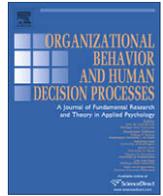




Contents lists available at ScienceDirect

Organizational Behavior and Human Decision Processes

journal homepage: www.elsevier.com/locate/obhdp

The enduring impact of transient emotions on decision making

Eduardo B. Andrade^{a,*}, Dan Ariely^b^a Haas School of Business, University of California, Berkeley, CA 94720-1900, USA^b Fuqua School of Business, Duke University, Durham, NC 27708, USA

ARTICLE INFO

Article history:

Received 6 October 2008

Accepted 20 February 2009

Available online 27 March 2009

Accepted by John Schaubroeck

Keywords:

Emotions

Negotiations

Ultimatum game

Anger

Incidental affect

Mood

Lasting effect

Long-term impact

ABSTRACT

People often do not realize they are being influenced by an incidental emotional state. As a result, decisions based on a fleeting incidental emotion can become the basis for future decisions and hence outlive the original cause for the behavior (i.e., the emotion itself). Using a sequence of ultimatum and dictator games, we provide empirical evidence for the enduring impact of transient emotions on economic decision making. Behavioral consistency and false consensus are presented as potential underlying processes.

© 2009 Elsevier Inc. All rights reserved.

Introduction

The impact of incidental emotions on decision making is well established (Vohs, Baumeister, & Loewenstein, 2007). Incidental emotions (i.e., unrelated to the target object) have been shown to influence how much people eat (Grunberg & Straub, 1992), help (Manucia, Baumann, & Cialdini, 1984), trust (Dunn & Schweitzer, 2005), procrastinate (Tice, Bratslavsky, & Baumeister, 2001), or price different products (Lerner, Small, & Loewenstein, 2004). Based on all of this evidence, it is tempting to suggest that incidental emotions represent an omnipresent influence in our mundane decision making processes. Skeptical critics, however, might wonder how pervasive the impact of emotion actually is. Most of the emotional changes experienced in our daily lives are relatively mild and short-lived. Even when a strong emotion is experienced, its intensity tends to fade away in a matter of seconds or, at most, minutes (Ekman, 1999). Although we may happen to grieve for days after a sudden loss, we more often get mildly disappointed after a tasteless meal or temporarily upbeat after a comedy show. It seems logical then to suggest that the impact of emotions on decision making should also be brief. Put simply, as the emotional state rapidly recedes to the background, so should its impact on decision making.

In contrast to this view, this article shows that the influence of mild incidental emotions on decision making can *live longer than the emotional experience itself*. Given that people often do not realize they are being influenced by the incidental emotional state, decisions based on a fleeting incidental emotion can become the basis for future decisions and hence outlive the original cause for the behavior (i.e., the emotion itself).

Theoretical background

The emotion literature has traditionally worked under the assumption that the intensity of a given feeling state fades away rather quickly, along with its impact on behavior (for a definitional note on emotion, see “Appendix”). Support for short-lived impact of emotions is demonstrated in a field study conducted by Isen and colleagues. The authors showed that after a positive mood manipulation made door to door (a free gift), individuals were more willing to help in a subsequent request over the phone relative to the control condition. However, the effect declined as time elapsed between the free gift (mood manipulation) and the phone request (dependent variable). After 20 min, as the positive mood supposedly faded away, the impact of the free gift on helping also mitigated (Isen, Clark, & Schwartz, 1976).

Although it is indisputable that under many circumstances the impact of emotion on behavior is directly contingent on the strength of the affective signal (e.g., Cohen & Andrade, 2004;

* Corresponding author. Fax: +1 510 643 0621.

E-mail address: eandrade@haas.berkeley.edu (E.B. Andrade).

Wegener & Petty, 1994), there are situations in which the impact of emotions on behavior can outlive the emotion itself. A few pieces of evidence have given initial support to this idea, focusing mostly on the retrieval and use of previously affect-based assessments in subsequent assessments and decisions.

Retrieval of past affect-based judgments

In a famous field experiment, Dutton and Aron (1974) manipulated male participants' level of fear by asking them to cross over an apparently dangerous (vs. safe) suspension bridge. While on the bridge, participants interacted with the female experimenter who offered them the opportunity to call her in the future—"to further discuss the research". The results showed that the high-arousal stimulus ("dangerous" bridge) increased male participants' propensity to call the female experimenter in the future relative to low-arousal stimulus ("safe" bridge). This was the case even though, at the time of the calling decision, the arousing experience had likely faded away. According to the authors' rationale, fear was misattributed to sexual arousal, which made male participants more attracted to the female experimenter during the personal interaction and led them to call her in the future. Similarly, Simonsohn (in press) has recently found that the weather during a campus visit influenced students' enrollment decision a few months after the experience. Although no direct measures of mood were taken, the author speculated that the past visit might have influenced participant's "remembered utility" and subsequent decisions.

In a more controlled environment, Ottati and Isbell (1996) exposed participants to a mood induction and then asked them to acquire information about a political candidate which they would have to evaluate in the future. The results showed that the impact of the mood induction on judgment was still present one week later. The authors suggested that since participants knew they would have to evaluate the target later on, they probably formed an impression on the spot, stored it in memory, and used it as a basis for judgment in the following week. Pocheptsova and Novemsky (2008) systematically investigated the moderating role of evaluation at the time of the emotional experience. Their results showed that the lasting impact of incidental emotions on delayed judgments and choices happened only when participants were instructed to evaluate the target object when first presented with it (i.e., right after the mood manipulation). When no direct instructions to evaluate the target object were provided, the lasting impact of incidental mood on judgment and choices disappeared.

