**Hedonic and Non-Hedonic Bias Toward the Future**

**Abstract**

It has widely been assumed, by philosophers, that our first-person preferences regarding pleasurable and painful experiences exhibit a bias toward the future (positive and negative hedonic future-bias), and that our preferences regarding non-hedonic events (both positive and negative) exhibit no such bias (non-hedonic time-neutrality). Further, it has been assumed that our third-person preferences are always time-neutral. Some have attempted to use these (presumed) differential patterns of future-bias—different across kinds of events and perspectives—to argue for the irrationality of hedonic future-bias. This paper experimentally tests these descriptive hypotheses. While as predicted we found first-person hedonic future-bias, we did not find that participants were time-neutral in all other conditions. Hence, the presumed asymmetry of hedonic/non-hedonic and first/third-person preferences cannot be used to argue for the irrationality of future-bias, since no such asymmetries exist. Instead, we develop a more fine-grained approach, according to which three factors—positive/negative valence, first/third-person, and hedonic/non-hedonic—each independently influence, but do not determine, whether an event is treated in a future-biased or time-neutral way. We discuss the upshots of these results for the debate over the rationality of future-bias.

**1. Introduction**

Roughly speaking (for now) an agent is *biased toward the future* if they tend to prefer that positively valenced events be in their future and that negatively valenced events be in their past. When the events in question are sensations, such as pleasure or pain, an agent is said to be *hedonically* future-biased.[[1]](#footnote-1) A common supposition is that human beings are hedonicallyfuture-biased, and this has been supported by recent empirical evidence.[[2]](#footnote-2) In the philosophical literature, there exists vigorous debate over the rational status of hedonic future-bias, and what this reveals about the nature of rationality and time. Some philosophers argue that hedonic future-bias is rationally required, others that it is rationally permissible, and still others that it is irrational.[[3]](#footnote-3)

It is noteworthy that while many philosophers have supposed that humans are hedonically future-biased, supporters of the rationality of hedonic future-bias have more often focussed on the intuition that we will prefer negatively valenced hedonic events (pains) to be in our past, than on the intuition that we will prefer positively valenced hedonic events (pleasures) to be in our future (see for instance Prior (1959), Hare (2007; 2008), and Heathwood (2008)). Since it is an open question whether one, or both, of these claims is true, it is worth being careful to distinguish them. Henceforth, we will say that a personis *positively hedonically future-biased* just in case they tend to prefer to have positively valenced hedonic events in their future. By contrast, a person is *negatively hedonically future-biased* just in case they tend to prefer to have negatively valenced hedonic events in their past.

Future-bias is contrasted with *time-neutrality* and *past-bias*. People are time-neutral about a certain kind of event when they have no preference regarding whether it is in their future or past. People who are past-biased about negatively valenced events prefer that they are located in their future, while people who are past-biased about positively valenced events prefer that they are located in their past. While, as we discuss below, philosophers have supposed that people are time-neutral about certain kinds of events, for no kinds of events is it predicted that people are past-biased.[[4]](#footnote-4)

Another kind of future-bias applies to *non-hedonic* events: events which are not pleasures or pains. These are typically events that are not experienced directly by the agent, or where the agent’s experience is not tied to the temporal location of the event. It has been predicted by Hare (2013)—a prominent defender of the rationality of hedonic future-bias—that future-bias will be absent with respect to non-hedonic events. We will say that people are *positively non-hedonically future-biased* just in case they tend to prefer to have positively valenced non-hedonic events in their future. People are *negatively non-hedonically future-biased* just in case they tend to prefer to have negatively valenced non-hedonic events in their past. Hare predicts that while humans are hedonically future-biased, we are *non-hedonically* time-neutral.

Hare motivates his prediction by outlining two thought experiments. In one, Hare imagines that he is certain his wife either recently was, or imminently will be, unfaithful to him, but he is uncertain which. In another, Hare imagines that a hated team either will win or has won the Super Bowl, and he is again uncertain of the temporal properties of the event. In each case, he claims that future-biased preferences are non-existent for him: he is negatively non-hedonically time-neutral. We take it that Hare has the same preferences when it comes to positive non-hedonic events. In other words, Hare self-reports that he is positively and negatively non-hedonically time-neutral. Moreover, as Hare takes himself to be a person of “moderately normal psychology” (2013, 508), he supposes that this will be true of people generally.

Meanwhile, opponents of hedonic future-bias, such as Brink (2011, 378), have also predicted a lack of non-hedonic future-bias. Brink argues that non-hedonic time-neutrality would show that future-bias is limited in scope and therefore suspect as a component of a theory of rationality. Dougherty (2015, 3, fn. 4) interprets this assumed nonexistence of non-hedonic future-bias to be evidence of the arbitrariness of any future-biased preferences, since it suggests that future-biased preferences are not formed by rational processes.

In sum, all sides assume the following: future-bias is a reaction to the temporal location of *pleasures* and *pains*. When an event is not experienced directly, or when its temporal location does not correspond to the temporal location of the experiences, future-bias is non-existent.

