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Working Paper

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ABSTRACT

Anecdotal evidence suggests that in a gambling environment people might violate "pre-commitments," and subsequently bet more than they had initially planned. In this paper, we investigate this phenomenon in a scenario where i) participants have full information about the gambles prior to the planning phase ii) the time period between the planning and actual phases of the gambles is very short, iii) participants believed that their plans will be executed, iv) and participants are reminded of their planned bets right before they make their actual bets. In a series of three experiments, we assess the presence, shape and potential processes underlying dynamic inconsistencies in a sequence of two fair gambles.

INTRODUCTION

A couple buys a weekend package to Las Vegas. It is their first time in the city and they are looking forward to having some fun in the most famous casinos in the world. As both have heard stories about overspending, they decide to make a plan. They agree that they should visit the casinos on only two nights and chip $200 per night at most. On their way back home after the trip, they wondered what went wrong and how come they spent so much more than they had initially planned.

Planning is a common consumer practice. Consumers plan how much to spend on a trip, how much to save for the month, and how much to eat at lunch. Nonetheless, it also seems that they revise as frequently as they plan (Baumeister, Heatherton, and Tice 1994). They eat (Wardle and Beales 1988), drink (Allsop and Saunders 1989), and smoke (Marlatt and Kaplan 1972) more than they had initially planned. Violations to pre-commitments are so common that people frequently self impose penalties in order to avoid them (Ariely and Wertenbroch, 2002). A common explanation is simply that at the planning phase people do not have as much information about the consumption opportunities. In the gambling example above, it is quite possible that the inexperienced couple was not a priori aware of the types of games, prices, social interactions, number and availability of casinos, among other characteristics inherent to the gambling experience in Las Vegas. Learning would therefore explain why the couple revised the plan. This would imply however, that as information about the consumption opportunities becomes fully available, dynamic inconsistencies between plans and subsequent actions should disappear. In gambling scenarios, however, anecdotal evidence suggests that people (even experts, who presumably have full information about the gambles and the surrounding environmental cues) usually “overspend,” betting—and often losing—much more than they had

initially planned. From Hollywood to Dostoyevsky, we have been frequently exposed to stories where gamblers have lost a blouse, a house, and sometimes, as a result, a spouse on the gambling table. Despite its potential pervasive effects, systematic investigation of dynamic inconsistencies in gambling is rather limited (Barkan and Busemeyer 2003).

This paper addresses this gap. In a series of 3 experiments participants are presented with a sequence of 2 gambles and asked to make a betting plan per gamble contingent on the previous outcome (e.g., "how much will you bet in gamble 2 in case you win/lose gamble 1?"). To test the pervasiveness of the effect our sample faces a scenario where i) full information about the characteristics of the gamble is provided prior to a planning phase ii) the time period between the planning and actual phases of the gambles is very short (around 1 minute), iii) participants believed that their plans will be executed, iv) and a reminder of the planned bet shows up right before the actual bet. Under these circumstances, three main questions emerge. First, are there differences between planned and actual behavior? In other words, in a within-subjects design where full information is provided, do dynamic inconsistencies emerge? Second, if deviations from the plan do take place, what is the shape of the dynamic inconsistencies? Specifically, we investigate the magnitude, frequency and direction of the deviations as a function of the outcome in the previous gamble (i.e., loss vs. gain). Finally, if dynamic inconsistencies emerge, what are the reasons for such deviations? Experiment 1 addresses the first two questions. The subsequent experiments test the robustness of the initial findings while providing an insight into the underlying processes. We start with a review of two different accounts related to dynamic inconsistencies in gambling.

CONCEPTUAL BACKGROUND

To predict the shape of dynamic inconsistencies in gambling and explain its underlying processes, two cognitive-based accounts can be drawn from the literature. The accounts and predictions derived from the to-be-mentioned models are not mutually exclusive and their application to gambling situations has varied from one account to the other.

Changes in Subjective Probabilities

If probabilities are subjective, then their assessments may vary as a result of an anticipated (i.e., planned) versus an experienced (i.e., actual) sequence of events. Of particular interest is the belief that the probability of a given outcome is lowered once this outcome has been recently experienced. This so-called "gambler's fallacy" relies on individual's flawed assumption that chance is a self-correcting process. Evidence for the gambler's fallacy is well documented and ranges from lottery games (Clotfelter and Cook 1993; Terrel 1994) to horse races (Metzger 1985). Also consistent with it is the fact that casinos display at each roulette table the series of the last ten to 15 outcomes, even though each outcome is independent of history. If we assume that the gambler's fallacy phenomenon requires the actual outcome to be revealed, then people will not be susceptible to such an erroneous belief during the planning phase. The fallacy would take place only at the actual phase of the gamble. That would be one explanation for potential deviations from the plan. Moreover, specific predictions can be derived. The subjective probability of a gain should increase after an actual loss. As a result, higher than planned bets (i.e., positive deviations) should become more likely and/or more intense in magnitude. Similarly, the subjective probability of a loss should increase after a gain is realized. As a result, lower than planned bets (i.e., negative deviations) should become more frequent

and/or more intense in magnitude. There has been evidence showing such reversals (Barkan and Busemeyer 2003), but they have been attributed to changes in reference points, rather than variations in subjective probabilities.

Changes in Reference Points

A second account assumes that, at the planning phase, individuals treat each gamble *independently* from one another, whereas during the actual gambles, the deviations are described as appropriate shifts in reference points (conditional on previous outcomes) in accordance with prospect theory. Consequently, the utility associated with the gambles shifts based on the previous outcomes (Barkan and Busemeyer 1999, 2003, Barkan et al. 2005). Two main predictions are derived. First, at the planning phase, the anticipated outcome in a first gamble should not influence betting patterns in a subsequent gamble, as individuals treat both gambles independently. Second, during the actual gamble the predictions should be consistent with prospect theory. Once losses are experienced in the first gamble and the reference point falls into the loss domain, individuals should then become more risk-seeking—i.e., positive deviations from the plan become more likely in a second gamble. When gains are experienced in the first gamble, the opposite should take place. Individuals become more risk-averse—i.e., negative deviations from the plan become more likely in a second gamble.

Consistent with the above account Barkan and Busemeyer (2003) show evidence that losses and gains did not produce any differences in subsequent bets at the planning phase. Moreover, the results showed negative deviations after the gains and positive deviations after the losses were realized. It is worth noting, however, that in their procedure participants (a) were forced to take gamble 1 and (b) had to decide on taking versus not taking gamble 2 (dichotomous

variable). As will be evident, our experiments use a more general procedure which allows the full possible range of bet choices and no restrictions on whether or not to take the initial gamble. In other words, in the following experiments participants are free to decide on *whether* and *how much* they would want to bet in *both* gambles and we examine and how this affects betting behavior in the planning and actual phases. Furthermore, in this paper we are interested in understanding the underlying psychological processes which might govern possible deviations from the plan.

Summary

Throughout the next three experiments, participants are presented with a sequence of two gambles and asked to make betting plans contingent on previous outcomes (e.g., "how much will you bet in gamble 2 in case you win/lose gamble 1?"). After the planning phase, participants enter into the actual phase, where they are asked to play the gambles and are unexpectedly given the opportunity to revise their "pre-commitments."

Following this research model, the literature leads us to suggest that dynamic inconsistencies are likely to take place. Both the changes in subjective probabilities and the changes in reference point accounts are consistent in predicting that during the actual phase of the gamble participants should bet more than planned after a loss and less than planned after a gain. We label this as *reverse* dynamic inconsistencies. In addition, the reference point account further assumes that at the planning phase decisions are made in isolation. As a result, when asked to pre-commit to a sequence of bets, the anticipated outcome of gamble 1 is expected to have no impact on betting decisions in gamble 2. Experiment 1 tests these predictions.

EXPERIMENT 1

Method

Participants and design. One hundred thirty five students from a western university participated in this experiment. They were paid a $5 flat fee plus additional earnings contingent on the outcomes of the gambles. The experiment employed a two (bet 2: planned vs. actual; within) by two (outcome 1: gain vs. loss; between) mixed design.

Procedure. The experiment was conducted in a computer-based environment. Participants arrived in the laboratory in groups of 15 to 20 and were assigned to one of the 20 laptops. They signed a consent form and were then instructed to start the experiment. The cover story stated that the study was about gambling preferences, and they would be playing a series of two identical and fair gambles. Each gamble offered a 50% chance of doubling the amount bet and had a 50% chance of losing the bet (EV = 0).

Participants came to the lab expecting to receive $15 for their participation in the experiment[1]. At the beginning of the experiment, however, they were told that the experimenter had received authorization from the University to allow them to use up to $10 (100 "electronic" chips) of their $15 participation fee in the subsequent gambles. As a result, they were told, they should bet as much or as little as they wanted, since the $10 represented their own and deserved money. Specifically, participants were told that they could bet any amount from $0 to $5 (0 to 50 chips) in each of the two gambles.

The procedure followed three steps: trial, planning, and actual phase. In order to provide participants with information about the gamble, they were first asked to practice the gamble in a trial phase (no betting involved). Then, participants were told that the gamble comprised of two

[1] According to the lab policy, participants must indeed receive on average $15 for 45-1 hour participation in any experiment.

additional phases. During the planning phase,[2] they would have to plan their bets in both gambles. Whatever decision made during the planning phase, they were told, would be carried out (no changes allowed). Participants then bet in gamble 1 and were given the opportunity to make bets in gamble 2 in anticipation of a gain and in anticipation of a loss in gamble 1. Then, the actual phase started. To avoid memory decay effects, they were reminded of the planned bet 1 and were *unexpectedly* informed that they could either confirm or revise the planned bet. They made the final bet in gamble 1 and then the gamble started. After 15 sec of "flashing" in the gambling board the outcome was revealed (see below). Participants then wrote the outcome in a financial summary sheet, which would be used latter on to compute the final participation fee per participant. Note that the final participation fee could vary noticeably (i.e., from $5 to $25). They were then reminded of their planned bet in gamble 2 and were asked—as in gamble 1—to confirm or revise it. Finally, after a few final questions participants were properly debriefed and thanked for their participation in the study.