Inferences on past affect-based decisions

These findings explicitly or implicitly suggest that people tend to retrieve past affect-based judgments and directly use it when making future judgments and decisions. We speculate that inferences based on past affect-laden decisions might also influence future choices. At least two mechanisms could contribute to this process: behavioral consistency and false consensus.

Behavioral consistency

From the early dissonance and balance theories (Festinger, 1957; Heider, 1958) to the foot-in-the-door effect (Freedman & Fraser, 1966), it is well established that individuals (or at least a significant portion of them) have a tendency to behave or make decisions in a manner consistent with prior beliefs and actions (Cialdini, Trost, & Newsom, 1995). In their seminal work, Freedman and Fraser (1966) asked participants to display a large signboard in their front lawn supporting safe driving. Two weeks earlier, half of these participants had been asked by a different volunteer to sign a

petition in favor of "keeping California beautiful," which was, not surprisingly, signed by virtually every participant. The results showed that those who had (vs. not) been asked to comply with the small request (keeping California beautiful) were significantly more likely to comply with the larger request (display the signboard in the front lawn) two weeks later. The authors concluded that people's self-images of good citizens had probably changed after complying with the first request, which led them to consistently comply with the second and larger request as well.

This type of process resonates well within the emotion realm. It is often the case that people do not fully realize that incidental emotions might be influencing their decisions (otherwise they tend to correct for the misattribution—Schwarz & Clore, 1983). In these cases, people are likely to use past choice as indication of preference. Then, once a subsequent context-related decision is called for, people will make subsequent choices consistent with the prior decisions and/or inferred beliefs.

There is at least one piece of evidence in the emotion literature that seems to corroborate the above rationale. Levin and Isen (1975) showed that, compared to a control condition, participants who found a dime in the coin return of a public telephone (positive mood manipulation) were more likely to mail an apparently forgotten letter, which was found in the same telephone booth (main DV). This effect emerged even when the letter was unstamped (study 2). Although no data on the time delay between the mood manipulation and the DV is available, it is possible that the mailing of unstamped letters took place when the emotion manipulation itself had faded away. So why would "once-happy" people be more likely to look for stamps and eventually mail the letter? We speculate that a two-stage process might have taken place: First, the emotional state influenced participants' willingness to pick up the forgotten letter. Second, once in possession of it, participants might have felt committed to mailing it in order to be consistent with the prior actions and/or inferred beliefs.

Another piece of evidence for the long-term effect of behavioral consistency comes from what Ariely, Loewenstein, and Prelec (2003) call "Coherent Arbitrariness." In their experiments, participants first made a hypothetical decision about whether they would pay an amount of money set by the last two digits of their social security number (i.e., 72 becomes \$72) for a variety of consumer products and after that participated in an auction for these products where they could bid as much as they wanted. The results showed that individuals with higher social security numbers ended up bidding a higher amount for these products (hence "arbitrariness"), while at the same time the relationship between the prices of related products (a computer mouse and a keyboard; a mediocre and very good wine) was sensible (hence "coherent")—that is, better products were given a higher price. What the pattern of coherent arbitrariness suggests is that individuals do not know with high accuracy how much they value different products, but that once they make a decision, they use that initial decision as an anchor (Tversky & Kahneman, 1974), basing later decisions on their own, albeit arbitrary, decisions.

False consensus

A second phenomenon might further instigate the lasting impact of emotions on decision making via inferences on past behavior. It is well established that people hold the conviction that their own beliefs and attitudes are widely shared by others (Ross, Greene, & House, 1977). As a result of this false consensus, people intuit that others would probably behave like them when facing a similar scenario (for reviews, see Marks & Miller, 1987; Mullen et al., 1985). This phenomenon therefore implies that incidental emotions, which unconsciously influenced people's decisions, will also lead individuals to believe that others would behave likewise

when presented with the same situation. In other words, whereas behavioral consistency implies that future decisions will be based on inferences about *one's own past actions*, false consensus suggests that future decisions will be based on inferences about *others' expected actions*. For instance, an incidentally angry person, who is more likely to reject an unfair offer in an ultimatum bargain, might in the future: (a) make fairer offers – i.e., behavioral consistency—and (b) believe that most people would do the same thing—i.e., false consensus effect.

Emotions in the ultimatum and dictator games

In the following experiment, we test whether the impact of incidental emotions on economic decision making can last longer than the emotion itself via inferences on a previous affect-based decision. To achieve this goal, we selected a scenario in which (a) incidental short-lived emotions are likely to play a role, (b) sequential decisions are made and (c) actual financial consequences take place. The Ultimatum and Dictators Games can address such requirements (Güth, Schmittberger, & Schwarze, 1982). In the ultimatum game (UG), one player is assigned to the role of the proposer, and one player to the role of the receiver. The proposer is given an amount of money \$X, and her task is to propose a split of this amount with the receiver. Any division is allowed. Next, the receiver can either accept or reject the proposer's offer. If the receiver accepts the offer, the transaction is carried out, and both players get the amount specified by the proposer. If the receiver rejects the offer, neither the proposer nor receiver gets anything, and the money returns to the experimenter. The dictator game (DG) follows the same rules, except for the fact that the receiver must accept whatever offer the proposer makes (the proposer is the "dictator").

