Predicting Future Emotions from Different Points of View: The Influence of Imagery Perspective on Affective Forecasting Accuracy

THESIS

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Abstract

Humans have the ability to imagine future points in time, and one way they use this ability is to make predictions about how they will feel in response to potential future outcomes. The current research examined whether the accuracy of these affective forecasts differed as a result of the visual perspective (own first-person versus observer’s third-person) that individuals took to imagine future events. When people use a first-person perspective, they make meaning of events in terms of their gut reactions to the events. In contrast, when they use a third-person perspective, they incorporate their broader knowledge and self-theories into their interpretations of the event. There is evidence that most individuals are unable to interpret online experiences without evaluating the events in terms of their self-theories. Therefore, their interpretations of events are more similar to online experiences when they picture events from a third-person perspective as opposed to a first-person perspective. We propose that individuals make more accurate forecasts when they use a third-person perspective instead of a first-person perspective because when using a third-person perspective they make meaning of imagined events in a similar manner to that which they use to make meaning of online experiences. In the current study, we manipulated the visual perspective that participants used to picture receiving a good and a bad grade on an upcoming midterm, and asked them to predict how they would feel in these scenarios. Participants later reported their
actual grades and how they actually felt. We found support for our hypothesis:
comparing forecasted and actual feelings, participants made more accurate affective
forecasts when they pictured the scenarios from a third-person perspective rather than a
first-person perspective.
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Table of Contents

Abstract ........................................................................................................................................... ii

Vita................................................................................................................................................ v

List of Tables..................................................................................................................................... vii

List of Figures .................................................................................................................................... viii

Chapter 1: Introduction ................................................................................................................... 1

Chapter 2: Study 1 .......................................................................................................................... 165

Chapter 3: General Discussion........................................................................................................ 48

References........................................................................................................................................ 65
Table 1: Three-way interaction of perspective, actual grades, and forecasted feelings/frequency of thought. The shaded cells pertain to the significant three-way interactions for the accuracy analyses; the bold-bordered cells represent the variables which had significant two-way interactions for objective accuracy analyses…………..36

Table 2: Two-way interaction of perspective and forecasted feelings/frequency of thought among those who received a bad grade………………………………………………….37
List of Figures

Figure 1: Accuracy scores for feelings each time an exam was thought about a day after receiving a bad grade by actual grade and perspective………………………………………..7

Figure 2: Accuracy scores for feelings each time an exam was thought about a week after receiving a bad grade by actual grade and perspective……………………………………..9

Figure 3: Accuracy scores for feelings each time an exam was thought about a day after receiving a good grade by actual grade and perspective…………………………………….31

Figure 4: Accuracy scores for feelings each time an exam was thought about a week after receiving a good grade by actual grades and perspective…………………………………..33

Figure 5: Actual feelings when receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean………………………………………………………………………………..38

Figure 6: Actual feelings a day after receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean……………………………………………………………………………41

Figure 7: Actual feelings a week after receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean……………………………………………………………………………44

Figure 8: Actual frequency of thinking about the exam a day after receiving a bad grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean…………………………………………………………..46
Chapter 1: Introduction

Imagine that you have an upcoming project for school or work and a vacation following it. You cannot stop worrying about the project— you fear that if it goes poorly you will feel terrible on vacation. You decide to prepare for hours, setting aside other goals and opportunities because you anticipate that you will feel unhappy if you perform poorly on the project. Did you make the right decision regarding how to spend your time? If you had received negative feedback on the project, would it have actually ruined your vacation?

This example highlights that predictions individuals make about how they will feel in the future can influence many important aspects of their lives. What processes come into play when they make these predictions? Are their predictions generally accurate? What contributes to the accuracy of the predictions?

