Hot/cold intrapersonal empathy gaps and the under-prediction of curiosity

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abstract:

We present evidence supporting the view that 'impulsive' behavior is linked to the impact of "visceral factors" - viscerally experienced emotions, drives, or cravings - on judgment and decision making In three experiments that manipulate curiosity as a visceral factor we show that. (1) visceral motivation (i.e , curiosity) selectively increases the desire for immediate relative to delayed gratification, and that (2) individuals underestimate the impact of visceral motivation on their own behavior We refer to the latter effect as an intrapersonal "hot/cold empathy gap "

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Self-destructive behavior presents a major puzzle to traditional decision research, which views action as conforming to stable plans and governed by deliberation The reality is that in decisions both small and large people often take actions that conflict with their earlier intentions, that they rapidly come to regret, and that they even recognize as self-destructive at the moment of acting "Impulsive" behavior of this type is commonly attributed to hyperbolic time discounting -- the disproportionate weighting of costs and benefits that are immediate (Ainslie, 1992, Rachlin & Raineri, 1992, Logue, 1988).

While not disputing that hyperbolic time discounting plays an important role, our focus is on a different, though related, cause of impulsive behavior. the influence of emotions, drives, and somatic sensations such as pain, to which we refer collectively as "visceral factors " When in a "hot" visceral state -- e g , angry, frightened, hungry or sexually aroused -- people are said to 'lose control,' respond to the 'heat of the moment,' or 'act against their own better judgment.' Although philosophical, literary, and lay-accounts commonly attribute impulsivity to visceral influences, visceral factors have not played a central role in most theoretical accounts of impulsivity.[1]

We present results from three studies that test two properties of visceral motivation which, we believe, contribute to impulsive behavior (see, Loewenstein, 1996) These are (1) that visceral motivation selectively increases the desire for immediate relative to delayed gratification, and (2) that individuals underestimate the impact of visceral motivation on their own future behavior. The first prediction differentiates our account of impulsive behavior from a pure impatience explanation, in which impulsivness is ascribed to a high discount of future consequences combined with an opportunity for immediate gratification On our view, while high discounting of the

future may reflect, in part, stable individual characteristics, it is also a direct consequence of visceral motivation (c f , Mischel, 1974, Baumeister & Scher, 1988, Bazerman, Tenbrunsel & Wade-Benzoni, 1998) The second prediction, which we refer to as a 'cold-to-hot empathy gap,' is important because, as we show, underestimation of the behavioral impact of visceral states will in general exacerbate their influence

All three studies involve manipulations of curiosity Widely viewed as a drive state (Loewenstein, 1994), curiosity can be induced quickly and reliably in experimental settings All three studies demonstrate that subjects who are not yet made curious underestimate the value of satisfying their own curiosity, even if the curiosity-generating situation is made perfectly familiar to them The second and third studies show, additionally, that curiosity increases the desire for immediate, but not delayed information

THEORETICAL OVERVIEW

Focus of Motivation

Visceral factors serve important motivational and self-regulatory functions (Pribram, 1984) For example, hunger motivates eating, anger motivates aggression, and pain motivates withdrawal and attempts at pain mitigation Visceral factors are common to a wide range of animal species and are evolutionarily more primitive than the problem solving and forward-looking decision making that is exhibited most dramatically by humans Perhaps because they are more primal, visceral factors seem to be capable of distorting, and even eclipsing human decision making capabilities

As the intensity of any visceral factor increases, its impact on behavior displays a

characteristic pattern At low levels, people typically feel that they can incorporate visceral influences into their behavior in a sensible fashion For example, people feel that they can react in a "cool,"calculated, fashion to low levels of anger or fear At moderate levels, however, visceral factors tend to create conflicts between desired and actual behavior along with efforts at self-control -- for example, efforts to restrain oneself from impulsively acting out one's anger or fear [2] At moderate levels people experience the subjective sensation of "multiple selves" doing battle with one another (for example, the self who wants to run from the podium and the self who insists that staying put is the most prudent course of action) (see, e g , Schelling, 1984, Thaler & Shefrin, 1981) At still higher levels, visceral factors take complete control of behavior [3] Crimes of passion, for example, are committed in an instant and regretted for a lifetime [4]

