LOOKING AT THE PAST WITH A WHOLE NEW PERSPECTIVE: THE INFLUENCE OF VISUAL PERSPECTIVE ON HINDSIGHT BIAS

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ABSTRACT

LINDSAY KENNEDY: Looking at the Past with a Whole New Perspective: The Influence of Visual Perspective on Hindsight Bias
(Under the direction of Lawrence J. Sanna)

Subjective experiences, namely feelings of ease or difficulty that accompany thinking, have been found to influence hindsight bias (e.g., Sanna, Schwarz, & Stocker, 2002). When thinking is easy, hindsight bias increases because people equate ease with plausibility; when thinking is difficult, however, hindsight bias is reduced. Recently, the influence of visual perspective (first- vs. third-person) on judgments has been explored (e.g., Libby, Eibach, & Gilovich, 2005), which may moderate the relationship between subjective experiences and hindsight bias. In two studies, the hypothesis that people rely more on their subjective experiences when thinking from a first-person perspective than a third-person perspective was examined. This follows from the suggestion that the third-person perspective promotes more abstract construal (Libby, et al., 2005), which may reduce reliance on subjective experiences. A marginally significant interaction was found between visual perspective and subjective experiences on judgments of inevitability. The implications of these studies are discussed.
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CHAPTER 1
INTRODUCTION

Although I was once told that “hindsight is 50/50,” most of us are familiar with the more popular version of this expression, “hindsight is 20/20.” Take this clichéd saying from everyday conversation into the laboratory, and we have what is known as the hindsight bias. Hindsight bias is a notably widespread phenomenon that occurs when “finding out that an outcome has occurred increases its perceived likelihood” (Fischhoff, 1975). It can arise in a wide array of contexts, and is not easy to eliminate. Even when participants are aware of and familiar with the existence of the hindsight bias, it seems that they are not immune to it (Bonds-Raacke, Fryer, Nicks, & Durr 2001).

It has been suggested recently that three subcomponents of hindsight bias exist: perceptions of necessity, foreseeability impressions, and memory distortions (Blank & Nestler, 2006; Blank, Nestler, von Collani, & Fischer, 2008). Though hindsight bias is still conceptualized as a single phenomenon, these subcomponents may act independently from one another (usually in differing magnitudes, and sometimes in differing directions; Blank, et al., 2008). In this breakdown of the hindsight bias, perceptions of necessity refers to the degree to which one believes that the outcome of an event had to occur. Foreseeability impressions refer to the general overestimation, after the fact, of the predictability of an event outcome. Finally, memory distortions simply refer to inaccurate recall of outcome.
predictions once the outcome is known. These distortions typically place predictions more in
line with the outcome than they really were.

When such biases exist, psychologists naturally begin to look for causes and consequences of them. In particular, several lines of research suggest that thinking of reasons to support alternative outcomes serves to attenuate hindsight bias (for reviews, see Fischhoff, 1982; Guilbault, Bryant, Posavac, & Brockway, 2004; Hawkins & Hastie, 1990). However, contrary to these suggestions, more recent research suggests that thinking about alternative outcomes may not always be effective at attenuating hindsight bias, and, in fact, may backfire by increasing it (for a review, see Schwarz, Sanna, Skurnik, & Yoon, 2007). For example, in a meta-analysis of 95 studies on hindsight bias, it was concluded that manipulations focused on generating alternatives did not result in lower effect sizes, indicating hindsight bias remained (Guilbault, Bryant, Brockway, & Posavac, 2004). More to the point, attempts to reduce hindsight bias by generating alternatives often backfire due to the subjective experiences that accompany exposure to outcome information. Sanna and Schwarz (2007) noted that these subjective experiences can include the experience of ease or difficulty of thought generation or recall, feelings of fluency and familiarity, or experiences of surprise. These subjective experiences are directly related to whether outcomes or alternative outcomes are seen as inevitable or not beyond what is concluded from the content of people’s thoughts.
Sanna, Schwarz, and Stocker (2002), for example, used a thought listing procedure to test whether levels of hindsight bias could be influenced by the generation of differing numbers of alternative outcomes. In two studies, participants were given a scenario about a British-Gurkha war (adapted from Fischhoff, 1975). Some participants were given no outcome information, whereas others were or told that either the British or the Gurkhas were victorious. After receiving outcome information, participants were asked to list either 2 or 10 thoughts about how the outcome may have turned out differently. Listing 2 thoughts was found to be an easy task for participants, whereas listing 10 thoughts was found to be a difficult task for participants. Following the thought listing task, judgments of outcome inevitability were made by all participants.

From this experimental design, Sanna et al. (2002) found that the subjective experience of ease or difficulty when generating thoughts interacted with the number of thoughts (thought content) generated by participants. In other words, those participants who were instructed to list 10 thoughts about how the outcome could have been different found this task difficult and therefore concluded that the alternative outcome was, in fact, unlikely, which resulted in greater hindsight bias. This finding is in contrast to previous ideas that listing more thoughts about alternative outcomes should result in lesser hindsight bias.
Participants who listed 2 thoughts, however, found this task to be easy, thus making the alternative outcome seem more likely, and lowering hindsight bias.