The general results in the literature on the UG have shown that when the proposer offers the receiver an unequal share of around 20–30% of the pie, the receivers' sense of fairness is often violated, and as a consequence, rejection rates are around 40–60%, with some variance based on multiple moderating variables such as gender, repetition, players' level of anonymity, etc. (Camerer, 2003). Along with the role of genuine fairness in driving rejection rates in the ultimatum game (Rabin, 1993), unequal offers have also been documented to trigger negative emotions (Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003), particularly anger (Pillutla & Murnighan, 1996). For example, Pillutla and Murnighan (1996) showed that offers perceived as more unfair elicited stronger feelings of anger and increased rejection rates. However, as the authors recognized: "Since this study did not manipulate anger, these conclusions are correlational rather than causal" (p. 220). Correlational effects were also demonstrated at the neuronal level. Using fMRI, Sanfey and colleagues (2003) showed that rejected unfair offers showed stronger brain activation in areas associated with negative emotional experience (i.e., anterior insula) compared to accepted unfair offers. More recently, Harlé and Sanfey (2007) demonstrated that incidental sadness increased rejection rates to unfair offers in the UG. In summary, there is accumulating support suggesting that involvement in this type of game is high and that negative emotions can influence the receivers' rejection rates—although evidence on the impact of anger has so far been correlational.

Overview of the experiment and specific hypothesis

In the following experiment, participants are asked to work on a sequence of five tasks broken into what appears to be four independent studies: (1) incidental emotion manipulation among receivers (IV = angry vs. happy video); (2) first ultimatum game where the targeted participants are receivers of an unfair offer (DV 1 = rejection rate); (3) emotion mitigation (neutral filler task

to all participants); (4) second ultimatum game where targeted participants are proposers (DV 2 = offer) and (5) dictator game where the targeted participants are again proposers (DV 3 = offer).

Within this research paradigm, we hypothesize first that angry (vs. happy) receivers will be more likely to reject an unfair offer from their respective proposer in the *first* ultimatum game. Such results would provide clear evidence of the direct impact of incidental emotions on decision making.

Second, we hypothesize an enduring impact of the incidental emotion manipulation in the second ultimatum game—i.e., after the neutral filler task has taken place and the emotion experience itself has been mitigated. Precisely, we predict that the "once-angry" receivers, who now play the role of the proposer, will be more likely to make fairer offers in the second ultimatum game.

Note that in the second ultimatum game, we switch the role of the participant from a receiver to a proposer. This role reversal has two benefits: the first benefit is that it allows us to test whether a consistent behavior is due to a "mindless" repetition of past actions (e.g., "I rejected then, I will reject now"), or whether it is influenced by a deeper change in the beliefs of the participant. A belief-based consistency process would suggest that the previous action leads the individual to infer that her choice was based on a set of beliefs/preferences. As a result, virtually any subsequent action which invokes the same set of beliefs would be indirectly influenced by previous choice. In our experiment, this means that those who reject an unfair offer would think that they have a preference for fairness. When a subsequent fairness-invoking decision arises, participants would use this apparent set of beliefs to decide on how to split the pie (e.g., "I have rejected an unfair offer, so I care about fairness. I should then make a fairer offer"). Of course, both aspects—belief and "mindless" repetition—might be playing a role in the long-term influence of fleeting emotions, but the role reversal test would provide at least some indication that inferences about fairness were taking place.

The second benefit of role reversal in these sequential games is the counterintuitive prediction on the impact of emotions on decision making. There is growing consensus in the emotion literature that happiness is more likely to stimulate cooperative and less selfish actions, whereas the opposite holds true for negative feelings—anger, in particular (Allred, Mallozzi, Matsui, & Raia, 1997; Andrade & Ho, 2007; Baron, 1990; Baron, Fortin, Frei, Hauver, & Shack, 1990; Carnevale & Isen, 1986; Forgas, 1998; Pillutla & Murnighan, 1996; van Kleef, de Dreu, & Manstead, 2004). Thus, if emotions are the main drivers for one's behavior in the proposer game, one would predict that angry (vs. happy) proposers are more likely to make unfair (vs. fair) offers. In contrast, our rationale predicts that proposers, who were angry (vs. happy) receivers in the first UG and were as a result more likely to reject unfair offers, will be the ones to make *fairer* offers in the second UG. The hypothesis is first that angry individuals will reject unfair offers as receivers. Later, when they come to be proposers, they will look back at their own behavior and try to behave in a consistent manner. As a result, they will, as proposers, make offers that are fairer! This thus creates a social benefit for invoking anger. The same general pattern should also occur in the happy condition. These individuals will accept unfair offers. Later, when they come to be proposers, they will look back at their own behavior and try to behave in a consistent way. As a result, they will make offers that are less fair! This thus creates a social cost for invoking happiness.

The last game—the dictator game—will help us speculate on the extent to which false consensus plays a role. Proposers in the second UG can make fairer offers either because they believe they care about fairness or because they anticipate that their partner might reject an unfair offer (Hoffman, McCabe, Shachat, & Smith, 1994; Novak, Page, & Sigmund, 2000). If a rejection in the first UG increases perception that others will also reject when facing a similar

scenario (false consensus), and that is what proposers in the second UG are focusing on, then fairer offers would go away when people play the subsequent dictator game—since in this game, receivers must accept whatever offer is made. In other words, a false consensus mechanism predicts that once-angry participants will make as unfair offers as the once-happy participants. However, if participants in the second UG made their decisions in order to be consistent with their prior beliefs/actions, then the type of game should *not* influence proposers' offer. In this case, once-angry (vs. once-happy) participants would make fairer offers even when they know that their respective partner would have to accept any offer made.

Finally, since there are proposers and receivers in the game, we can assess the financial consequences of the enduring impact of transient emotions. Two outcomes are possible: if, on the one hand, proposers in the second UG make fairer offers in the angry (vs. happy) condition and, as a result, receivers are more likely to accept them, the enduring impact of emotions might improve angry receivers' payoffs. If, on the other hand, receivers in the second UG are willing to accept whatever offer proposers make, the enduring impact of emotions might lead once-angry (vs. once-happy) proposers to lose money. In the same vein, if once-angry (vs. once-happy) proposers make fairer offers in the final dictator game as well (where any offer would be accepted), then the lasting impact of emotions will also reduce the targeted participants payoffs.