Beyond this motivational specificity, visceral factors have the important effect of enhancing the value of immediate relative to delayed goal satisfaction Tomorrow's heroin means little to the craving addict, even if he knows that his craving will be more intense at that time Elevated visceral factors thus produce a type of good- or activity-specific temporal myopia

Hot/cold Empathy Gaps

If people could predict accurately how future visceral states will affect their own behavior they could take actions to avoid such states or to limit -- e g , by precommitment strategies -- their behavioral influence The central prediction that we test is that predictions of this type are instead subject to a "hot/cold" empathy gap. People in one visceral state have difficulty appreciating how they would feel or how they would behave if they were in a different state Such empathy gaps arise in two ways which we label "cold-to-hot" and "hot-to-cold."

Cold-to-hot empathy gaps occur when people in a cold, nonaroused, state recall or predict their own behavior in a hot state. Hot-to-cold empathy gaps are analogous, but the person making the judgments is in a hot state, remembering or predicting behavior in a cold state.

Both types of hot/cold empathy gaps contribute to impulsive behavior and frustrate attempts to maintain self-control. The cold-to-hot empathy gap -- the tendency to underpredict the impact of future visceral factors -- can lead people to overexpose themselves to situations that induce visceral factors, and to underprepare for random encounters with such situations. When not sexually aroused, for instance, people under-predict the future force of the "heat of the moment" and thus overestimate their likelihood of practicing safe sex or abstaining from sex altogether. Those at risk for addiction may decide to experiment with drugs without fully appreciating their own likelihood of becoming hooked (c f., Seeburger, 1993). Recovering alcoholics may underestimate the risk of attending social events, such as office parties, at which alcohol will be served. People may expose themselves high pressure sales situations (e g., introductory EST seminars or expense-paid trips to vacation spots) with an underappreciation of their own vulnerability.

Hot-to-cold gaps can further exacerbate these "cold-to-hot problems" by causing people to overrespond to the heat of the moment when it does occur. Crimes of passion may result, in part, from hot-to-cold empathy gaps. The individual who not only feels angry, but also believes that his anger will persist, is more likely to act on that anger than a person who recognizes that the current anger is likely to dissipate. Impulsive suicides may result from hot-to-cold empathy gaps -- the difficult of imagining oneself in a nondepressed state (Solomon, 1998). Overshopping on an empty stomach is yet another classic example. In the political realm, hot/cold empathy gaps point

to risks associated with 'direct democracy' mechanisms, such as referendum and initiative voting, that allow for speedy implementation of policies. People who are worked up (hot) about a particular issue, are likely to overestimate the permanence of their own feelings and, in the heat of the moment, implement extreme measures that they end up regretting (Elster, 1992)

Previous Research on Hot/cold Empathy Gaps

A number of previous studies provide evidence supporting the notion of hot/cold empathy gaps. Loewenstein, Nagin and Paternoster (1997) examined predictions of dating behavior made by male students who were sexually aroused (by looking at photographs of nude women) or not so aroused. Subjects imagined themselves on a date during which their partner suddenly wanted to terminate foreplay, and predicted their own likelihood of complying immediately with the request. Consistent with the hot/cold empathy gap idea, aroused (hot) subjects predicted a significantly higher likelihood that they would behave in a sexually aggressive manner.

