desirable in situations in which they are more strongly proscribed by social norms.

To do so and to examine the robustness and generality of the relationship between social norms and the consideration of behavior, we used a self-report methodology. We presented participants with a broad array of everyday situations paired with a variety of everyday motivational states and behaviors. These pairings created a diverse set of items that we presented to two groups of participants. One set of participants rated how common and how acceptable a given behavior was in a given situation (e.g., to eat a sandwich at a bank). The other set of participants reported how likely a given behavior would be to come to mind in a given situation (e.g., to eat a sandwich at a bank, if hungry), and how much they would want to do it. We then conducted an item-level analysis. We correlated each item's average normativity rating from the first set of participants (i.e., how common and appropriate it was judged to be by the first set of participants) with the second set of participants' average ratings of consideration and desirability of the behavior in that situation (whether it would come to mind and whether participants would want to do it, as reported by the second set of participants).

We predicted that the judged normativity of a given behavior in a given situation would strongly predict the degree to which that behavior would come to mind and be desired in that situation. Of note, the design of Study 1 takes advantage of the fact that behaviors that are normative in one situation (e.g., taking a nap in one's bedroom) can be counternormative in another (e.g., taking a nap on a couch in a bank lobby). This allowed us to test whether the very same behaviors would be seen as less likely to come to mind and less desirable in situations where the behavior is seen as counternormative than in situations where it is normative.

Method

For this, and all reported studies, all data and materials will be made publicly available on open science framework (https://osf.io/qr7ws/). All procedures were approved by the researchers' institutional review board.

Study 1 follows an earlier experimental study, which examined a narrower range of situations and yielded similar results (Study S1). It is also a preregistered extension of a second earlier study, which examined a similarly broad range of situations but used a person-level rather than item-level analysis. That study also yielded similar results (Study S2; see https://osf.io/udasb for preregistration).

Participants

Following preregistered exclusions (see below), 992 U.S. residents (M_{age} = 45.27, SD = 16.84; 47% male) were recruited from Lucid (see Coppock & McClellan, 2019). Except where otherwise noted, we did not collect race/ethnicity data in this or any of the following studies. We were unsure of what effect size to expect. The sample size was determined prior to data collection and set to ensure sufficient power to detect even modest effects.

Procedure

Following prior research, we developed a matrix of 13 common situations varying in the nature of social norms (e.g., "at a public park," "in the library"; Gelfand et al., 2011; Price & Bouffard, 1974) and 13 behaviors that would be possible in these situations and would satisfy common motivational states (e.g., sleepy/take a nap; hungry/eat a sandwich; Hofmann et al., 2012). As shown in Table 1, we used this matrix to pair each situation with each motivational state and behavior, creating 169 combinations (e.g., "eat a sandwich in a public park" if "hungry"; "eat a sandwich in the library" if "hungry").

All participants were presented with a subset of situation–behavior pairs. Each participant responded to 13 of the situation–behavior pairs (i.e., "items") in random order. Items were blocked so that each participant responded to all 13 situations and all 13 behaviors.

Table 1

Situations and Behaviors Examined in Study 1

Everyday situations	Motivational states and behaviors
At a bank	Sleepy/take a nap
At a job interview	Tired/lie down and rest
At a public park	Bored/check social media on your phone
On a bus	Bored/play a game on your phone
In your own bedroom	Bored/read a magazine
On a city sidewalk	Bored/listen to music on headphones
At the movie theater, watching a movie	Want a snack/eat potato chips
At the airport, waiting for a flight	Want a snack/eat a candy bar
At a bar	Hungry/eat a sandwich
At the workplace	Want to express affection/kiss (on the mouth)
At a funeral	Find someone attractive/flirt
In the library	Want to unwind/drink a beer or glass of wine
In a classroom, listening to a lecture	Feet hurt/take your shoes off and rest

Note. Each participant viewed 13 pairs (or "items") comprised of one of each of all 13 situations and one of each of all 13 motivational states/behaviors, randomly paired.

Participants were divided into two conditions (by random assignment). In the norm condition, participants were asked to evaluate the normativity of items: "How common or rare is it to [behavior, e.g., eat a sandwich] in [situation, e.g., a public park]?" (1 = *extremely rare*, 7 = *extremely common*); "How appropriate or inappropriate is it to [behavior] in [situation]?" (1 = *extremely inappropriate*, 7 = *extremely appropriate*). In the behavior-regulation condition, participants were asked how likely the behavior would be to come to mind and how desirable it would be to do in the situation: "Imagine you are [situation]. If you were [motivational state], would it *come to mind* that you could [behavior] here? (1 = *definitely not*, 7 = *definitely*); If you were [motivational state], would you *want to* [behavior] here?" (1 = *definitely not*, 7 = *definitely*).

In each case, participants were asked to assume that the given behavior was physically possible (e.g., that they had or could get a sandwich). Finally, to check whether certain behaviors and scenarios were applicable to each participant, participants reported whether they drink alcohol, have a smartphone, and have flown on an airplane.

Exclusion Criteria

Preregistered analyses excluded items that would be inapplicable for these participants (e.g., "drink alcohol" for those who do not drink or are under 21; 6% of responses); all data were excluded if a participant indicated that they were distracted or answered randomly ($N = 4$) or completed the survey in fewer than 240 s ($N = 18$). After these exclusions, 31–46 participants provided norm ratings for each item, and a different 32–46 participants provided ratings of each item's mental availability and desirability.

Results

Among the first set of participants, ratings of appropriateness and commonness correlated strongly ($r = 0.92$). Therefore, we created a composite measure of norm strength by averaging these ratings for each of the 169 items.

Because different participants provided norm ratings and ratings of mental availability and desirability, we conducted a by-item analysis, averaging the responses of all participants to each item. Thus, each item had an average norm rating (from the first set of participants) and average ratings of mental availability and desirability (from the second set of participants). We then examined the primary question: Would people report being less likely to think of, and experience less desire to do, behaviors that others had rated as less normative in context? They did, and as displayed in Figure 1, these correlations were significant and exceptionally strong, rs = 0.95 and 0.89, ps < .001, respectively. Almost all of the variability in participants' reports of whether a behavior that fits with a motivational state (e.g., eating when hungry) would come to mind in a context (e.g., in a classroom) was explained by the normativity of that behavior in that context as rated by other participants, $R^2 = 90.25\%$. For the variability in participants' desire to enact the behavior, this figure was $R^2 = 79.21\%$.

The fact that these associations arose even though different participants contributed to the normative and behavior-regulation ratings suggests that this regulatory process operates at a consensual or cultural level, consistent with our focus on social norms. In Study S2 (in the Supplemental Materials), we found the same process at an individual level. There, each participant provided ratings of norms, mental availability, and desirability for a random 13 items from the same set of 169 situation/behavior pairs shown in Table 1. The median within-participant correlations between the strength of the perceived norm and ratings of the (a) mental availability and (b) desirability of behaviors were $r = 0.81$ and 0.68, ps < .001, respectively.

Studies 2a–2c: Can Counternormative Acts Seem "Impossible"?

In Study 1, participants reported that behaviors that were counternormative in context would not come to mind. To go beyond self-reports and further explore how norms shape the representation of behavioral affordances, Studies 2a–2c examined whether people are liable to conflate counternormative behaviors as impossible. To do so, we adapted a paradigm developed in past research to reveal default biases in cognition present even before people have a chance to deliberately reflect on their responses (Phillips & Cushman, 2017).

Figure 1

Correlations Between Social Norms and (A) Consideration and (B) Desirability of Various Actions That Could Fulfill a Motivational State (Study 1)
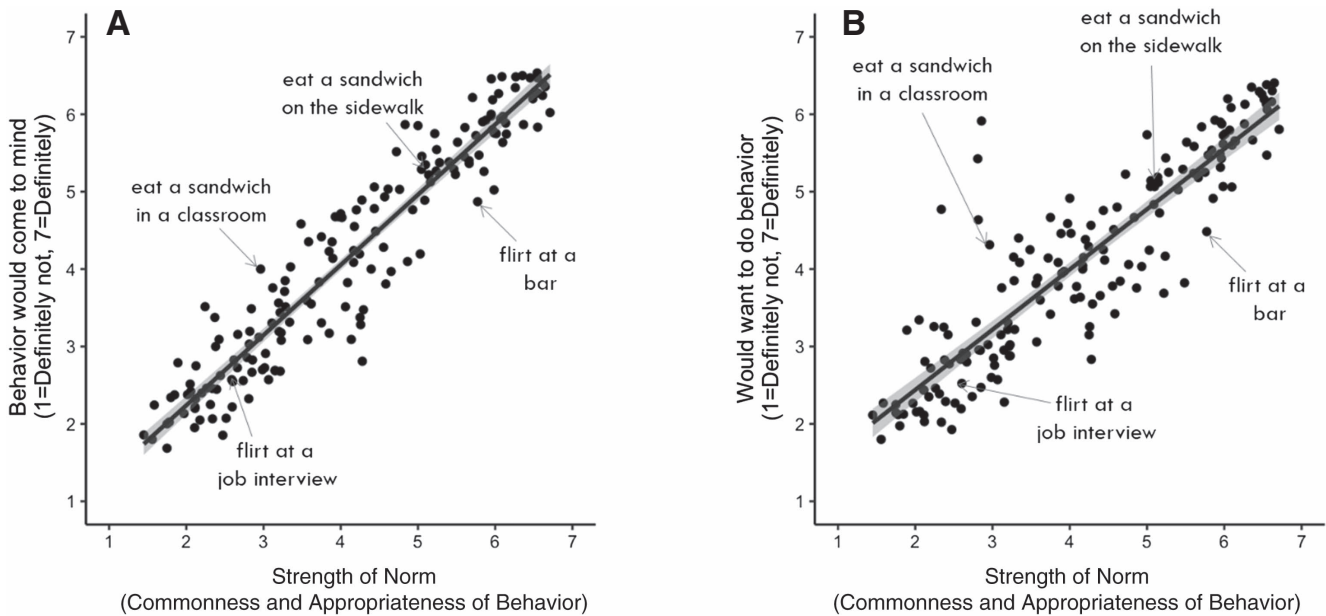
Note. Each point represents the averaged responses of 74–79 participants to a given situation–behavior pair (e.g., "lie down and rest in the library, if you were tired"), approximately half of whom provided norm ratings and half of whom provided ratings of what would come to mind and be desired (total *N* = 992).

This prior research suggests that, under time pressure, people can conflate immoral actions as "impossible." Here, we test whether behaviors that are simply counternormative are also more likely to be conflated as "impossible," as compared to normative behaviors. A propensity to mistake counternormative behaviors as impossible would provide evidence that social norms are processed as psychological affordances and responded to in much the same way as physical affordances.

In Study 2a, we asked participants to imagine several contexts and to judge whether various behaviors were "possible" or "impossible" in them. In colloquial language "impossible" can refer to acts that are socially inappropriate or counternormative (Johnson-Laird, 1978). This colloquial meaning itself speaks to the degree to which social norms influence people's representation of behavioral affordances. Nevertheless, to ensure that responses were not driven only by this interpretation, in Study 2b and replication Study 2c, we gave participants a narrow, explicit definition: "When we say 'physically possible,' we specifically mean things that *could* potentially happen, even if they would be improbable or inappropriate, or would involve an item that's not always common in that context."