Experiment

Method

Participants and design

One hundred and ten students from a western university participated in the experiment. They received \$5 plus the earning generated during the games in exchange for their participation in the experiment. The experiment adopted a two (affect: anger vs. happiness; between) by three (role: receiver in UG 1 vs. proposer in UG 2 vs. proposer in DG; within) mixed design. Participants were randomly assigned to one of the two conditions.

Procedure

The experiment was conducted in a computer-based environment. Participants arrived in the laboratory in groups of 18–20 and were randomly assigned to one of the laptops. They were told that they would be participating in a sequence of four short studies, which were combined to obey the lab's minimum time required length for any given experimental session. Two of the studies (1 and 3) were related to visual stimuli and memory while the other two were about economic decision making. Similar studies were set apart, they were told, to avoid the possibility that the answers from one study contaminate the answers of the other.

"Study 1: Video and Memory" asked participants to watch 5 min of a film clip followed by a task in which participants were asked to describe a personal experience related to the movie (see Andrade, 2005 for a similar procedure). The targeted participants, those who would play the receiver in study 2 (see below), were assigned to either the angry or a happy condition in study 1. In the angry condition, they watched a clip of the movie "Life as a House", where an employee (Kevin Klein) breaks the firm's architecture models after being fired by an arrogant boss. In the happy condition, participants watched a clip of an episode of *Friends* ("New Years Resolution"). Note that we also had real proposers in this study. These participants, who would play the proposer in study 2, watched 5 min of a non-emotional documentary about Africa.

After the emotion manipulation, participants in "Study 2: Economic Games" played the ultimatum game. Receivers were provided with the following instructions:

"The purpose of this study is to investigate how people make economic decisions in a particular game. Thus, *you will be playing with real money*. Feel free to ask the experimenter questions as they arise. Communication with other participants is prohibited. This study is a game, in which two students are matched at random and assigned to the role of either the Proposer or the Receiver. You have been randomly assigned to the role of the RECEIVER.

A sum of \$10 has just been allocated to the Proposer. His/Her task now is to offer a division of the \$10 between the two of you. You can either accept or reject the Proposer's offer. If you accept it, you receive whatever the Proposer offered you and the Proposer keeps his/her share. If you reject it, *neither of you will get anything*. Both of you have full information about the rules of the game.

You don't know (and will not know) who the matched Proposer is. Similarly, the matched Proposer does not know (and will not know) who you are either. So, the game is played in complete anonymity.

Click on the continue button below and wait for the Proposer's offer."

Proposers saw similar instructions. However, since we wanted to test receivers' reaction to *unfair* offers, proposers were, unbeknown to receivers, given only two options to choose from (i.e., Keep \$7.5 and Give \$2.5 or Give \$7.5 and Keep \$2.5). Previous research has shown that the vast majority of proposers in this situation, not surprisingly, choose the first option (Andrade & Ho, in press).

After the first ultimatum game, "Study 3: Picture and Memory" introduced a filler task. Participants conducted a task about pictures and memory. In an attempt to neutralize participants' positive or negative emotions, all pictures were neutral in content, and the task lasted around 20 min.

In "Study 4: Economic Games," participants played the reverse role in a second ultimatum game. That is, those who played the role of the receiver in study 2 were asked to play the role of the proposer in study 4, and vice-versa. They were informed that they would be playing with a different, but always anonymous, partner. Finally, right after the proposers made their offer but before they got a response to it from receivers, proposers were told that another round would be available where they would be playing a similar role in a slightly different game. They then played the third and final economic game, which was the dictator game. The dictator game is similar to the ultimatum game except for the fact that the receiver must accept whatever offer the proposer (the "Dictator") makes—and both players are aware of it.

Emotion manipulation check. Anger and happiness were measured at two points in time: (a) right after the emotion manipulation ("study 1") and (b) right after the 20 min filler task ("study 3"). To avoid hypothesis guessing, the emotion manipulation checks ("Right now I feel angry/happy" nine-point scale; 9 = very much) were embedded in a list of several items related to the cover story.

At the end of the experiment participants were asked to report the purpose of the studies and to describe any problems during the experiments. No one guessed the hypotheses or misunderstood the instructions.

Summary of procedure and hypotheses. In short, receivers' emotions were manipulated (study 1) and its impact on rejection to unfair

offers assessed in a first UG (study 2). We hypothesized that angry receivers would be more likely to reject unfair offers than happy receivers. After a 20 min filler-task—meant to mitigate the previous emotional experience (study 3)—, the once-angry (vs. once-happy) receivers played the UG for the second time. This time, however, they were asked to play the role of the proposers. We hypothesized that in this second UG, proposers in the angry (vs. happy) condition would offer a higher share of the pie to the paired-receiver. After making the offer on the division of the pie but before getting a feedback from the receiver, participants were asked to play the same role in a slightly different version of the game. They then played the dictator game, where receivers would have to accept whatever offer was made by the paired-proposer. The dictator game allowed us to investigate the extent to which behavioral consistency and/or false consensus were the driving mechanisms.

Results

Manipulation check

As expected, most proposers (93%) made the offers that favored themselves in the first ultimatum game (i.e., to keep \$7.5 and give \$2.5 to receivers). All subsequent analyses are made within this group ($n = 102$; 51 proposers and 51 receivers).