Gambles. The gambles had the following characteristics. A gambling board consisting of 20 red and 20 blue squares appeared on the screen (see appendix 1). A "X" sign flashed randomly on the board every ½ sec for 15 sec. Each flash was independent of the previous one so that it could flash more than once in the same square—and participants were aware of it. At the end of the fifteen second period, the flashing stopped. If the "X" sign ended up in a blue square, the participant would double the amount bet; otherwise, s/he would lose the bet. The probabilities, payoffs, and the remaining time were displayed on top of the gambling board. To avoid potential objective mistakes, the board was constructed to present visual and easy-to-assess probabilities. Also, the winners were required to raise their hand so the experimenter could

[2] In the procedure, we used the term "pre-commitment" rather than "plan" in order reinforce the belief that changes would not be allowed.

"double-check" each outcome. This procedure was added to simply allow all participants to actually observe the actual distribution of gains and losses in the room. Finally, to bring knowledge about this type of gambling to a common real-life baseline, participants also were told at the beginning of the experiment that the probabilities and payouts in the current gamble presented a slightly better deal compared to the black or red option in the American roulette (which offers a 47.38% of doubling the amount bet).

Results

Planning phase. Participants planned the betting amount in gamble 1, and then, in gamble 2 in anticipation of a gain and in anticipation of a loss. The results showed that previous outcomes influenced subsequent planned bets ($F(1, 133) = 21.11$, $p < .001$). Planned bets in gamble 2 were lower in anticipation of a loss (vs. gain) in gamble 1 ($M_L = 18.7$ vs. $M_G = 24.4$; $F(1, 134) = 18.52$, $p < .001$). Moreover, compared to their planned bets in gamble 1 ($M = 25.4$), participants reported lower planned bets in gamble 2 after an anticipated loss in the previous gamble ($F(1, 134) = 42.45$, $p < .001$), but reported similar planned bets in gamble 2 after an anticipated gain in the previous gamble ($F(1, 134) = .89$, $p > .10$). In other words, at the planning phase, losses discouraged participants from betting in subsequent gambles, whereas gains had no effect on bets placed on subsequent gambles. Remember that, at the planning phase, participants were led to believe that no changes in "pre-commitment" would be allowed and that their stated bets would be actually played. Therefore, these results do not represent instances of intentions, but actual forward looking behavior based on anticipated contingencies.

Actual phase. As expected, there was no significant difference between planned ($M = 25.4$) and actual bet in gamble 1 ($M = 25.0$; $F(1, 134) = .45$, $p > .10$). However, a significant

interaction emerged between betting phase (planned vs. actual) and the outcome of gamble 1 ($F(1, 133) = 16.16$, $p < .001$; see figure 1)[3]. Participants who won gamble 1, bet on average the same amount they had initially planned in anticipation of such gain ($M_p = 23.2$ vs. $M_a = 23.6$; $F(1, 133) = .13$, $p > .10$). Participants who lost gamble 1, however, bet on average more than they had previously planned to bet in anticipation of such loss ($M_p = 19.3$ vs. $M_a = 25.9$; $F(1, 133) = 39.20$, $p < .001$).

Insert Figure 1 around Here

Frequency of deviations. Given the findings above it is also useful to understand the relative frequency of positive versus negative deviations from the plan. Forty-two percent of participants (n=57) deviated from the plan. Within this group, a chi-square analysis showed that the pattern of deviations in gamble 2 was contingent on the outcome of gamble 1 ($\chi^2 = 20.50$, $p < .001$). After a gain, preference for positive (45.5%) versus negative (54.5%) deviations did not differ from chance ($z = .42$, $p > .10$), whereas positive deviations (97.1%) represented a clear dominant option after a loss. In fact, among those who decided to deviate from the plan after a loss, only 1 participant (2.9%) chose to bet less than s/he had initially planned ($z = 5.58$, $p < .001$).

Discussion

Experiment 1 produced several initial findings. First, at the planning phase, individuals chose to bet less after a prior loss, as compared to after a prior gain and as compared to a

[3] Analyses of covariance (previous bet as a covariate) were also conducted across all 3 experiments. The analyses produced virtually identical results in terms of interaction and minimal changes in the pairwise comparisons. We have decided then to rely on the ANOVAs and actual means rather than on ANCOVAS and adjusted means.

previous bet. This effect shows that individuals do not necessarily disregard the previous outcome when planning the next gamble, but simply believe that losses will affect their behavior in a conservative manner—i.e., spend less as wealth declines. Second, *asymmetric* dynamic inconsistencies emerged at gamble 2 when planned and actual bets are contrasted. For losses, participants bet on average more than they had initially planned, whereas, for gains, they bet on average the same amount they initially planned. This effect results from the fact that positive deviations became by far the dominating option after losses, whereas positive and negative deviations were as likely after gains. Note also that no deviations in the actual phase took place at gamble 1. Thus, deviations in gamble 2 can not be simply attributed to the unexpectedness of option availability (e.g., "Now that I can deviate from the plan, I'll better do it!").

In summary, while the two cognitive-based accounts have been used to make predictions about dynamic inconsistencies, both accounts predict *reverse* rather than the *asymmetric* dynamic inconsistencies that we find in our study. Furthermore, a reference point account assumes that people assess the gambles independently at the planning phase, but integrate prior outcomes at the actual phase because of which the reference point shifts after an actual gambling outcome. This again is in contrast to our results which show that the first outcome is not ignored in the planning phase—particularly in the losses domain—since losses led participants to plan to bet less in gamble 2. This leads us to what the underlying processes might be that lead to the asymmetric dynamic inconsistencies of gambling.

THE ROLE OF FEELINGS

The interaction between gambling behavior and feeling states is well established (see Andrade and Cohen 2007a for a review). Whereas emotions influence gambling (Isen and Geva

1987), gambling also changes feeling states (Griffins 1995). Although not yet directly explored in the literature, feelings might well play a role in dynamic inconsistencies. Specifically, it is possible that at the planning phase people might be not paying sufficient attention to the role of feelings during the actual phase of the gamble. Individuals may be underestimating a) how much excitement during the pre-outcome period of the gamble 2 can be anticipated and incorporated into the betting decision, b) how much the feelings of post-outcome —experienced after gamble 1—might influence the betting decision in gamble 2.

Effect of Pre-Outcome Feelings (The Utility of Excitement)

Most gambling activities show a time delay between betting and outcome. It can take a few seconds (e.g., roulette), a few hours (e.g., sports betting) or a few days (e.g., lottery). Positive and negative affective reactions are experienced in anticipation of such uncertain outcomes and can be incorporated into one's utility function (Elster and Loewenstein 1992). For instance, Loewenstein (1987) showed in a hypothetical setting that people prefer to receive an electrical shock immediately, but prefer to delay a kiss from a favorite actor. The author suggested that the main reason for the time preference reversals relies on the anticipated dread (anxiety) and savoring (excitement) arising from the pre-outcome period— in this case, with a certain outcome. For a while, economists and psychologists have recognized that the importance of anticipated excitement in most gambling activities (Blaszczynski, Wilson, and McConaghy 1986; Caplin and Leahy 2001; Conlisk 1993; Dickerson 1993; Griffins 1995; Johnson, O'Brien, and Shin 1999; Pope 1983). As the utility of food is not merely a function of its nutrients, the utility of gambling does not arise only from its effects on wealth (Conlisk 1993). In the context of gambling, evidence has been provided to support this rationale. First, gambling activities have

shown to be physiologically arousing during the pre-outcome period (Griffins 1995). Second, arousal has shown to correlate positively with persistence in gambling (Dickerson and Adcock 1987). Finally, subjective reports have shown that excitement is among the most important motives behind gambling activities among college students (Neighbors et al. 2002).[4]

For our research these studies imply that when participants are in the process of actual gambling, pre-outcome excitement might vary during the gambles and that the betting amounts should endogenously capture such excitement effects. For instance, if one anticipates that the pre-outcome period might be exciting she may bet more to foster the forthcoming affective reaction. Thus, the utility of pre-outcome excitement may explain potential deviations from the plan in the following manner. At the planning phase, because consumers have not yet *experienced* the sequence of gambles, they may well disregard or minimize the consumption value of pre-outcome excitement or anxiety and not incorporate it into the planned betting decisions. However, during the actual gambles, and particularly after having experienced the pre-outcome phase of the first gamble, the excitement or anxiety associated with the activity becomes salient and leads to deviations from the plan in subsequent bets. Therefore, in anticipation of pre-outcome excitement in a second gamble, positive deviations from the plan should be more likely (e.g., "This gamble is more fun than I thought it would be, and I'm willing to pay to have more of the same"). The opposite should hold true when consumers anticipate stronger levels of anxiety in subsequent bets. In this case, negative deviations from the plans should be expected. (e.g., "this gamble is more stressful than I thought it would be, and I want to reduce my bets to avoid negative feelings in this upcoming gamble"). Given our asymmetric inconsistency pattern of results, the rationale above implies that higher levels of excitement

[4] In fact, some research has taken the rather extreme position that the pre-outcome excitement not only confers utility but actually represents the most important component of the gambling activity (Dickerson 1993).

should take place after participants decided to deviate positively from the plan in gamble 2—usually, as experiment 1 showed us, after a loss in gamble 1. In other words, the positive deviations would represent at least in part participants' attempt to buy the upcoming excitement levels to be experienced during the pre-outcome period of gamble 2.