Across all three studies, our preregistered hypothesis involved an interaction such that participants would be significantly more likely to mistake counternormative acts as "impossible" when making speeded judgments as compared to when making reflective judgments. This conflation of counternormative actions as impossible would provide evidence of how deeply social norms shape people's representations of what behaviors are afforded by situations. As will be seen, however, people conflated counternormative actions as impossible even absent time pressure.

Method

For preregistration, see https://osf.io/jmu6x/.

Participants

In Study 2a, we aimed to recruit 250 U.S. participants from Amazon Mechanical Turk; 255 respondents participated (*M*age = 36.62, *SD* = 11.10; 53% male). In Study 2b, we recruited 350 adults from MTurk (*M*age = 38.50, *SD* = 13.02; 44% male). In Study 2c, we aimed to recruit 425 participants from MTurk; 435 U.S. adults (*M*age = 37.36, *SD* = 12.10; 43% male) completed the task. All sample sizes were determined prior to data collection and were set to be large enough to detect even modest effects.

Following our preregistration, in all three studies, we excluded participants who reported that they were significantly distracted or answered randomly during the task and used the same data processing and exclusion criteria used by Phillips and Cushman (2017, p. 2 of Supporting Information), as follows:

> Trials on which participants did not respond were excluded from the analyses. Subsequently, each participant's average response time (excluding outlier responses defined as >6,000 ms) was computed. All data from a participant were dropped if a participant's average response time was lower than 800 ms in the speeded condition or lower than 1,000 ms in the reflective condition. Additionally, data from all trials on which a response was given in less than 500 ms were dropped, as were data from reflective trials on which the response was given in less than 1,500 ms.

In Study 2a, this resulted in the exclusion of 26 participants: 23 whose average response times were shorter than preregistered

criteria, one who failed to respond to any of the possibility questions, and two who answered that they were distracted or clicked randomly during the task.

In Studies 2b and 2c, we expanded the preregistered exclusion criteria, reflecting observations from prior studies. In Study 2b, we also excluded respondents under the age of 21 (who would not be permitted to drink alcohol). A total of 32 participants were excluded: four under the age of 21, 23 whose average response time was shorter than preregistered criteria, and five who reported that they were distracted or clicked randomly during the task.

In Study 2c, we also excluded participants who marked more than 95% of the normative items or fewer than 5% of the impossible items as "not physically possible." A total of 55 participants were excluded: five who answered that they were distracted or clicked randomly during the task, 49 who met preregistered exclusion criteria for answering too quickly, and one who marked all of the impossible items as possible.

Materials

We selected six situations used in Study 1 (e.g., "at a bar with friends"). Each situation was paired with eight normative behaviors (e.g., "signal for the bartender," "eat some onion rings"), four impossible behaviors ("float in the air above the crowd," "turn a glass of beer into wine"), and four counternormative behaviors (e.g., "read aloud from a prayer book," "put a blanket on the ground and lie down"), for a total of 16 behaviors per situation and 96 total behaviors (see Appendix, for complete stimuli). Pilot testing confirmed that the behaviors defined as normative-in-context were viewed as significantly more common and more appropriate than behaviors defined as counternormative-in-context (Study S3). To ensure that the effects arose from the normativity of the behaviors rather than from other qualities, each of the 24 counternormative behaviors appeared as a normative behavior in another context (e.g., "put a blanket on the ground and lie down" while "at a public park"). Primary analyses examine the subset of behaviors that appeared as both normative- and counternormative-in-context.

Procedure

In each study, participants responded to all 96 behaviors. Items were blocked within context. Blocks were presented in random order, as were items within block.

In Study 2a, participants were asked to imagine the contexts and to judge whether each action would be "possible" or "impossible" in each. Each context was described in text and presented alongside a representative photo of it. Participants were randomly assigned to one of two conditions. Half of the participants were instructed to respond as quickly and accurately as possible, and half were instructed to take their time and carefully reflect on their responses. Participants in the speeded condition had to respond within 1,550 ms, following Phillips and Cushman (2017). Those in the reflective condition had no time limit.

The procedure for Study 2b was similar to Study 2a, with the exception that participants were asked to judge whether each behavior "could be physically possible." The instructions were explicit: "When we say 'physically possible,' we specifically mean things that could potentially happen, even if they would be improbable or inappropriate, or would involve an item that's not always common in that context." Each trial was preceded and followed by reminders to judge whether the behaviors "could be physically possible" for someone to do.

Study 2c was a close replication of Study 2b, with a few minor changes. First, we extended the response time in the speeded condition to 1,750 ms following complaints from a few participants in Study 2b that they did not have enough time to read the materials. We also better matched the length of materials and replaced potentially confusing items. Whereas the items in Study 2b had a mean length of 28.88 characters ($SD = 5.74$, range 20–43), those in Study 2c had a mean length of 26.65 characters ($SD = 2.59$, range 22–35).

Results

Analysis Plan

Our analysis closely followed that of Phillips and Cushman (2017). Analyses were conducted with generalized linear mixed-effects models in R. Each effect's significance was determined by comparing a model that included the relevant term to a model that did not include that term. The effect was determined to be significant if the fit of the model including the relevant term was significantly better than the fit of the model that did not include that term.

The analyses discussed in the main text compared the subset of behaviors that appeared as both counternormative- and normative-in-context and tested for main effects of normativity and time pressure as well as for an interaction between normativity and time pressure. Examining the full set of behaviors (including behaviors that were normative in one context but did not appear in another, and "impossible" behaviors) produced the same pattern of results (see Studies 2a–2c Supplemental Analyses in Supplemental Materials).

Primary Analyses

As noted, we originally anticipated that participants would misclassify counternormative behaviors as impossible more often only in the speeded condition, when they had little time to override automatic processes. However, we found that people judged counternormative behaviors as impossible more often, even when they had as much time to deliberate as they liked. Across studies, behaviors were 6- to 18-fold more likely to be judged "impossible" when they were counternormative-in-context than when they were normative-in-context, main effect of normativity: Study 2a: $\chi^2(1) = 219.35$, $p < .001$; Study 2b: $\chi^2(1) = 18.15$, $p < .001$; Study 2c; $\chi^2(1) = 30.47$, $p < .001$; see Figure 2, Figure S3, and Tables S2–S4 in Supplemental Materials. There was also a main effect of response speed: Overall, participants misidentified fewer behaviors as "impossible" in the reflective condition than in the speeded condition, Study 2a: $\chi^2(1) = 19.53$, $p < .001$; Study 2b: $\chi^2(1) = 23.13$, $p < .001$; Study 2c: $\chi^2(1) = 18.50$, $p < .001$. There was no interaction between speeded versus reflective condition and normativity, Study 2a: $\chi^2(1) = 1.93$, $p = .16$; Study 2b: $\chi^2(1) = 0.36$, $p = .55$; Study 2c: $\chi^2(1) = 1.17$, $p = .28$. The effect of normativity was significant in both the speeded condition (Study 2a: $Z = 35.39$, $p < .001$; Study 2b: $Z = 5.35$, $p < .001$; Study 2c: $Z = 5.77$, $p < .001$) and, strikingly, even in the reflective condition, where participants had ample time to consider their responses (Study 2a:

Figure 2

Percentage of Possible Behaviors Judged Impossible When Normative vs. Counternormative in Context (Studies 2a and 2b)
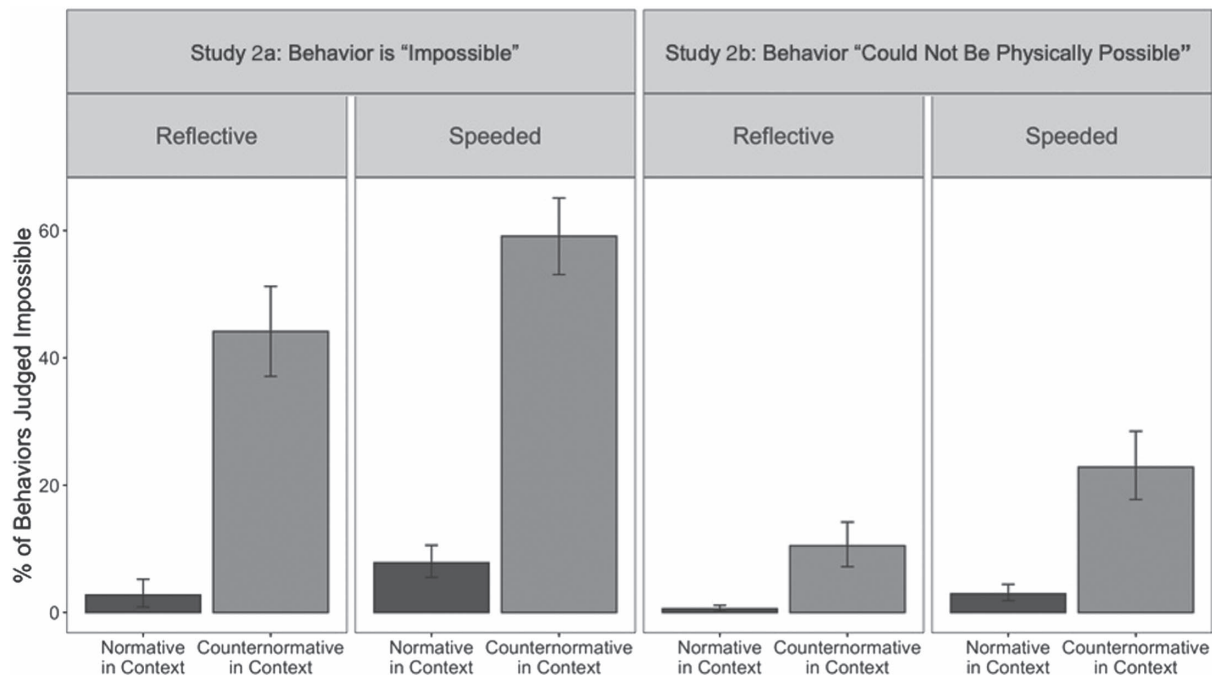
Note. Figure shows the average percentage of possible behaviors judged to be impossible (or "not physically possible") when normative-in-context (e.g., "ask for a bottle of beer at a bar") vs. counternormative-in-context (e.g., "ask for a bottle of beer in a job interview"). Error bars represent bootstrapped 95% CIs (confidence intervals). Study 2c produced the same pattern of results as Study 2b (Figure S3). Study 2a: $N = 229$; Study 2b: $N = 317$.

$Z = 13.02$, $p < .001$; Study 2b: $Z = 9.74$, $p < .001$; Study 2c: $Z = 10.37$, $p < .001$).