An ANOVA with repeated measures showed that there was significant interaction between emotion manipulation and the reported level of anger ($F(1,49) = 40.9$, $p < .001$, $\eta_p^2 = .45$) and happiness ($F(1,49) = 26.10$, $p < .001$, $\eta_p^2 = .35$). As expected, participants in the angry condition were feeling significantly angrier and less happy right after the angry (vs. happy) manipulation in “study 1” (anger_time 1: $M_{\text{angry cond}} = 5.2$, $SE = .27$ vs. $M_{\text{happy cond}} = 1.3$, $SE = .28$, $F(1,49) = 100.53$, $p < .001$, $\eta_p^2 = .67$; happiness_time 1: $M_{\text{angry cond}} = 4.1$, $SE = .33$ vs. $M_{\text{happy cond}} = 7.7$, $SE = .34$, $F(1,49) = 55.85$, $p < .001$, $\eta_p^2 = .53$). However, the emotion manipulation faded away after the 20 min filler task (“study 3”) where no difference between the emotion conditions was observed (anger_time 2: $M_{\text{angry cond}} = 2.8$, $SE = .37$ vs. $M_{\text{happy cond}} = 3.1$, $SE = .38$, $F(1,49) = .27$, $p > .10$, $\eta_p^2 = .00$; happiness_time 2: $M_{\text{angry cond}} = 5.1$, $SE = .31$ vs. $M_{\text{happy cond}} = 5.6$, $SE = .32$, $F(1,49) = 1.17$, $p > .10$, $\eta_p^2 = .02$).

First ultimatum game

The emotion manipulation influenced receivers' response to the unfair offer. Whereas only 40% of happy receivers were willing to reject the apparent unfair offer, the rejection rate climbed to 73% among angry receivers ($\chi^2 = 5.68$, $p < .05$).

Second ultimatum game

Remember that in the second ultimatum game, the roles reversed and the emotion manipulation had already dissipated due to the filler task. Within this scenario, the once-angry receivers who were now playing the role of the proposers requested a smaller share of the pie ($M = \$5.8$, $SE = .19$) compared to happy condition ($M = \$6.5$; $SE = .20$, $F(1,49) = 6.56$, $p = .01$, $\eta_p^2 = .12$). Fig. 1 displays the distribution of proposers' offers in the second UG as a function of emotion condition. The graph shows, for instance, that 76% of proposers in the angry condition made an offer in which they would keep for themselves \$6 *at most*. In the happy condition, only 44% behaved the same way ($z = 2.40$, $p < .01$). In other words, in line with our hypothesis, proposers in the angry (vs. happy) condition made *fairer offers* to the paired-receivers.

Our rationale for this result is that, consistency with past behavior—which was unconsciously impacted by the incidental emotion—had a strong influence on future action. This could be directly tested by assessing the extent to which the choice in the

first ultimatum game contributed to the proposers' offer in the second ultimatum game over and above the incidental emotion manipulation. A 2 (emotion: anger vs. happiness; between) by 2 (choice in UG1: accept vs. reject; between) ANOVA reveals a significant main effect of choice in UG1 ($F(1,47) = 24.4$, $p < .001$, $\eta_p^2 = .34$), but no main effect for the emotion manipulation ($F(1,47) = 1.57$, $p > .10$, $\eta_p^2 = .03$), or for their interaction ($F(1,47) = .00$, $p > .10$, $\eta_p^2 = .00$). In other words, the allocation decision proposers made in the second UG was largely dependent on the decision to reject or accept the offer in the first UG, and had little to do with the emotion condition they were assigned to—providing support for the impact of past decisions on future decisions and the influence of the emotional influence past the emotion itself.

Dictator game

In the dictator game, participants were assigned to the same roles played in the second ultimatum game. However, they now faced a game in which whatever offer made would have to be accepted. Not surprisingly, proposers in the dictator game kept a larger share of the pie ($M = \$7.5$, $SE = .28$) relative to the ultimatum game ($M = \$6.2$, $SE = .15$; $F(1,50) = 23.74$, $p < .001$, $\eta_p^2 = .32$), which indicates that they understood the benefits of being a “dictator” in the game. However, the pattern of results across conditions remained similar to the second ultimatum game. Proposers in the angry (vs. happy) condition were still more likely to keep a smaller share of the pie, although the effect was marginal ($M_{\text{angry}} = \$7.0$, $SE = .38$ vs. $M_{\text{happy}} = \$8.0$, $SE = .39$; $F(1,49) = 3.15$, $p = .08$, $\eta_p^2 = .06$). Fig. 2 displays the distribution of proposers' offers in the DG as a function of emotion condition. The graph shows that, similar to the results in the second UG (i.e., Fig. 1), participants in the angry condition were more likely to make fairer offers. Precisely, 58% of proposers in the angry condition made an offer in which they kept for themselves \$6 *at most*. In the happy condition this amount dropped to 28% ($z = 2.14$, $p < .05$). It is worth noting, however, that the number of proposers who offered receivers very little (i.e., $\leq \$1$) increased significantly in the DG (21 proposers) relative to the UG (only one proposer), and that happened in both angry and happy conditions.

Moreover, an ANOVA with repeated measure showed that time of the offer (second vs. third game) and emotion manipulation (angry vs. happy) did not interact on the amount offered by the proposers ($F(1,49) = .25$, $p < .10$, $\eta_p^2 = .01$). Only a main effect of round ($F(1,49) = 23.47$, $p < .001$, $\eta_p^2 = .32$) and a main effect of emotion manipulation ($F(1,49) = 5.94$, $p < .05$, $\eta_p^2 = .11$) emerged.