Effect of Post-Outcome Feelings (The Hot-Cold Empathy Gap)

It has been proposed that when in a relatively neutral emotional (cold) state, individuals have difficulty predicting how they might feel and/or behave when they experience a stronger visceral (hot) state, the so called hot-cold empathy gap (Loewenstein 1996). Further, this rationale suggests that when deprived of a given "resource," the aversive state that is experienced will lead people to react and usually *overdo* in an attempt to restore a homeostatic state. That would explain why hungry consumers buy more food than they've initially planned (Gilbert, Gill, and Wilson 2002; Nisbett and Kanouse 1968), why curious individuals care more about the missing information than they had initially predicted (Loewenstein, Prelec, and Shatto 1996), and why drug users underestimate the impact of craving (Loewenstein 1996). Even though people do have the opportunity to stop or keep their pre-commitments, empirical evidence has shown that in order to reduce the current aversive state people usually overact (Loewenstein and Schkade 1999). Whether deprived from food, information, drugs, or money individuals will react, and usually exaggerate, in an attempt to reestablish the prior state.

Translated into gambling contexts, negative emotions generated by losses could influence people's attempt to "over bet" (i.e., positively deviate from the initial plan) in a visceral attempt to restore a current affective state in the prospect of winning. That could help explain the findings of the first experiment. When losses were experienced in gamble 1 and participants

became "deprived" of money, positive deviations took place in gamble 2. Since for gains, no sense of deprivation was experienced, no unique pattern of behavior was observed.[5] In other words, *people might at the planning stage (before the outcome is experienced) be underestimating how much their actual negative feelings will influence them to "chase the loss"* in the sense of deviating positively from the plan.

Note that contrary to a reference point account, a model based on the hot-cold empathy gap implies that the previous outcome may well be incorporated into future decision in *both* planning and actual phases of a gamble. However, the properties of a *planned* (i.e., cold) gain or loss influence behavior differently compared to the *experienced* (i.e., hot) gain or loss.

Finally, according to the hot-cold empathy gap, the urge to restore a prior state may lead people to "observe themselves behaving contrary to their own perceived self-interest" (Loewenstein 1996; p. 289). An implication is that in an attempt to recover from the loss, people may be willing to endure the anxiety associated with the pre-outcome period of the gamble rather than betting in an attempt to buy the gamble's pre-outcome excitement (e.g., "I shouldn't be doing this, but I need to get my money back!"). This rationale is contrary to the utility of excitement account, in which pre-outcome excitement is a major factor in betting decisions.

Summary

In short, if the asymmetric dynamic inconsistencies are contingent on pre-outcome feelings of excitement and anxiety, those who deviate positively from the plan in gamble 2 (i.e.,

[5] The hot-cold empathy gap does not directly address the positive side of the affective spectrum. Moreover, whereas positive feelings may well generate deviations—as individuals' feelings at a planning phase differ from feelings during the actual gamble—, the direction of the effect is not defined by the theory, specially when applied to economic decisions: "I restrict attention to negative emotions because their effects resemble those of drive states such as hunger and feeling states such as pain. The effects of positive emotions are more subtle and complex" (Loewenstein 2000, p. 426).

most likely those who lost in gamble 1), should be the ones to experience highest levels of excitement or lowest levels of anxiety during that gamble. However, if the asymmetric dynamic inconsistencies result from the hot-cold empathy gap—i.e., the underestimation of post-outcome feelings and the need to restore a homeostatic state (after losing gamble 1)—, participants should bet more than planned only when they are "free" to do so. When explicitly instructed to control for the impact of post-outcome feelings on subsequent behavior, the positive deviations after losses could be mitigated and, consequently, the asymmetric dynamic inconsistency could disappear.

EXPERIMENT 2

In this second experiment we attempt to replicate the previous findings and provide initial evidence regarding the role of feelings on asymmetric dynamic inconsistencies and particularly on the positive deviations after losses. Thus, the procedure is very similar to the previous one, with the following changes. First, an orthogonal manipulation is introduced where half participants are presented with an affect-based judgment correction prior to actual bet 2. We hypothesized that in this scenario, compared to a control condition, the positive deviations from the planned bets after losses should be mitigated. Also importantly, since no deviations on average have been shown after gains, the effects of this "affective correction" manipulation are expected to be null in this condition. Second, an online excitement-anxiety scale is introduced where participant are instructed to continuously report their feelings during the pre-outcome period of each gamble. That will allow us to knowing whether individuals' bets in gamble 2 are endogenously affected by the forthcoming excitement or anxiety or if pre-outcome feelings are just a by-product of the gambling activity which does not affect the actual choice of bets.

Specifically, if pre-outcome feelings play a role, higher levels of excitement or lower levels of anxiety should take place after participants deviate positively from plans in gamble 2. Finally, to further increase external validity and test the robustness of the findings, in this experiment the gambles show probabilities and pay out virtually identical to the black/red options of the American roulette in which the odds slightly favor the house and the EV < 0 (see appendix 2).

Method

Participants and design. One hundred seventy nine students from a western university participated in this experiment. They were paid a $5 flat fee plus additional earnings contingent on the outcomes of the gambles. The experiment employed a two (bet 2: planned vs. actual; within) by two (outcome 1: gain vs. loss; between) by two (affective correction: yes vs. no; between) mixed design.

Procedure and affective correction manipulation. The experiment adopted a procedure similar to that used in experiment 1, except for the following changes. First, each of the two gambles offered a 47.5% chance of doubling the amount bet (instead of a 50% chance of doubling so that the EV is slightly less than zero). Second, an affect-based judgment correction (hereafter, affective correction) was implemented. Just before the actual bet in gamble 2, half of participants were instructed to make sure that potential feelings generated by the previous gamble, if any, would not influence the betting decision in gamble 2. Notice that this manipulation goes beyond highlighting the source of feelings (Schwarz and Clore 1983). The main reason for that was to avoid variance in normative assessments about the role of feelings in gambling. For instance, it is possible that some people who lost and felt bad about it, might not perceive higher bets in an attempt to eliminate the aversive experience as an inappropriate

behavior. As a result, to avoid variance in normative judgments, the affective correction manipulation was meant to assure that *if feelings were playing a role in participants' decisions, they should be corrected*. No information about the potential direction of the effect was provided. Finally, participants were then instructed to continuously report their feelings on a –50 (anxiety) to +50 (excitement) scale based on a modified version of the Online Affect Scale-OAS (Andrade and Cohen 2007b). Excitement (anxiety) was defined a priori as the pleasant (unpleasant) feeling generated by the uncertainty about the outcome,—usually associated with enthusiasm and eagerness (apprehension and worry). The scale was set to zero (a middle point) prior to each gamble and the data recorded every ½ sec for fifteen seconds. Thus, thirty data points per participant per gamble were gathered. The trial phase prior to the planning phase allowed them to practice the scale (see appendix 2).

Results

Three participants bet more than the amount allowed per gamble and were deleted from the sample.

Planning phase. The results showed that planned bets in gamble 2 were lower in anticipation of a loss (vs. gain) in gamble 1 ($M_L = 20.7$ vs. $M_G = 23.7$; $F(1, 178) = 9.85$, $p < .005$). Moreover, compared to their planned bets in gamble 1 ($M = 23.8$), participants reported lower planned bets in gamble 2 after an anticipated loss in the previous gamble ($F(1, 178) = 15.87$, $p < .001$), but reported similar planned bets in gamble 2 after an anticipated gain in the previous gamble ($F(1, 178) = .02$, $p > .10$). In short, the results replicate the findings in experiment 1 using gambles with negative expected value. When compared either to gains or to a previous bet, losses in the planning phase reduced betting amounts in subsequent gambles.

Actual phase. As expected and consistent with previous findings, there was no significant difference between planned (M = 23.8) and actual bet in gamble 1 (M = 24.0; F(1, 178) = .162, $p > .10$). To test the impact of feelings on dynamic inconsistencies, an analysis of variance assessed the interaction between betting phase (planned vs. actual) and previous outcomes (gain vs. loss) in gamble 2 when participants were either *not* provided with any additional instructions (control condition) or instructed to avoid using their feelings prior to bet 2 (affective correction condition). A significant interaction emerged in the control condition (F(1, 95) = 5.46, $p < .05$; see figure 2). For gains, there was no significant deviation from the plan. Participants who won gamble 1 bet on average the same amount they had previously planned to in anticipation of such gain (M_p = 22.8 vs. M_a = 21.5; F(1, 95) = .60, $p > .10$). However, there was a significant deviation from the plan for losses. Participants who lost gamble 1 bet on average more than they had previously planned to bet in anticipation of such loss (M_p = 19.3 vs. M_a = 23.3; $F(1, 95) = 7.1$, $p < .01$). Again, in the control condition, the interaction replicates the findings of experiment 1.