Overall, the rate at which participants misidentified possible behaviors as impossible dropped with the explicit definition of "possibility" in Study 2b (and Study 2c) as compared to Study 2a (Figure 2 and Figure S3 in Supplemental Materials). Yet, even with this explicit definition, and even with as much time as needed to reflect, participants still misclassified possible behaviors as behaviors that "could not be physically possible" far more often when these behaviors were counternormative in context than when they were normative in context. Participants conflated a lack of psychological affordance with a lack of physical affordance.

Robustness Tests

Additional analyses considered the possibility that our results were driven by either a small subset of items in each study or by a few outlier participants. First, using binary logistic GEE models with exchangeable working correlation matrices, we analyzed each behavior independently to test whether it was more likely to be misclassified as impossible when it was counternormative in context than when it was normative in context. In both Studies 2a and 2b, 24 out of 24 behaviors were significantly more likely to be classified as impossible when they were counternormative in context than when they were normative in context ($ps < .001$); for Study 2c, this figure was 23 out of 24 behaviors ($ps < .001$).

Second, to explore whether our effects were driven by a small number of outlying participants, we conducted Wilcoxon signed rank tests for each study, which do not assume normal distributions and are thus less affected by extreme outliers. These tests revealed that the median difference between the proportion of counternormative versus normative behaviors misclassified as impossible was significant in all three studies ($ps < .001$). Thus, the results are not driven by either a small subset of items or a small subset of participants.

Open-Ended Responses

Participants' qualitative comments further reveal the conflation of counternormative behaviors as impossible, even as participants understood the instructions. Participants said: "I have seen people wearing headphones at a funeral. But that should be impossible in a sense" (Study 2a); "There were some things … that are technically possible; but they aren't really something people would do" (Study 2a); "It was tricky because you wanted to answer if it was acceptable to do these things, instead of physically possible. I had to think hard sometimes" (Study 2b); "I had to forget about the social taboos of some of the activities; and remind myself to consider if that activity was physically possible" (Study 2c); "I think I made a few errors … because I *allowed myself* to think about if someone would do something instead of whether it was physically possible" (emphasis added); "It took a while to get used to thinking about if it was physically possible instead of socially acceptable" (Study 2c). One

participant even indicated that disregarding social norms felt illogical: "I found this very strange. I would have preferred to answer logically and not what was possible" (Study 2c).

Discussion

Studies 2a–2c show that counternormative behaviors are liable to be misclassified as impossible far more than normative behaviors. Our claim is not that people always think that counternormative behaviors are literally impossible. Instead, it is that counternormative behaviors are often experienced as so far outside the affordances of a situation that they are readily conflated as impossible. Moreover, this conflation of psychological and physical affordances is so deep-seated that it is hard to eliminate even with explicit instructions, as shown in Studies 2b and 2c.

Study 3: Are People Blind to Counternormative Affordances?

To demonstrate the depth of the influence social norms have on representations of behavioral affordances, in Study 3, we adopted a "change blindness" paradigm. In doing so, we test whether people are, to some extent, cognitively "blind" to counternormative behavioral options within their environment. Change blindness is a robust cognitive phenomenon wherein people often fail to notice even large changes in visual scenes (see Simons & Levin, 1997; Simons & Rensink, 2005). Past work has shown that change blindness effects are sensitive to top-down influences like goals and task demands; in particular, people are less likely to notice changes in the environment that are irrelevant to their goals (Jones et al., 2003; Triesch et al., 2003). We posit that social norms also operate as a top-down influence on basic attentional processes and mental representations (see also Gantman & Van Bavel, 2014, 2015). Thus, we predict that people will be relatively "blind" to changes in objects that would be counternormative to engage with (e.g., someone else's food), even when those objects are goal-relevant (e.g., when hungry). Such a finding would provide strong evidence that people's mental representations of behavioral affordances in a situation go beyond what is physically (or perceptually) available and are also constructed around what is afforded psychologically, that is, by the norms of the situation.

To test this prediction, we first primed participants with either a hunger goal (to find something to eat) or an unrelated goal (to find parking). We then showed them a scene, illustrated in Figure 3, that contained two food objects—one that would be normative to obtain (a box of cookies for sale) and one that would be counternormative to obtain (a box of cookies carried by a stranger). The scene was then presented a second time, but with one of the food objects replaced by a book. Between subjects, we manipulated which food object was replaced, the one that would be normative to obtain (the box of cookies for sale) or the one that would be counternormative to obtain (the box of cookies carried by a stranger). The primary outcome was whether participants correctly identified the change.

Following past work (Jones et al., 2003), we expected that people with an eating goal would be more likely to notice the changed food object than people with an irrelevant goal, as people preferentially attend to and track objects in their environment that are relevant to their goals (see Aarts et al., 2001). More importantly, for the present

research, we hypothesized that, among people primed with an eating goal, people would be less likely to notice changes to the food object that would be counternormative (vs. normative) to obtain. This finding would suggest that social norms shape how people process their environment, decreasing attention to and tracking of even goal-relevant objects that would be counternormative to engage with.

To rule out simple visual salience as an alternative explanation for this effect, we also expected that participants primed with an irrelevant goal would be equally likely to detect changes to the two food objects. To rule out spatial location as an alternative explanation, we counterbalanced across participants the location of the food object that was normative versus counternormative to take.

Method

Study 3 is a preregistered replication of Study S4, which is reported in the Supplemental Materials. That study yielded similar results with smaller sample size and did not use counterbalancing (see https://aspredicted.org/VCG_5RR, for preregistration).
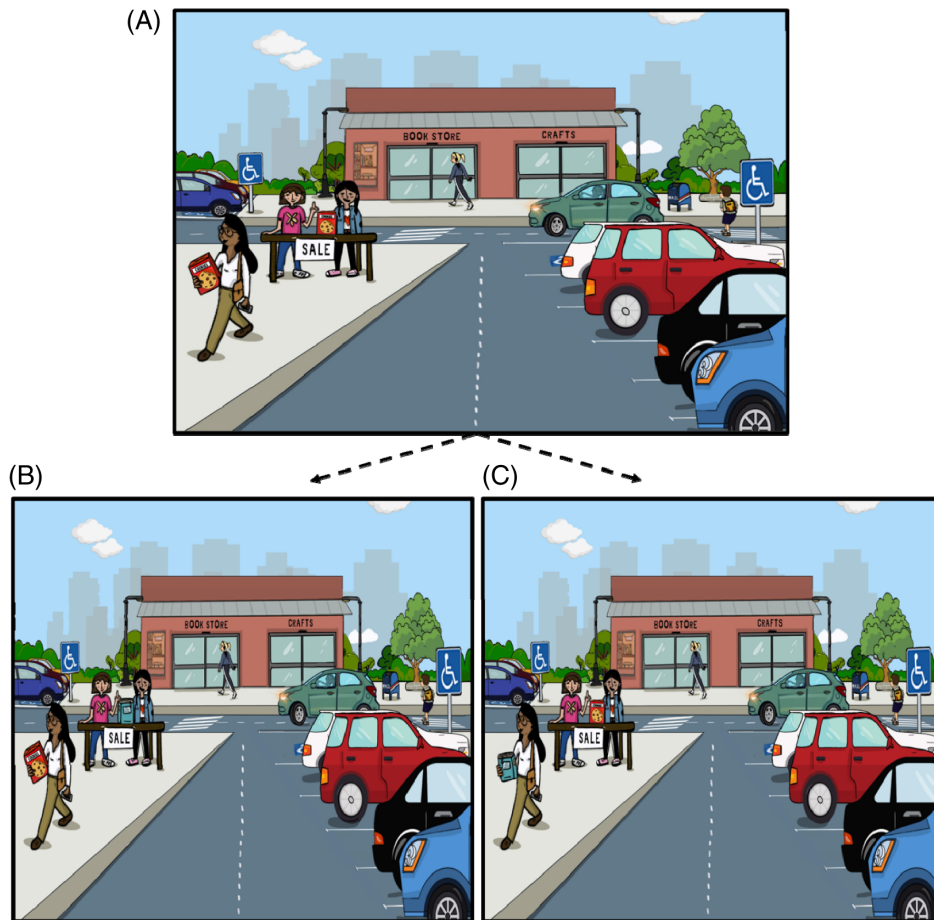
Participants

One thousand and five participants ($M_{age} = 41.74$, $SD = 13.62$; 41.1% female, 57.7% male, 1.1% nonbinary or other; .6% American Indian/Native American, 7.2% Asian/Asian American, 3.9% Hispanic/Latinx, 8.7% Black/African-American, 72.2% White, 6.1% multiple races, .6% other) were recruited from Amazon Mechanical Turk using CloudResearch (see Litman et al., 2017). Sample size was determined prior to data collection (predetermined to be 1,000 participants) and was based on a power analysis, which used simulations of pilot data to estimate the sample size needed to detect a significant interaction effect at least 80% of the time.

Materials

The primary materials are a set of animated cartoon scenes depicting a shopping center parking lot. Figure 3 displays one of the two counterbalanced versions of these images. Figure 3A is the base scene that all participants (in this counterbalancing condition) saw. It shows a busy parking lot with a few open spaces, two girls selling cookies at a table, and a woman walking away from the table holding a box of cookies. Figure 3B and 3C are the changed images. Either one or the other was presented to participants after the base image. They are identical to the base scene but for one change in each. In Figure 3B, the cookie box on the table has been replaced with a book. We refer to this as the "normative change" image because the object that was changed would have been normative to obtain—it would be normal and acceptable to buy a box of cookies. In Figure 3C, the cookie box in the woman's hand has been replaced with a book. We refer to this as the "counternormative change" image because the object that was changed would be counternormative to obtain—it is not normal or acceptable to take a box of cookies from a stranger.

Half of the participants saw the images presented in Figure 3 and half saw the counterbalanced images. These were identical except that the location of the sale table and the woman walking with the cookie box/book were switched. By counterbalancing the position of the normative and counternormative object across participants,

Figure 3
Images Shown to Participants in Study 3 (Counterbalancing Version 1)

Note. All participants first saw the base image (Image A). Depending on condition, participants were then presented with either Image B or C, each of which is identical to Image A but with one object changed. In Image B, the cookie box on the sale table has been replaced by a book. In Image C, the cookie box in the woman's hand has been replaced by a book. We refer to Image B as the normative change image, as it would be normatively acceptable to buy a box of cookies if one were hungry. We refer to Image C as the counternormative change image, as it would be counternormative to take cookies from a stranger. Half of the participants saw the images shown above; half saw images from a counterbalancing version, which differed only in swapping the location of the woman walking and the sale table. See the online article for the color version of this figure.

our design rules out simple spatial location as an alternative explanation for any differential identification of changes in these objects.

Procedure

Participants were asked to imagine themselves running errands, one of which was to stop at a bookstore and pick up a book as a gift for a friend. Participants were randomly assigned to one of two goal conditions. In the eating goal condition, participants were told,

> Imagine that it is mid-afternoon and you are walking up to a bookstore to pick up a book as a gift for a friend. You haven't eaten much today and are very hungry, so you want to grab a snack. Because you are hungry, you are hoping to find something you can eat at or near the bookstore.

