

The Valjean Effect: Visceral States and Cheating

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Abstract

Visceral states like thirst, hunger, and fatigue can alter motivations, predictions, and even memory. Across three studies, we demonstrate that such “hot” states can also shift moral standards and increase dishonest behavior. Compared to participants who had just eaten or who had not yet exercised, hungry and thirsty participants were more likely to behave dishonestly in order to win a prize. Consistent with the specificity of motivation that is characteristic of visceral states, participants were only more likely to cheat for a prize that could alleviate their current deprived state (such as a bottle of water). Interestingly, this increase in dishonest behavior did not seem to be driven by an increase in the perceived monetary value of the prize.

The catalyst of the epic novel *Les Misérables* is the hunger-induced theft of a loaf of bread, which protagonist Jean Valjean steals to feed himself, his sister, and her seven children. This simple crime leads to 19 years of imprisonment, Inspector Javert's ensuing heartless pursuit of Valjean, and tragic endings for many characters. Valjean's story has all the complexity and nuance one would expect of great literature, as well as a keen understanding of the many wants, needs, and concerns that drive human behavior. Here, we present evidence that can shed light on one of the reasons why an ultimately good person like Valjean might have been tempted to act unethically, demonstrating that people under the influence of a visceral state are apt to behave immorally in order to satisfy that state.

It is no secret that people find ways to skirt a large set of internal and external moral codes and serve themselves at others' expense (e.g., Mazar & Ariely, 2006). Even in the lab, people are adept cheaters. Given the opportunity, they interpret ambiguous criteria to give themselves the best financial or self-presentational outcome (Hsee, 1995; 1996), repeat (or ignore) coin flips until they get the "random" result they want (e.g., Batson, Kobryniewicz, Dinnerstein, Kampf, & Wilson, 1997; Batson, Thompson, Seufferling, Whitney, & Strongman, 1999), and even outright lie about their level of performance to receive more compensation (Mazar, Amir, & Ariely, 2008). Remarkably, they do these things and still see themselves as honest (Chance, Norton, Gino, & Ariely, 2011; Mazar et al., 2008).

Yet in addition to this baseline tendency to be dishonest, certain circumstances may exacerbate an individual's inclinations to act unethically. Visceral drive states, like hunger, thirst, fatigue, pain, and an assortment of cravings, are generally adaptive physiological signals that something important for survival is wrong or lacking. Visceral states are quite powerful: they can affect memory and prediction, (e.g., Nordgren, van der Pligt, & van Harreveld, 2006), empathy

for suffering (e.g., Nordgren, Banas, & MacDonald, 2011; Nordgren, McDonnell, & Loewenstein, 2011), public policy preferences (e.g., Risen & Critcher, 2011), and can even influence perception of the physical world, making visceral state-relevant objects appear closer than they are (Balcetis & Dunning, 2010). The nature of these powerful urges means that they can lead people to perform self-interested acts that they might otherwise avoid (Loewenstein, 1996). For example, Ditto, Pizarro, Epstein, Jacobsen, & MacDonald (2006) found that visceral states also engender a sort of “motivational myopia”—a focus on the goal of alleviating the visceral state at the expense of other important goals (Loewenstein, 1996).

This work suggests that people in hot states are more likely to sacrifice their own long-term goals (like being thin) to satisfy their visceral states (like no longer being hungry; e.g., Loewenstein, 1996). Given past research, perhaps people will overlook the downsides of dishonesty and temporarily give greater priority to satisfying their visceral states than to a broader goal of being an honest person. In support of this idea, individuals under the influence of “hot” visceral states are more likely to report a willingness to engage in high-risk behaviors. For example, compared to non-aroused men, sexually aroused men are more likely to report interest in engaging in sexually risky behaviors (e.g., Ariely & Loewenstein, 2006; Ditto et al., 2006), and report a greater willingness to engage in immoral behaviors, such as drugging a woman to have sex with her (e.g., Ariely & Loewenstein, 2006; Loewenstein, Nagin, & Paternoster, 1997). Yet to date this research on the effects of visceral states on morality has looked solely at judgments of such behaviors on the part of oneself and others, and not at actual unethical behavior, which may be significantly less likely to shift and where the consequences of a shift are likely to be more severe.