In the present research, we set out to speak to these questions, focusing on a particular aspect of the forecasting process. When people think about future events, they often picture them in their mind's eye. They can imagine the events from either a first-person perspective (through their own eyes) or a third-person perspective (from an
observer's point of view in which they see themselves and their surroundings in the image) (Nigro and Neisser, 1983). In the current research we propose that the perspective that individuals take to imagine a future event can influence the accuracy with which they make predictions about how they will feel. The current study contributes to research in the domains of affective forecasting and imagery perspective, and also has potential implications in terms of developing strategies to improve well-being.

**Affective Forecasting**

Individuals often make affective forecasts, or predictions about how they will feel in the future. There are several components to affective forecasts (Wilson and Gilbert, 2003). First of all, *valence* refers to whether the emotion will be positive or negative. In addition, one can make forecasts about the *specific emotions* that he will feel. For example, one might specifically forecast that he will feel shame, worry, happiness, nervousness, or any of a host of defined emotions. Forecasts related to both valence and specific emotions are often accurate. Also, one can predict how strong the affect will be, which can also be described as the *intensity*. Finally, one can make forecasts regarding the length of time for which the emotion will last, or the *duration*. Unlike forecasts regarding valence or specific emotions, forecasts related to the intensity and duration of affect are generally biased. The present research will focus primarily on forecasts related to the intensity and the duration of affect.
Durability Bias

One common error in affective forecasting which results in inaccurate forecasts of affective duration is the durability bias. This occurs when individuals forecast that they will feel emotions resulting from an event for longer than they actually feel the emotions in experience (Gilbert, Pinel, Wilson, Blumberg, and Wheatley, 1998). The durability bias has been shown on a large scale in regards to events such as enduring major medical problems (Affleck and Tennen, 1996). Surprisingly, individuals feel much better emotionally after a shorter period of time than they ever would have imagined. Empirical studies have also found evidence for the durability bias in domains such as romantic relationship breakups and college professors' failure to achieve tenure (Gilbert et. al., 1998). For example, in one study individuals in romantic relationships predicted how they would feel two months following a breakup. The researchers compared these predictions to the actual feelings of those who had been through a breakup. The forecasters predicted that they would feel much worse than the experiencers actually felt (Gilbert et. al., 1998).

Impact and the Impact Bias

In many cases, researchers do not study duration and intensity distinctly- they combine the two into what is termed "impact". Duration and intensity have been merged for a couple of reasons. First of all, it is often difficult to separate duration and intensity in empirical studies because it requires measurement at several points in time. In addition, researchers are generally interested in impact and the information that it provides us; in many cases it is unnecessary to parse duration and intensity. For example,
the knowledge that the impact of an event is either overestimated or underestimated is informative enough for many purposes; we do not necessarily need to know the how the actual intensity at various points in time compares to affective forecasts. One key finding in terms of impact is that individuals tend to overestimate the impact that an event will have, a phenomenon referred to as the impact bias. One interesting aspect of the impact bias is that it is stronger for negative events than positive events (Finkenauer et. al., 2007).

**Focalism**

There are several different processes which contribute to the impact bias, two of which are focalism and immune neglect (Wilson and Gilbert, 2003). The first process, focalism, occurs when individuals make their affective forecasts focusing on one event to the exclusion of other events that may be occurring at the same time. These other events will most likely have some influence on affect, but these effects are not incorporated into forecasts; therefore, the impact bias occurs. For example, when one tries to predict how he will feel when his chosen candidate wins the presidential election, he may forget about the project he has due the day following the election. Therefore, he predicts that he will feel very strong positive emotions when he finds out that his preferred candidate won the election when in reality the positive emotion will be dampened by worrying about the project and concentrating on preparing. In one study, participants were asked to predict how they would feel a couple of days following a school football team win. In the experimental condition, participants were required to write out a diary containing details about the events occurring either two or three days after the football game, while those in
the control condition simply made affective forecasts without taking this information into consideration. Those who wrote out the diary made more realistic expectations about how they would feel and exhibited less of an impact bias because they took into account events besides the football game which could influence their affect (Wilson, Wheatley, Meyers, Gilbert, and Axsom, 2000).