In the parking goal condition, participants were told,

> Imagine that you are on your way home from work and have to make a stop at a bookstore to pick up a book as a gift for a friend. You are tired and eager to get home, so you want to make this a quick stop. Because you are in a hurry, you are hoping to find parking quickly.

To encourage elaboration on these goals, participants were presented with an open-ended question with the instructions, "Take a second to imagine yourself *hungry and looking for something to eat/tired and looking for parking*. Briefly describe what you would be thinking or feeling below."

Next, participants were told that they would see a scene drawn from a first-hand perspective and that their task was to imagine themselves in that scene with either a goal of looking for something to eat or looking for a place to park. They were told that the image

would remain on the screen for a short amount of time, after which the screen would automatically advance.

Following this goal induction, participants were presented with a screen that read either "Imagine that you are looking for something to eat … " or "Imagine that you are looking for parking … " This text remained on the screen for 2 s, after which the screen automatically advanced. On the next screen, participants saw the base image shown in Figure 3A (or the counterbalanced version). This scene was displayed for 10 s at which point the image was replaced with an X in the center of the screen and the instructions, "Take a short break … In a few seconds, we will show you the scene again. Remember you are looking for something to *eat/parking*!" This mask was displayed for 5 s after which the scene reappeared but with one object changed, either Figure 3B (normative change condition) or Figure 3C (counternormative change condition; or the counterbalanced versions of each). This second scene was displayed for another 10 s.

As stated in our preregistration, the primary outcome was whether participants correctly identified the change. To assess this, immediately following the presentation of the changed scene, participants were asked to indicate whether they noticed a change in the picture between the first and second presentations (Yes/No/I don't know). Next, they were asked, "If you did notice a change, what changed across the two presentations?" Participants were given space to write a response. Responses were coded for whether they correctly identified the object in the scene that had changed.

Next, as manipulation checks, participants were re-presented with the original base image and asked to indicate on a 5-point scale how focused they had been on trying to find parking and how focused they had been on trying to find something to eat ($1 = not at all$, $5 = extremely$). Participants were then asked to report how appropriate they thought it would be to buy cookies from the sale table and how appropriate they thought it would be to take cookies from the woman ($1 = extremely inappropriate$, $5 = extremely appropriate$). Finally, participants were asked to provide demographic information and any additional comments. Participants were then thanked and debriefed.

Results

Manipulation Checks

Validating the goal manipulation, participants reported being more focused on finding something to eat in the goal-relevant condition ($M = 4.50$, $SD = .76$) than in the goal-irrelevant condition ($M = 1.31$, $SD = .77$), $t(1,001) = 66.01$, $p < .001$, $d = 4.17$. Validating the manipulation of normative affordances, a paired sample t test revealed that participants rated buying cookies from the sale table as much more appropriate ($M = 4.13$, $SD = 1.00$) than taking cookies from the woman ($M = 1.25$, $SD = .75$), $t(1,004) = 71.89$, $p < .001$, $d = 2.27$.

Preliminary Analyses

There was no main effect of the counterbalancing variable and no three-way interaction between it, the goal-relevance manipulation, and the normativity manipulation ($ps > .40$). The pattern of results reported below was highly similar and held for both counterbalancing versions of the scenes.

Primary Analyses

We began by conducting the 2 (goal condition: eating- vs. parking-goal) × 2 (changed item: normatively afforded vs. not afforded) binary logistic regression on the likelihood that participants correctly identified the change in the scene. There was a main effect of goal condition: People were more likely to detect the change when the changed object was goal-relevant (eating goal condition) than when it was goal-irrelevant, parking goal condition; $b = 1.36$, $SE = .12$, Wald $\chi^2(1) = 118.47$, $p < .001$, conceptually replicating past research (Jones et al., 2003). There was also a main effect of the normative affordance: People were more likely to correctly identify the change when it occurred on a normatively afforded object (the cookie box for sale) than on the counternormative object, the cookie box held by a passerby; $b = .43$, $SE = .12$, Wald $\chi^2(1) = 12.18$, $p < .001$. These main effects were qualified by a marginal interaction between goal-relevance and the normative affordance of the changed object, $b = .21$, $SE = .12$, Wald $\chi^2(1) = 2.79$, $p = .09$. See Figure 4. Although we predicted this interaction to be significant, we attribute its marginal significance to the near floor rates of correct identification in the goal-irrelevant (find parking) condition (<5%), which sharply reduces the power to detect a noncrossover interaction using binary logistic regression (Hsieh et al., 1998). Nonetheless, given our preregistered analyses and the marginal significance of the interaction, we proceeded with testing our primary predictions by examining the simple effects of the normativity of the changed object in the goal-relevant and goal-irrelevant conditions.

As predicted, when the changed object was goal-relevant (i.e., participants were primed with an eating goal), participants were much less likely to correctly identify the change when it occurred on the counternormative object than when it occurred on the normatively afforded object (estimated probability of correctly identifying change 24.9% vs. 54.5%), $b = -.64$, $SE = .10$, Wald $\chi^2(1) = 43.82$, $p < .001$. Ruling out low-level visual features as an alternative explanation for this effect, there was no such effect of normative affordance among participants in the goal-irrelevant (parking-goal condition) condition (estimated probability of correctly identifying change 3.2% vs. 5.0%), $b = -.23$, $SE = .23$, Wald $\chi^2(1) = .98$, $p = .32$.

Discussion

Replicating past research (Jones et al., 2003), in Study 3, people were more likely to detect changes to an object when it was relevant to their goals than when it was not. However, the study revealed that people can become attentionally blind even to goal-relevant objects that would be counternormative to engage with. As shown in Figure 4, people were less than half as likely to detect changes in a goal-relevant object that was counternormative to act upon than one that was normatively afforded by the situation (observed probabilities of 25% vs. 55%).

A limitation of Study 3 is that the interaction between goal relevance and normative affordance was marginally significant; thus, conclusions should be appropriately cautious. We interpret this result as arising from the limitations of statistical power to detect an interaction in a binary logistic regression with exceptionally low rates of correct identification in the goal-irrelevant condition (4.1%). Nonetheless, overall, we see the results as providing strong support for our hypothesis that norms can blind people to even goal-relevant

Figure 4

Estimated Probability of Correctly Identifying the Change in the Cookie Box (Study 3)
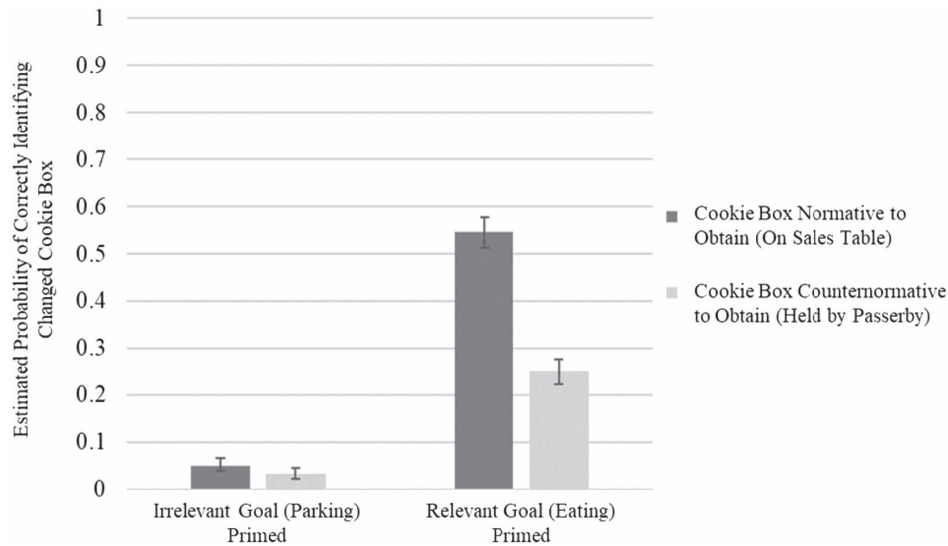
Note. Figure shows estimated probability of correctly identifying that the cookie box changed as a function of whether participants were primed with an eating goal or not and whether the cookie box was normative to obtain (for sale) versus not (a strangers). Error bars represent standard errors.

objects in their environment. Confidence in this interpretation is bolstered by the fact that these results closely replicate those of Study S4 reported in the Supplemental Materials.

Study 4: Can Norms Offload Burdens of Self-Control?

If behaviors that are counternormative in a context go unconsidered, then can norms foreclose temptations whose consideration may otherwise interfere with people's ability to work toward their goals? To begin to explore this question, Study 4 examined people's experience of temptation and conflict in the paradigmatic self-regulatory domain of healthy eating. When presented with tasty but unhealthy foods, many people experience a self-control conflict between the temptation to eat something delicious and their over-arching goal to maintain good health. Navigating this conflict and inhibiting the urge to indulge in the temptation can be burdensome and depleting, as well as liable to fail (Baumeister et al., 1998; Baumeister & Heatherton, 1996). In fact, past research shows that the people who are most successful at self-control are those who avoid self-control conflicts all together (Hofmann et al., 2012). By removing tempting behaviors from consideration, can social norms reduce people's experience of temptation and self-control conflict as they consider tasty but unhealthy foods?

To address this question, we obtained a clinically relevant sample: participants from registries maintained by the Diabetes Research Center at a large medical school. These participants identified healthy eating as a major self-regulatory concern. The sample included both people who were dieting and people with medical conditions such as diabetes, for whom healthy eating has particular self-regulatory importance. Participants were asked to respond to scenarios that presented them with tasty but unhealthy foods both in situations in which consuming the food would be normatively

acceptable (e.g., having donuts at a work meeting after a colleague offered them) or strongly counternormative (e.g., taking snacks from a youth soccer game where there were only enough snacks for the kids). Participants reported how tempted they would be by the unhealthy food, how difficult it would be for them to resist the food, and how much self-control conflict they would experience. We predicted that people would be less tempted by unhealthy foods, find them easier to resist, and experience less self-control conflict in contexts where consumption was counternormative than in contexts where consumption was socially acceptable. Moreover, we predicted that participants would report being less likely to eat the unhealthy food when doing so was counternormative.

Method

Participants

Two-hundred and nine participants ($M_{age} = 57.75$, $SD = 13.17$; 78.5% female, 21% male, .5% nonbinary; .5% American Indian/Native American, 11% Asian/Asian American, 6% Hispanic/Latinx, 1% Black/African American, .5% Native Hawaiian/Other Pacific Islander, 75% White, 5% multiple races, 1% other) were recruited from the Diabetes Research Center at a large medical school at a West Coast University. Participants were recruited through an email sent to two registries maintained by the research center. These registries included people with Type I or II diabetes, prediabetics, and people who self-selected into a registry to participate in nutrition-based studies and behavioral interventions. We planned to collect a minimum of 100 participants (which would provide over 95% power to detect a within-subjects effect size of $d = .40$) but included all participants who completed the survey within a day of receiving the recruitment email. We stopped data collection 1 day after the recruitment email was sent to the second registry.