Insert Figures 2 and 3 around Here

When participants were asked to correct for potential affect-based judgments just before actual bet 2, the interaction between betting phase and outcome disappeared (F(1, 80) = .12, $p < .10$; see figure 3). Consistent with the predictions, pairwise comparisons showed that the absence of interaction was driven mainly by a reduction in the deviations from the plan in the loss conditions. When participants were asked to avoid using their feelings at the actual phase in gamble 2, there was no difference between a bet in anticipation of a loss (M_p = 18.8) and a bet after the loss was realized (M_a = 19.9; F(1, 80) = .75, $p > .10$). Also important, the affective

correction manipulation had no influence in participants' betting patterns after a gain. Participants who won gamble 1 bet on average the same amount that they had initially planned to bet in anticipation of such gain (M_p = 25.7 vs. M_a = 26.2; $F(1, 80) = .19$, $p > .10$). This is important as it shows that the manipulation produced localized effects as a function of outcome in the first gamble, and not simply a general drop in betting patterns at gamble 2. Finally, a marginally significant three-way interaction emerged among betting phase (planned vs. actual), outcome 1 (gain vs. loss), and affective correction (yes vs. no) on betting patterns in gamble 2 ($F(1, 175) = 2.74$, $p < .10$).

Frequency of deviations. Thirty-eight percent of participants (n= 69) deviated from the plan in gamble 2. An open question is whether, within the loss conditions, the affective correction manipulation reduced the *magnitude* and/or *frequency* of positive deviations from the plan. Within the control condition (n=37), a chi-squared test was conducted to assess if the distribution of positive and negative deviations was contingent on the outcome of gamble 1. The results yield a significant interaction (χ^2 (1) = 6.13, p = .01). After a gain, positive (50%) and negative (50%) deviations were as likely ($z = 0$, $p > .10$), whereas after a loss preference for positive deviations (88.2%) was significantly greater than chance ($z = 3.15$, $p < .001$). Only 11.8% of participants who lost in the first gamble decided to bet less than planned in gamble 2. Within the affective correction condition (n=32), the impact of previous outcome on type of deviation was mitigated (χ^2 (1) = 2.74, p = .10). However, the effect was not necessarily eliminated. After a loss, preference for positive deviations (75%) was still greater than chance ($z = 1.73$, $p < .05$), whereas after a gain, positive (55%) and negative deviations (45%) were again as frequent ($z = .41$, $p > .10$). Therefore, it seems that the affective correction did not necessarily eliminate the deviations as much as it reduced its magnitude.

Magnitude of deviations. To provide a clearer assessment of the impact of the affective correction manipulation on the magnitude of the deviations, we selected the 69 participants who deviated (positively or negatively) from the plan and conducted an analysis of variance with outcome 1 (gain vs. loss) and affective correction (yes vs. no) as the two factors and Δ at gamble 2 (i.e., actual bet 2 (-) planned bet 2) as the main dependent variable. The results yield a marginally significant interaction ($F(1, 65) = 3.62$, $p = .06$; see figure 4). Most importantly, the interaction was mainly driven by a significant reduction in the magnitude of positive deviations within the loss domain. When participants were free to use their feelings during bet 2 (control condition), positive deviations averaged 12.9 chips. However, when asked to correct potential affect-based judgments prior to bet 2, positive deviations reduced to 3.2 chips ($F(1, 65) = 3.17$, $p. = 08$). After a gain, the affective correction had no impact on the magnitude of the deviations ($M_G = -2.8$ vs. $M_G = 1.1$; $F(1, 65) = .69$, $p < .10$). Similarly, within the control condition, there was a significant impact of outcome 1 on the magnitude of deviations in gamble 2 ($F(1, 65) = 10.74$, $p < .01$). This difference disappeared within the affective correction condition ($F(1, 65) = .16$, $p. > .10$).

Insert Figure 4 around Here

Pre-outcome feelings. Individuals' feelings during the two gambles were assessed with the online excitement-anxiety scale. The thirty data points of pre-outcome feelings (15 sec recorded at every ½ sec) were averaged and treated as the dependent variable in the subsequent analyses. The results showed, first that the pattern did not vary as a function of previous outcome ($F(1, 176) = .11$, $p > .10$). In gamble 2, interestingly, participants reported high levels of anxiety

(rather than excitement). Precisely, anxiety was significantly greater than zero for participants who had experienced a loss in gamble 1 (M_L = -6.8; t(90) = -3.37, $p < .005$) as well as for those who had experienced a gain (M_G =-5.9; t(86) = -2.95, $p < .005$). We speculate that this effect might have resulted from the negative EV and the salience of the higher probability of losing on the gambling board (more red than blue squares - appendix 2). Regardless, the results showed that positive deviations after losses are not an attempt to "buy the excitement" of the gamble. In fact, participants who chose to deviate positively from the plan tended to report on average higher levels of anxiety during gamble 2 (M = -10.6) compared to those who chose to deviate negatively from the plan (M = -2.5; F(1, 66) = 3.22, $p = .08$). The level of anxiety for those who chose not to deviate from the plan was somewhere in the middle (M = -5.7) and did not differ from the positive and negative deviation groups (F(1, 150) = 2.03, $p > .10$, and F(1, 134) = .57, $p > .10$, respectively). The interaction between type of deviation and previous outcome was non significant (F(1, 172) = .48, $p > .10$).

Discussion

This second experiment makes three contributions. First, the affective correction manipulation mitigated the magnitude of deviations after an anticipated versus actual loss. This suggests, consistent with a hot-cold empathy gap account, that the attempt to reduce an aversive state contributed to "over betting" in gamble 2 after participants *experienced* a loss in gamble 1. Also, there was no difference between planned and actual bets for gains, and the affective correction, as expected, did not produce any effects. This null effect is also an important demonstration that the manipulation did not reduce betting patterns in general. Instead, it produced localized effects based on the directional impact of feelings on betting after a loss. In

other words, participants seem to (1) recognize and (2) try to correct the impact of negative feelings on betting after a loss by reducing the extent of positive deviations from the planned bet. Since positive feelings (i.e., after a gain) did not produce significant effects, the affective correction had no impact on the extent of the deviations. Second, similar to previous experiments, positive deviations did not represent an attempt to incorporate anticipated pre-outcome excitement into the utility of gambling. Participants experienced stronger feelings of anxiety after positive deviations compared to negative deviations. Thus, participants increased their bets in gamble 2 despite anticipated pre-outcome anxiety and not because of anticipated pre-outcome excitement. Finally, this study shows that the main findings of the previous experiment replicate in a gambling scenario where the EV is negative. Once again, at the planning phase, participants' bets were lower after anticipated losses (vs. anticipated gains and vs. previous bets). Also, at the actual phase in the control condition, participants bet on average more than they had initially planned to bet after a loss, but showed no differences after a gain.

EXPERIMENT 3

The hot-cold empathy gap implies that people might underestimate the *intensity of feelings* as well as (and maybe as a result) its impact on future bets. Whereas the previous experiment showed that participants underestimated the impact of negative feelings, it is still an open question (a) whether participants have also underestimated the intensity of negative feelings of post-outcome and (b) whether any association between underestimation of negative feelings and positive deviations exists. Thus, in this experiment one major change is that participants are asked after the planning phase to predict how they will feel after losing and after winning the first bet. Specifically, we test if people are underestimating at the planning stage how bad they

will feel after losing their first bet and if those who deviate positively from the plan after the actual loss in gamble 1 are precisely the ones more likely to underestimate their negative feelings of post-outcome in the first place.

A second change refers to the assessment of pre-outcome feelings. It is possible that the high levels of anxiety reported in experiment 2 might be due (a) to the use of a *bipolar* online affect scale, which forced participants to report either excitement or anxiety at a given point in time, (b) to the presence of a gamble with negative EV and salient display of an unfavorable probability of winning. Thus, in this final experiment an Online Affect Grid (OAG – Andrade and Cohen 2007b) is used to capture the within subjects pre-outcome feelings of anxiety and excitement, which allows participants to report either or both (mixed) feelings at any given point in time. Moreover, the probability and pay out are the same ones used in experiment 1 (i.e., 50 change of winning/losing; EV=0).

Method

Participants and Design. One hundred four students from a western university participated in this experiment. In addition to the earnings generated from the gambles, they were awarded a $5 flat fee for participating in this experiment. The experiment employed a two (bet 2: planned vs. actual; within) by two (outcome 1: gain vs. loss; between) by two (axes labels: X = anxiety/Y = excitement vs. X = excitement/Y = anxiety; between) mixed design.

Procedure. This experiment adopted a procedure similar to that used in experiment 1, with the following two changes. In order to further investigate the role of post-outcome feelings and provide further evidence for the hot-cold empathy gap, participants were asked in the planning phase to estimate on a continuous 100 point scale how bad (0), neutral (50), or good

(100) they would be feeling after winning and after loss whatever they decided to bet in gamble 1. This estimation would be contrasted with the actual feelings to be reported on the same scale just after the outcome in gamble 1. Such procedure would allow us to assess potential (mis)estimations of post-outcome feelings as well as to test potential relationships between affective (mis)estimations and deviations from the plan after gains and losses.

Second, an online affect grid (OAG – Andrade and Cohen 2007b) was used in order to capture potential feelings of excitement and anxiety within subjects during the pre-outcome period (see appendix 3). The X and Y axes represented either excitement or anxiety. Participants were randomly assigned to the X = anxiety/Y = excitement or to the X = excitement/Y = anxiety conditions. In the former, participants were instructed that if they were *only* anxious during the pre-outcome period they should keep the button along the X axis, moving it up and down as the feelings of anxiety modified. If they were feeling only excited during the pre-outcome period they should keep the button along the Y axis, moving it right or left as the feelings of excitement varied. The opposite instructions were presented in the Y = excitement/X = anxiety condition. For both groups, they were instructed that if they experienced a combination of both feelings, they could move the button anywhere in the grid. Also, due to potential difficulties associated with the task itself, the pre-outcome period lasted a bit longer (20 sec) relative to the previous experiments (15 sec).