Another prediction made by philosophers working on time biases concerns what we call *third-person preferences.* Third-person preferences are the preferences that a first-party has about the timing of events for a third-party. Third-person preferences are to be distinguished from *first-person preferences,* which are preferences that a first-party has about the timing of events relevant to themselves. The above predictions, that human beings are *positively and negatively* *hedonically future-biased* and *positively and negatively* *non-hedonically time-neutral,* are predictions about first-person preferences. By contrast, it has been predicted that third-person preferences about the temporal location of hedonic events will be time-neutral. That prediction can be traced back at least to Parfit (1984, 181) who presents the following case:

I am an exile from some country, where I have left my widowed mother. Though I am deeply concerned about her, I very seldom get news. I have known for some time that she is fatally ill, and cannot live long. I am now told something new. My mother’s illness has become very painful, in a way that drugs cannot relieve. For the next few months, before she dies, she faces a terrible ordeal. That she will soon die I already knew. But I am deeply distressed to learn of the suffering that she must endure.

A day later I am told that I had been partly misinformed. The facts were right, but not the timing. My mother did have many months of suffering, but she is now dead.

Parfit reports that in this case his reaction would be time-neutral. In contrast, he would care a great deal about whether *his* pain is in the past or future. Thus, he posits an “asymmetry” between first- and third-person preferences in relation to hedonic future-bias.[[5]](#footnote-5) Brink (2011, 378–9), Greene and Sullivan (2015, 968), and Dougherty (2015, 3) agree with Parfit’s prediction and take it to be further evidence against the rationality of hedonic future-bias.[[6]](#footnote-6) Indeed, evolutionary accounts of the irrationality of hedonic future-bias hypothesise that third-person *hedonic* preferences are like first-person *non*-hedonic preferences because in each instance the party forming the preferences has ‘emotional distance’ from the experiences. If the emotions associated with future-bias are distorting factors, then non-hedonic and third-person preferences would tend to exhibit greater rationality.[[7]](#footnote-7)

As Hare (2013, 408) notes, in discussing descriptive facts about future-bias philosophers have had to make do with “armchair resources.” There should be more empirical research into the nature of future-bias, including how it is affected by the hedonic/non-hedonic and first/third-person distinctions. Such research is particularly important given the perceived implications of these distinctions in the debate over the rationality of future-bias in both ethics and metaphysics.

Thus, we performed an experiment (§2.1) designed to test the predictions made by philosophers in this domain. We had eight hypotheses corresponding to the various combinations of valence (positive/negative), perspective (first-person/third-person), and kind of event (hedonic/non-hedonic). Following philosophers’ predictions, we hypothesised that participants would be future-biased in first-person hedonic conditions, and temporally neutral for all other conditions. Thus, we hypothesised that participants would display:

1. first-person negative hedonic future-bias;
2. first-person positive hedonic future-bias;
3. first-person negative non-hedonic time-neutrality;
4. first-person positive non-hedonic time-neutrality;
5. third-person negative hedonic time-neutrality;
6. third-person positive hedonic time-neutrality;
7. third-person negative non-hedonic time-neutrality;
8. third-person positive non-hedonic time-neutrality.

As it turns out, initial results of this experiment (§2.2) support only the first and second hypotheses. Interestingly, we found a majority of participants to be future-biased in the third-person hedonic conditions. In the negative non-hedonic conditions (both first- and third-person), our sample was split between future-biased and what we will call *non-future-biased* individuals: individuals who are either past-biased or time-neutral.

Thus, we did not find the predicted asymmetry between first- and third-person preferences, and while we did find a difference in people’s preferences regarding hedonic and non-hedonic events, we did not find that people only exhibited future-bias when it came to hedonic events. In §3 we propose an explanation of our findings and consider the upshots for arguments regarding the normative status of future-bias.

**2. Experimental Design and Results**

**2.1 Method**

*2.1.1 Participants*

931 people participated in the study. Participants were U.S. residents, recruited and tested online using Amazon Mechanical Turk, and compensated $0.50 for approximately 5 minutes of their time. 118 participants had to be excluded for failing to follow task instructions. This means that they failed to answer the questions, or failed an attentional check question. The remaining sample was composed of 813 participants (aged 19-73; (279 female; 8 prefer not to answer). Mean age 35.27 (SD = 10.87).[[8]](#footnote-8) Ethics approval for this study was obtained from the [blanked] Human Research Ethics Committee. Informed consent was obtained from all participants prior to testing. The survey was conducted online using Qualtrics.

*2.1.2 Materials and Procedure*

Participants were randomly assigned to one of eight conditions. These eight conditions reflected all possible combinations of valence (positive/negative), kind of event (hedonic/non-hedonic) and perspective (first-person/third-person). We hypothesised that we would find future-bias in the positive and negative first-person hedonic conditions, and time-neutrality in the other six conditions.

We developed a single base vignette that could be minimally modified for each of these conditions. Our base vignette is designed to allow for non-hedonic vignettes that are similar to those offered by Hare (2013, 508). For example, he writes:

I learn that my wife plans to be unfaithful to me, for the first time, this week. I very much do not want this to happen. But, being a non-confrontational sort of fellow, I decide not to try and prevent it from happening. I isolate myself from her — I retreat to Yorkshire and work on some philosophy. Time passes. Has the dread event occurred? I don’t know.