Half of participants in our sample self-identified as currently dieting; 91% reported at least somewhat trying to reduce consumption of unhealthy foods ($M = 3.91$, $SD = .94$ on a 5-point scale: $1 = not at all$; $5 = very much$); and 97% reported that unhealthy, but tasty, foods presented at least "a little bit" of a self-control conflict for them ($M = 3.36$, $SD = 1.03$ on a 5-point scale: $1 = not at all$; $5 = very much$).

Materials

The materials used in this study are shown in Table 2. We created four pairs of scenarios, each of which presented participants with the prospect of consuming a tasty but unhealthy food. In one scenario in each pair, consumption of the unhealthy food was permitted by the social norms of the situation and in the other consumption was strongly counternormative.

A pilot study conducted before Study 4 verified the normativity manipulation. In each scenario pair, pilot participants ($N = 50$)

perceived consumption of the food to be more rude, less normal, and more inappropriate in the counternormative version than in the normative version (ps for each scenario $< .001$; ds range from 1.26 to 2.67). Similarly, participants estimated that a smaller percentage of other people would consume the food in the counternormative version of each scenario (ps for each scenario $< .001$; ds range from 1.43 to 2.14).

Procedure

Participants were presented with either the normative or the counternormative version of each of the four scenarios shown in Table 2. Each participant responded to two scenarios in which food consumption was normative and two in which consumption was counternormative. Which version of each scenario participants saw was fully counterbalanced across participants and the order of presentation was randomized.

Table 2
Scenarios From Study 4

Scenario name	Scenario	Target behavior
"Donuts at work"	Work meeting: Imagine that you are attending an in-person work meeting with several colleagues in the middle of the afternoon. You arrive a few minutes early. When you walk into the room, there is a large table in the center with some people sitting around it, talking to each other as they settle in. You take an open seat. As you sit down, you see one of your colleagues has a donut box in front of him. Another colleague says, "Donuts?" *{Normative version}* The first colleague says, "Yeah, they're a bunch left over from an earlier meeting with some clients. Feel free, anyone." *{Counternormative version}* The first colleague says, "Yeah, they're a bunch for a meeting after this with some clients."	Take a donut
"Lunch dessert"	Midday lunch with friends: Imagine that you are out at lunch with a couple of friends in the middle of the week. It is a beautiful day outside and you are eating on a patio. You have just finished your main course and are feeling good about having eaten a reasonably healthy lunch. The waiter comes by and asks if you would like to order dessert. The waiter lists several items. There is a ganache chocolate cake, a crème brûlée, bread pudding, ice cream, and more. *{Normative version}* Your two friends look happy to stay for a while. Both say yes, and each orders a dessert. *{Counternormative version}* Your two friends look like they are ready to wrap up the meal and leave. Both say no thanks, and neither orders a dessert.	Order a dessert
"Extra helping at dinner"	*{Normative version}* Casual dinner party: Imagine that your friend is hosting a casual dinner party where five dishes will be served. The host brings the food out from the kitchen to a side table. She invites each guest to help themselves. You find two dishes good, but you especially like the third dish. You finish your helping quickly. *{Counternormative version}* Formal dinner party: Imagine that your friend is hosting a formal dinner party where five courses will be served. The host brings the food out from the kitchen to a side table. She sets out the first course on carefully arranged plates and serves it to each guest. The first two courses are good, but you especially like the third course. You finish your serving quickly.	Take a second helping
"Cookies at a youth soccer game"	Youth soccer game: Imagine that you are at a soccer game for your niece. The kids play hard and have fun. After the game, one of the parents lays out snacks on a picnic table for everyone. The snacks include a batch of fresh-baked homemade cookies. *{Normative version}* There is plenty of food, and enough cookies for both kids and adults to have a few. *{Counternormative version}* There is enough food for the kids, and just enough cookies for each kid to have one.	Take a cookie

For each scenario, participants were provided 5-point scales to answer the following four questions: (a) how tempted would you be to consume the food (i.e., take a donut/order a dessert/take another helping of the third dish/take a cookie; 1 = *not at all tempted,* 5 = *extremely tempted*); (b) how difficult would it be to resist consuming the food (1 = *not at all difficult,* 5 = *extremely difficult*); (c) how much self-control would it require for you to not consume the food (1 = *none at all,* 5 = *an extreme amount of self-control*); and (d) to what extent would this situation create a self-control conflict for you (1 = *not at all,* 5 = *very much so*). For each scenario, these four ratings were combined to form a single measure of the extent to which the situation created an experience of self-control conflict. This composite was reliable for each scenario (donuts at work α = .94; lunch dessert α = .95; extra helping at dinner α = .92; cookies at a youth soccer game α = .92). Additionally, for each scenario, participants reported how likely they would be to do the target behavior (take a donut/order a dessert/take another helping/take a cookie). Finally, participants were asked to provide demographic information and information about their dieting habits. They were then debriefed.

Results

First, we tested whether people would report experiencing less self-control conflict when presented with a situation in which consuming unhealthy food was counternormative than when it was normative. To do so, for each participant, we averaged the composite experience of self-control conflict measure for the two scenarios in which consumption was counternormative and the two in which consumption was normative. We then submitted these averages to a within-subjects *t* test. As shown in Figure 5, participants reported that they would experience much less self-control conflict about consuming tasty but unhealthy foods when doing so would be counternormative (*M* = 1.71, *SD* = .67) than when it would be normative (*M* = 2.67, *SD* = .92), paired *t*(209) = 14.34, *p* < .001, *d* = .99.

The same effect arose for consumption. Using the same analytic approach, we found that people reported they would be less likely to consume unhealthy but tasty foods when doing so would be counternormative (*M* = 2.06, *SD* = 1.20) than when doing so would be normative (*M* = 4.01, *SD* = 1.66), paired *t*(209) = 15.17, *p* < .001, *d* = 1.05. See Figure 6.

Additionally, illustrating the impact of experiencing temptation on self-regulation, people's self-reported likelihood of consuming the unhealthy food was strongly predicted by how much self-control conflict participants said they would experience (correlations for the four scenarios ranged from *r* = .77 to .82).

These effects were replicated using a between-subjects analysis. When we examined experience of self-control conflict and likelihood of indulging in unhealthy foods for each scenario separately, we found that the effect of counternormativity was statistically large and robust for all four scenarios (*d*s ranging from .70 to 1.38, see Figures S5 and S6 in Supplemental Materials).

Study 5: Can Norms Be Intentionally Implemented to Reduce Self-Control Conflict and Support Everyday Self-Control?

Study 4 showed that not only can social norms increase people's likelihood of sticking to health goals in the face of tempting foods;

Figure 5

Average Amount of Self-Control Conflict Around Unhealthy Food Consumption (Study 4)
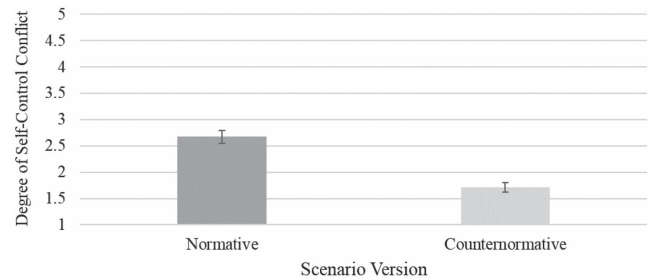
Note. Figure shows the average amount of self-control conflict participants said they would experience around unhealthy food consumption when taking the food was normative versus counternormative in context. Error bars represent 95% CIs (confidence intervals).

they can also transform the experience of resisting temptation to be relatively effortless and free from conflict. Examining a different self-regulatory context, Study 5, a field study, tested whether it is possible to introduce a social norm intentionally in a real-world context to reduce conflict and support self-regulation.

To do so, Study 5 examined the use of technology in the classroom. Technology such as laptops and cellphones poses a self-control conflict for many students, where the motivation to pay attention and learn competes against the temptation to multitask and succumb to distractions. Although technology can aid students' learning, it can also tempt students to engage in off-task activities, such as browsing social media, which harm learning (Ravizza et al., 2017; Sana et al., 2013). Even if students do not actually engage in such behaviors, merely considering and having to inhibit the urge to multitask may be distracting. Moreover, the effort required to inhibit this urge may leave students depleted and less able to focus on learning (e.g., Baumeister et al., 1998). Could changing social norms around technology use in class reduce students' urges to multitask using technology?

Figure 6

Average Self-Reported Likelihood of Consuming Unhealthy Food (Study 4) Across the Four Scenarios When Consuming the Food Was Normative Versus Counternormative in Context (Study 4)
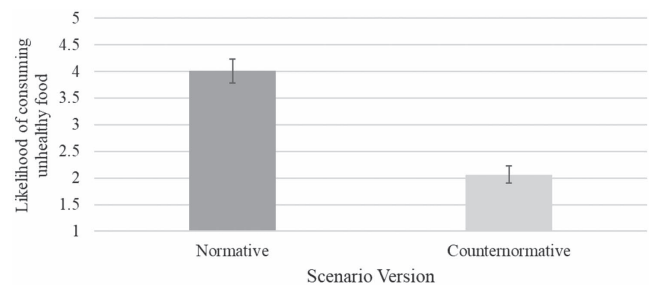
Note. Figure shows the average self-reported likelihood of consuming unhealth food across the fours scenarios in Study 4 when consuming the food was normative versus counternormative in context. Error bars represent 95% CIs (confidence intervals).

Study 5 extends the previous studies in three important ways. First, it provides a real-world field test of our theory by examining whether social norms can mitigate actual temptations to multitask among students in class. In doing so, the norm intervention aimed to reduce the extent to which students experience self-control conflict and temptations to multitask, as well as their actual multitasking behavior.

Second, if social norms are to be deployed intentionally to help solve self-control problems, a critical question involves the flexibility of our proposed process. Here we test whether even newly implemented norms can reduce the extent to which counternormative behavior is considered. That is, are people's representation of the behavioral affordances of situations responsive to new norms or just norms that have been learned over development?

A third question that becomes critical for an application involves how people perceive social norms that regulate behavior once they are in place. In Study 5, the new norm discourages multitasking behavior and reduces the range of behaviors that are acceptable in the classroom. While people often anticipate negative reactions to normative pressure and policy directives, past research suggests that, once in place, support for restrictive policies (e.g., bans on public smoking and plastic water bottles) often rises, even with a few days of their enactment, as people come to rationalize the new status quo (Laurin, 2018; see also Fong et al., 2006). Will students experience a no-tech norm as an undesirable constraint on personal freedom? Or will they find the norm beneficial and support its implementation elsewhere?

In the present study, we worked with a large university lecture course to examine the effect of changing social norms about technology use. The study spanned two terms of the same course (each term with new students). In the first term, we implemented an individual approach to help students develop and commit to personal goals and strategies regarding technology use in class. Although students expressed strong motivation to avoid multitasking in class, both the temptation to multitask and multitasking remained high and were not reduced relative to a randomized control condition (see Study S5). In a second term of the same course, we had the instructor explicitly establish a course norm against personal technology use. Importantly, this was not specifically enforced: Students were not penalized or "called out" if they violated the norm, and students could exempt themselves from the norm if they deemed it necessary. We thus conceptualize this as an informal course policy, established by the instructor, that sets a norm for the class about how to behave in class.