Results

Manipulation Check. The order of the axis labels did not influence participants' pre-outcome feelings in either gamble 1 ($F(1,102) = 1.1$, $p > .10$) or in gamble 2 ($F(1, 102) = .64$, $p >$

.10) and so the levels of this factor were collapsed. Two participants violated instructions and bet more than the allowed amount in a given gamble and were deleted from the sample.

Planning phase. The results showed that prior outcomes influenced subsequent planned bets ($F(1, 102) = 5.16$, $p < .01$). Planned bets in gamble 2 were slightly lower in anticipation of a loss (vs. gain) in gamble 1 ($M_L = 21.3$ vs. $M_G = 24.4$; $F(1, 103) = 3.13$, $p < .10$). Moreover, compared to their planned bets in gamble 1 (M = 25.0), participants reported lower planned bets in gamble 2 after an anticipated loss in the previous gamble ($F(1, 103) = 10.28$, $p < .01$), but reported similar planned bets in gamble 2 after an anticipated gain in the previous gamble ($F(1, 103) = .20$, $p > .10$). In short, the results replicate the previous experiments.

Actual phase. Again, there was no significant difference between planned (M = 25.0) and actual bet in gamble 1 (M = 25.6; $F(1, 103) = .93$, $p > .10$). However, a significant interaction emerged between betting phase (planned vs. actual) and the outcome of gamble 1 ($F(1,102) = 8.40$, $p = .005$; see figure 5). For gains, there was no significant deviation from the plan ($M_p = 23.3$ vs. $M_a = 23.2$; $F(1,102) = .01$, $p > .10$). However, there was a significant deviation from the plan for losses. Participants who lost gamble 1 bet on average more than they had previously planned to bet in anticipation of such loss ($M_p = 22.8$ vs. $M_a = 29.9$; $F(1, 102) = 14.82$, $p < .001$).

---Insert Figure 5 around Here---

Frequency of deviations. A total of 39% (n=41) participants deviated from the plan. A chi-square analysis showed that the pattern of deviations in gamble 2 was contingent on the outcome of gamble 1 (χ^2 (1) = 5.64, $p < .05$). After a gain, preference for positive (52.6%) versus negative (47.4 %) deviations did not differ from chance ($z = .22$, $p > .10$), whereas most of

deviations were positive after a loss (86.4%). In fact only 3 participants (6.4%) decided to bet less than they had originally planned to bet after a loss ($z = 3.41$, $p < .001$). Once again, average and frequency of deviation analyses showed that the results replicate the asymmetric dynamic inconsistencies found in the previous experiments. In other words, neither the affective forecasting measures nor the OAG influenced the pattern of results.

Pre-outcome feelings. Participants' feelings during the 20 sec pre-outcome periods (i.e., for each gamble) were assessed with the online affect grid (OAG) in this experiment. The results showed that on average participants' levels of excitement (M = 28.99) and anxiety (M = 28.83) during gamble 1 were significantly greater than zero ($t(104) = 14.08$, $p < .001$ and $t(104) = 14.29$, $p < .001$), respectively). Moreover, levels of anxiety and excitement did not differ from one another ($F(1, 103) = .01$, $p > .10$). In gamble 2, however, the results showed an interaction between type of feeling (excitement vs. anxiety; within subjects) and outcome (gain vs. loss; between subjects) on experienced pre-outcome feeling ($F(1, 102) = 5.97$, $p < .05$; see figures 6 and 7). After a loss in gamble 1, participants' level of anxiety during gamble 2—averaged across the 20 sec period—increased (M = 42.3) compared to a gain (M = 32.2) in gamble 1 ($F(1, 102) = 4.67$, $p < .05$), whereas the level of excitement remained at the same level ($M_g = 31.4$ vs. $M_l = 25.3$, $F(1, 102) = 2.07$, $p > .10$). Also, after a gain in gamble 1, participants' level of excitement and anxiety were virtually identical during the pre-outcome period of gamble 2 ($F(1, 102) = .03$, $p > .10$), whereas after a loss, the levels of anxiety increased significantly relative to the levels of excitement ($F(1, 102) = 11.97$, $p = .001$). There was no interaction between type of deviation, previous outcome, and type of affective state on pre-outcome feelings ($F(1, 98) = .87$, $p > 10$). In short, a loss in gamble 1 increased the levels of anxiety during gamble 2. Again, since most positive deviations took place after losses, it seems that participants were not necessarily looking

for excitement, but were rather willing to endure the pre-outcome anxiety during gamble 2 in an attempt to recover from the loss.

---Insert Figures 6 and 7 around Here---

(Mis)estimation of Post-Outcome Feelings. Remember that after planning the sequence of bets, participants were asked to estimate on a 100 point scale how bad (0), neutral (50), or good (100) they would be feeling after winning *and* after losing the amount they had planned to bet in gamble 1. Since in the first bet most participants carried over the plan, the estimation could then be contrasted against the actual experience. Just after the outcome was revealed participants were once again asked to report the current feelings on the same 100 point scale.

The results showed an interaction between predicted and experienced state and type of outcome on post-outcome feelings ($F(1, 102) = 5.25$, $p < .05$). On average participants were highly accurate for gains ($M_{pred} = 79.9.1$ vs. $M_{exp} = 78.8$; $F(1, 102) = .29$, $p > .10$) but underestimated how bad they would feel after losses ($M_{pred} = 39.1$ vs. $M_{exp} = 31.1$; $F(1, 102) = 12.84$, $p = .001$). Figure 8 plots the predicted and experienced feelings (Y axis) as a function of number of chips won or lost per participant (X axis). As it can be seen by the gap between the predicted and experienced trend lines in quadrant 4, participants underestimated how bad they would feel after losing a given bet. On the gain side (quadrant 2), however, there was virtually no gap between predicted and experienced trend lines.

---Insert Figure 8 around Here---

(Mis)estimations and deviations from the plan. To assess a potential relationship between affective (mis)estimations and subsequent deviations from the plan, chi-square analyses were conducted to test if the type of deviation from the plan in gamble 2 was contingent on the type of (mis)estimation of post-outcome feelings in gamble 1. The results showed that after gains, deviations from the plan were not contingent on (mis)estimations of post-outcome feelings (χ^2 (1) = 1.51 $p > .10$). However, deviations were significantly contingent on the (mis)estimations of post-outcome feelings after losses. Among those who deviated positively from the plan (the most common pattern of deviation after losses), 68.4% had underestimated their negative feelings as a result of gamble 1, whereas only 21.5% had overestimated it. The remaining 10.5% had been accurate about their feelings (χ^2 (1) = 11.81, $p < .01$).

Discussion

Experiment 3 shows consistent with the hot-cold empathy gap that participants tended to underestimate their negative feelings after losses in the planning phase whereas no systematic bias was perceived after gains. Moreover, there was a significant association between type of misestimation and type of deviation. Most positive deviations after losses happened among participants who had previously underestimated their negative feelings by reporting lower predicted feelings than their actual experienced feelings after a loss in gamble 1. After gains, the type of deviation was not contingent on the type of misestimation. Finally, while participants did experience mixed feelings during the gambles, as soon as they lost a given bet, they became more anxious relative to (a) the levels of anxiety in gamble 1 and (b) the level of excitement gamble 2. Again, since most positive deviations took place after a loss, participants seemed

willing to increase betting in gamble 2 despite anticipated increased levels of anxiety rather than because of anticipated increased levels of excitement.

GENERAL DISCUSSION

Most real life gambling situations from casinos to state lotteries involve situations where consumers may plan the budget that they would want to gamble. Yet anecdotal evidence suggests that consumers frequently violate their commitments and bet more that what they had planned. Indeed it is common to encounter cases of individuals who lose more money in a casino than their originally intended budget, of consumers who upon losing end up betting even more in the "heat of the moment" in an attempt to make up for the losses. Casinos have been known to respond to this behavior by offering free house money or free accommodations get people into casinos, or to even have strategically placed ATMs that allow consumers to easily withdraw cash.

In this paper we investigate how consumers might deviate from their planned and committed behavior during the actual gambling process in a sequential gambling environment. To control for the impact of learning participants were provided with a scenario in which i) there was full information about the gambles prior to the planning phase ii) the time period between the planning and actual phases of the gambles was very short, iii) they believed that their plans would be executed, (iv) and a reminder of the planned bet showed up right before they made their actual bet. Moreover, to make it similar to what one would observe in an actual casino (e.g., roulette table), there was a time delay between bets and outcomes and a gambling "flashing board" attempts to trigger feelings of excitement/anxiety during the pre-outcome phase.

Given this scenario, four main contributions are made across the studies. First, in the "pre-commitment" phase, people behave quite conservatively, betting less after an anticipated loss and the same amount after an anticipated gain. Second, when offered the unexpected choice to change their bet during the actual phase we find a remarkably systematic and robust pattern of deviation from the plan. After a loss in the first gamble, individuals bet in gamble 2 significantly more than what they had initially planned, while after a gain in the first gamble on average no differences from plans were observed in gamble 2. We term this phenomenon the *asymmetric dynamic inconsistency* in sequential and fair gambles. In fact, the frequency of deviations show that across all three experiments an impressive majority (i.e., around 90% of those who deviated from the plan in gamble 2) preferred positive to negative deviations in gamble 2 after a loss was experienced in gamble 1. In contrast, after a gain, preference for positive versus negative deviations did not differ from chance.