Loewenstein and Adler (1995) examined people's predictions of how attached they would become to objects they were endowed with. Research on the "endowment effect" (Kahneman, Knetsch & Thaler, 1990) has shown that people become powerfully attached to objects they are endowed with. In one of Loewenstein and Adler's studies, some subjects were told that they would be endowed with an object and were asked them to predict the price at which they would sell the object back to the experimenter once they were endowed. These subjects, and others who did not make a prediction, were then endowed with the object and given the opportunity to sell it back to the experimenter. Much in same way that addicts-to-be seem to underestimate their own future attachment to drugs (Seeburger, 1993, 152), subjects who were not endowed substantially

under-predicted their own post-endowment selling prices

Read and van Leeuwen (1998) conducted a study that can be interpreted as demonstrating an underprediction of the impact of future hunger on one's own preferences They approached office workers and asked them to choose between healthy and unhealthy snacks (i e , fruit and junk food) that they would receive in one week at a time when they could be expected to be hungry (late in the afternoon) or not hungry (immediately after lunch) Subjects made the choice either when they were hungry (late in the afternoon) or not hungry (immediately after lunch) As predicted by a hot/cold empathy gap, snack choices were affected both by their anticipated level of hunger, and by their *current* level of hunger, people who were hungry when they made the choice were more likely to opt for unhealthy snacks than those who were not hungry Moreover a large fraction of subjects who chose a healthy snack when they were not hungry that would be received at a time when they would be hungry, when the time of snack delivery actually arrived, changed their minds and requested an unhealthy snack

Read and Loewenstein (1999) conducted a study of memory for pain designed to test for hot-to-cold empathy gaps Some subjects received a 15 second exposure to cold-pressor pain and were immediately asked how much time they would be willing to undergo the pain one week hence for varying levels of payment (e g , 3 minutes of pain for $5 00) Other subjects were exposed to the pain on one day, then returned one week later and made the same choices Consistent with the existence of a hot/cold empathy gap, willingness to accept pain in exchange for payment was greater for (cold) subjects who had experienced the pain one week earlier than for (hot) subjects who had just experienced it [5]

Some recent studies have reported results that are consistent with a hot/cold empathy gap,

although the authors do not interpret their results in such a fashion Gilbert, Pinel, Wilson and Blumberg (1998) report several studies that document a similar bias, which they attribute to "immue neglect" -- the tendency to underestimate one's own powers of adaptation to unfavorable events In one study conducted with college students, respondents reported whether they were currently in, or had experienced the dissolution of, a romantic relationship Those in a relationship were asked to predict how they would feel two months after breaking up, and also to report their current happiness Those who had broken up reported their current happiness Consisten with underprediction of adaptation, forecasters predicted that they would be significantly less happy two months following a breakup than those who had experienced such an outcome reported actually being In a different study reported in the same paper, all current assistant professors at the College of Liberal Arts at the University of Texas, Austin, were asked to forecast their overall well-being at various points in time after their tenture decision conditional on the decision being favorable and unfavorable. In addition, those who had been assistant professors during the previous ten years, who had received either positive or negative decisions, were asked to report their current well-being Forecasters, on average, thought that they would not fully adapt to (i e , no longer be hedonically affected by) good or bad news until about 5 years after the tenure decision However, the degree of adaptation observed in the post-tenure group was much more rapid Forecasts for periods less than 5 years greatly exaggerated the hedonic impact of tenure. people expected to be happier than they turned out to be if they received it and less happy than they turned out to be if tenure was denied

Schkade & Kahneman (1998) asked students at California and Midwest universities to report their own level of life satisfaction and also to estimate the life satisfaction of "a student with your

values and interests" at a university in the other location Students in the midwest thought that students in California were more satisfied, and those in California perceived those in the midwest as less satisfied However, both groups reported similar levels of life satisfaction