These findings for generating alternatives and hindsight bias are consistent with those obtained in other areas. For example, in a now classic study of these issues, Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, and Simons (1991) had participants list either 6 or 12 examples of assertive or unassertive behavior. Those participants who were asked to list 6 examples of assertive behavior, experienced as easy, evaluated themselves as being more assertive overall than those participants asked to list 12 examples, experienced as difficult. Again, it was found that the subjective experience of ease or difficulty in generating such thoughts interacted with the content of people’s thoughts, even sometimes resulting in judgments that were opposite to the implications of thought content. That is, people who found it easy to generate examples of (un)assertive behaviors judged themselves to be high on that characteristic, but those who found it difficult to generate examples of (un)assertive behaviors judged themselves to be low on that characteristic. Other research further supports a default mind-set that “ease is good and difficulty is bad.” For example, Briñol, Petty, and Tormala (2006) provide the example “if tennis is easy, I must be good at it.” As applied to the present research, the subjective ease of generating thoughts about an event outcome equates to plausibility or likelihood.
CHAPTER 3

VISUAL PERSPECTIVE MAY INFLUENCE HINDSIGHT BIAS

If subjective experiences are a common factor in hindsight bias judgments, then manipulations that influence the extent to which these experiences are relied upon when making judgments may reveal the conditions under which hindsight bias is likely to be higher or lower. My thesis was designed to examine one possible mechanism: visual perspective. In other words, “putting things into perspective,” differing perspectives, that is, might show us when hindsight judgments are more influenced by thought content and when they are more influenced by subjective experiences.

Psychological research on perspective comes from several areas. For example, in a series of studies, Libby, Eibach, and Gilovich (2005), found that the influence of memory perspective influenced judgments of personal change. Participants were asked to recall their first experience with psychological treatment. To manipulate memory perspective, participants were either prompted to visualize the event from a first-person perspective or a third-person perspective. Those visualizing the event from a first-person perspective were instructed to put themselves back in the memory, and look out at their environment through their own eyes, as the event happened originally. Conversely, those visualizing the event from a third-person perspective were instructed to actually see themselves in their memory, as if looking at the event as an observer. Following this manipulation, participants rated how much they had changed since their first psychological treatment. It was found that those
participants who were induced to take a third-person perspective reported greater personal change over time than those who experienced their memory from the first-person perspective. In another study, it was found that participants asked to recall past social awkwardness in high school from a third-person perspective not only reported greater personal change, but also proceeded to act more skilled in a social situation. Taken together, the authors proposed that the third-person perspective leads to more abstract construal than the first-person perspective (Libby et al., 2005).

Perspective taking has also been applied to some judgmental biases. For example, research has suggested that people are “blind” to their own biases and even claim that they are more objective decision makers than are others (Pronin, Gilovich, & Ross 2004). Similarly, Heath (1999) found that when asked about job performance motivation, workers claimed that they were motivated intrinsically for the sake of self-betterment, while their co-workers were driven by external, financial factors. Taken together, such studies illustrate that differing perspectives—first- versus third-person—affect the judgments that people make.
CHAPTER 4
THE PRESENT RESEARCH

My thesis was designed to test whether people rely more on their subjective experiences when judging the past from a first-person visual perspective (the likely default perspective taken in prior research) but less on their subjective experiences when judging the past from a third-person perspective (a possibility not yet tested by prior research). This idea follows from research examining the role of subjective experiences in self-other differences. That is, some recent research indicates that people will rely on their subjective experiences when making self-judgments but not when they are making judgments about others. The essential idea here is that we are privy to our own subjective experiences and, so, by default, these experiences are likely to influence self-judgments; in contrast, subjective experiences are not generally used when making judgments about others because we are not privy to their subjective experiences (Caruso, 2008). The result is that self judgments are influenced by subjective experiences, whereas judgments about others are influenced only by thought content.

In the present research, I extend this idea by examining whether subjective experiences are used when making judgments from a first-person perspective, similar to self judgments, but that people may rely on thought content when making judgments from a third-person perspective, similar to judgments about others. In essence, when people take a third-person perspective they act as if they are observers of their own behaviors (Libby et al.,
Thus, my hypothesis is that when generating thoughts from a third-person, outside observer perspective, people may be less likely to use subjective experiences in judgments. In short, making judgments from a third-person perspective may be similar to making judgments about others, and people may rely on thought content rather than their subjective experiences under such conditions. Perspective-taking could thus further inform when hindsight bias occurs, as well as suggest ways of influencing it by changing people’s visual perspective.

To date, research involving the role of perspective on judgment and decision making has only tested whether judgments differ for self and others, and it has not tested whether differing visual perspectives have similar effects. For example, Buehler, Griffin, and Ross (1994), in research on the planning fallacy, found that when “actors” generated thoughts about completing a task, they underestimated task completion times. However, when different participants read these thoughts (the “observers”), they tended to overestimate task completion times. In a similar manner, Wanke, Bless, and Biller (1996) found effects of subjective experiences (accessibility) when individuals were asked to generate 3 or 7 arguments for or against an issue and then form an attitude on the issue, but content effects were found when participants were asked to simply read arguments generated by others. That is, generating arguments from the first-person perspective resulted in attitudes consistent with subjective experiences, but reading arguments generated by others resulted in attitudes consistent with thought content.