Financial consequences

Since there were proposers and receivers, it was possible to assess whether the emotion manipulation influenced participants' financial outcome after the emotion itself had mitigated. In the first ultimatum game angry receivers, who were more likely to reject the unfair offer, ended the first game with less money in their pocket ($M = \$0.7$, $SE = .23$) compared to happy receivers ($M = \$1.5$, $SE = .24$; $F(1,49) = 6.15$, $p < .05$, $\eta_p^2 = .11$). Moreover, the emotion manipulation produced a financial effect in subsequent games after the emotion itself had faded away ($F(1,49) = 5.03$, $p < .05$, $\eta_p^2 = .09$). In the second UG and in the DG, proposers who once were angry made fairer offers which were *not* more likely to be accepted compared to the happy condition – causing them to make on average less money ($M = \$12.5$, $SE = .54$) than those who once were happy receivers ($M = \$14.3$, $SE = .55$). In total, the results show that a mild incidental emotion manipulation made participants in the angry condition lose on average \$2.5 relative to the happy condition, due to a direct plus and indirect (and lasting) impact of emotion.

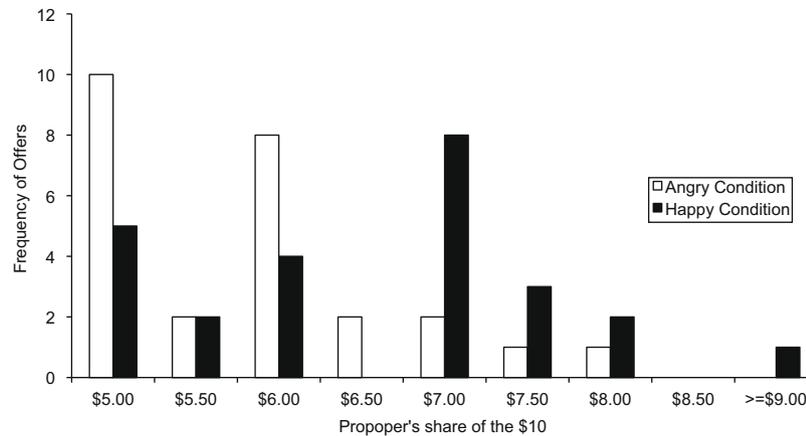


Fig. 1. Distribution of proposers' offers in the UG.

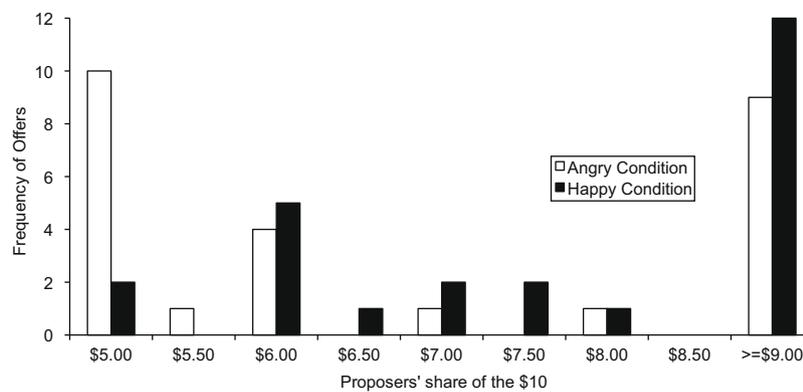


Fig. 2. Distribution of proposers' offers in the DG.

Discussion

This experiment provides evidence consistent with the two main hypotheses. First, incidental emotion directly influenced decision making: angry (vs. happy) receivers were significantly more likely to reject an unfair offer. Second, incidental emotion had an indirect and lasting effect on economic decision making. Proposers who once were angry (vs. happy) receivers made fairer offers to their respective partners in the second ultimatum game. Moreover, this effect was moderated by their decision in the first ultimatum game. Those who rejected unfair offers—most frequently in the incidental anger condition—were the ones more likely to make fairer offers. Finally, fairer offers in the angry condition emerged even when proposers knew that receivers would have to accept their decision—the dictator game. These results provide initial evidence that behavioral consistency represented at least one of the core mechanisms. Finally, using actual proposers and receivers, the experiment demonstrates that participants in the angry (vs. happy) condition, who became fairer proposers, ended up making less money.

General discussion

The affect literature has consistently demonstrated that incidental emotions can influence judgment and decision making. Emotions change how much we help, eat, or take-risks, to mention a few. The vast majority of the literature, however, focuses on the short-lived impact of incidental states. Moreover, it implicitly or explicitly states that once the emotion dissipates (and it

usually fades away rather quickly), so should its impact on behavior. In this article, we demonstrate that mild incidental emotions can not only influence economic decisions in the short term, but also *live longer than the emotional experience itself*. Because past actions are often used as a starting point for decision making and people tend to behave consistently with past actions and cognitions, earlier choices—unconsciously based on a fleeting incidental emotion—can become the basis for future decisions and hence outlive the original cause for the behavior (i.e., the emotion itself).

Behavioral consistency and/or false consensus

Our experiment provides initial evidence that behavioral consistency might be driving the effect since “once-angry” receivers were still making fairer offers when they played the dictator game. That being said, such statement must be seen with caution for two reasons. First, although those in the angry conditions did make fairer offers than those in the happy condition, the effect was marginal ($p = .08$). Second, the dictator game asked participants to make a similar type of decision relative to a previous choice (i.e., how to share the \$10 with the partner), and these two decisions took place around 1 min after one another. Such a scenario likely fostered a “need for consistency”. Future research could exogenously manipulate the consistency cues available in the environment to test the extent to which it moderates people’s subsequent actions. Likewise, false consensus is also known to present interesting boundary conditions (Marks & Miller, 1987; Mullen et al., 1985), which could be

inserted into the design in order to disentangle the two mechanisms. For example, it is possible that false consensus might be heightened (mitigated) if students are told that their matched-participant is from a similar (dissimilar) group. To the extent that the enduring impact of emotion is mediated by false consensus, the lasting effects should be higher when similar groups are interacting among themselves, and false consensus is more likely.