**Immune Neglect**

Immune neglect represents another process which may contribute to the impact bias. Individuals have a "psychological immune system" which helps them to construe negative events in a way that decreases the negative emotional impact of these events. This process serves to help them feel better when negative events occur. Many people do not realize that this process occurs and they often fail to take their psychological immune systems into account when they predict how they will feel in the future; therefore, they predict that negative events will have a stronger impact than they do in reality. This phenomenon is termed immune neglect (Gilbert et. al., 1998). For example, one study in which participants exhibited this effect involved personality assessments. Participants were told that their personalities were assessed by either a computer (fallible source) or a team of specialized clinicians (infallible source), and that their personalities would be classified as good, extraordinary, or mundane. Some participants reported how they would feel after being classified as mundane while others were actually classified as mundane. The affective forecasts did not differ due to the source of the assessment—whether a computer or a team of clinicians; however, those who actually experienced being assessed by a computer felt much better than those who were assessed by the
clinicians. When participants made predictions about how they would feel when they were assessed by the fallible source they failed to take into account the fact that they would be able to attribute the negative assessment to the infallibility of the source, which would make them feel better (Gilbert et. al., 1998).

**Two Aspects of Forecasts: Content and Effects**

It may be important to consider what content goes into predictions and where individuals are lead astray when they make inaccurate affective forecasts. There are two aspects of forecasts which can result in affective forecasting accuracy failure: misprediction of the content of the event and misprediction of the content's emotional effects. Individuals cannot know how an event will come about or what the exact outcome will be; they must make predictions about these variables. If they fail to accurately predict what will occur, they have made incorrect predictions about the content of the event or have misconstrued the event itself. For example, a student may predict that she will find out her Chemistry final grade after she arrives at her parents' house for the summer. She may also predict that she will receive a 'B' on the test. What if the grades are unexpectedly posted earlier, and she finds out her grade in her dorm room as she's getting ready to go to a party with her roommates? What if she actually receives a 'D' on the test? Both of these details represent misprediction of the content of the event, and they will cause her prediction regarding how she will feel when she finds out her test grade to be inaccurate.

One can also have a theory that a particular event will make him feel a certain way; if this theory is incorrect, it could be classified as misprediction of the event
content's emotional effects. For example, imagine that the student predicts that she will find out her Chemistry final grade while she is in the dorm getting ready to go to a party with her friends. She predicts that she will receive a 'B', and because she is typically an 'A' student, she forecasts that she will feel bad about her grade. Imagine that in reality, she does, in fact, find out that she received a 'B' on her final while she is in her dorm room getting ready to go to a party. However, she does not feel bad; instead, she cannot help but feel excited that summer has begun and she is preparing to go to a party with her friends. She was correct about the content of the event, but she was incorrect about how the event would make her feel. This would constitute a misprediction of the event's emotional effects.

Imagery Perspective

When people think about the future, they often picture it. The content of these mental images can vary, but even when the content is held constant they can picture these events in two different ways: from a first-person perspective or from a third-person perspective. The perspective that individuals take to picture an event influences their interpretations of the events; we are interested in these interpretation effects.

Imagery Perspective and Meaning-Making Processes

There is evidence that the visual perspective that individuals take influences the processes that they use to make meaning of events (Libby and Eibach, 2009). Specifically, when using a first-person perspective they tend to process events in a more experiential manner, relying on visceral responses to the events. When using a third-person perspective individuals often incorporate their more general self-theories into their
interpretation of the events. When we hold the content of the future events that individuals picture constant, they still differ in their responses to the events based on which perspective they take to imagine the event (e.g. Libby, Shaeffer, Eibach, and Slemmer, 2007). This suggests that if they are making inaccurate forecasts of any kind, they are mispredicting the effects of the event as opposed to mispredicting the content of the event itself.