Initial Research

Sanna, Kennedy, and Chang (under review) provided indirect evidence for the possibility that hindsight bias may be influenced by people’s perspectives. Hindsight bias
was investigated using the outcome of a basketball game between the University of North Carolina at Chapel Hill (Carolina) and Duke University (Duke). On the day before the game (Time 1), all participants were asked to predict the outcome of the game and rate the inevitability of such an outcome. On the day following the game (Time 2), participants were asked to generate 3, 12, or no reasons as to why Carolina won the game before completing the same inevitability ratings as Time 1. Finally, a week later (Time 3), participants who had previously listed reasons were given back their reasons, and asked to read over them before making the inevitability ratings.

The main results pertinent to my thesis were as follows: Hindsight judgments were influenced by subjective experiences when generating thoughts at Time 2, consistent with prior research, but hindsight judgments were consistent with thought content when participants simply read over the thoughts they had generated previously at Time 3. This shift in levels of hindsight bias may have revealed a fading, or dissociation, of subjective experiences over time. My thesis was designed to examine whether these effects may have resulted from a change in visual perspective when people look back at themselves after time has passed. That is, participants may have naturally taken a first-person perspective at Time 2 when generating reasons, and, as time passed, took a more third-person perspective at Time 3 when reading reasons. This is consistent with the idea that people may view themselves from a third-person perspective, as an observer might, when looking at their own past behaviors (Frank & Gilovich, 1989; Libby et al., 2005). However, visual perspective was neither manipulated nor tested in the Sanna et al. (under review) research.
CHAPTER 5
STUDY 1

My first study provided an initial test of the hypothesis that visual perspective may interact with subjective experiences and influence hindsight judgments. In this experiment, I attempted to induce either a first- or third-person perspective. The design was a 2 (visual perspective: first-person vs. third-person) x 2 (event outcome valence: positive vs. negative) x 2 (reasons generated: 3 vs. 12) between-participants factorial. I used a variation of the verbal perspective inductions employed by Libby et al. (2005) to manipulate how participants thought about a past academic event. Also included was a reasons generation task that made it possible to evaluate the effects of subjective experiences versus thought content effects.

An interaction between visual perspective and reasons generated was hypothesized, such that 1) the first-person perspective would produce hindsight judgments consistent with subjective experiences and 2) the third-person perspective would produce hindsight judgments consistent with thought content effects. Finally, event valence was included in an attempt to address the possibility that positive and negative outcomes may produce different effects, given the likely high personal relevance of academic events to the undergraduate participants. Although not explicitly hypothesized, Blank et al. (2008) suggested that personally relevant events are likely to result in a self-protective pattern of hindsight
judgments. That is, a person is more likely to see a negative personally relevant outcome as more necessary (in a sense, denying personal control over the outcome), yet less foreseeable.

Method

Participants

Participants were 113 undergraduates from the University of North Carolina at Chapel Hill who were enrolled in an introductory psychology course. In exchange for their participation, participants received credit toward partial fulfillment of a class requirement.

Procedures

Upon arrival at the laboratory, participants were told that the purpose of the experiment was to examine students’ reactions to various life events. Sessions were conducted in a closed conference room, where there was no participant interaction. Participants were randomly assigned to one of eight conditions, ranging from first-person perspective/positive academic event/3 reasons generated to third-person perspective/negative academic event/12 reasons generated. All data were collected via questionnaires that were administered during 30-minute lab sessions.

Perspective manipulation and manipulation checks. Perspective was manipulated through paragraphs that were modeled after Libby et al. (2005). Participants in the first-person condition read:

Please recall a positive (successful) (negative/unsuccesful) academic event (such as getting a high (low) grade on an exam, quiz, assignment, speech, etc.) that you had about a month ago. Please visualize yourself experiencing the positive (negative) academic event FROM THE SAME VISUAL PERSPECTIVE THAT YOU ORIGINALLY HAD; in other words, LOOKING OUT AT YOUR SURROUNDINGS THROUGH YOUR OWN EYES, as you were when the event was happening. Please try to make your memory detailed as vivid as possible and keep it in your mind as you continue through the questionnaire.
Participants in the third-person condition read:

Please recall a positive (successful) (negative/unsatisfactory) academic event (such as getting a high (low) grade on an exam, quiz, assignment, speech, etc.) that you had about a month ago. Please visualize yourself experiencing the positive (negative) academic event FROM AN OBSERVER’S VISUAL PERSPECTIVE; in other words, SO THAT YOU CAN SEE YOURSELF IN THE MEMORY, AS WELL AS YOUR SURROUNDINGS, as if you were in the room watching yourself. Please try to make your memory detailed as vivid as possible and keep it in your mind as you continue through the questionnaire.