Other studies provide indirect support for empathy gaps For example, a secondary finding from Milgram' famous shock experiment is that people who did not participate in the experiment believed almost without exception that they themselves could not have administered the powerful shocks In our terminology, this is an example of a cold-to-hot empathy gap, subjects not in the procedure cannot appreciate the pressure of an authoritative experimenter In a different domain, Slavin et al (cited in Kolata, 1997) found that the willingness to accept (hypothetically) a grueling course of chemotherapy for a 3 months longer lifespan varied greatly between oncologists (6% accept), healthy people (10% accept), and current cancer patients (42% accept) People's predictions, when in a cold (calm, healthy) state, of what they will want when they are in a hot (agitated and unhealthy) state, again appear to be biased A "hot-to-cold" empathy gap may also be implicated in the finding (Ausubel, 1991) that most credit-card owners anticipate, unrealistically, that they will maintain a zero credit balance on their card (the average card has a balance of $2,000) Away from the lure of shopping opportunities, it seems, people underestimate the attraction that such opportunities will pose in the future This illusion allows credit card companies to charge exorbitant rates on credit balances because, when they acquire cards, people think that the interest rates won't apply to them

EXPERIMENTS

Study 1

Our first study tests the prediction that people who are not currently curious will underpredict the force of their own future curiosity Subjects who had either taken (hot condition), or were about to take a quiz (cold condition), chose between receiving the answers to the quiz or a candy bar (i e , if they chose the candy bar, they would not find out the correct answers to the questions). Based on the cold-to-hot empathy gap, we predicted that subjects who were not curious because they had not yet taken the quiz, would be more likely to choose the candy bar over the answers.

Method

Subjects were 105 visitors to Pittsburgh International Airport. The sample was 42% female. Thirty-nine percent were younger than 35 and 77% had a high school diploma Each subject was shown a sample geography question drawn randomly from a list of 11 geography questions, along with the answer to the question Answers to sample questions were provided before the questions themselves so as to prevent subjects from experiencing even a brief moment of curiosity For example, every 11th subject was told that "Houston Texas is located further south than Jacksonville, Florida" and that the questions they would be given would contain questions of the

form:

"Which US city is located farther South: a. Houston, Texas or b. Jacksonville, Florida?"

Subjects in the cold choice condition were then asked:

"After attempting to answer these 10 questions, would you prefer to:

a. get a Dove candy bar, or

b. receive the answer key?"

They were then asked to predict their own future level of curiosity on a 1-10 point scale (1=not curious to 10=very curious). Finally, they were presented with, and attempted to answer, the 10 remaining questions.

Subjects in the hot choice condition were first presented with, and attempted to answer, the ten questions, and only then were asked to choose between a candy bar or the answers. After making the choice, they were asked to report their level of curiosity on the same 10 point scale.

After taking the test all subjects estimated the number of questions they had answered correctly, their interest in trivia and their knowledge of US geography. Subjects in the cold choice condition were also asked whether, hypothetically, they would change their choice if given the opportunity. The final task for the cold-choice subjects was to report their level of curiosity.

Results

As hypothesized, more subjects in the hot choice condition opted for the answers (75%, 40/53) than in the cold choice condition (50%, 26/52), a significant difference ($\chi 2(1)=7.3$, $p<.01$). There was no such significant difference, however, in predictions of curiosity (on the 1 to 10 point scale) made by cold choice subjects and actual curiosity ratings by hot subjects, although the means were in the direction of underprediction of curiosity ($t(100)=1.5$, $p>.1$).

Choice of the answers over the candy bar was positively related to subjects' self-reported level of curiosity when they made the choice ($p < 001$), their self-rated interest in trivia ($p < 001$), and marginally to their self-rated knowledge of US Geography ($p < 1$), but not to actual or estimated number of problems answered correctly There were no significant relationships between experimental condition and estimated problems correct, actual number of problems correct, overconfidence (actual minus expected correct), or in self-rated interest in trivia or knowledge of US geography Only 4 subjects in the cold choice condition expressed a preference for changing their earlier choice Of these, 3 changed from wanting the candy bar to wanting the answers