We were concerned about a possible confound with this vignette. We worried that participants might prefer that the event be in the future so that they would have the opportunity to intervene and prevent it. If so, then reported preferences regarding the temporal location of the infidelity would not reveal pure time preferences. Thus we developed a base vignette in which it is more obvious that intervention is impossible. Our vignettes describe an astronaut on a trip from Earth to another planet, and in the non-hedonic conditions it is specified that communication with Earth is impossible.

Participants in the first-person hedonic conditions read a vignette describing a hedonic event: eating a meal. The positive hedonic event is eating one’s favourite meal; the negative hedonic event is eating one’s most disliked meal. Thus, these participants read a version of the following vignette:

Imagine you are an astronaut on a 10-year voyage between planets. You are 5 years into the voyage. The ship’s food dispenser normally produces bland meals containing only essential nutrients. However, it is programmed to dispense your [favourite]/[most disliked] meal — which you really [like]/[dislike] — during one day of the voyage. One morning, you awake from a dream concerning your [favourite]/[most disliked] meal and for a moment you cannot remember whether you have received it yet.

Participants in the third-person hedonic conditions received a vignette systematically amended to change first-person locutions into third-person locutions.[[9]](#footnote-9) An example of the substitution is given below (for the vignette used in the third-person positive hedonic condition).

Imagine Freddie is an astronaut on a 10-year voyage between planets. He is 5 years into the voyage. The ship’s food dispenser normally produces bland meals containing only essential nutrients. However, it is programmed to dispense Freddie’s favourite meal — which he really likes — during one day of the voyage. One morning, Freddie awakes from a dream concerning his favourite meal and for a moment he cannot remember whether he has received it yet.

In each condition, participants were asked how much they agree, on a Likert scale from 1 (strongly disagree) to 7 (strongly agree) with one of two statements.

Participants in the first-person positive hedonic condition were presented with either (a) I would prefer to learn that my favourite meal was dispensed yesterday, and will not be dispensed tomorrow *or* (b) I would prefer to learn that my favourite meal will be dispensed tomorrow, and was not dispensed yesterday. Participants in the first-person negative hedonic condition were presented with equivalent statements about their most disliked meal.

Participants in the third-person positive hedonic condition were presented with either (a) I would prefer to learn that Freddie’s favourite meal was dispensed yesterday, and will not be dispensed tomorrow *or* (b) I would prefer to learn that Freddie’s favourite meal will be dispensed tomorrow, and was not dispensed yesterday. Participants in the third-person negative hedonic condition were presented with equivalent statements about Freddie’s most disliked meal.

The reason for presenting participants both forms of this statement was in order to control for question effects—effects due to being asked to agree that one would prefer the event to be in the near past versus being asked to agree that one would prefer the event to be in the near future.

Participants in the non-hedonic conditions read a vignette describing a non-hedonic event similar to those discussed by Brink (2011), Hare (2013), and Dougherty (2015). Participants in the positive non-hedonic conditions read a vignette describing the receipt of a community service prize. Participants in the negative non-hedonic conditions read a vignette describing having embarrassing photographs released.

These participants read a version of the following vignette:

Imagine you are an astronaut on a 10-year voyage from Earth to set up a colony on a new planet. It is a one-way mission, and there is no way you can return to Earth. You are 5 years into the voyage. Just before you left, you learned that [your home-town mayor plans to award you an important community service prize]/[someone plans to release embarrassing photos of you] at some time during the 10-year period in which you are traveling]. You do not know when they will [award the prize]/[release the photos], and it is not possible to communicate with Earth during the trip, or even once you have arrived on the new planet. You find yourself wondering whether [the prize has been awarded]/[photos have been released] yet.

In each condition, participants were asked how much they agree, on a Likert scale from 1 (strongly disagree) to 7 (strongly agree) with one of two statements.

Participants in the first-person positive non-hedonic condition were presented with either (a) I would prefer to learn that the important community prize was awarded yesterday, and will not be awarded tomorrow, *or* (b) I would prefer to learn that that the important community prize will be awarded tomorrow, and was not awarded yesterday. Participants in the first-person negative non-hedonic condition were presented with equivalent statements about the embarrassing photos.

Participants in the third-person positive non-hedonic condition were presented with either (a) I would prefer to learn that the important community prize was awarded to Freddie yesterday, and will not be awarded tomorrow, *or* (b) I would prefer to learn that that the important community prize will be awarded to Freddie tomorrow, and was not awarded yesterday. Participants in the third-person negative non-hedonic condition were presented with equivalent statements about Freddie’s embarrassing photos.

In all eight conditions, participants were then asked to indicate their level of confidence in their previous judgement. After having done so, participants proceeded to a new screen, where they answered a comprehension question: *“In this vignette, you were asked to imagine that you were…”* to which they could answer (1) an astronaut or (2) a dog. Participants who chose (2) were excluded. At no point could participants return to a previous screen.