After reading the respective paragraphs, participants were asked to make a drawing of the event, from the perspective they were visualizing. In a box provided they then wrote about the event for approximately five minutes. For our purposes, this not only served as a manipulation check, but also attempted to further induce perspective. Additionally, on a set of rating scales, participants were asked to indicate the extent to which they adopted a first-person perspective, the extent to which they adopted a third-person perspective, and the extent to which the event was positive and negative using 11-point rating scales ranging from 0 (Not at all) to 10 (Very much).

Reasons generation. Participants were asked to generate either 3 or 12 reasons why the academic event was positive/successful or negative/unsatisfactory. Corresponding numbered blanks were provided for participants to list their reasons. Upon completion of reason generation, participants rated the extent to which generating the requested number of reasons was easy and the extent to which it was difficult. Again, an 11-point scale was used, ranging from 0 (Not at all) to 10 (Very much).

Hindsight judgments. On the last page of the questionnaire, hindsight judgments were obtained. Rating scales asked participants to rate the extent to which the event outcome was: 1) inevitable, 2) foreseeable, 3) predictable, 4) anticipated, and 5) expected, each on 11-point scales. Finally, participants provided estimates of the probability of the positive or
negative academic event. They were instructed to provide answers between 0% and 100% by inserting a number into a blank space. These specific dependent measures were selected in an attempt to account for two of the ways in which hindsight bias may manifest itself: feelings of necessity (the extent that the event outcome was inevitable and the probability rating) and foreseeability impressions (the extent that the event outcome was foreseeable, predictable, anticipated, and expected; Blank & Nestler, 2006). For the purposes of this study, memory distortions were not included.

Upon completing the experiment, participants were debriefed, provided with the opportunity to ask questions or express concerns, and thanked for their time.

Results

*Perspective.* Participants were categorized into first- or third-person conditions based on their drawings of the event. This was done because, although the instructions indicated what perspective each participant should adopt, it was sometimes the case that participants seemed (at least through their graphical representation) not to have followed, or possibly understood, instructions. I thus report the hindsight judgments first by classifying participants to perspective on the basis of their drawings, but also report the results using perspective as participants were assigned to experimental condition. Eight subjects failed to draw a picture from either perspective, and were dropped from subsequent analyses.

In addition, the 11-point rating scale indicating the extent to which each participant adopted a third-person perspective was reversed-scored and averaged with the question assessing the extent to which each participant adopted a first-person perspective. This produced a composite perspective score. Numbers closer to 10 were indicative of a more
first-person perspective, while numbers closer to zero were indicative of a more third-person perspective.

A 2 x 2 x 2 analysis of variance (ANOVA) revealed a significant effect of perspective, \( F(1, 103) = 7.30, p = .008 \), such that those whose drawings demonstrated a first-person perspective reported adopting a more first-person perspective. As predicted, participants in the first-person perspective condition reported an average perspective of 7.30 (\( SD = 1.60 \)), and those coded as a third-person perspective reported an average perspective of 6.19 (\( SD = 2.29 \)). This finding remains the same when the assigned perspective is used, as well, \( F(1, 103) = 22.854, p < .0001 \). I note, however, that on average participants in both perspective conditions tended to report a more first-person mindset, as both means were above the midpoint of the scale, a point to which I will later return.

**Outcome Valence.** The extent to which the event was rated as negative was reversed-scored and averaged with the extent to which the event was rated as positive. As expected, participants thinking about a positively valenced event had, on average, more positive composite scores (\( M = 8.98, SD = 0.86 \)) than those thinking about a negatively valenced event (\( M = 2.15, SD = 1.45 \)). This difference was significant, \( F(1, 103) = 893.08, p < .0001 \).

**Ease/Difficulty of Thought Generation.** The degree of thought generation difficulty was reversed-scored and averaged with the degree of thought generation ease. As predicted, participants generating 3 reasons found the task relatively easy (\( M = 7.38, SD = 2.17 \)), while those generating 12 thoughts found the task relatively difficult (\( M = 3.92, SD = 2.30 \)). This difference was significant, \( F(1, 103) = 670.17, p < .0001 \).

**Hindsight judgments.** Finally, a 2 x 2 x 2 ANOVA was conducted on all hindsight judgments, including the extent to which the outcome was seen as 1) inevitable, 2)
foreseeable, 3) predictable, 4) anticipated, and 5) expected. Estimates of probability were also analyzed through the 2 x 2 x 2 ANOVA. Replicating Sanna et al. (2002), there was a significant main effect of thoughts generated on the average of all hindsight measures, such that generating 3 reasons led to more hindsight, overall, than generating 12 reasons, $F(1, 96) = 6.03, p = .016$. There was a marginally significant two-way interaction between reasons generated and perspective in drawing on the extent to which the outcome was inevitable, $F(1, 96) = 2.98, p = .087$. The means reported in Table 1 illustrate that this interaction was in line with the hypotheses. Event valence did not qualify this interaction. This interaction was not significant when the assigned perspective was used instead of the perspective drawn, $F(1, 96) = .162, p = .689$, and did not display a pattern in line with the hypotheses, as shown in Table 2. There were no other main or interactive effects for any of the other hindsight judgments (i.e., foreseeable, predictable, anticipated, and expected). The probability measure, 0-100% rating, also did not differ by experimental conditions. All hindsight measures correlated significantly with one another, and produced a moderate reliability coefficient, $\alpha = .50$.