The standard economic account of cheating behavior would suggest that participants in visceral states engage in a simple cost-benefit analysis between the perceived benefits of dishonest behavior and its potential costs (i.e., getting caught and punished; e.g., Lewicki, 1984). From this perspective, it seems possible that the benefits of cheating increase in a visceral state. Simply put, thirsty individuals may perceive a bottle of water as worth more than non-thirsty individuals, tilting the calculus in favor of acting dishonestly. If so, we would expect the monetary value individuals place on the reward to reflect this. Alternatively, visceral states appear to increase focus on need-relevant objects at the expense of other objects and ideas (e.g., Balci et al., 2010; Brendl, Markman, & Messner, 2003). Perhaps visceral states induce a narrowing of focus on materials that can help relieve them and thus a crowding out of thoughts about things like moral values, the consequences of cheating, or even other objects in view. If so, we should expect to find that cheating in visceral states would be limited to winnings that could possibly alleviate a person's current state. During strong emotional states, attention seems to narrow such that people are more likely to focus on state-congruent stimuli (Gable & Harmon-Jones, 2010). Add this to recent theorizing on dishonesty that emphasizes internal constraints that prevent people from cheating (e.g., Mazar et al., 2008; Mazar & Ariely, 2006), and the narrowing of focus on a need object might lead us to expect that states of deprivation can shift individuals' attention to the potential outcome of an unethical act in a way that can overwhelm their internal moral standards, even if the benefit of the immoral action is no different.

Overview of Studies

We sought to test whether people experiencing visceral states will actually *behave* immorally in order to satisfy these states. In Study 1 we establish that the more strongly people feel a visceral state (hunger), the more likely they are to act dishonestly in order to relieve that

state. We replicate this finding in Study 2 using a different visceral state (thirst), while showing that the observed increase in cheating is not related to the perceived monetary value of the prize. In Study 3 we demonstrate that this increased cheating is only observed if cheating increases the chances of receiving a reward that would alleviate the visceral state, as opposed to motivating cheating behavior in general.

Study 1

If visceral states make people more inclined to behave dishonestly, we might expect to find that the more strongly someone is feeling a visceral state, the more likely they are to cheat to relieve that state. In Study 1, hungry and sated people (and those in between) were approached around mealtime and offered the chance to win a prize that could offset hunger. The prize-winning procedure gave participants ample opportunity to stretch the truth in order to win. If visceral states do prompt unethical behavior in order to alleviate that state, we should find that the hungrier a participant reports feeling, the more likely they are to report winning the prize as well. In addition, we asked them about the monetary value of the prize, to test whether it is also a predictor of tendency to cheat.

Method

Participants. One hundred forty-four students, staff, and visitors at the University of Florida participated for the chance to win a “snack pack.”

Procedure. We approached participants near a campus food court around lunchtime to find a selection of both hungry and sated participants. We told them we were conducting a marketing study to investigate interest in a “snack pack” that might be made available at campus stores. We presented them with the snack pack, containing a small bag of potato chips, a granola

bar, a miniature Snickers bar, and a mint, attractively packaged. They were told that there were not enough snack packs for everyone, but they would get a chance to win one for participating.

We first asked them to describe how *good, bad, anxious, happy, sad, angry, hurried, tired, hungry, and thirsty* they were feeling on a scale from 0 (not at all) to 4 (extremely). They also indicated how long it had been since they had eaten (1 = less than 1 hour ago; 2 = 1-4 hours ago; 3 = 4-8 hours ago; 4 = 8 or more hours ago). On the following page, they indicated their willingness to pay, by reporting whether they would rather have the snack pack or different small amounts of money, ranging from \$.50 to \$5.00 in \$.50 increments. Finally, some filler items relevant to the snack pack were included: how often they eat the items in the snack pack; how appealing it seems; how likely they would be to purchase it; and what would be included in their ideal snack pack.

In addition, participants received an opaque cup with a clear lid containing one die to shake when they finished the questionnaires. They learned that if they rolled an even number they would win a snack pack. They were told that the die was placed in the cup to ensure that the experimenters would not lose it, and that they should take “a couple of practice throws” before they roll the die for real to try to win the snack pack. The die-rolling task was designed to give participants leeway to lie, by allowing them to roll the die until they got the outcome they wanted.

The experimenter stepped aside and made it obvious that they were not watching participants closely as they worked. They recorded whether participants verbally reported rolling a winning number. All participants were offered a snack pack at the end of the experiment, whether they reported winning or not.