*2.1.3 Analyses*

Recall that, in order to control for question effects, in each condition participants were presented with one of two statements. Half of the participants in a given condition were asked how much they *agreed* with the statement that they would prefer to learn that the event in question will occur in the *near future,* and half were asked how much they *agreed* with the statement that they would prefer to learn that the event in question occurred in the *near past.*[[10]](#footnote-10) In order to amalgamate these results in the positive conditions, levels of agreement with the latter statement were reverse-coded (i.e. a response of 1 was transformed into a response of 7; a response of 2 was transformed into a response of 6, and so on). In the negative conditions, levels of agreement with the former statement were reverse-coded. After this reverse-coding, the results are *as if* all participants had been asked their levels of agreement that they would prefer the event in question be located in the near future if positive, and to be located in the near past if negative. Thus, in what follows, *higher levels of agreement* indicate *higher levels of future-bias*.

In order to test for future-bias we ran separate one-sample t-tests to test whether mean levels of agreement significantly differed from 4 in each condition.

We followed up these analyses with a separate one-way 𝜒2-tests to test whether the proportion of participants responding with 5, 6 or 7 to the vignette (i.e. responding in a future-biased way) versus the proportion of participants responding with 1, 2, 3 or 4 (i.e. responding in a non-future-biased way) differed significantly from a 50/50 split in each condition.

Finally, level of agreement and level of confidence[[11]](#footnote-11) were then analysed with separate analyses of variance (ANOVA) with between-subjects variables of valence (positive/negative), event (hedonic/non-hedonic), and perspective (first-person/third-person).

**2.2 Results**

*2.2.1 Levels of Agreement*

Recall that we hypothesised that we would find future-bias in the two first-person hedonic conditions, and time-neutrality in the remaining six conditions. The former hypotheses were confirmed: we found future-bias in the first-person hedonic conditions. However, none of our remaining hypotheses were vindicated.

Table 1 below summarises the descriptive data from the experiment. After the reverse-coding described in §2.1.3, the ‘yes’ column represents the proportion of participants who agree with the statement that they have future-biased preferences and the ‘no’ column represents the proportion of participants who *disagree* with the statement that they have future-biased preferences. The ‘4’ column represents the proportion of people who neither agree nor disagree with those statements. We also included the results of the t-tests and one-way 𝜒2-tests for each condition.

*Table 1. Descriptive data from all conditions.*

The results of our t-tests show mean levels of agreement significantly above 4 in all conditions except for conditions (4) and (8), where we found mean levels of agreement that did not differ significantly from 4. This lends support to four of our hypotheses: that we would find future-bias in conditions (1) and (2), and that we would find time neutrality in conditions (4) and (8). However, mean levels of agreement significantly above 4 in conditions (3), (5), (6) and (7) suggests that, contrary to our hypotheses, participants are future-biased in these four conditions

However, a mean that does not differ significantly from 4 can come about not as a result of most participants being time-neutral, but as a result of there being a balance between participants responding with ‘yes’ and participants responding with ‘no’. Likewise, a mean significantly above 4 can come about despite most participants responding with 4. Thus it is perhaps more illuminating to consider the results of our one-way 𝜒2-tests (which, recall, show us whether the proportion of participants responding in a future-biased versus non-future-biased way differs significantly from a 50/50 split).

These results show that a significant majority of people were future-biased in all four hedonic conditions ((1), (2), (5) and (6)). In first- and third- person negative non-hedonic conditions ((3) and (7)), where we found mean levels of agreement significantly above 4, we find that the split between future-biased and non-future-biased participants does not significantly differ from a 50/50 split. Finally, while in first- and third-person positive non-hedonic conditions ((4) and (8)) we do find that a significant majority of participants are non-future-biased we see that in each case a *higher* percentage of participants is ‘past-biased’ (i.e., they *dis*agreed with the statement expressing a future-biased preference, or agreed with a statement expressing the opposite preference) than are time-neutral (i.e. responded with 4). Thus none of predictions (3) through (8) was supported: even in those conditions in which we failed to find that a majority of participants were future-biased, we nonetheless failed to find that a majority of participants were time-neutral in those conditions.

In order to compare future-bias across conditions we tested level of agreement with a 2x2x2 between-subjects ANOVA. [[12]](#footnote-12) The result of this test found significant main effects of perspective (first/third person) *F*(1, 805) = 5.263, *p* = .022, event (hedonic/non-hedonic) *F*(1, 805) = 65.590, *p* < .001, and valence (positive/negative) *F*(1, 805) = 8.111, *p* = .005. We also observed a significant two-way interaction between perspective and event *F*(1, 805) = 23.266, *p* < .001.

The main effect of *perspective* showed that future-bias was significantly higher in first-person conditions (*M* = 4.96, *SD* = 1.77) than for third-person conditions (*M* = 4.67, *SD* = 1.78).

The main effect of *event* showed that future-bias was significantly higher in hedonic conditions (*M* = 5.32, *SD* = 1.77) than for non-hedonic conditions (*M* = 4.31, *SD* = 1.78).