Study 2

Study 2 uses the same basic paradigm as Study 1 to investigate the impact of delay on the value of satisfying curiosity The hot/cold treatment used in Study is now crossed with an additional experimental manipulation: whether the answers, if chosen, would be received immediately or only after a delay of approximately one hour We anticipated that the curiosity induction manipulation would increase the desirability of the answers only when the answers are immediately available, not when they are delayed We also added a new between-subject experimental condition in which subjects predicted their choice between the answers and candy bar (and the prediction is for a choice made in a "hot" condition, after seeing the questions) We refer to these condition as "cold/predict/immediate," and "cold/predict/delayed," and to the earlier choice conditions as "cold/immediate," "cold/delayed," hot/immediate," and "hot/delayed "

We induced curiosity with the same 11 geography questions as in Study 1 The study was

conducted with 114 visitors to the Pittsburgh National Aviary Thirty-eight percent of the subjects were male, 55% were 35 year old or older, and 50% had a college degree Subjects were recruited as they entered the aviary In the delay conditions they were told that if they opted for the answers over the (immediately available) candy bar, they would receive the answers as they exited from the aviary -- typically about an hour later

Table 1 summarizes the design and the main findings The results confirm our first hypothesis, that a larger fraction of subjects would opt for the answers in the hot/immediate condition than in any of the other choice conditions ($\chi 2(1)=5$ 4, $p< 02$) They also show that predicted choices are much more similar to "cold" rather to "hot" choices

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Table 1 about here

As in the previous study, very few subjects expressed a desire to change their original decision, although they were not actually given the option of doing so Three subjects in the cold choice condition expressed a desire to change their original choice Of those, two changed from wanting the candy bar to wanting the answers In the prediction conditions 8 of 21 subjects mispredicted their own post-test preferences Of these, 7 predicted they would want the candy bar but later actually wanted the answers

Also as in the previous study, subjects' choices were related, in the predictable direction, to self-reported curiosity ($p< 001$), knowledge of US geography ($p< 01$), interest in trivia ($p< 05$), as well, marginally, as self-rated hunger ($p< 10$)

An unexpected finding in this study was the lower proportion of subjects in the

cold/immediate condition who opted for the answers. We had no prior reason to anticipate that this cell would differ from either cold/delay or hot/delay and, if anything, would have expected the fraction opting for the answers to be slightly higher in this condition based on simple time discounting. One of the reasons for running an additional study was to determine whether this unpredicted result was spurious.

Study 3

Study 3 was the same as Study 2, with one modification designed to rule out an artifactual interpretation of our results. Recall that in the first two studies each subject saw a single sample question that was randomly selected from the 11. If there was a single item among the 11 that was much more curiosity-evoking than the others, such an item would appear as the sample question for only one out of every eleven subjects but would be among those included in the quiz for the remaining 10 out of eleven subjects. In this case, the sample question would under-represent the 'true' curiosity-inducing nature of the quiz for 10 out of 11 subjects, which might conceivably account for the difference between those who had and had not actually taken the quiz.

To eliminate this interpretation, we created two subsets of 5 questions, and for any subject, used one subset as the sample and the other subset as the quiz. The total of 10 questions were taken from the original 11 questions used in Study 1. One-half of the subjects received the first subset as the sample, while other half received the second subset as the sample.

Results

Table 2 summarizes the results. As predicted, a higher fraction of subjects in the hot/immediate condition opted to receive the answers than in any of the other 3 cells ($\chi^2(1)=8.9$,

$p < .003$).

Table 2 about here

Subjects in the two cold conditions were asked if they would change their prior choice if they could. Three of 23 subjects (13%) in the cold/delay condition reported a desire to change their original choice -- all in the direction of opting for the answers instead of the candy bar. Seven of 23 (30%) subjects in the cold/immediate condition expressed a desire to change their choice, six of the seven wanted to change from the candy bar to the answers.