Discussion

According to manipulation checks, perspective, valence, and ease of thought listing all seemed to be effectively manipulated. However, there were no significant effects on hindsight bias measures (i.e., inevitable, foreseeable, predictable, anticipated, and expected). There was only the marginally significant interaction when participants were classified in perspective on the basis of their drawings. Thus, I conducted a second study as an attempt to build on Study 1, but with a stronger manipulation of visual perspective. In particular, after running Study 1, there seemed to be a couple of issues that I might improve upon. First, there seemed to be some confusion on the part of participants when asked to adopt a
particular perspective. That is, in several cases, participants were instructed to adopt one perspective, but they made a drawing of the opposite perspective. Even though I classified them on the basis of their drawings, this confusion could have led to the manipulations being weaker than they could have been. Second, although the perspective manipulation check measure revealed a significant difference between first- and third-person perspectives, there was an overall trend towards first-person perspectives—that is, ratings were above the midpoint of the scale for both perspective conditions, indicating that participants did not take a strong third-person perspective. Because of these possibilities, I conducted a second study that included a stronger method of perspective induction.
CHAPTER 6

STUDY 2

Study 2 attempted to provide a stronger manipulation of visual perspective, and to provide generality to the findings of Study 1. Here, instead of a verbal manipulation of perspective, I used a computerized video game, called *Need For Speed II, Special Edition* (NFSIISE) to induce either a first- or third-person perspective visually in participants. NFSIISE is a car-racing game that allows players to race while taking either a first- or third-person perspective. This was a more direct manipulation of perspective that did not rely on participants attempting to adopt a particular perspective on their own from verbal instructions. For instance, such a manipulation does not require an understanding of the meaning behind first- and third-person perspectives, because participants actually assumed a first- or third-person perspective when they played the game.

Study 2 was a 2 (perspective: first-person vs. third-person) x 2 (reasons generated: 3 vs. 12) factorial, with a structure similar to that of Study 1. As so, the hypotheses remained essentially the same. That is, I predicted that the first-person perspective would produce inevitability ratings consistent with subjective experience, such that those participants generating 3 reasons would report greater hindsight judgments than those generating 12 reasons, but that the third-person perspective would produce hindsight judgments that were consistent with content effects, such that those participants generating 3 reasons would report
lower hindsight ratings than those generating 12. The factor of valence was excluded from this study, as it did not affect the results in Study 1

Method

Participants

Participants were 53 undergraduates from the University of North Carolina at Chapel Hill who were enrolled in an introductory psychology course. In exchange for their participation, participants received credit toward partial fulfillment of a class requirement.

Procedures

The general procedures for this study conceptually replicated Study 1, with the main difference being the visual perspective manipulation. There were up to five participants per session. Upon arriving in the laboratory, participants were seated at a center table and told that the purpose of the experiment was to investigate how people make judgments about performances on various tasks. They then had the opportunity to read and sign an informed consent form before being assigned to one of five individual rooms.

The computer game NFSIISE was used in this study. This game lent itself well to the research due to its ease of play, non-violent nature, and ability to choose between points-of-view, or perspectives (see Figure 1 and Figure 2 for screenshots from the game). Once seated in front of the computer, participants were directed by the experimenter to read and follow the instruction sheet on their desks. This sheet provided them with a short game description and directions (i.e., “Press the UP arrow to accelerate.”), instructed them to click “Continue” on the screen when they were ready to begin the race, and asked them to notify the experimenter once they had finished. The computers were prepared in advance, such that each was randomly set to one of the two race perspectives before the participants arrived.
Participants performed a two-lap timed trial, in which it was only their car on the track. After finishing the race, approximately 2 minutes to 5 minutes later, participants notified the experimenter who recorded their total race time into a notebook. This information automatically appeared on a screen that displayed a summary of their race statistics after they finished the race. The experimenter then exited the game, and entered the participant’s total race time into the program. The next screen instructed participants to, “Please wait while MediaLab calculates your percentile rank…” The experimenter then told participants that this screen may take up to a minute to calculate their performance in comparison to past participants, and that they should follow the directions on the next screen that appears. The experimenter then left the participant’s room to allow for the completion of the questionnaire.

After “calculating”, the next screen contained a fake (unbeknownst to participants) graph of the cumulative performance of past participants. A portion of this graph was highlighted, indicating the performance of the current participant. The text read, “Your total race time was in the 30\textsuperscript{th} PERCENTILE. In other words, your time was 10 seconds SLOWER than the average. Please click “Continue” to proceed to the rest of the experiment.” The “Continue” button was activated after a 15 second delay in an effort to ensure that participants had viewed their false feedback.