Finally, the main effect of *valence* showed that future-bias was significantly higher in negative conditions (*M* = 4.99, *SD* = 1.77) than for positive conditions (*M* = 4.64, *SD* = 1.78).

Simple effects tests using a Bonferroni correction[[13]](#footnote-13) were carried out on the two-way interaction between perspective and event (see Figure 1). First, for first-person conditions, future-bias was significantly higher in hedonic conditions (*M* = 5.76, *SD* = 1.77) than in non-hedonic conditions (*M* = 4.15, *SD* = 1.78; *p* < .001).

Second, for third-person conditions, future-bias was significantly higher in hedonic conditions (*M* = 4.87, *SD* = 1.77) than in non-hedonic conditions (*M* = 4.47, *SD* = 1.77; *p* = .022).

Third, for hedonic conditions, future-bias was significantly higher in first-person conditions than in third-person conditions (*p* < .001).

Fourth, in contrast, for non-hedonic conditions, there was no significant difference in bias between first-person and third-person conditions (*p* = .069).

*Figure 1. The two-way interaction between perspective and event type for future-bias. Error bars indicate 95% confidence intervals.*

Because the discovery of future-bias in third-person hedonic conditions (and the split in the third-person negative non-hedonic condition) was surprising, we ran a replication study re-testing the four third-person conditions, which did replicate these results.

The sample was composed of 353 participants (aged 18-72; (142 female; 1 prefer not to answer). Mean age 33.52 (SD = 10.47). Once again, participants were U.S. residents, recruited and tested online using Amazon Mechanical Turk, and compensated $0.50 for approximately 5 minutes of their time. Participants who took part in our original study were ineligible to participate in the replication study.

Table 2 below summarises the descriptive data from the replication study. It should be read in the same way as Table 1.

*Table 2*. *Descriptive data from the replication of third-person conditions.*

Table 2 shows that our replication study replicated all of our t-test results and three of our four one-way 𝜒2-test results. The one result that it did not replicate is our earlier finding that a significant majority of people are non-future-biased in condition (8). Instead, our replication study found the split between future-biased and non-future-biased participants not to differ significantly from a 50/50 split in this condition.

Once again, we compared future-bias across conditions by testing level of agreement with a 2x2 between-subjects ANOVA. The result of this test found a significant main effect of good *F*(1, 349) = 9.677. The main effect of good showed that future-bias was significantly higher in hedonic conditions (*M* = 4.99, *SD* = 1.90) than for non-hedonic conditions (*M* = 4.36, *SD* = 1.90). We observed no other significant effects.

**3. Discussion**

Some of the predictions made by philosophers such as Parfit (1984), Brink (2011), Hare (2013), Greene and Sullivan (2015), and Dougherty (2015), were borne out, insofar as we found future-bias in both the first-person hedonic conditions. However, we failed to find the predicted time-neutrality in the third-person hedonic conditions and the first- and third-person negative non-hedonic conditions. Instead, we either found that people were straightforwardly future-biased (in the third-person hedonic conditions), or that they were split between populations that were future-biased and populations that were non-future-biased (first- and third-person negative non-hedonic conditions). The only conditions in which we found a majority of participants to be non-future-biased were the first- and third-person positive non-hedonic conditions, and the latter was the one condition that failed to replicate in our follow-up study.

So, while philosophers predicted that we would find future-bias only in first-person hedonic conditions, and time-neutrality elsewhere, instead we found *non*-future-bias in only two of the other conditions, and we found future-bias, or a split between future-bias and non-future-bias, otherwise. Even in those conditions in which we found non-future-bias, we did not find a majority of participants being time-neutral: instead, lack of future-bias was the product of a mixture of time-neutral and past-biased participants.[[14]](#footnote-14) Indeed, far from future-bias being the exception to the rule, instead we found non-future-bias to be the exception to the rule.

What might explain these results? Of most interest is explaining i) why the same pattern of results was observed in first- and third-person conditions, and ii) why a future-biased subpopulation was observed in negative non-hedonic conditions. We consider each in turn.

The fact that we find the same pattern of results across the first- and third-person conditions—and, in particular, that we found future-bias in the third-person hedonic conditions—suggests that participants might be responding to the third-person conditions in some sense as though it is a first-person condition.[[15]](#footnote-15) Perhaps participants are imaginatively putting themselves in Freddie’s position, and then answering the question about what they would prefer to learn, based on what they think things are like for Freddie. This seems to be consistent with the fact that although we found the same pattern of future-bias in both first- and third-person conditions, the degree of future-bias—and indeed the degree of confidence—was greater in first- than in third-person conditions. Since we are likely to be less adept at imagining ourselves in someone else’s position (e.g., Freddie’s), we would expect the strength of future-bias to be somewhat less in the third-person cases than the first-person cases. This is what we find. Perhaps it ought not be surprising that this is how we go about having preferences over what happens to third parties—by placing ourselves in their position.