Results and Discussion

Nine of the 144 participants failed to fill out the emotions scale properly, six of them failed to complete the willingness to pay measure, and eight of them declined to roll the die, resulting in varying numbers of participants (between 133 and 136, depending on overlap) in each analysis.

Because we only know the number that each participant reported to us, not the actual number that they rolled or how many tries it took them to roll it, our procedure only allowed us to see cheating at the aggregate level, not uncover whether any specific participant cheated. Regardless, evidence of cheating clearly emerged: 76.5% of participants reported rolling a winning number, more than expected by chance, $\chi^2(1, N = 136) = 38.12, p < .001, \phi = .53$. Further, the hungrier participants were, the more likely they were to report winning the snack pack. A logistic regression with hunger and willingness to pay as predictors revealed that hunger was a significant predictor of likelihood of winning (and thus likelihood of cheating), $\beta = .42, p = .009$. Willingness to pay was a predictor of likelihood of winning as well, although only marginally, $\beta = .36, p = .09$. Interestingly, hunger and willingness to pay were uncorrelated, $r(133) = .02, p = .80$, suggesting that participants do not find the prize to be monetarily more valuable when they are hungry.

It may be that when participants are hungry, however, the economic value of the chips may not change, but the chips would nonetheless seem crispier, the Snickers bar would seem more satisfying, etc. Hunger and the non-monetary value of the snack pack (i.e., its appeal, one of our filler questions) are indeed marginally correlated, $r(134) = .16, p = .07$, yet when we added appeal to the regression, neither it ($\beta = .23, p = .19$) nor willingness to pay ($\beta = .30, p = .16$) predicted winning significantly, whereas hunger still did, $\beta = .39, p = .02$.

Our data in Study 1 suggests that visceral states can drive people to cheat, as hungrier participants were more likely to report winning the prize. Further, the perceived monetary value of the prize did not meaningfully predict cheating, and was not predicted by actual hunger. In this study, the visceral state was naturalistically determined, and the prize was unique and its true value unknown, both advantages for testing the influence of visceral states and their relationship to monetary value and to cheating. While these results show a link between visceral state and dishonesty, however, they are also purely correlational; Studies 2 and 3 use a naturalistic quasi-experiment and a new visceral state (thirst) to expand our hypotheses.

Study 2

Past research has shown that exercise is a simple way to induce thirst, a powerful visceral state (e.g., Van Boven & Loewenstein, 2003). In Study 2, we chose to approach people as they entered or exited a gym. This way, participants from one population naturally sort themselves into thirsty and nonthirsty conditions. We then gave participants an opportunity to lie to win a bottle of water. We predicted that participants leaving the gym would be more likely to lie to win the water than people about to enter the gym, even though both groups ought to be equally able to anticipate that a bottle of water would be an appealing commodity after a workout. But they may not necessarily think it is a monetarily valuable commodity: Study 2 again examined whether visceral states increase the perceived monetary benefit of cheating.

Method

Participants. Sixty-two Cornell University undergraduates (18 male, 14 female, and 30 unreported) participated in exchange for the chance to win a bottle of water.

Procedure. Participants completed a short questionnaire about going to the gym either as they were about to enter a campus gym (*control* condition) or immediately after they left (*thirst*

condition). Participants rated how *tired*, *thirsty*, *anxious*, *happy*, *sad*, and *angry* they were, on a scale from 0 (not at all) to 4 (extremely); one person failed to complete the scale properly.

Participants also assigned a price to the bottle of Fiji water they could win.

After filling out the questionnaire, participants learned that the experimenters only had enough bottles of water for half the participants. To determine who would win, participants were to think of a number from 1 through 10; they thought of a number, and then we told them that those participants who thought of an even number would win the prize. They then indicated whether they thought of an even number (note: people may be more likely to spontaneously generate odd numbers [e.g., Kubovy & Pstotka, 1976], but this should not differ between conditions). This procedure allowed participants to be honest or dishonest as they wished, and gave us a criterion by which to judge dishonesty between conditions.