Third, we investigate the potential role of pre-outcome feelings in betting decisions. If people expect to feel excited during the pre-outcome phase of the gamble, they may endogenously incorporate it into their betting decision process and, hence, increase betting to foster the upcoming excitement. We show, however, that individuals who lost gamble 1 and as a result were more likely to deviate positively from the plan in gamble 2, tended to experience higher levels of anxiety and/or lower levels of excitement during that gamble. Thus, it seems that a betting increase happens *despite anticipated pre-outcome anxiety rather than because of anticipated pre-outcome excitement* during gamble 2.

Finally, we show that people might at the planning stage (before the outcome is experienced) be underestimating how much their actual negative feelings will influence them to "chase the loss." Consistent with the predictions of a hot cold empathy gap, when losses are

experienced in a first gamble and participants become "deprived" of money, positive deviations take place in subsequent gamble in a visceral attempt to restore a current affective state in the prospect of winning. Since for gains, no sense of deprivation is experienced, no unique pattern of behavior is observed. Consistent with this rationale, we show that the asymmetric dynamic inconsistencies go away when people are instructed to control for the impact of feelings on subsequent bets (experiment 2) and that positive deviations happen more frequently among those underestimate at the planning stage the intensity of the negative feelings experienced after gamble 1 (experiment 3).

LIMITATIONS AND FUTURE RESEARCH

Our study is an initial attempt to uncover dynamic effects faced by consumers who participate in sequential gambles. Clearly, an important research problem is the investigation of how the nature of dynamic inconsistencies depends upon the characteristics of the gamble. In particular, for the same expected value, the gamble could involve larger gains but at smaller odds of winning the gamble. How would such a gamble affect the deviations from planned behavior? Similarly, what would happen if the number of gambles increases? We have actually conducted an experiment which is similar in design to experiment 1 but where participants were asked to plan and bet on a sequence of three gambles. The results replicated the findings described in this paper. It would be interesting to examine the results when additional gambles were added to the procedure and the sequence of gambles become longer. For instance, in addition to the effects we have uncovered, would the gambler's fallacy play a role in betting behavior after a sequence of several gambles?

Although in sequential gambles people tend to become more risk-seeking after losses (e.g., Gehring & Willoughby 2002), there has also been evidence of the opposite, at least when gambles are framed in terms of investments (e.g., Shiv et al. 2005). An interesting research question therefore is what motivates people to "chase the loss" versus "walk away." Even among those who underestimate their negative feelings, it is possible that under certain circumstances, they may interpret the experienced negative feelings as a "stop" signal rather than an "act to get rid of" signal. In other words, the direction of the effect may be a function of the interplay between affective evaluation—i.e., stop gambling—and affect regulation—i.e., chase the loss to get rid of the aversive state (Andrade 2005; Andrade and Cohen 2007a). The reason why affect regulation may be in this case the dominating mechanism might be due the perceived mood-lifting opportunities associated with gambling environment in question. Over betting in gamble is quite often a simple, readily available, easy to rationalize, and effortless action, which might well eliminate one's negative feelings especially if people expect to at least break-even (Thaler and Johnson 1990). This is precisely the case in our scenarios where people are presented with a sequence of two fair sequential gambles. Changes to the properties of gambles might lead to different results. Future research is required to further address this issue. Thus the general area of dynamic effects in sequential gambling and the relationships between planned and actual gambling behavior is a rich area for future investigation of decision making in risky environments.

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FIGURE 1. BETS AT THE PLANNING AND ACTUAL PHASES IN GAMBLE 2 AS A FUCNTION OF PREVIOUS OUTCOME (EXPERIMENT 1)

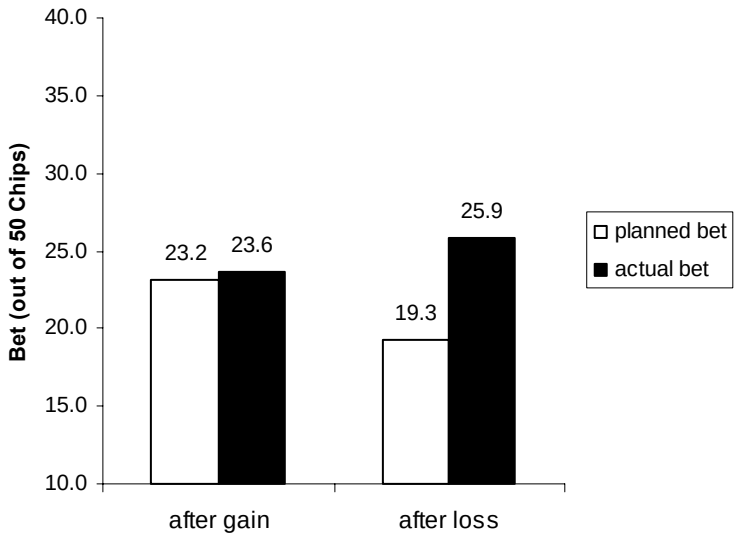


FIGURE 2. BETS AT THE PLANNING AND ACTUAL PHASES IN GAMBLE 2 – CONTROL CONDITION (EXPERIMENT 2)

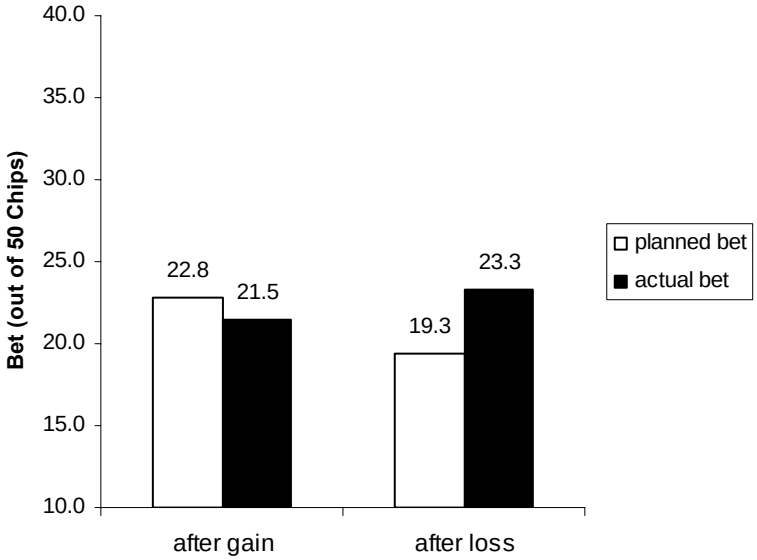


FIGURE 3. BETS AT THE PLANNING AND ACTUAL PHASES IN GAMBLE 2 – AFFECTIVE CORRECTION CONDITION (EXPERIMENT 2)

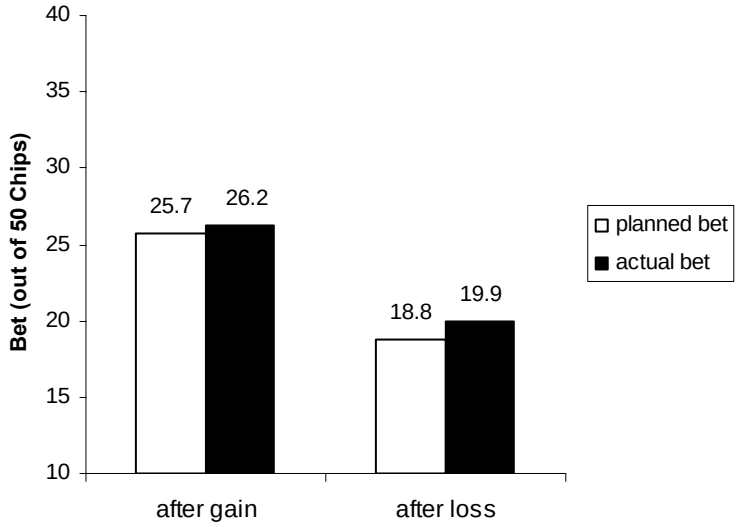


FIGURE 4. Δ BETWEEN PLANNED AND ACTUAL BET AS A FUCNTION OF AFFECTIVE CORRECTION CONDITION (EXPERIMENT 2).

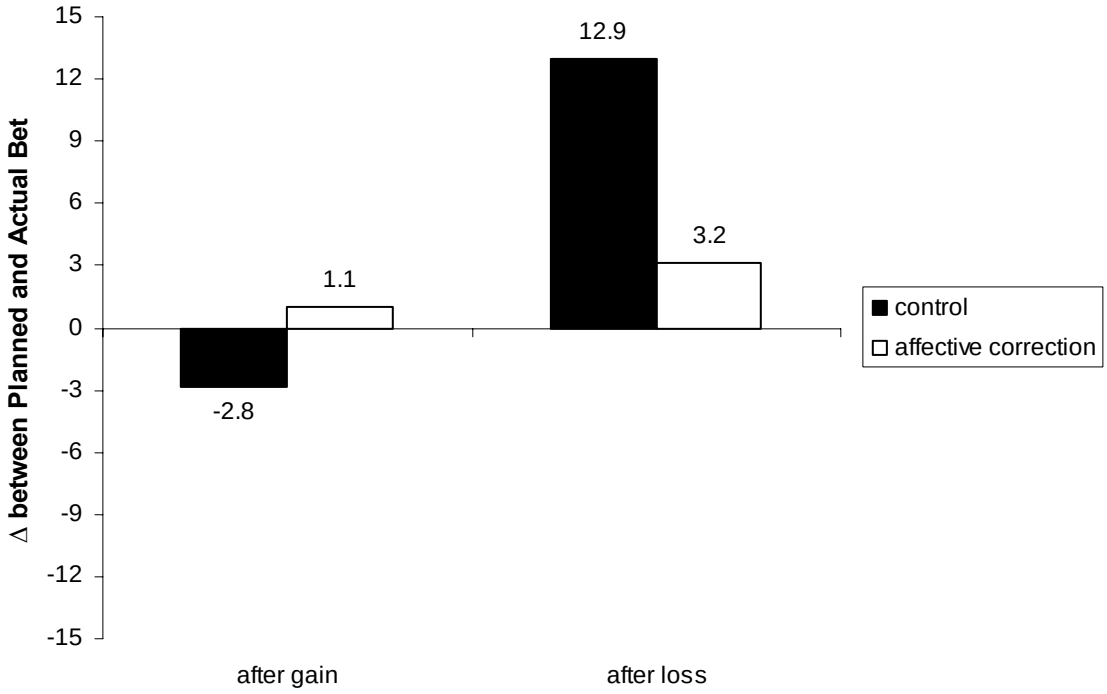


FIGURE 5. BETS AT THE PLANNING AND ACTUAL PHASES IN GAMBLE 2 (EXPERIMENT 3)