Parfit seems to predict this result when he discusses a variant of his ill-mother thought experiment in which his mother is still alive. He writes (p 182):

I would be less distressed here to learn about my mother’s past suffering. This difference can be explained. If my mother is like me, she now views with indifference her past ordeal…. If there is an asymmetry in our concern about our own and other people’s past suffering, it would not be surprising if this asymmetry was clearest in cases where the others are now dead…. Since [if she is dead] my concern about her past suffering cannot be affected by her present attitude, this is the case in which my concern shows itself in its purest form.

Parfit’s theory seems to be that third-person hedonic time-neutrality is counteracted by our expectations of how the person in question currently feels about their ordeal. Perhaps, in line with our theory, this effect is strongest when we imagine ourselves in the position of the other person, and it is only when such perspective-taking is impossible that third-person future-bias is eliminated.

Interestingly, these results appear (at least initially) to be in conflict with those of Caruso, Gilbert, and Wilson (2008). Caruso et al.’s study is influential in the philosophical literature on future-bias and widely cited, and it is the only empirical study of future-bias to date. Caruso et al. asked participants to determine fair compensation for boring data entry work that either occurred in the past or will occur in the future. Participants assigned themselves 60% more compensation for future work in first-person conditions. However, in third-person conditions, they recommended the same compensation regardless of when the work occurred. This suggested to philosophers that their prediction about a first- versus third-person asymmetry for hedonic future-bias is empirically supported: the participants in the study seemed to be future-biased about their own experiences but time-neutral about the experiences of others.

What could explain the difference between our results and those of Caruso et al. when it comes to the third-person conditions? One thing that might explain the difference is that our third-person vignettes described events surrounding some *particular* individual—Freddie—an astronaut on a special mission. Hence, participants are in a position to imagine themselves in Freddie’s situation and ask what they themselves would prefer. By contrast, in Caruso et al.’s study, participants are told to provide a dollar figure of compensation to work that has been, or will be, completed by a “randomly selected person from the local area” (2008, 299). No details about the person are provided. So, there is little prompting to take on the perspective of a particular person.

Jointly, what these results suggest is that there is a way of having third-person preferences which leads to future-bias; namely, when one is prompted to take on the perspective of a particular person. Indeed, many real-life instances of third-person preferences are like this. It is only in special situations—e.g., when a preference is elicited for a randomly selected stranger or someone who has already died—that perspective-taking is blocked.

It is worth noting, however, that in discussing the supposed asymmetry between first- and third-person preferences, philosophers such as Hare (2008) and Greene and Sullivan (2015, 968) have predicted that third-person preferences will be time-neutral whether or not perspective-taking is blocked.[[16]](#footnote-16) Other philosophers, such as Brink (2011, 378–9) and Dougherty (2015, 3, fn. 4), have failed to mention the importance of perspective-taking in claiming that third-person preferences are time-neutral. So, even if Caruso et al.’s study shows us that there are conditions under which we are third-person time-neutral, these don’t seem to be exactly the conditions under which philosophers predicted that people are third-person time-neutral. Hence, we think that our results undermine these philosophers’ predictions.

Of course, defenders of the irrationality of future-bias could still argue that Parfit’s ill-mother case and Caruso et al.’s money-compensation case are precisely the right place to look for rational behavior. If people are time-neutral in those cases, then, they might argue, that gives us reason to think that future-bias is irrational. Perhaps, as Parfit suggests, those are the cases in which third-person time-neutrality manifests in its purest form. Our point is just that the traditional philosophical intuitions about these cases don’t seem to be vindicated by our study, even if there are third-person cases that do produce time-neutrality. Quite generally, if future-bias is irrational, it is not because we exhibit it in only a few conditions.[[17]](#footnote-17)

Turn now to the question of why we found that roughly half our participants were future-biased in both first- and third-person negative non-hedonic conditions. This is puzzling given extant evolutionary explanations of first-person hedonic future-bias (see Horwich (1987, 196–8), Maclaurin and Dyke (2002), Suhler and Callender (2012), and Greene and Sullivan (2015, Section V)). These accounts agree that hedonic future-bias is the result of temporally asymmetric emotions that track whether a hedonic event is past or future. For example, feelings of dread or anxiety are aroused by the prospect of future painful experiences but not by consideration of past painful experiences. Past painful experiences, in fact, often arouse positive emotions like relief. The temporally asymmetric nature of these emotions is advantageous partly because we can influence the future but not the past.

In contrast, as Hare (2013) claims, the temporal location of non-hedonic events does not seem to have this effect. For example, events like the release of embarrassing photos, spousal infidelities, or a hated team winning the Super Bowl do not produce an anxiety/relief pattern as they pass from immediate future to immediate past in the way that painful sensations do. Therefore, it would be congruent with evolutionary accounts of future-bias if people were hedonically future-biased but non-hedonically time-neutral. However, our results did not support the existence of such an asymmetry.

We suggest the following. Instead of positing general hedonic/non-hedonic and first/third-person asymmetries in preferences, we should instead notice that there are (at least) three features of an event that tend to diminish future-bias and (at least) three features that tend to increase it. Future-bias tends to increase when events are negatively valenced, hedonic, and first-person. Future-bias tends to decrease when events are positively valenced, non-hedonic, or third-person.[[18]](#footnote-18) This can be seen in the main effects of perspective, event type and valence. But we should also expect that sometimes features that diminish future-bias will be overridden by features that increase it, and vice versa. That is what we observed. Let us more closely consider each feature in turn.