Results

Manipulation check. As expected, participants felt thirstier after their workout ($M = 2.45$, $SD = 1.02$) than before ($M = 1.63$, $SD = 1.16$), $t(59) = -2.93$, $p = .005$, $d = .75$, 95% CI [.38, 1.15], lending confidence to the effectiveness of this procedure for manipulating thirst (and consistent with previous research; e.g., Van Boven & Loewenstein, 2003).¹

Cheating. As in Study 1, we only know whether participants reported thinking of an even number, not whether they truly thought of one. Thus, our procedure again relies on an aggregate measure of cheating and does not allow us to see which specific participants may have cheated. Thirsty participants guessed a winning number almost twice as often: 80.0% of thirsty participants, but only 40.6% of control participants, reported a winning number, $\chi^2(1, N = 62) = 9.98$, $p = .002$, $\phi = .40$, 95% CI [.12, .61]. We also ran a replication in which the winning number was odd. In this replication, baseline rates of winning are higher, consistent with previous

findings that people are more likely to generate odd numbers (Kubovy & Psootka, 1976). Even so, post-gym participants were more likely to win the bottle of water: 78.9% of participants approached after exercising likewise reported choosing a winning number, compared to only 56.9% of those approached before, $\chi^2(1, N = 72) = 4.39, p = .04, \phi = .25, 95\% \text{ CI} [-.01, .47]$.

Value of the prize. Thirsty participants ($M = \$1.82, SD = 2.71$) did not assign a higher value to the bottle of water than control participants ($M = \$1.80, SD = 2.10$), $t < .04, ns$. This null result should be interpreted with caution, of course, but combined with Study 1, it suggests that the increased proportion of dishonest participants in the “thirsty” group was not due simply to any greater perceived economic benefits of cheating.

Discussion

As predicted, people were more likely to cheat under the influence of a visceral state. Those participants who were thirsty after exercising were more likely to claim that they had won a thirst-quenching bottle of water than participants who were just about to exercise, even though they did not perceive the water to be any more valuable. All participants were presumably aware that water would be useful during and after their workout, but it appears that the actual experience of the visceral state prompted cheating behavior. But are people in a visceral state more likely to cheat in general? Would Valjean’s hunger have made him more likely to steal, say, a bishop’s silverware as well as the loaf of bread, or would it only make the bread seem more theft-worthy? Previous research suggests the latter. Hungry participants think overeating is less bad and tired participants think fatigue-based outbursts are less bad than control participants, but hungry participants do not excuse fatigue-based bad behavior and fatigued participants do not excuse hunger-based bad behavior (Nordgren, van der Pligt, & van Harreveld, 2007). And people experiencing a strong drive state may *devalue* drive-irrelevant objects, even when those

objects, like money, could indirectly help to relieve the state (Brendl et al., 2003). Study 3 tests whether visceral states shift moral standards more broadly.

Study 3

Studies 1 and 2 provide little evidence to support the idea that the economic benefits of cheating shift in a visceral state. In Study 3 we used the pre-/post-exercise method of manipulating thirst, offering to some participants the bottle of water and to other participants another object of similar monetary value (in this case, a souvenir pen), one that is not suited to alleviate the specific visceral state in question (i.e., thirst). Because the water bottle is specifically suited to alleviate thirst, we expected participants who were offered the chance to win water to report a winning number significantly more often than participants who were offered the chance to win a pen.

Method

Participants. Ninety-one undergraduates (43 male, 34 female, and 14 unreported) at Cornell University participated outside a campus gym.

Procedure. The procedure was largely identical to Study 2. Here, half of the participants were offered the chance to win the bottle of water if they reported an even number; the other half were offered the chance to win a pen with the University logo on it. To disguise the purpose of the study, we also included filler questions asking how often the participants work out, how much they like the gym, and the kinds of exercise they planned to do.

Results

Manipulation check. Participants again reported being significantly thirstier after they worked out ($M = 2.48$, $SD = .95$) than before ($M = 1.77$, $SD = .90$), $t(89) = -3.68$, $p < .001$, $d = .77$, 95% CI [.50, 1.03].

Cheating. A logistic regression examining thirst condition (thirsty vs. non-thirsty) and prize condition (water vs. pen) revealed no significant main effect of thirst (Wald’s $\chi^2 = .16, p = .69$, Odds Ratio = 1.19, 95% CI [.52, 2.72]) or of the prize (Wald’s $\chi^2 = 1.38, p = .24$, Odds Ratio = .61, 95% CI [.27, 1.40]), but a significant interaction between thirst and prize (Wald’s $\chi^2 = 6.39, p = .01$, Odds Ratio = 9.24, 95% CI [1.65, 51.78]). As can be seen in Table 1, thirsty participants offered the chance to win a pen were *less* likely to report a winning number ($\chi^2 (1, N = 46) = 4.29, p = .04, \phi = .31, 95\% \text{ CI } [-.03, .58]$), but slightly (although non-significantly) more likely to win the water bottle $\chi^2 (1, N = 45) = 2.41, p = .12, \phi = .23, 95\% \text{ CI } [-.10, .53]$.