Belief-based vs. mechanical consistency

When it comes to behavioral consistency, at least two complementary mechanisms might be at play: belief-based and mechanical consistency. In a belief-based consistency process, a previous action leads the individual to infer that her choice was based on a set of beliefs/preferences. As a result, virtually any subsequent action which invokes the same set of beliefs would be indirectly influenced by prior choice. In our experiment, this means that those who rejected an unfair offer thought they had some meaningful preference for fairness. When a subsequent fairness-invoking decision was at play, participants used this set of beliefs to make their choice on how to split the pie.

In a more mechanical consistency process, there is a more direct link between past and future choices, without deliberate inferences about beliefs. One simply behaves in the future in the same manner s/he behaved in the past. This is particularly likely when the decision context is identical (e.g., same type of choice, game, and physical environment). Our experiment adopted a different type of decision (i.e., role reversal from UG 1 to UG 2) but kept the same type of game as well as the same physical environment (lab). Thus, it is quite likely that both aspects were key contributors to people's willingness to behave consistently overtime and hence demonstrate the enduring impact of transient emotions. Future research could try to vary not only the type of decision to be made, but also the context in which the decision is called for while holding constant the key belief being invoked to make the decision (e.g., fairness).

Note that demonstrating mechanical consistency would not diminish, in any sense, the importance of behavioral consistency itself. In many daily life situations, we commonly face routine-like and sequential decisions where the type of the decision and the environment we are embedded in are identical overtime (e.g., a trader deciding on buying or selling stocks or a professor deciding on the grades).

How long does the enduring effect last?

The literature seems to lack longitudinal studies where the initial impact of emotions, which are known to have incidental changes in preferences in the short term, can produce lasting changes on subsequent judgment and choices. Although we have provided some evidence that a belief-based consistency mediated the process, whether the fairness preferences obtained in the lab become instances of stable and enduring beliefs in the long run remains an open question. Preferences tend to be constructed and are highly context-dependent (Payne, Bettman, & Johnson, 1993). In repeated choices, they can also be biased by available decision heuristics (Amir & Levav, 2008). Thus, it would be interesting to have a longitudinal study not only where the contextual cues vary substantially, but also where the time delay between decisions is relatively long. One might also speculate that beliefs are prone to memory effects, and thus must be relatively salient in order to be active and produce meaningful effects. Unless a previous decision is cued, future decisions might not activate the belief-system and influence decision making.

Conclusion

Given that we often experience mild incidental emotions, understanding its long-term impact represents a valuable research enterprise. Interestingly, the literature has been relatively silent on this issue. Few studies have systematically studied this phenomenon and have usually focused on the direct retrieval of past affect-based judgments (see Ottati & Isbell, 1996 and Pocheptsova & Novemsky, 2008). In this article, we have pointed out that decisions based on fleeting emotions can lead individuals to make inferences about their own (behavioral consistency) and others' preferences (false consensus) and eventually influence subsequent decision making. It is our hope that future research may shed further light into the boundary conditions and underlying processes associated with the enduring impact of transient emotions on decision making.

Acknowledgments

The seeds for this project were sown during Summer Institute on Emotion and Decision Making (2004) at the Center for Advanced Study in the Behavioral Sciences—Stanford University. The project was co-sponsored by the Junior Faculty Research Grant at the University of California, Berkeley and the Media Lab at MIT. The authors thank Taizan Chan for his assistance with programming. They also thank Vincent Chan, James Chong, Simon Mak, Erica Mutschlernielsen and the *Xlab* for their assistance with data collection.

Appendix

Definitional note of emotions

Emotions are specific (e.g., anger, happiness, fear, etc.) and brief subjective feelings, which usually have an identifiable cause (e.g., I'm angry with. . .). Moods, on the other hand, are usually more diffuse (e.g. good or bad mood) and weaker feeling states, and tend to lack source identification (e.g., I'm in a bad mood). Affect (or feelings) is the overarching category, which incorporates mood and emotions (Russell & Carroll, 1999; Schwarz & Clore, 1996). Given that our affect manipulations present specific and short-lived properties (fleeting anger vs. happiness), the term emotion is used throughout this article, except when we describe the procedure and findings of previous research.

Note that despite the conceptual differences, mood and emotions can both incidentally influence one's judgment and decision making beyond conscious awareness. That is the key property which allows us to rationalize and demonstrate the enduring impact of transient emotions. As a result, our rationale and findings should also apply if sheer mood manipulations are to be used (e.g., bad vs. good weather).

References

- Allred, K. G., Mallozzi, J. S., Matsui, F., & Raia, C. P. (1997). The influence of anger and compassion on negotiation performance. *Organizational Behavior and Human Decision Processes*, 70, 175–187.
- Amir, O., & Levav, J. (2008). Choice construction versus preference construction: The instability of preference learned in context. *Journal of Marketing Research*, XLV, 2, 145–158.
- Andrade, E. B. (2005). Behavioral consequences of affect: Combining evaluative and regulatory properties. *Journal of Consumer Research*, 32, 355–362.
- Andrade, E. B., & Ho, T.-H. (in press). Gaming emotions. *Journal of Consumer Research*.
- Andrade, E. B., & Ho, T.-H. (2007). How is the boss's mood? I want a raise. *Psychological Science*, 18(August), 668–671.
- Ariely, D., Loewenstein, G., & Prelec, D. (2003). Coherent arbitrariness: Stable demand curves without stable preferences. *Quarterly Journal of Economics*, 118(1), 73–105.