In general, rules or policies can be one way that groups or institutions seek to establish social norms. That said, this field context does not permit the precision of the prior studies in the independent variable and, in some ways, the course policy can be seen as a rule. For instance, if a student sought an exemption, they would have to ask the professor for this. In this respect, the course policy integrates a psychological affordance (no-tech norm) with a physical affordance (the hassle of having to ask for an exemption). From this perspective, the primary contribution of Study 5 is less in providing a narrow test of our theory than in examining how this theory can be implemented as a change in practice in an important real-world setting. Whether formally or informally, people in leadership positions are often uniquely positioned to set norms that shift community behaviors in ways that are visible to all and can become self-reinforcing. As we will see in our results, indeed, this

manipulation was effective in creating a norm, as students in the no-tech classroom reported using technology significantly less than those in the control term.

A limitation of Study 5 is that the no-tech norm could not be implemented on a randomized basis to individual students within class. Instead, it was implemented in one term and not the other. This methodology, termed "improvement science," is common in education as schools seek to improve over time (Bryk et al., 2015). However, it creates some ambiguity about the causal relationship. For instance, there could be unobserved differences between classes. Thus, we see the ecological validity of Study 5 as complementing the clean causal test in Study 4. Moreover, confidence in causal inference is enhanced by the fact that important features of the course were matched across terms, including instructor, content, school, academic term, class size, and student demographics (see Table S5 in Supplemental Materials). We also conducted the same comparison across two terms at a second university and found similar results (see Study S6 in Supplemental Materials).

It is also possible that dependencies within conditions could contribute to the effects, as students interact within class. Indeed, as noted above, part of the goal is to establish a norm that then becomes self-fulfilling within the class community.

Method

Participants

Participants were 494 students (44% male) enrolled in a large university lecture course. A total of 246 students were in Term 1, which served as a control condition, and 248 different students were in Term 2, when we implemented the "no-tech" social norm. The sample size was limited to the number of students enrolled each term who consented to the analysis of their data.

Procedure

In Term 1, the instructor set no expectation about whether laptops should be used in class; the syllabus simply requested that students "avoid multitasking during class, such as checking email, using social media, video, web browsing, texting, chat programs, etc." All students learned in an early lecture on research methods about scientific research showing that multitasking can harm learning. Half of the students were additionally randomized to read information about "distraction pollution" (how one student's multitasking can harm other students' learning) and to reflect on testimonials from other students endorsing situation-modification strategies to enhance self-control (such as taking notes on article, turning off WiFi, and putting cell phones on airplane mode). This additional randomized element had no lasting effect on students' experience of temptations to multitask or multitasking behavior (see Study S5 in Supplemental Materials).

All students in Term 1 were asked to write plans for their technology use in class. These elements make for an especially rigorous comparison—all students were aware of the costs of multitasking for learning and encouraged to intentionally address the self-regulatory challenge that multitasking could present. Indeed, in Term 1, students reported high motivation to avoid multitasking in class—75% said that it was "very" or "extremely"

important to them to avoid multitasking in class, and 65% reported being "very" or "extremely" motivated to do so.

A new set of students enrolled in Term 2. This term had the same instructor and course content as Term 1. In Term 2, as in Term 1, students learned in an early lecture about how multitasking can harm learning. However, in Term 2, the professor also introduced a clear norm against technology use. She simply stated that laptops, tablets, and cell phones should not be used in class and justified this position by reference to the detrimental effects of multitasking on learning. However, there was no penalty for using technology, and any student could request to do so if they felt it would help their learning (some did, and each agreed to use their devices for notetaking only and to be thoughtful about their seating in the lecture hall). Instructors reported that the no-tech norm was adhered to by students, the vast majority of whom visibly did not use technology in class.

Dependent Measures

Our primary interest was whether the no-tech norm reduced the temptation students reported to multitask. We also assessed students' self-reported multitasking behavior.

In both terms, to ensure high response rates, students were offered extra credit to complete surveys distributed in Weeks 5 and 13–14. To encourage honest reporting and reduce demand processes, students completed the surveys online in a private setting and were assured that their responses would be viewed anonymously and would not be tied to their course outcomes in any way.

These surveys assessed multitasking behavior: (a) how many times students initiated multitasking with technology in a typical class and (b) how many minutes, out of each 75-min lecture, they spent "multitasking with your [laptop/phone], on average" (two items, summed). They also assessed temptations to multitask: (c) how tempted students were to multitask in class over the prior 2 weeks (1 = not at all, 5 = very); and (d) how tempted they were to engage in eight specific multitasking activities during class (e.g., "texting," "reading the news"; 1 = not at all, 5 = very). An end-of-term course evaluation (Week 15) further assessed how many times, during an average lecture, students experienced an urge to use their laptops and phones to engage in non-course-related multitasking activities.

This end-of-term course evaluation also assessed the degree to which students thought a no-tech policy would be "beneficial for future students" (1 = not beneficial at all, 5 = extremely beneficial); would infringe "too much on students' freedom" (1 = strongly disagree, 7 = strongly agree); whether they would support a no-tech policy for future terms of this class (1 = strongly oppose, 7 = strongly support); and whether they would support making no-tech the default for lecture courses at their university (1 = strongly oppose, 7 = strongly support). The course evaluation also asked students for any open-ended observations they would like to share about a course no-tech norm. A total of 449–471 students responded to these surveys.

Results

Data Analysis

Because the multitasking behavior and urge measures were skewed, these data were analyzed using nonparametric tests (Wilcoxon rank sum tests), and medians rather than means are reported. To correct a survey programming error, data were imputed for some

students on the "minutes multitasking" questions; results remain significant using the original uncorrected data (see Study 5, for additional details in Supplemental Materials).

Multitasking Behavior

The no-tech norm successfully reduced multitasking (Table 3A). At each time point, students reported initiating multitasking less often and spending less time multitasking in the no-tech classroom than in the classroom where laptop use was normative. To illustrate, when technology was normative students reported multitasking for a median of 11 min per 75-min class by Weeks 13–14, but just 3 min per class when there was a no-tech norm, $U = 38,778, p < .001$. Examining means, students in the former classroom reported spending an average of 24% of class time multitasking ($M = 17.82$ of a 75-min class), as compared to 10% with the no-tech norm ($M = 7.44$ min), $t(371.54) = 6.745, p < .001$. These findings demonstrate both that the norm was effectively established—descriptively, there was less tech use in the no-tech classroom than in the control classroom—and that the professor's induction of the norm impacted students' behavior.

Temptations to Multitask

Our primary research question involved students' experience of temptation as the norm shifted. Importantly, the norm did not merely promote compliance. It also reduced students' temptation to multitask at each time point (Table 3B). For example, in the term in which laptop use was normative, most students (69%) reported experiencing at least one laptop-related multitasking urge per lecture. But with the no-tech norm, this dropped to 38%, $\chi^2(1) = 41.74, p < .001$. That is, most students (62%) reported experiencing no such urges.

Evaluations of the No-Tech Norm

How do people who experience "social regulation" view normative constraints? Consistent with evidence that people often come to support restrictive policies once they are in place (Eidelman & Crandall, 2012; Fong et al., 2006; Laurin, 2018), students who experienced the no-tech norm strongly endorsed it: 87% supported its implementation in future terms, compared to 29% of students in the term in which laptops were normative, $\chi^2(1) = 152.94, p < .001$. They were also more likely to view a proposed no-tech policy as beneficial, 97% versus 61%, $\chi^2(1) = 84.7, p < .001$, far less likely to view it as infringing excessively on students' freedom, 19% versus 69%, $\chi^2(1) = 113.73, p < .001$, and far more likely to support making it the default in lecture classes at their university, 73% versus 27%, $\chi^2(1) = 91.92, p < .001$. These values represent dichotomized scale responses; means produce the same results, with large effect sizes (Table 3C). As shown in Table 4, students' open-ended evaluations further reveal how students' evaluations shifted with the implementation of a no-tech norm.

Discussion

Study 5 shows how norms can be implemented intentionally to support students' efforts to concentrate in class. In this case, a norm of not using technology during class reduced the extent to which students even considered distracting behaviors like texting or

Table 3
Results From Study 5

Time point	Measure	Laptops normative + personal plan	No-tech norm	Statistical test
		A. Self-reported multitasking		
Week 5	Median times initiating multitasking in a typical class	4 times [2, 6]	3 times [1, 5]	$U = 31,814, p < .001$
	Median minutes multitasked on laptop or phone per 75-min class	10 min [3.75, 18]	5 min [1, 11.75]	$U = 31,509, p < .001$
Weeks 13–14	Median times initiating multitasking in a typical class	4 times [2, 6]	2 times [0, 4.75]	$U = 36,320, p < .001$
	Median minutes multitasked on laptop or phone per 75-min class	11 min [5, 23]	3 min [0, 10]	$U = 38,778, p < .001$
		B. Temptation to multitask		
Week 5	Temptation to multitask in class in general over the past 2 weeks (1–5 scale)	2.70 (1.09)	2.35 (1.06)	$t(464.38) = 3.47, p < .001, d = 0.32$
	Average temptation to engage in 8 specific multitasking behaviors in class (1–5 scale)	1.87 (0.55)	1.72 (0.52)	$t(467.01) = 2.99, p = .003, d = 0.28$
Weeks 13–14	Temptation to multitask in class in general over the past 2 weeks (1–5 scale)	2.91 (1.15)	2.44 (1.05)	$t(462.83) = 4.66, p < .001, d = 0.43$
	Average temptation to engage in 8 specific multitasking behaviors in class (1–5 scale)	1.96 (0.60)	1.71 (0.57)	$t(466.70) = 4.60, p < .001, d = 0.42$
Week 15	Median number of urges to multitask on a laptop or phone during an average class	10 [4, 23]	5 [2, 10]	$U = 32,752, p < .001$
		C. Evaluation of a no-tech policy		
Week 15	No-tech policy would be beneficial for future students (1–5 scale)	2.40 (1.41)	4.29 (1.02)	$t(400.31) = 16.38, p < .001, d = 1.55$
	No-tech policy would infringe too much on students' freedom (1–7 scale)	5.01 (1.71)	2.85 (1.67)	$t(449.95) = 13.61, p < .001, d = 1.28$
	Support for no-tech policy in this course in future terms (1–7 scale)	3.23 (2.11)	6.10 (1.45)	$t(389.92) = 16.84, p < .001, d = 1.59$
	Support for no-tech policy as default in lecture classes (1–7 scale)	3.21 (1.99)	5.40 (1.79)	$t(444.83) = 12.32, p < .001, d = 1.16$

Note. Standard deviation indicated in parentheses; interquartile range indicated in brackets (*Ns* for each measure = 449–471). Medians are examined where measures were skewed. Welch-adjusted *t* tests used, not assuming equality of variance.

checking their email during class. This reduction in conflict is important both for theory and application. First, it provides further evidence that norms constrain the behavioral choice set, extending Studies 1–4. Second, the need to fight the urge to pull out one's phone in the middle of class may itself be distracting and detrimental to learning (see Baumeister et al., 1998; Muraven et al., 1998). By offloading the burden of self-control to the social context, social norms facilitated immersion in the class, freeing up cognitive resources for students to pursue the learning goals that brought them to the class in the first place.