To allay concerns that the results for the water are not significant in Study 3, we created a composite of the data for those who could win water in the (only) three studies using this paradigm. The desired pattern is highly significant: 47.7% of participants claimed to win the water before they exercised, compared to 76.3% afterwards, $\chi^2 (1, N = 179) = 15.68, p = .0001, \phi = .30, 95\% \text{ CI } [.14, .44]$. Regardless, the different pattern between the results for the water and the pen suggest that the fit between one’s state and the prize matters for viscerally-driven cheating: thirst does not simply lead to a greater desire to cheat to acquire anything, especially something that would not itself satiate thirst.

Table 1. Percentage of participants who “won” the prize in Study 3.

	Water	Pen
Before	45.0%	60.9%
After	68.0%	30.4%

Discussion

The results of Study 3 indicate that hot states do not appear to lower people's general inhibitions against cheating, as post-exercise participants are *less* likely to win the pen, consistent with devaluation (Brendl et al., 2003). Of course, people in visceral states do cheat for reasons that are indirectly but instrumentally related to their visceral states; for instance, drug addicts have been known to steal money or items they can sell in order to buy drugs. This work, however, suggests that this may be a second-order impulse or something more likely to be done after some consideration (Brendl et al., 2003). The reduced cheating for the pen also reduces the likelihood that our effect is due not to the thirst that our participants were feeling, but instead to the depleting nature of exercise (or of feeling thirst). People who have recently undergone a self-control depleting task are more likely to cheat on a subsequent task with monetary benefits (Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009), but Study 3 reduces the likelihood that our effect is due to general depletion caused by exercise or thirst. Certainly there are times when visceral states and depletion overlap. But thirsty participants were selective in their lies, suggesting that visceral drives and depletion independently lead to dishonesty.

The results of Study 3 also speak against the possibility that moral licensing may be at work here. One could predict that post-exercise participants might be feeling virtuous about their effort in the gym, and thus grant themselves license to "be bad" afterwards (e.g., Khan & Dhar, 2006; Monin & Miller, 2001). However, this would suggest that participants would be inclined to cheat for either outcome, the pen or the water, but again, participants have a preference for which prize they are willing to stretch the truth to receive, suggesting that the fit between their state and the prize encourages cheating.

General Discussion

In three studies, we demonstrated that people who are currently experiencing an unpleasant visceral state are more likely to cheat in order to alleviate it relative to people who are currently sated (but might reasonably expect to experience that state in the future). Correlational data in Study 1 revealed a relationship between hunger and likelihood of reporting having won a hunger-alleviating prize; the estimated monetary value of the prize did not explain the overly high rates of winning. In Study 2, participants were more likely to report having thought of a “winning” number in order to win a bottle of water (but showed no difference in their estimate of the bottle’s monetary value) after a workout at the gym (versus before). Finally, in Study 3 thirsty participants were more dishonest if they could win a bottle of water, but showed no increase in dishonesty if the prize was a (need-irrelevant) pen.

It is intriguing that participants’ tendency to cheat did not seem driven by an increase in the perceived economic value of an object. One could imagine that the increased cheating we see in these studies falls somewhere on a continuum from being completely impulsive to completely calculated. Certainly visceral states prompt impulsive behavior (e.g., Loewenstein, 1996). And certainly people make calculated decisions to act unethically, via moral disengagement (e.g., Shu, Gino, & Bazerman, 2011) or other forms of (self-)justification. Our data suggest that people are not on the ends of this continuum, but instead fall somewhere in between. After all, the fact that thirsty participants in Study 3 leave the pen behind suggests that there is some sort of calculus going on in their decision to lie rather than pure impulse or a lack of self-control (e.g., Kouchaki & Smith, 2014), and the fact that they do not shift their ratings of the appeal of viscerally-related items or estimates of their worth in Studies 1 and 2 suggests that participants are not actively trying to make cheating seem more worthwhile or less consequential. Instead, we believe that our research is consistent with other work indicating that the needs engendered by