- Baron, R. A. (1990). Environmentally induced positive affect: Its impact on self-efficacy, task performance, negotiation, and conflict. *Journal of Applied Social Psychology*, 20, 368–384.
- Baron, R. A., Fortin, S. P., Frei, R. L., Hauver, L. A., & Shack, M. L. (1990). Reducing organizational conflict: The role of socially-induced positive affect. *International Journal of Conflict Management*, 1, 133–152.
- Camerer, C. (2003). *Behavioral game theory: Experiments in strategic interaction*. New York, NY: Russell Sage.
- Carnevale, P. J., & Isen, A. M. (1986). The influence of positive affect and visual access on the discovery of integrative solutions in bilateral negotiations. *Organizational Behavior and Human Decision Processes*, 37, 1–13.
- Cialdini, R. B., Trost, M. R., & Newsom, J. T. (1995). Preference for consistency: The development of a valid measure and the discovery of surprising behavioral implications. *Journal of Personality and Social Psychology*, 69, 318–328.
- Cohen, J. B., & Andrade, E. B. (2004). Affective intuition and task-contingent affect regulation. *Journal of Consumer Research*, 31, 358–367.
- Dunn, J., & Schweitzer, M. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology*(6), 736–748.
- Dutton, D. G., & Aron, A. P. (1974). Some evidence for heightened sexual attraction under conditions of high anxiety. *Journal of Personality and Social Psychology*, 30(4), 510–517.
- Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). Sussex, U.K.: John Wiley & Sons.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Palo Alto, CA: Stanford University Press.
- Forgas, J. (1998). On feeling good and getting your way: Mood effects on negotiator cognition and behavior. *Journal of Personality and Social Psychology*, 74, 565–577.
- Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. *Journal of Personality and Social Psychology*, 4, 196–202.
- Grunberg, N. E., & Straub, R. O. (1992). The role of gender and taste class in the effects of stress on eating. *Health Psychology*, 11, 97–100.
- Güth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior and Organization*, 3, 367–388.
- Harlé, K. M., & Sanfey, A. G. (2007). Incidental sadness biases social economic decisions in the ultimatum game. *Emotion*, 7, 876–881.
- Heider, F. (1958). *The Psychology of interpersonal relations*. New York, NY: Erlbaum.
- Hoffman, E., McCabe, K., Shachat, K., & Smith, V. (1994). Preferences, property rights, and anonymity in bargaining games. *Games and Economic Behavior*, 7, 346–380.
- Isen, A. M., Clark, M. S., & Schwartz, M. F. (1976). Duration of the effect of good mood on helping: Footprints on the sands of time. *Journal of Personality and Social Psychology*, 34, 385–393.
- Lerner, J. S., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings: Carry-over effects of emotions on economic transactions. *Psychological Science*, 15(5), 337–341.
- Levin, P. F., & Isen, A. M. (1975). Further studies on the effect of feeling good on helping. *Sociometry*, 38(1), 141–147.
- Manucia, G. K., Baumann, D. J., & Cialdini, R. B. (1984). Mood influences on helping: Direct effects or side effects? *Journal of Personality and Social Psychology*, 46, 357–364.
- Marks, G., & Miller, N. (1987). Ten years of research on the false-consensus effect: An empirical and theoretical review. *Psychological Bulletin*, 102, 72–90.
- Mullen, B., Atkins, J. L., Champion, D. S., Edwards, C., Hardy, D., Story, J. E., et al. (1985). The false consensus effect: A meta-analysis of 115 hypothesis tests. *Journal of Experimental Social Psychology*, 21, 262–283.
- Novak, M. A., Page, K. M., & Sigmund, K. (2000). Fairness versus reason in the ultimatum game. *Science*, 289, 1773–1775.
- Ottati, V., & Isbell, L. M. (1996). Effects on mood during exposure to target information on subsequently reported judgments: An on-line model of misattribution and correction. *Journal of Personality and Social Psychology*, 71, 39–53.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The adaptive decision maker*. Cambridge: Cambridge University Press.
- Pillutla, M. M., & Murnighan, J. K. (1996). Unfairness, anger, and spite: Emotional rejections of ultimatum offers. *Organizational Behavior and Human Decision Processes*, 68, 208–224.
- Pochepsotova, A., & Novemsky, N. (2008). When do incidental mood effects last? Lay beliefs versus actual effects, working paper, University of Maryland.
- Rabin, M. (1993). Incorporating fairness into game theory and economics. *American Economic Review*, 83, 1281–1302.
- Ross, L., Greene, D., & House, P. (1977). The false consensus effect. An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology*, 13, 279–301.
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125(1), 3–30.
- Sanfey, A. G., Rilling, J. K., Aronson, J. A., Nystrom, L. E., & Cohen, J. D. (2003). The neural basis of economic decision-making in the ultimatum game. *Science*, 300, 1755–1758.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being – Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513–523.
- Schwarz, N., & Clore, G. L. (1996). Feelings and phenomenal experiences. In E. T. Higgins & A. W. Kruglansky (Eds.), *Social psychology: Handbook of basic principles* (pp. 433–465). New York: Guilford.
- Simonsohn, U. (in press). Weather to go to College. *The Economic Journal*.
- Tice, D. M., Bratslavsky, E., & Baumeister, R. F. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of Personality and Social Psychology*, 80, 53–67.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, CLXXXV, 1124–1131.
- van Kleef, G. A., de Dreu, C. K. W., & Manstead, A. S. R. (2004). The interpersonal effects of anger and happiness in negotiations. *Journal of Personality and Social Psychology*, 86, 57–76.
- Vohs, K., Baumeister, R., & Loewenstein, G. (2007). *Do emotions help or hurt decision making? A hedgefoxian perspective*. New York, NY: Russell.
- Wegener, D., & Petty, R. E. (1994). Mood management across affective states – the hedonic contingency hypothesis. *Journal of Personality and Social Psychology*, 66, 1034–1048.