The questionnaire then began, and was similar to that used in Study 1, with a few modifications. Participants were first asked to think back to when they were playing the game and visualize the race in their minds. Participants were then asked to keep the visualization of the race in their minds as they continued through the rest of the experiment and list either 3 or 12 reasons as to why they performed in the 30\textsuperscript{th} percentile. Each reason
was to be typed into its own box, on its own page. Participants were to hit “Enter” in order to move to a new screen to type the next reason. Participants were asked to rate the ease and difficulty of listing the requested number of reasons on an 11-point scale ranging from 0 (Not at all) to 10 (Very much), in order to verify the assumption that generating 3 reasons was considered easy, while generating 12 reasons was considered difficult. All participants then answered questions aimed to assess their levels of hindsight bias, including ratings of inevitability, predictability, expectation, anticipation, unavoidability, and inescapability, all on 11-point scales. Ratings of inevitability, unavoidability, and inescapability were intended to tap into necessity impressions, while the remaining ratings aimed to assess foreseeability impressions.

After responding to all dependent measures, participants were asked a series of questions intended to assess the influence of the perspective manipulation and their subjective experiences on their responses. The first question asked, “To what extent were you visualizing the race from a 1st or 3rd person perspective while generating reasons?” Participants were given a brief example of each type of perspective (e.g., “A 1st person perspective is as if you were sitting in the car, looking out through the windshield as a driver would.”) and then given an 11-point scale to indicate their perspective (anchored by 1st person and 3rd person). They were then asked to think about the ease or difficulty experienced while generating reasons and indicate the extent to which those feelings influenced their judgments about the outcome (indicating their use of subjective experiences; again, on an 11-point scale).

The final screen asked participants to inform the experimenter that they had completed the experiment. Once all participants were finished, the experimenter thanked
them, gave them a paper copy of the debriefing, verbally explained the purpose of the experiment, and dismissed them.

Results

_Perspective._ Analyses revealed a significant effect of manipulated perspective on the manipulation check of perspective, $F(1, 49) = 19.93, p< .0001$. As predicted, participants who raced from a first-person perspective reported an average perspective of 5.00 ($SD = 3.894$), and those who raced from a third-person perspective condition reported an average perspective of 9.27 ($SD = 2.878$), again with higher numbers reflecting a more third-person perspective.

_Ease/Difficulty of Thought Generation._ The degree of thought generation difficulty was reversed-scored and averaged with the degree of thought generation ease. As predicted, participants generating 3 reasons found the task relatively easy ($M = 7.34, SD = 2.64$), while those generating 12 thoughts found the task relatively difficult ($M = 4.48, SD = 1.95$). This difference was significant, $F(1, 49) = 19.479, p< .0001$.

_Hindsight judgments._ A 2 x 2 ANOVA was conducted on all measures of hindsight, including the extent to which the outcome was seen as 1) inevitable, 2) predictable, 3) expected, 4) anticipated, 5) unavoidable, and 6) inescapable. As presented in Table 3, the predicted patterns of data between reasons generated and visual perspective was found on both the extent to which the outcome was viewed as anticipated and expected (perhaps both reflecting foreseeability impressions); however, neither of these interactions were significant, $F(1, 49) = .549, p = .462$ and $F(1, 49) = .162, p = .689$, respectively. No remaining interactions or main effects were significant, nor did the means reflect the
hypothesized patterns. Again, correlations among all of the hindsight measures were significant, and produced a high reliability coefficient, $\alpha = .85$.

*Use of Subjective Experiences.* Finally, there were no significant effects of visual perspective on whether subjects said they used their subjective experiences when making judgments, however, those in the first-person condition ($M = 6.35$, $SD = 3.298$) did report using their subjective experiences slightly more than those in the third-person condition ($M = 6.11$, $SD = 2.833$), $F(1, 51) = .78$, $p = .782$, which was in line with the hypotheses of the study.

**Discussion**

As in Study 1, the independent variables in this study appeared to be effectively manipulated. Although the NFSIISE game was a stronger manipulation of perspective because it did not simply rely on verbal instructions to induce participants to adopt a particular perspective, it may not have been strong enough. Even though participants did report taking a more first-person perspective during thought generation if they raced from a first-person perspective and more of a third-person perspective during thought generation if they raced from a third-person perspective, this difference did not result in any significant main effects or interactions. Also, although I was able to replicate the established finding that generating few thoughts is relatively easy, whereas generating many thoughts is relatively difficult, these subjective experiences were not found to interact with visual perspective as manipulated in this experiment.

For two of the hindsight bias measures, namely the extent to which the outcome was seen as anticipated and expected, there were trends in predicted directions. With both of these variables, participants in the first-person perspective conditions appeared to rely on
their subjective experiences when making hindsight judgments (greater hindsight bias when asked to generate three thoughts, relative to 12), while participants in the third-person perspective conditions seemed to rely more on thought content (greater hindsight bias when asked to generate 12 thoughts, relative to 3). However, these interactions did not reach significance.

Also, different levels of reported use of subjective experiences were found between participants in the first- and third-person perspective conditions. More specifically, participants in the first-person perspective condition reported using their subjective experiences (those of ease and/or difficulty) slightly more than participants in the third-person perspective condition when making hindsight judgments. But this difference was also nonsignificant.