visceral states end up crowding out other considerations. For instance, participants in visceral states are more likely to take risks in order to satisfy their needs, ignoring likelihood of success and instead focusing on the possible positive outcome (Ditto et al., 2006). Visceral states also increase visual focus on state-relevant objects and narrow a person's visual field (Balcetis & Dunning, 2010; Gable & Harmon-Jones, 2008). Additionally, knowledge of internal or external consequences, an effective deterrent to cheating, may be ignored during a need state (e.g., Loewenstein et al., 1997). Although our studies were not designed to directly test this, our data are consistent with the idea that the appeal of a visceral state-relevant object is more focal (even if the absolute level of appeal is unchanged from what it might be if a person were in a more neutral state) and thus is less likely to be overridden by a person's ethical standards or thoughts of the consequences of cheating. Sadly, by ignoring the consequences of their behavior save its effects on their bodily needs, people set themselves up to behave dishonestly, in ways they might not expect or countenance when they are sated.

Future research might test how to keep ethical behavior intact in the face of visceral states. Although visceral states are indeed powerful, recent evidence (as well as occasional experience) suggests they can be ignored or overruled (e.g., O'Brien & Ellsworth, 2013). Perhaps people in such states can be encouraged to consider the consequences of their actions beyond satiation. Obviously, if possible punishment is pointed out and people believe they are likely to be caught, they should be less likely to cheat, but their internal constraints, like concern over having to view themselves as "cheaters," can also decrease cheating and may be ignored during visceral states (e.g., Bryan, Adams, & Monin, 2012; Mazar et al., 2008). Even a simple reminder of one's internal rules and standards might be enough to overcome a visceral state's push toward cheating (Shu, Mazar, Gino, Ariely, & Bazerman, 2012).

Future research might also examine how well people anticipate this sort of behavior, in themselves or in others. There is evidence that people are better predictors of their own and others' behavior and desires during a visceral state if they are currently experiencing it (e.g., Read & van Leeuwen, 1999; Van Boven & Loewenstein, 2003). However, emerging evidence suggests that people in visceral states may be better able to anticipate how they might act when confronted with future opportunities to cheat, but no better at planning for or coping with such drives (De Ridder, Ouweland, Stok, & Aarts, 2011), and in fact experiencing a visceral state can lower their sense of self-efficacy in warding off negative viscerally-driven impulses (Nordgren, van der Pligt, & van Harreveld, 2008). Further, a dissociation between expectations and actual behavior can also be quite common in moral domains, where some combination of motivation and a lack of awareness of situational influences can lead people to make overly optimistic predictions about how ethically they would behave (e.g., Milgram, 1965).

Our work suggests that, at times, a person's immoral behavior may have less to do with who they are as a person and more to do with whether they have recently exercised, eaten, or slept. In *Les Misérables*, many people paid a hefty price because Jean Valjean's hunger helped to override his moral standards. Perhaps those tragedies might have been averted had a hungry Valjean realized that morality can be driven not by the mind or the heart, but by the rest of the body instead.

Notes

¹ It also does not seem to reliably affect other visceral states. Participants in Study 3 report being hungrier after working out ($M = 1.98$, $SD = 1.36$) than before ($M = 1.14$, $SD = 1.21$), $t(89) = -3.10$, $p = .003$, $d = .65$, but we did not find this difference in Study 2 ($M_{after} = 1.40$, $SD = 1.19$; $M_{before} = 1.79$, $SD = 1.40$), $t(59) = 1.17$, ns , and participants in our replication of Study 2 reported being marginally hungrier *before* their workout ($M = 1.53$, $SD = 1.42$) than after ($M = .95$, $SD = 1.14$), $t(63.2) = 1.91$, $p = .06$, $d = .45$. There were also no differences in fatigue in any study, all $ts < .8$. It appears that exercise primarily increases the visceral state of thirst. Additionally, participants are happier after exercising than before in Study 2 ($M_{before} = 2.06$, $SD = .84$; $M_{after} = 2.72$, $SD = .80$), $t(59) = -3.15$, $p = .003$, $d = .80$, and our replication of Study 2 ($M_{before} = 2.03$, $SD = 1.09$; $M_{after} = 2.61$, $SD = .72$), $t(56.2) = -2.62$, $p = .01$, $d = .75$, and less angry afterward in Study 2 ($M_{before} = .94$, $SD = 1.11$; $M_{after} = .41$, $SD = .68$), $t(59) = 2.62$, $p = .03$, $d = .59$, but these differences were not replicated in other studies. No other items revealed significant differences in any of the three studies.

Authors' Note

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