General Discussion

The present research suggests a novel and powerful mechanism by which social norms influence behavior—namely, by constraining what behaviors are considered and can become tempting in a situation. Across diverse everyday behaviors and social contexts, norms accounted for nearly all of the variability in the extent to which people reported they would think of and would want to do a wide range of need-meeting behaviors (Study 1). The influence of norms penetrates so deeply that behaviors that are rare and socially inappropriate in a context may be mistaken as "impossible" (Study 2). Moreover, people may remain cognitively "blind" to objects that would be counternormative to engage with, even if they would help address one's current motivations (Study 3). The results suggest

that, to a significant extent, behaviors that would be counternormative in context are excluded from consideration.

The finding that social norms can effectively exclude behaviors from consideration has major implications for self-regulation and goal pursuit in social contexts. In effect, norms can offload individual burdens of self-control to the social context. In Study 4, people striving to eat healthily reported that the very same tasty but unhealthy foods became less alluring and easier to resist when their consumption would violate situational norms. In Study 5, a field study, when norms against using outside technology were instituted in a college classroom, students did not just comply; they felt far less tempted to multitask and were less likely to experience distracting urges to engage in behaviors like texting or checking social media during class. Furthermore, students endorsed the goal-supporting constraints the norm imposed.

Can Normative Constraints "Free" People to Pursue Their Goals?

Much classic research casts people as free when they are unconstrained by the situation or by other people. From this perspective, social influence can be a source of irrationality (Asch, 1952), laziness (Latané et al., 1979), and immorality (Milgram, 1974). Yet, the present research invites us to reconsider the fundamental

Table 4
Students' Sample Open-Ended Comments Regarding a No-Tech Policy (Study 5)

Laptops normative	No-tech norm
• "I feel like it is the student's responsibility to show some discipline with technology during class." • "Students should be free to make their own choices." • "It ultimately should be the student's choice" • "It is a student's choice whether they want to risk the distraction of technology" • "It's a great way to treat college students like children" • "We are at an age where we should be able to decide what is best for us" • "Don't do it. The students are adults." • "Prohibitions are inherently flawed" • "It would backfire" • "People would be more inclined to use technology if they were specifically told not to" • "As college students, we have a right to choose the best note taking method that works" • "If students choose to do other things, that is their own choice"	• "I like it a lot. Class seemed more engaged" • "Loved it! Made the class more involved, interested, and even more respectful (I think) towards our professor" • "Gives me a more focus-able environment that is less distracting for when I learn, especially when compared to other lecture classes without this policy" • "Tech policy is most useful from the perspective of not being distracted by other people browsing/doing stuff on their computers around me" • "Made it easier for me to focus" • "I think it created an extremely comprehensive environment and facilitated heightened learning in lecture. I strongly support it and wish all my lecture classes were no-tech" • "Extremely helpful in helping me learn" • "I absolutely loved it even though I was initially against it. It was so helpful in making sure I was paying attention" • "I truly thought it was helpful and I learned more than I would have" • "I was opposed to it at first, but as the semester went on, I realized I was much more engaged and was learning the concepts much more efficiently" • "I think it really helps you be fully engaged and immersed in the material"

relationship between the person and the situation. Just as people construct physical spaces that afford goal pursuits, such as doorways that fit a typical person (Gibson, 1977), groups, institutions, and societies construct norms that constrain options to support individuals' goal-directed efforts. For example, norms about the timing of alcohol consumption discourage daytime inebriation, freeing people from a temptation that might otherwise be counterproductive and difficult to resist (Hofmann et al., 2012). Similarly, the norm of quiet focus in a library constrains behavior to facilitate reading and studying, whereas norms in group fitness classes constrain behavior to facilitate exercise. Groups and institutions create these spaces to free individuals to pursue valued goals. Individuals enter them to make progress toward these goals. In ideal circumstances, institutions and leaders can introduce social norms intentionally to preclude alternative behaviors from consideration, foreclosing temptations that could otherwise prove distracting and thus free individuals to pursue their goals (Study 5).

The foregrounding of social norms' influence on experiences of temptation places the present work within a growing literature that highlights social influences on self-regulation (e.g., Fitzsimons & Bargh, 2003; Fitzsimons & Finkel, 2010; vanDellen & Hoyle, 2010). Previously, much research has focused on intrapsychic processes involved in self-control and behavior regulation, such as the availability of internal resources (Baumeister et al., 2007), individual mindsets and belief systems (Fujita et al., 2006; Job et al., 2010), and other cognitive and motivational processes (Carver & Scheier, 1982; Metcalfe & Mischel, 1999; Trope & Fishbach, 2000). Past research has also highlighted individual differences in trait self-control (Mischel et al., 1989; Tangney et al., 2004). In contrast, our work highlights the deep role that the social context plays in defining what behaviors do and do not pose a self-control challenge in the first place.

Implications for Social Policy

The idea that norms can influence the extent to which a behavior even comes to mind or becomes tempting suggests a powerful way to reduce self-control challenges: change norms to discourage behaviors that people struggle to regulate on their own.

Historical examples suggest this opportunity in public health contexts, where top-down policy change in laws, institutional policies, and directives from authority figures have contributed to shifts in social norms (see Tankard & Paluck, 2016). For example, rates of seat belt wearing in the United States rose dramatically after mandatory seat belt laws were implemented, a change that has saved thousands of lives (Centers for Disease Control & Prevention, 2011). Our research suggests the subjective experience that may have co-occurred with and contributed to this change in norms: rather than needing to make a conscious decision weighing the personal risks and benefits of buckling up each time they enter a car, we theorize that many Americans now put on a seat belt without a thought of doing otherwise. Likewise, smoking rates have declined in the United States over the late 20th and 21st centuries, a decline attributed to public health campaigns and policy changes designed to make smoking more expensive, less convenient, and not cool—not normal (U.S. Department of Health and Human Services, 2020; Hoek et al., 2022). Compared to the social context of the 1960s—when negative health effects of smoking had been reported yet smoking was common, widely accepted, and widely promoted in advertising and media—the present-day social context may make it easier and less burdensome to resist starting smoking, at least in many social settings. These examples illustrate the opportunity for policy-driven norm changes to support public health goals by making the choice of healthier and safer behaviors so routine and automatic as to not even feel like a conscious decision.

But what about individual freedom and personal responsibility? Particularly, in the United States, policies that seek to curtail unhealthy or risky behaviors are often seen as infringing on personal freedom and thus undesirable (Hook & Markus, 2020). Notably, the implementation of both antitobacco laws and seat belt laws initially incited heated debate over the appropriate role of government in influencing individual choices (Friedman et al., 2015; Mejia et al., 2014; Oreskes, 1984). Yet, support for such measures has risen over

time. Perceptions of what constitutes an infringement on freedom depend, to some extent, on the current status quo: As we have noted, in general, once policies are firmly in place, people become more likely to endorse them (Eidelman & Crandall, 2012; see also Fong et al., 2006), in part because people rationalize the status quo (Laurin, 2018). In the present research, we examined circumstances in which norms can reduce experiences of unwanted temptations and thus support individual goal pursuit. Perhaps personal experience with this benefit—as illustrated by students' open-ended comments in Study 5—serves as another mechanism by which norms that constrain risky or problematic behaviors can come to be viewed more favorably once in place.

In what other settings could norms be harnessed to serve personally and socially valued goals? And how can researchers, institutional leaders, and policymakers implement appropriate norms in these contexts effectively to support individuals' self-regulatory efforts? These are important questions for future research and policy.

It is worth considering, for instance, how such steps in some cases have been, could have been, or could still be taken to establish norms around protective behaviors in the COVID-19 pandemic—including to promote social distancing, mask-wearing, self-quarantining, and vaccinating (see Drury & Stokoe, 2022; Latkin et al., 2022; Neville et al., 2021; Young & Goldstein, 2021). These practices can pose self-control conflicts: While they can protect the self and others against a potentially serious illness, they may also pose short-term costs, such as forgoing social events or not seeing loved ones. In at least some cases, it has been possible to establish strong norms around these practices (e.g., in Japan, see Rich & Dooley, 2022). More broadly, societies with "tight norms"—those that have strong norms and a low tolerance of norm-violating behavior (Gelfand et al., 2011)—have had citizens with more positive psychological experiences during the COVID-19 pandemic and fewer cases and deaths (Gelfand et al., 2021; Liu et al., 2022). It may be easier to implement strong norms in tight-norm cultures in response to new demands, such as a global pandemic. In turn, well-implemented norms may help individuals resolve conflicts before they arise and, thus, both promote individual and public health by reducing transmission and free individuals from the burdens of innumerable difficult and stressful decisions. Conversely, our research implies the consequence of a failure to fully or evenly implement such norms both in worse individual and public health and in increased self-control and societal conflict.

Our research has examined social norms as perceived by an actor. However, as noted, the influence of norms on what options come to mind is often supported by, and can be even inseparable from, other aspects of the context, including physical affordances (what behaviors the physical environment makes easier or harder to do); moral concerns; and formal, well-enforced rules that define what is and what is not allowed. For example, the norm of not walking onstage during a Broadway performance may be reinforced by a lack of stairs from the audience to the stage, by the belief that disrupting others' enjoyment of the performance would be wrong, and by institutional actors who enforce rules against such trespass (e.g., security guards). Insofar as such mutual reinforcement of psychological and physical affordances has especially strong and robust influences on behavior (see Markus & Kitayama, 2010; Walton & Yeager, 2020), reforms that seek to implement new norms to promote personal and public health or other valued outcomes may attend to all these aspects (e.g., Are seat belts installed in

cars and easy to use? Are cigarettes available for purchase only in a few, well-regulated spaces? Are face masks readily available? Are they required?).

Finally, while we have emphasized situations where strong norms may smooth functioning and serve important individual, institutional, and societal needs, clearly the power of norms to regulate behavior is not inherently good. If a situation serves harmful ends, strong norms may prevent people from challenging an immoral status quo (Arendt, 1964; Milgram, 1974). It is thus also valuable to identify ways individuals can resist or change strong immoral social norms (Spreitzer & Sonenshein, 2004).

Conclusion

Humans are deeply interdependent beings who rely on coordinating and cooperating with others to survive, achieve desired goals, and maintain well-being (Baumeister & Leary, 1995; Tomasello, 2014; Williams, 2009). As a consequence, social coordination is an omnipresent concern, and mechanisms that support it are routinely accessed in navigating daily life. Social norms provide one such mechanism (see Axelrod, 1986; Davidson & Kelly, 2020; Ullmann-Margalit, 1977)—they help set ground rules to ensure that individual needs and goals are generally pursued in ways that do not conflict with other people's goals or with collective goals. As a consequence, we theorize, social norms are routinely and automatically integrated into people's representations of the behavioral affordances of situations. Here, we show that, in pursuing even basic individual needs such as to eat, to drink, or to sleep, people's very awareness of the behavioral options that would meet their needs is constrained by norms in social situations. In so doing, social norms operate in the background in nearly every context, shaping the expression and fulfillment of personal motivations in ways that maintain social harmony.