I note, however, the possibility that there remain some theoretically interesting possibilities. For example, as proposed by Libby, et al. (2005), it could be the case that those adopting a third-person perspective subsequently adopted a more abstract level of construal, which, in this study, would suggest that this abstract level of construal may reduce the reliance on subjective experiences, possibly because they are simply unavailable. In other words, the third-person perspective may serve to remove the individual from his or her subjective experience. In line with Caruso (2008), it may be the case that participants adopting a third-person perspective feel more like an observer and less like themselves, which leads them to discount the usefulness of their subjective experiences. But more research is needed to assess this possibility.

There were also unanticipated findings. To put things quite frankly, the hindsight bias measures displayed inconsistent patterns, and were mainly nonsignificant. Although the
extent to which the event outcome was viewed as inevitable was marginally significant in the first study, the pattern revealed in the second study was in direct opposition to the hypothesis. This was the dependent measure that behaved most variably across studies. The other dependent measures (i.e., the extent to which the event outcome was predicted, unavoidable, and inescapable) also displayed nonsignificant patterns, and thus did not support my hypotheses.
CHAPTER 7
GENERAL DISCUSSION

Across two studies, the effects of perspective-taking on levels of hindsight bias were examined. It was hypothesized that participants taking a first-person visual perspective would rely on subjective experiences that accompanied their thought generation about an outcome when making hindsight judgments, thus demonstrating judgments consistent with thought accessibility effects. In other words, participants listing 3 reasons were expected to show greater hindsight judgments than participants listing 12 reasons. In contrast, for the third-person conditions, the opposite pattern was expected: that is, participants listing 3 reasons would have lower hindsight judgments than participants listing 12 reasons, consistent with thought content effects. These hypotheses were based on the idea that subjective experiences are relied upon less when thinking about an event from a third-person perspective, an idea that had yet to be tested.

In the first study, I attempted to manipulate perspective using a variation of the verbal perspective induction used by Libby, et al. (2005). When recalling and generating explanations for a past academic performance from a first-person perspective, participants in Study 1 reported inevitability judgments consistent with their subjective experiences, whereas participants adopting a third-person perspective reported inevitability judgments consistent with thought content. This interaction between perspective and thoughts listed was marginally significant.
Results from the second study were even more mixed. The video game, *Need for Speed II, Special Edition*, was used to induce perspective as an alternative to the verbal perspective induction. This methodological change was intended to provide a cleaner and stronger manipulation of perspective. In this study, only a couple of nonsignificant patterns emerged in the direction of the hypothesis, with judgments of the degree to which the event outcome was anticipated and expected demonstrating the hypothesized interaction between perspective and thought generation. But both of these patterns were nonsignificant. Also, participants in the first-person perspective condition reported using their subjective experiences when making hindsight bias judgments more than participants in the third-person perspective condition, but this was only marginal.
CHAPTER 8
FUTURE DIRECTIONS

Taken together, what inferences can be drawn from the current studies? For starters, if the general hypotheses were, in fact, theoretically likely, it may be the case that the current perspective manipulation (NFSIISE) was too divergent from the perspective induction employed by Libby et al. (2005) to be effective. Perhaps this manipulation was too subtle or its effects were too short-lived to produce significant differences in the hindsight judgments made by the participants. To be even more direct, a future possibility may involve using video recordings to allow participants to actually observe themselves performing a behavior.

Regarding the hindsight bias ratings, one glaring and unanticipated finding in these two studies was the way in which the dependent measures behaved, relative to one another. Although multiple dependent measures of hindsight were used, many were expected to provide similar results. As it turns out, participants often reported divergent estimations of predictability, foreseeability, anticipation, and so forth, even though all of these measures were intended to assess hindsight bias.

The question of whether the performance of these dependent measures was the product of a general misunderstanding of the measures or inappropriate conceptualizations of these terms cannot be answered with the existing data. Blank and Nestler (2006) have provided empirical evidence to speak to the existence of the three subcomponents of hindsight bias, so perhaps it is more likely that the language of the dependent measures
created some confusion among the participants. For example, although the use of synonyms such as unavoidable and inescapable was intended to provide multiple measures of the same concept, participants may have taken the different questions as an indication that they should be giving different answers. That is, participants may have assumed that unavoidable and inescapable, for example, meant two different things in this context; otherwise, why would two separate questions be used? Perhaps it would have been more efficient to “disguise” the similarity among the dependent measures by wording the questions differently. For example, instead of asking the extent to which the event outcome was viewed as inevitable, etc., it may have been better to ask for levels of agreement with statements such as, “Nothing could have influenced the outcome of this [event]” (Blank & Nestler, 2006).

It is also curious that the dependent measures performed so differently from the first study to the second study. In the first study, the extent to which the event outcome was viewed as inevitable was the only measure to display a trend towards the hypothesized interaction. In the second study, however, this measure produced a nonsignificant pattern in the opposite direction. What would cause such discrepant findings from one study to the next? As the study procedures were conceptually identical, the main substantial difference and potential explanation appears to be the perspective manipulation used. On the other hand, it may be that the differing focal events (an academic event vs. a computerized racing game) resulted in somewhat different manifestations of the hindsight bias. Because an academic event is likely to be more self-relevant for these participants (college undergraduates) than a video racing game, it is possible that the participants’ ratings of necessity and foreseeability impressions were more ego-defensive in the first study (Blank, et
But, as event outcome valence did not qualify the hypothesized interaction present in the first study, there remains no clear answer to these inconsistencies.