As we saw in our results, participants showed a greater degree of future-bias in the negatively valenced conditions than the positively valenced conditions. Thus, defenders of the rationality of hedonic future-bias, such as Prior (1959), Hare (2007; 2008), and Heathwood (2008), are well-served by focusing on cases involving painful experiences instead of pleasurable ones. It is commonly observed that negatively valenced information contributes more strongly to people’s judgments than positively valenced information (for example, see reviews by Taylor, 1991; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). If participants are more sensitive to the temporal location of negatively valenced events, then we would expect them to be more future-biased in the negatively valenced conditions.

Our results also showed that, in general, participants tend to be less future-biased in non-hedonic than in hedonic conditions. This result might be explained by the evolutionary accounts of future-bias we discussed above. However, as we observed, this effect is not strong enough to override the influence of negative valence, resulting in a split between future-biased and non-future-biased participants in negative non-hedonic conditions.

Finally, our results show that participants in the hedonic conditions were less future-biased in the third-person conditions as compared to the first-person conditions. However, this effect is not very large, and, indeed, are smaller than that observed by Caruso et al. (2008). We suggested that this might be the result of our vignettes prompting many participants to take the perspective of the individual described in the vignette. When such perspective-taking is unavailable, as in Caruso et al.’s case or Parfit’s ill-mother case, third-person preferences may decrease future-bias more.

**4. Conclusion**

Our results show that philosophers’ predictions about first-person hedonic future-bias have been accurate. The results also suggest that philosophers arguing for the rationality of hedonic future-bias have been correct to focus on thought experiments involving pain instead of pleasure, as we found participants to be more future-biased in negatively valenced conditions. However, philosophers’ predictions concerning non-hedonic and third-person cases have not been accurate. Participants were future-biased in all hedonic conditions and non-future-biased in positive non-hedonic conditions. In negative non-hedonic conditions, half our participants report future-bias and half report non-future-bias. Thus, we found that there are no general hedonic/non-hedonic and first/third-person asymmetries in temporal preferences, which undermines arguments for the irrationality of future-bias that appeal to such asymmetries.

Nevertheless, we did observe main effects of perspective, event type, and valence. Thus we suggested that there are, in fact, at least three dimensions that influence whether preferences are future-biased. Future-bias tends to increase when events are negatively valenced, hedonic, or first-person, and it tends to decrease when events are positively valenced, non-hedonic, or third-person. The effects of the third-person perspective may decrease to the degree that people take the perspective of the other person.

While these results do not determine whether future-bias is rational or irrational, they do provide an insight into the descriptive realities of future-biased preferences, which should prove useful for theorising about the normative status of future-bias for both supporters and opponents alike.