Crucially, social norms are not fixed features of social environments. Nor are they exogenous to people. They are made *by* people, including institutions and other sociocultural actors. When we reflect on our values and goals as individuals and as collectives, we can construct norms *for* people to help us achieve important goals in our lives.

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Appendix

Stimuli in Study 2

Table A1

Situations and Behaviors Used in Study 2a

Situation	Category	Behaviors
Sarah is at a bar with friends. At a bar with friends, is it possible for Sarah to …	Normative	Signal for the bartender
		Pour a glass of wine
		Ask someone to dance
		Eat some onion rings
		Cheer loudly about a sports game
		Ask for a bottle of beer
		Throw darts at the wall
		Offer a cocktail to a stranger
	Counternormative	Put a blanket on the ground and lie down
		Read aloud from a prayer book
		Give a formal presentation
		Kick a soccer ball back and forth
	Impossible	Turn a glass of beer into wine
		Float in the air above the crowd
		Crumple up a $20 bill and drink it
		Open a bottle of wine by blinking
Greg is at his grandmother's funeral. At his grandmother's funeral, is it possible for Greg to …	Normative	Read aloud from a prayer book
		Give a speech about his grandmother
		Hold out his arms for a hug
		Ask everyone for a moment of silence
		Reminisce about old memories
		Sing along to a hymn
		Wipe tears from his eyes
		Feel sad about his grandmother
	Counternormative	Flip through a magazine
		Listen to music on headphones
		Toss a frisbee back and forth
		Share a copy of his resume
	Impossible	Bring his grandmother back to life
		Prevent his grandmother from dying
		Divide into two copies of himself
		Broadcast a speech using his mind

(*table continues*)

(*Appendix continues*)

Table A1 (*continued*)

Situation	Category	Behaviors
Steven is in a job interview. In a job interview, is it possible for Steven to …	Normative	Share a copy of his resume Ask questions about the job Answer questions about himself Talk about his work experience Describe his qualifications Talk about why he wants the job Try his best to get the job Smile at the interviewer
	Counternormative	Open a bag of potato chips and eat them Ask for a bottle of beer Start reading a novel Hold out his arms for a hug
	Impossible	Use a magic genie to get the job Get hired by making a wish Make the other candidates invisible Answer questions telepathically
John is at a public park. At a park, is it possible for John to …	Normative	Open a bag of potato chips and eat them Kick a soccer ball back and forth Put a blanket on the ground and lie down Jog around for exercise Toss a frisbee back and forth Lay out a picnic blanket and eat a sandwich Look for patterns in the clouds Listen to birds singing
	Counternormative	Ask everyone for a moment of silence Offer a cocktail to a stranger Raise his hand and ask how to solve a math problem Take notes on a computer
	Impossible	Turn into a sunflower Swim in the dirt underground Toss a basketball with his mind Make a dog appear out of thin air
Pam is at the library. At the library, is it possible for Pam to …	Normative	Flip through a magazine Listen to music on headphones Start reading a novel Check out a book she hasn't read Browse the fiction section Look up something on a computer Sign up for a library card Return books to the librarian
	Counternormative	Lay out a picnic blanket and eat a sandwich Ask someone to dance Eat some onion rings Give a speech about her grandmother
	Impossible	Juggle books using her mind Read books that don't exist Teleport to another room Turn into an armchair
Jane is in a classroom, during class. In class, is it possible for Jane to …	Normative	Give a formal presentation Raise her hand and ask how to solve a math problem Take notes on a computer Think about what the teacher says Write down a question Quietly listen to a lecture Answer questions on a test Work on an assignment
	Counternormative	Pour a glass of wine Throw darts at the wall Cheer loudly about a sports game Jog around for exercise
	Impossible	Go back in time to retake a test Switch brains with the teacher Take notes while sleeping Ask a question by sneezing

(*Appendix continues*)

Table A2

Situations and Behaviors Examined in Study 2b

Situation	Category	Behaviors
Someone is at a bar with friends. Could it be physically possible for someone at a bar to …	Normative	Signal for the bartender
		Pour a glass of wine
		Ask someone to dance
		Eat some onion rings
		Cheer about a football score
		Ask for a bottle of beer
		Throw darts at the wall
		Offer a cocktail to a stranger
	Counternormative	Put a blanket on the ground and lie down
		Read aloud from a prayer book
		Give a formal presentation
		Kick a soccer ball back and forth
	Impossible	Turn chairs into cats by thinking
		Float in the air above the crowd
		Drink a handful of pennies
		Blink to make food appear
Someone is at their grandmother's funeral. Could it be physically possible for someone at their grandmother's funeral to …	Normative	Read aloud from a prayer book
		Give a speech about their grandmother
		Hold out their arms for a hug
		Ask everyone for a moment of silence
		Reminisce about old memories
		Sing along to a hymn
		Wipe tears from their eyes
		Feel sad about their grandmother
	Counternormative	Flip through a magazine
		Listen to music on headphones
		Toss a frisbee back and forth
		Share a copy of their resume
	Impossible	Borrow $20 from a talking squirrel
		Switch bodies with their grandmother
		Divide into two copies of themselves
		Use socks to receive radio signals
Someone is in a job interview. Could it be physically possible for someone in a job interview to …	Normative	Share a copy of their resume
		Ask questions about the job
		Answer questions about themselves
		Talk about their work experience
		Describe their qualifications
		Talk about why they want the job
		Try their best to get the job
		Smile at the interviewer
	Counternormative	Open a bag of potato chips and eat them
		Ask for a bottle of beer
		Start reading a novel
		Hold out their arms for a hug
	Impossible	Use a magic genie to get the job
		Use mind control on the interviewer
		Turn everyone else invisible
		Communicate telepathically
Someone is at a public park. Could it be physically possible for someone at a park to …	Normative	Open a bag of potato chips and eat them
		Kick a soccer ball back and forth
		Put a blanket on the ground and lie down
		Jog around for exercise
		Toss a frisbee back and forth
		Lay out a picnic blanket and eat a sandwich
		Look for patterns in the clouds
		Listen to birds singing
	Counternormative	Ask everyone for a moment of silence
		Offer a cocktail to a stranger
		Raise their hand and ask a math question
		Take notes on a computer
	Impossible	Transform into a sunflower
		Swim in the dirt underground
		Bend a telephone pole by staring at it
		Make a dog appear out of thin air

(table continues)

(Appendix continues)

Table A2 (*continued*)

Situation	Category	Behaviors
Someone is at the library. Could it be physically possible for someone at the library to …	Normative	Flip through a magazine Listen to music on headphones Start reading a novel Check out a couple of books Browse the fiction section Look up something on a computer Sign up for a library card Return items to the librarian
	Counternormative	Lay out a picnic blanket and eat a sandwich Ask someone to dance Eat some onion rings Give a speech about their grandmother
	Impossible	Juggle pencils by blowing on them Read invisible books Teleport to another room Transform into an armchair
Someone is in a classroom, during class. Could it be physically possible for someone in a classroom to …	Normative	Give a formal presentation Raise their hand and ask a math question Take notes on a computer Think about what the teacher says Write down a question Quietly listen to a lecture Answer questions on a test Work on an assignment
	Counternormative	Pour a glass of wine Throw darts at the wall Cheer about a football score Jog around for exercise
	Impossible	Force time to go in reverse Switch brains with the teacher Fly in circles around the room Sneeze a billion times a minute

Table A3

Situations and Behaviors Examined in Study 2c

Situation	Category	Behaviors
Someone is at a bar with friends. Could it be physically possible for someone at a bar to …	Normative	Signal for the bartender Pour a few glasses of wine Invite someone to dance Eat french fries with ketchup Cheer about a football score Ask for a bottle of beer Throw darts at the wall Offer a cocktail to a stranger
	Counternormative	Lie down on the ground Read aloud from a prayer book Give a formal presentation Kick a soccer ball around
	Impossible	Transform salt into gold Float in the air weightlessly Breathe water using gills Blink to make food appear
Someone is at their mom's funeral. Could it be physically possible for someone at their mom's funeral to …	Normative	Read aloud from a prayer book Give a speech about their mom Hold out their arms for a hug Scold children for talking Reminisce about old memories Put flowers on the casket Wipe tears from their eyes Feel sad about their mom

(*table continues*)

Table A3 (*continued*)

Situation	Category	Behaviors
	Counternormative	Flip through a magazine
		Listen to music on headphones
		Toss a frisbee back and forth
		Share a copy of their resume
	Impossible	Walk through solid walls
		Switch bodies with their mom
		Split their body into two copies
		Build a radio out of socks
Someone is in a job interview.	Normative	Share a copy of their resume
Could it be physically possible for someone in a job interview to …		Ask questions about the job
		Comment about the weather
		Talk about their work experience
		Describe their qualifications
		Say why they want the job
		Try their best to be hired
		Smile at the interviewer
	Counternormative	Eat a bag of potato chips
		Ask for a bottle of beer
		Start reading a romance novel
		Hold out their arms for a hug
	Impossible	Use a magic genie to get hired
		Erase the interviewer's memory
		Turn everyone else invisible
		Swallow the entire universe
Someone is at a public park.	Normative	Eat a bag of potato chips
Could it be physically possible for someone at a park to …		Kick a soccer ball around
		Lie down on the ground
		Jog around for exercise
		Toss a frisbee back and forth
		Have a picnic on a blanket
		Look for shapes in the clouds
		Listen to birds singing
	Counternormative	Scold children for talking
		Offer a cocktail to a stranger
		Raise a hand to ask a math question
		Take notes on a computer
	Impossible	Transform into a sunflower
		Teach a tree to read English
		Explode bricks by thinking
		Create dogs out of thin air
Someone is at the library.	Normative	Flip through a magazine
Could it be physically possible for someone at the library to …		Listen to music on headphones
		Start reading a romance novel
		Check out a couple of books
		Browse the fiction section
		Look at the library catalog
		Sign up for a library card
		Return items to the librarian
	Counternormative	Have a picnic on a blanket
		Invite someone to dance
		Eat french fries with ketchup
		Give a speech about their mom
	Impossible	Juggle buildings by thinking
		Melt pennies with their eyes
		Teleport to another room
		Transform into an armchair
Someone is in a classroom, during class.	Normative	Give a formal presentation
Could it be physically possible for someone in a classroom to …		Raise her hand and ask how to solve a math problem
		Take notes on a computer
		Think about what the teacher says
		Write down a question
		Quietly listen to a lecture
		Answer questions on a test
		Work on an assignment

(table continues)

Table A3 (*continued*)

Situation	Category	Behaviors
	Counternormative	Pour a glass of wine
		Throw darts at the wall
		Cheer loudly about a sports game
		Jog around for exercise
	Impossible	Go back in time to retake a test
		Switch brains with the teacher
		Take notes while sleeping
		Ask a question by sneezing