In order to move forward in this line of research, it appears that I may first need to take a step back. Perhaps a better understanding of appropriate ways to induce different perspectives is required before we can develop a better understanding of the effects of perspective-taking on other concepts, such as the hindsight bias. However, these manipulations clearly seemed to produce strong effects in prior research (e.g., Libby et al., 2005; Libby, Shaeffer, Eibach, & Slemmer, 2007; Vasquez & Buehler, 2008), and my research followed these procedures quite closely. As it stands now, it is unclear whether the null results from Study 1 and Study 2 are reflective of theoretical or methodological issues. A practical endeavor may involve attempts to replicate the basic design followed by Libby et al. (2005) using variations of the perspective induction. Such research would help identify potential alternatives to the verbal induction and speak to the generalizability of the effects of perspective-taking. If the reliability of additional inductions can be established, the influence of perspective-taking may then be applied to a wider range of theoretical questions. Perhaps it is premature to conclude that perspective has no influence on subjective experiences, and thus, no influence on hindsight bias, but the results of the current studies aren’t enough on their own to make a case for the hypothesized effects. It seems that more basic research on perspective-taking and perspective-taking inductions is needed before such a manipulation is included in more complex experimental designs.

Following this, it would then be appropriate to test for differences in reported reliance on subjective experiences when making judgments as a result of perspective-taking. If future studies can confidently demonstrate the overall hypothesis that was explored in the current
studies, attention may then turn to that of improving decision-making procedures. If reliance on subjective experiences is viewed as heuristic-like or even flawed thinking, the case may be made that relying on thought content is more objective. In turn, this may result in the recommendation to “take a step back” and “put things into (third-person) perspective” before making a judgment. Similar logic could hold for reliance on thought content (length is strength; more is better) and the third-person perspective, but directed research may eventually be able to tease out the most effective perspective-taking strategy when making decisions. Sometimes it may be most useful to figure out what doesn’t work, in order to better understand that which does work, and this may very well be one of those cases. These could then have further implications for debiasing judgments. Overall, although the current studies lacked significant results, perspective remains an interesting and potentially important concept within psychology. As demonstrated by Libby, et al. (2007), adopting different perspectives can not only affect subsequent attitudes, but also self-ratings and subsequent behavior. Visualizing oneself performing a behavior from the third-person perspective increases the likelihood that one will incorporate that behavior into their existing self-concept and increases the likelihood that the given behavior will be performed (Libby et al., 2007). Such findings make it clear that perspective-taking is meaningful and deserving of more research attention, as perspective-taking may carry great recommendations on how to increase desirable behaviors and decrease undesirable ones. Again, although subjective experiences were not found to interact with perspective in these studies, it’s not to say that other psychological variables should not be explored in relation to perspective-taking. In fact, it seems likely to me that perspective could be found to interact with several variables on outcomes such as emotions, perceptions of control, attributions, and even race relations.
Future researchers should not shy away from the study of perspective, but rather view it as a challenging puzzle to solve.
REFERENCES


Table 1. Mean Inevitability Ratings using Perspective in Drawing, Study 1

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<th>Reasons generated</th>
<th>Perspective in Drawing</th>
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<tbody>
<tr>
<td></td>
<td>First-person</td>
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<tr>
<td>3</td>
<td>4.43 (SD = 1.66)</td>
</tr>
<tr>
<td>12</td>
<td>4.26 (SD = 2.38)</td>
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</tbody>
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*Note. F(1, 96) = 2.98, p = .087. Maximum rating = 10.*
Table 2. Mean Inevitability Ratings using Assigned Perspective, Study 1

<table>
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<tr>
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<th>Assigned Perspective</th>
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<tbody>
<tr>
<td></td>
<td>First-person</td>
<td>Third-person</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4.21 ($SD = 2.13$)</td>
<td>3.58 ($SD = 2.04$)</td>
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<tr>
<td>12</td>
<td>4.77 ($SD = 2.47$)</td>
<td>4.54 ($SD = 2.25$)</td>
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</table>

*Note. $F(1, 96) = .162, p = .689$. Maximum rating = 10.*
Table 3. Mean Hindsight Judgment Ratings (Anticipated, Expected), Study 2

<table>
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<td>Anticipated</td>
<td>First-person</td>
<td>Third-person</td>
</tr>
<tr>
<td>3</td>
<td>6.08 ($SD = 2.19$)</td>
<td>6.00 ($SD = 2.42$)</td>
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<td>12</td>
<td>5.79 ($SD = 2.72$)</td>
<td>6.64 ($SD = 2.10$)</td>
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<tr>
<td></td>
<td>Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.42 ($SD = 2.58$)</td>
<td>6.23 ($SD = 2.32$)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>6.14 ($SD = 2.80$)</td>
<td>6.50 ($SD = 2.18$)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Anticipated: $F(1, 49) = .549, p = .462$; Expected: $F(1, 49) = .162, p = .689$. Maximum rating = 10.
Figure 1. A third-person perspective screenshot from NFSIISE.
Figure 2. Race summary screen that is displayed after the race.