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1. For a more formal characterisation of hedonic time biases see Greene and Sullivan (2015, 948–9). [↑](#footnote-ref-1)
2. Caruso, Gilbert and Wilson (2008). [↑](#footnote-ref-2)
3. Explicit supporters of the rationality of hedonic future bias include Prior (1959), Hare (2007; 2008), and Heathwood (2008). Recent critics of hedonic future bias include Brink (2011), Greene and Sullivan (2015), and Dougherty (2015). Hedden (2015) argues that hedonic future bias is merely rationally permissible while Parfit (1984) remains neutral about its rationality. [↑](#footnote-ref-3)
4. Indeed, ‘past-bias’ is not a term that appears in the literature on time bias. However, the concept is clear—it is simply the inverse of future-bias. [↑](#footnote-ref-4)
5. Some empirical evidence for this asymmetry can be found in the research of Caruso, Gilbert, and Wilson (2008, Study 4). [↑](#footnote-ref-5)
6. Hare (2008) argues that the predicted asymmetry between first and third-person preferences over the temporal location of hedonic events requires the other person to be spatially distant. When the other person is spatially close, Hare predicts, hedonic future bias returns. He takes this to be consistent with the view that hedonic future bias is rational. See footnote 16 for more discussion of this hypothesis. [↑](#footnote-ref-6)
7. Evolutionary accounts of future bias focusing on the role of emotions include Horwich, 1987, 196–8; Maclaurin and Dyke, 2002; Suhler and Callender, 2012; and Greene and Sullivan, 2015, Section V. Historical precedent for these views can be seen in the work of Hume (1738, sec. 2.3.7.6) and Adam Smith (1759, pt. 6). [↑](#footnote-ref-7)
8. There were also no significant main effects of age and gender, nor were there any significant interaction effects with age and gender. [↑](#footnote-ref-8)
9. Not only do our third-person vignettes allow for a direct comparison to the first-person vignettes, they also avoid a potential confound in Parfit’s ill-mother thought experiment (1984, introduced in Section 1); namely, that his mother suffering in the past entails that she had less time alive overall, which provides a time-neutral reason to prefer her suffering to be in the future. [↑](#footnote-ref-9)
10. There was no significant main effect of statement type, nor were there any significant interaction effects with statement type. Statement type has *no influence* on our reported results. As such it is permissible to amalgamate the two statement types in the manner that we have. [↑](#footnote-ref-10)
11. Participants were quite confident in their judgements regarding their preferences. Results of a 2x2x2 between-subjects ANOVA found significant main effects of perspective *F*(1, 805) = 18.188, *p* < .001 and event *F*(1, 805) = 15.054, *p* < .001. No other significant main effects or interaction effects were observed. The main effect of perspective showed that levels of confidence were significantly higher for first-person conditions (*M* = 5.61, *SD* = 1.43) than for third-person conditions (*M* = 5.16, *SD* = 1.60). The main effect of event showed that levels of confidence were significantly higher for hedonic conditions (*M* = 5.86, *SD* = 1.59) than for non-hedonic conditions (*M* = 5.18, *SD* = 1.43). [↑](#footnote-ref-11)
12. The ANOVA assumes (1) residuals are normally distributed and (2) homogeneity of variance. We first tested these assumptions using a Shapiro-Wilk test (*W* = .973, *p* < .001) and Levene’s test (*F* = 2.741, *p* = .008). According to these tests both assumptions have been violated. However, on large samples (n = 813) the ANOVA is robust to non-normality, and visual inspection of the normal Q-Q plot shows that the residuals in this study do *approximate* a normal distribution. Further, an investigation into the homogeneity of variance violation revealed that it was being driven solely by the lower variance in condition (1). The ANOVA is robust to non-homogeneity when the variance ratio between the largest variance and lowest variance conditions is less than 1.5 (Blanca, Alarcón, Arnau, Bono and Bendayan, 2018), and in this study is the ratio is 1.46 (between condition 1 and condition 3). [↑](#footnote-ref-12)
13. Whenever you perform multiple statistical tests on the same data there is an increased chance of encountering type-one errors (false positives). The Bonferroni correction helps correct this problem. [↑](#footnote-ref-13)
14. There is one limitation to the study that we should note. We have assumed that time-neutral participants will respond with 4, and those who are time-biased in some manner (past or future) will respond with 1-3 or 5-7. It is, however, possible that a small number of strongly time-neutral participants will respond in a ‘deviant’ way, by responding to statements of the form “I would prefer to learn that [the event will occur] tomorrow, and [did not occur] yesterday” with 1-3, in order to strongly indicate that they have no time-biased preferences. Our methodology will classify these participants as either past-biased or future-biased. Importantly, even if there are such participants, this will not affect the mean levels of agreement that we see, since we would expect that they will be evenly allocated to each statement type in a given condition, and they will respond in this manner regardless of the question they see. For each participant misclassified as future-biased, another will be misclassified as past-biased, and this effect will cancel itself out. The results of the ANOVA, then, would be unaffected by any such effect.

    Nevertheless, if there is a small population of participants who respond in this ‘deviant’ manner, it will lead us to slightly overestimate the percentage of people who are past-biased and future-biased. While we have no reason to suppose that there are participants who responded in this manner, the reader should nonetheless keep this in mind in what follows. A useful follow-up study would replicate this study using a single sliding scale from “I would prefer to learn that [the event will occur] tomorrow, and [did not occur] yesterday” to “I would prefer to learn that [the event occurred] yesterday, and [will not occur] tomorrow”. Then this type of deviant response would not be possible. Thanks to an anonymous referee for pointing this out. [↑](#footnote-ref-14)
15. With thanks to an anonymous referee for this suggestion. [↑](#footnote-ref-15)
16. Recall that Hare (2008) maintains that people will be time-neutral if the third person is spatially isolated from the chooser (see footnote 6). However, the case of Freddie the astronaut is *extremely* spatially isolated, so Hare’s view would predict that participants will be time-neutral in their preferences regarding Freddie. [↑](#footnote-ref-16)
17. There is a difference between the cases we discuss by Parfit (1984) and Brink (2011) and those by Hare (2008) and Greene and Sullivan (2015) that may be relevant to the debate over future-bias. Parfit’s and Brink’s cases compare situations in which *the same* negative event is either past or future, while Hare’s and Greene and Sullivan’s cases compare events involving *more past pain* against ones involving *less future pain.* Hare and Greene and Sullivan predict that people will prefer more past pain in the first-person condition and less future pain in the third-person condition. Our experiments are like Parfit’s and Brink’s cases—they compare the same negative events being past or future. It is possible for our results and Hare and Greene and Sullivan’s predictions to be consistent: it could be that when the negative events are the same people use the fact that one is past as a ‘tiebreaker.’ It would be interesting for future work to compare unequal tradeoffs between past and future like those discussed by Hare and Greene and Sullivan. Notably, Parfit’s (1984, 165) influential *My Past or Future Operations* case in support of negative hedonic future-bias also features an unequal tradeoff. [↑](#footnote-ref-17)
18. More carefully, perspective only seems to matter when the events are hedonic. [↑](#footnote-ref-18)