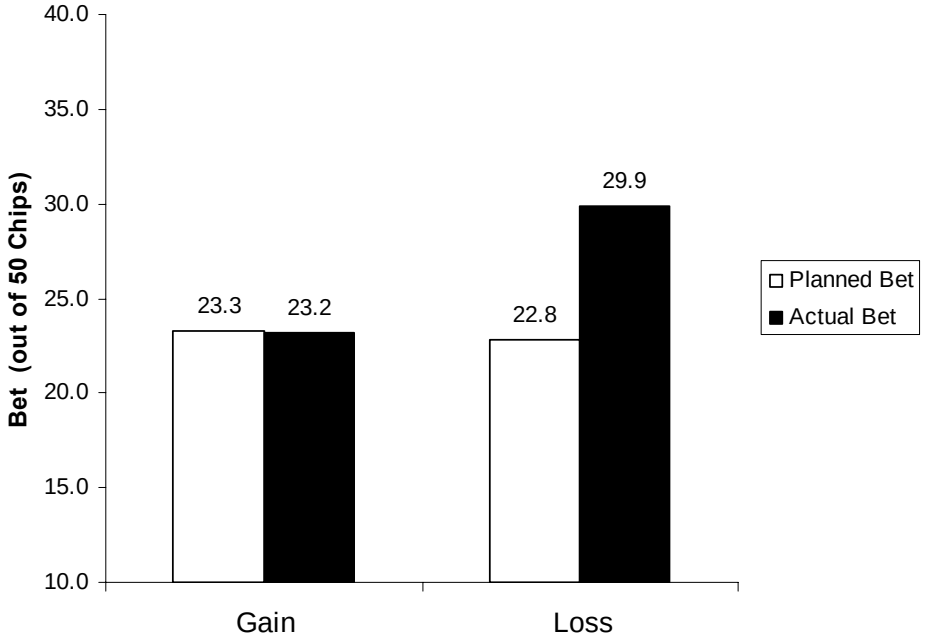


FIGURE 6. ONLINE PRE-OUTCOME FEELINGS OF ANXIETY AND EXCITEMENT DURING GAMBLE 1 – (EXPERIMENT 3)

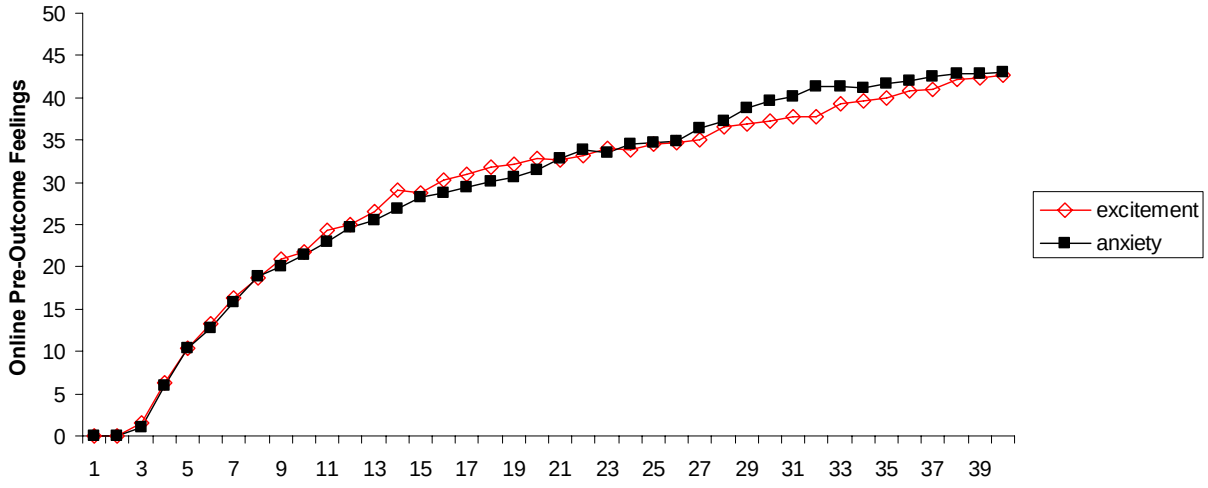


FIGURE 7. ONLINE PRE-OUTCOME FEELINGS OF ANXIETY AND EXCITEMENT DURING GAMBLE 2 AS A FUNCTION OF PREVIOUS OUTCOME (EXPERIMENT 3)