Discussion

The results of the three studies are consistent and confirm our main two hypotheses. All three studies indicate that people fail to appreciate the impact of curiosity on their choices, even when they are fully in a position to "simulate" the curiosity induction (Study 3 is especially clear in this respect). Moreover, the absence of a significant impact of curiosity induction on ratings, rather than on choices, (Study 1) suggests that the decision impact of being in a "hot" state is not necessarily mediated via a prior impact on judgments. In other words, the impact of visceral motivation on choices is "direct," at least in this particular experiment. This result is similar to the finding in the dating study mentioned earlier (Loewenstein, Nagin & Paternoster, 1997) that the impact of the sexual arousal manipulation on self-reported likelihood of behaving aggressively was not mediated by any of a variety of measured judgmental variables, such as the perceived likelihood of punishment or the anticipated attractiveness of the date. It is also similar to the

finding in Read and Loewenstein's (1999) study of memory for pain that differences in dependent *choice* variables (i.e., willingness to accept pain in exchange for payment) between experimental and control treatments were much larger than differences in subjective ratings of pain

The second hypothesis, also strongly supported, is that curiosity induction creates a "good-specific" temporal myopia, increasing disproportionately the value of immediate satisfaction of curiosity (but not of some other good). Importantly, in a "cold" state without curiosity induction, the desire to receive the answers rather than the candy bar is either independent of delay (Study 3) or interacts in the "wrong" direction, with fewer people preferring the answers when they would be provided immediately (Study 2). This seems to rule out the interpretation that the discounting of the answers in the delayed "hot" condition is due to a rational anticipation of curiosity dissipation (otherwise we would get the same interaction between preference and delay in the "cold" condition as well).

GENERAL DISCUSSION

Causes of Hot/cold Empathy Gaps

The fact that emotions can powerfully influence judgment has been documented in many studies. Bower (1992) presents evidence that temporarily induced moods of happiness, sadness, or anger give rise to mood-congruent biases in people's fear associations, imaginative fantasies, snap judgments of their acquaintances, momentary self-concept, and attributional style. Johnson and Tversky (1983) found that a relatively minor emotion manipulation had a significant impact on subjects' appraisals of a wide range of diverse risks. Forgas (1995) refers to the effects of emotions on memory and judgment as "affect infusion." Affect infusion, is "a process whereby

affectively loaded information exerts an influence and becomes incorporated into the judgmental process, entering into the judges' deliberations and eventually coloring the judgmental outcomes " LeDoux (1996) argues that these influences can be attributed to the wiring of the human brain. "Emotions can flood consciousness because the wiring of the brain at this point in our evolutionary history is such that connections from the emotional systems to the cognitive systems are stronger than connections from the cognitive systems to the emotional systems" (page 19)

People who are perfectly aware of the impact of emotions on judgment might be able to compensate for the impact of such emotions on their own behavior However, it is by now well established that people have limited introspective access to the factors that influence judgment and decisions (Nisbett & Wilson, 1977), and, consequently, that they cannot 'undo' the effects of information received For example, people are unable to revert back to their original opinions after learning that evidence on the basis of which they revised their opinion has been discredited (Anderson, Lepper & Ross, 1980), they are unable to remember what they originally expected to happen after receiving information that a particular outcome has happened (Fischhoff, 1975), and they are unable to undo the effect of the information they have so as to accurately predict the beliefs of the less-informed other (Camerer et al , 1989) If people are similarly unaware of how visceral factors influence their own *immediate* behavior, it is not particularly surprising that they underestimate their impact on their own future behavior

Varieties of hot/cold empathy gaps

Hot/cold empathy gaps occur not only prospectively, but also retrospectively As illustrated by the infamous "morning after" phenomenon which often follows an evening's excesses, people

in a cold state have difficulty remembering how they felt or why they acted as they did in a hot state Likewise, when in a hot state, people often have difficulty remembering that they were ever in a cold state A striking instance of a progressively increasing hot-to-cold retrospective empathy gap can be seen in the following first-person account of depression: "I kept redating the beginning of the depression. since my breakup with my girlfriend, the past October, since my mother's death, since the beginning of her two-year illness, since puberty, since birth Soon I couldn't remember what pleasurable moods had been like " (Solomon, 1998, page 46)

Both types of hot/cold empathy gaps also operate interpersonally When cold, it is difficult to understand or predict the behavior of someone who is hot, and likewise when hot it is often difficult to understand how others can feel cold in the situation The novelist Milan Kundera illustrates such an interpersonal empathy gap with the example of gift-giving.

> "Imagine that you have a friend who loves Schumann and hates Schubert, while you madly love Schubert and Schumann bores you to tears What kind of record would you give your friend as a birthday gift? Schubert, of course . And the moment you leave he'll throw it in the wastebasket" (1990.102)

Concluding comments

Historical accounts, dating back to the ancient Greeks, looked on behavior as the outcome of a conflict between reason and passion Reason was seen as largely benign, whereas passion was seen as unpredictable and often self-destructive Modern psychology has to a remarkable degree confirmed the validity of some such dichotomy, although the contemporary view of the passions is

much more benign.

Neuroscientists distinguish between the evolutionarily older limbic system of the brain, which plays a fundamental role in emotions and drives, and the relatively newer cortical systems, which play a greater role in language, consciousness, and problem solving. Consistent with such a separation, recent research has shown that affective reactions can occur rapidly and with minimal cortical involvement (Zajonc, 1980, LeDoux, 1996), and that affective reactions and cognitive appraisals of a situation often differ -- a phenomenon seen most strikingly in phobics (Barlow, 1988).

Until recently the passion side of the behavioral equation has been missing from decision making accounts of behavior, which have viewed decision making as largely a matter of effective problem solving. Research conducted in the last few years, however, has reasserted the importance of the affective dimension for decision making. In contrast to the classically negative view of emotions and other visceral sensations, the new research has tended to highlight the essential and positive role played by affective inputs, in part by demonstrating abnormalities that arise when such emotional inputs are absent (Wilson et al., 1993, Damasio, 1994).

While acknowledging the importance of emotions and other visceral factors for successful functioning, the visceral factor perspective can be viewed as a return to the older view that emotions and drives often come into conflict with deliberative decision making. The visceral factor perspective is an attempt to understand and codify the nature of such conflict. All visceral factors can not only distort cognitive appraisals (through "motivational" processes), but, at high levels of intensity, can actually take control of behavior. Moreover, as implied by the hot/cold empathy gap, decision makers underestimate the impact of visceral factors on their own behavior,

which has the perverse effect of increasing their decision influence

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Table 1
Percent of subjects choosing (or predicting that they will choose) the answers over the candy bar

experimental condition	answers to be received. immediately	after delay
hot choice	60%	35%
cold choice	21%	39%
cold prediction	38%	43%

Table 2
Percent of subjects choosing the answers over the candy bar

experimental condition	answers received. immediately	after delay
hot choice	61%	32%
cold choice	26%	22%

Notes

[1] Some notable exceptions are Baumeister & Scher (1994) and Mischel (1974)

2. O'Connor, deDreu, Schroth, Barry, Lituchy and Bazerman (1999) provide evidence for the role of emotions in interpersonal conficts When people were in the "heat" of a conflict they reported powerful emotions that produced a discrepancy between what they wanted to do and what they believed that they should do When they were, instead, thinking back on or ahead to a conflict there was less emotionality and a closer correspondence between such 'want' and 'should' reactions

[3] Elevated visceral factors can also distort judgments of the best course of action (see, e.g., Sjöberg, 1980), but the effect on judgment is typically smaller than the effect on behavior, producing the sensation of "acting against one's own better judgment."

[4] Many features of our legal system, such as consumer protection clauses and different penalties for premeditated and unpremeditated crimes, are premised on the notion that people are less control of, and hence responsible for, their behavior when they are in a hot state.

[5] A second manipulation, of focus of attention on or away from pain sensations, tested an implication of Leventhal's two-factor theory of pain Subjects who focussed on pain sensations did not experience the dropoff in memory for pain, as measured by WTAP