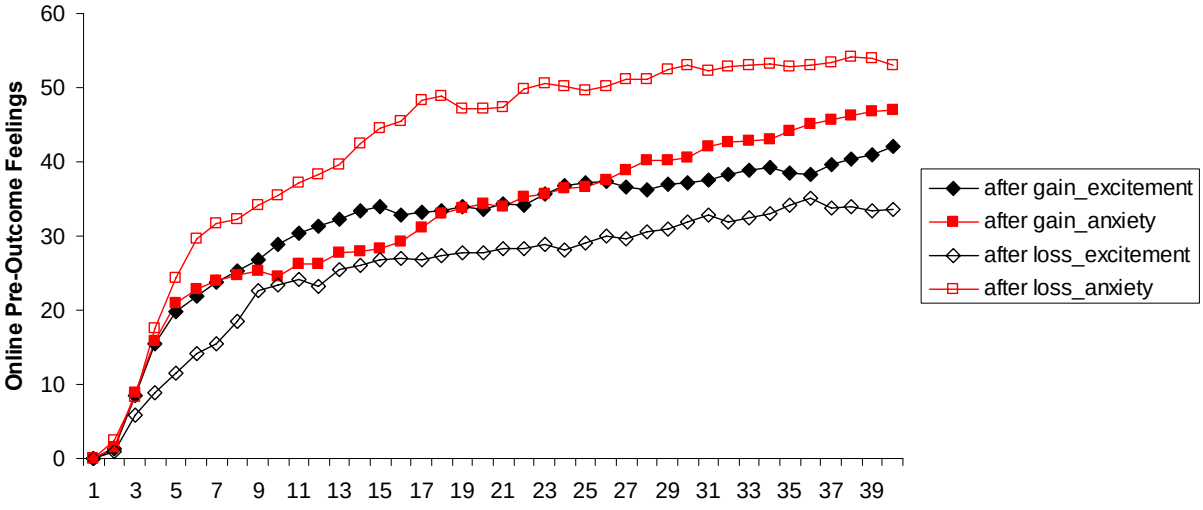
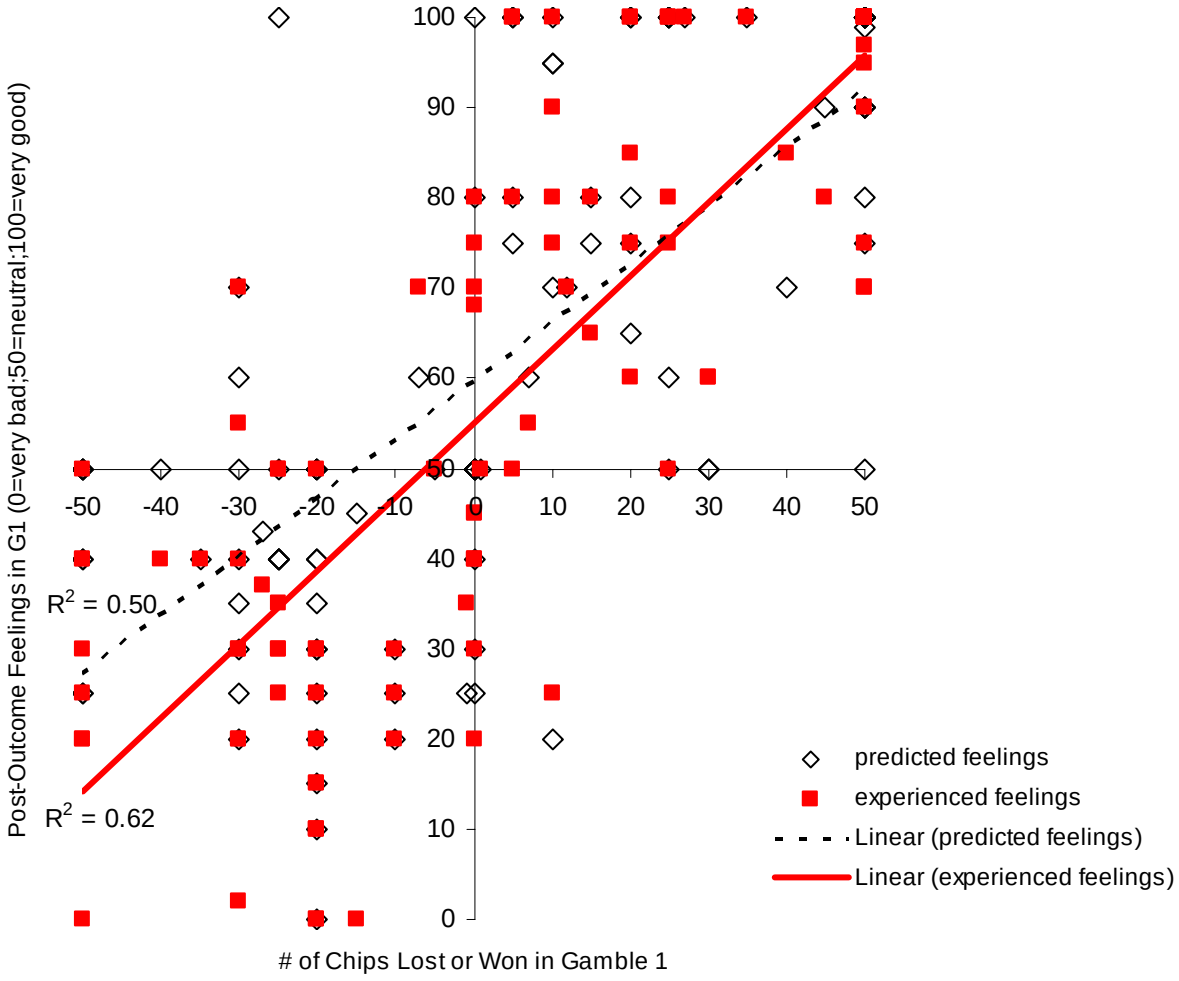
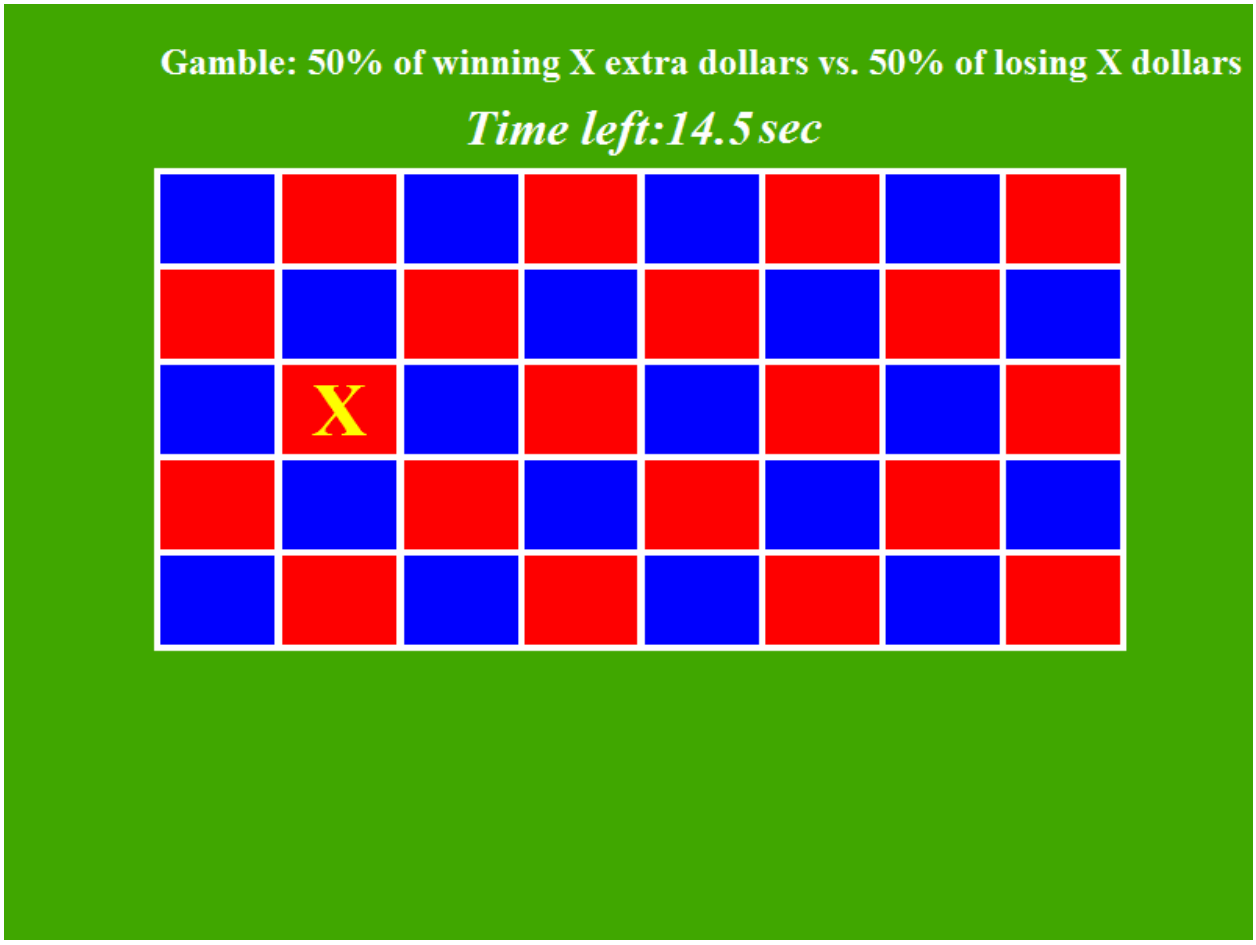


FIGURE 8. PREDICTED AND EXPERIENCED POST-OUTUCOME FEELING AFTER GAMBLE 1 (EXPERIMENT 3)



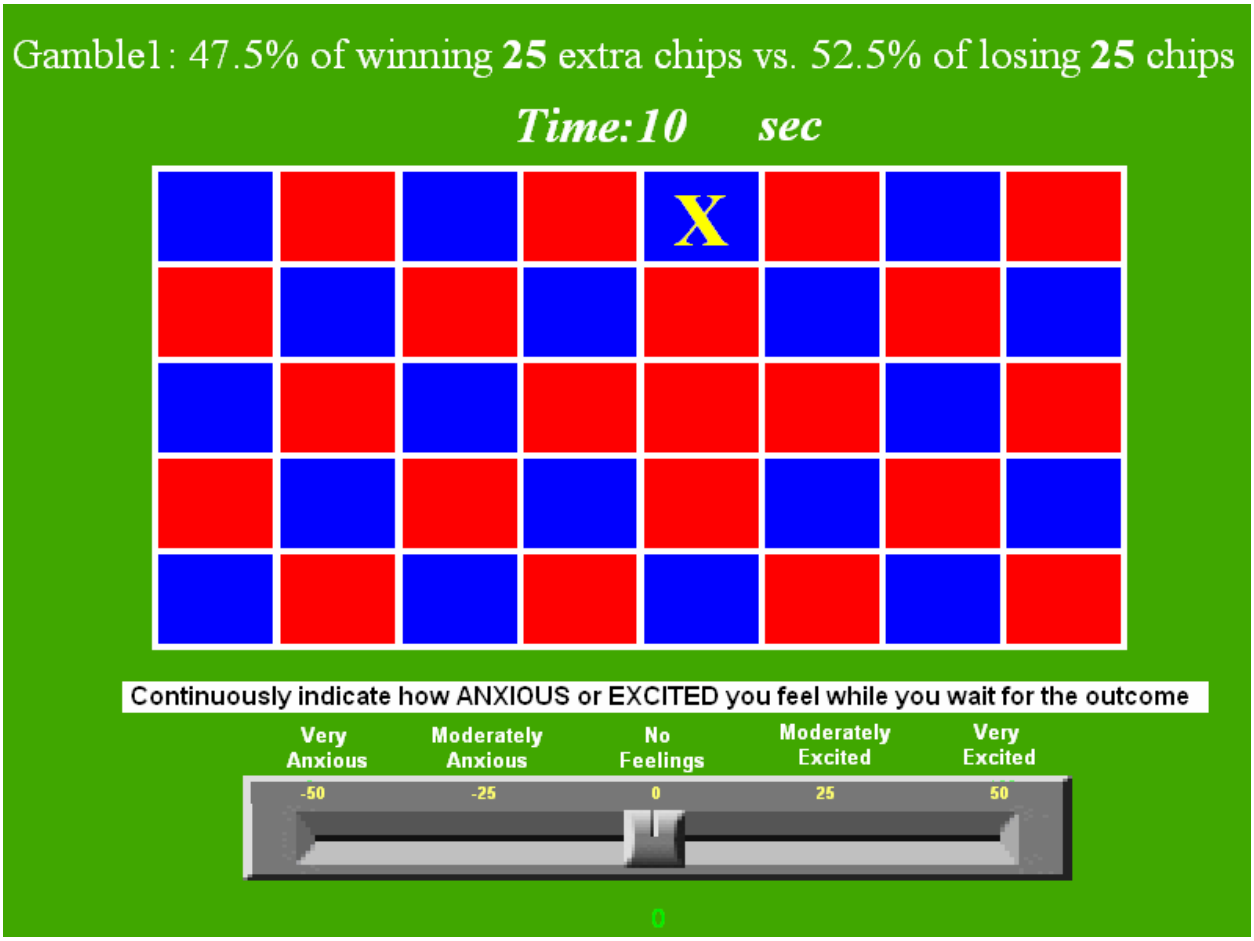
APPENDIX 1

GAMBLING BOARD (EXPERIMENT 1)



APPENDIX 2

GAMBLING BOARD AND THE ONLINE AFFECT SCALE – OAS (EXPERIMENT 2)



APPENDIX 3

GAMBLING BOARD AND THE ONLINE AFFECT GRID - OAG (EXPERIMENT 3)