Evidence for the influence of imagery perspective on meaning-making has been shown on many different levels. For example, research has demonstrated that individuals process information more concretely when using a first-person perspective. In one study, participants were more likely to describe doing well on a school assignment in terms of abstract goals or personal traits such as demonstrating knowledge and ability than in terms of detailed actions such as getting a good grade when picturing the event from a third-person perspective as opposed to a first-person perspective (Vasquez and Buehler, 2007). This effect is not an artifact of spatial distance. In another study, participants were shown photos which depicted common actions such as ironing and cutting paper from either a first-person or a third-person perspective. The distance of the action within the photograph was controlled, yet participants still described the actions depicted from a third-person perspective in the photographs more abstractly (Libby, Shaeffer, and Eibach, 2009). Finally, when participants pictured a past emotional incident from a third-person perspective instead of a first-person perspective they were more likely to refer to other life events instead of details about the event itself when explaining how they felt (Kross, Ayduk, and Mischel, 2005).
There is also evidence that when people picture events from a third-person perspective they incorporate their self-theories in their meaning-making processes. In one study, participants were asked to picture several shameful events from either a first-person or a third-person perspective and report how much shame they would feel. The level of reported shame did not differ based on trait self-esteem for those who pictured the events from a first-person perspective; however, within the third-person condition, those with low trait self-esteem reported more shame than those with high self-esteem (Libby, Valenti, Pfent, and Eibach, in prep.). In addition, among low self-esteem participants, those who used a third-person perspective reported more shame than those who used a first-person perspective. The opposite pattern emerged for those with high self-esteem. This suggests that those who adopted a third-person perspective incorporated their self-theories when processing the event, which caused those with high self-esteem to feel better when using a third-person and those with low self-esteem to feel worse when using a third-person perspective (than those who used a first-person perspective).

Imagery Perspective and Affective Forecasting

Cognitive-Experiential Self Theory

Does visual perspective influence the accuracy of affective forecasts, and if so, which perspective is more likely to lead to more accurate forecasts? One key factor influencing the accuracy of affective forecasts is the extent to which an individual makes meaning of the event in the same way in both the forecasting phase and the actual experience. This idea stems from an existing theory which has been used to explain
affective forecasting inaccuracy, Cognitive-Experiential Self Theory (Epstein, 1994). This theory states that individuals have two separate processing systems: the experiential system and the rational system. Individuals rely on simple emotional cues when using the experiential system yet they think through information analytically when they use the rational system. According to this account, one process which may lead to affective forecasting inaccuracy is that whereby individuals use the cognitive system to make predictions about the future while relying on the experiential system when events are actually occurring (Dunn, Forrin, and Ashton-James, 2009). This account argues that individuals' predicted experience should be as similar as possible to their actual experience, and that the discontinuity between the two systems used to make predictions about events and to experience events leads to affective forecasting inaccuracy (Dunn et. al., 2009).

**Imagery Perspective and Meaning-Making: Similarity of Forecast and Experience**

Based on the idea that the way in which individuals make meaning of events should be the same when they make forecasts and when they actually experience the events, which visual perspective is likely to result in more accurate affective forecasts? It may seem that the clear, intuitive answer would be that first-person perspective brings one closer to the actual experience of an event because the view is from one's own perspective, and that it therefore results in more accurate forecasts. This may not necessarily be the case. When using a first-person perspective we believe that individuals make meaning of events by processing events in terms of their visceral responses to the events; when using a third-person perspective, they use their existing self-theories and
knowledge to interpret the events. According to evidence provided below, individuals may not have the capability of processing events without taking their self-theories into account. This suggests that the process individuals use when they make meaning of events when using a third-person perspective as opposed to a first-person perspective maps on closer to the way in which they make meaning of events in online experience. Therefore, we believe that using a third-person perspective should result in more accurate affective forecasts than using a first-person perspective.

Evidence that individuals have difficulty processing online experiences without taking their self-theories into account links back to William James' distinctions of the self, defined a century ago. James theorized that individuals have two "selves": the "I" self, or the self as experiencer, and the "me" self, or the self as object (1890/1950). Colloquially, the "self" refers to the "me" self- the self that individuals can reflect on and use language to explain. The "I" self, on the other hand, represents the self in the moment, the self that is focused on experience. One proposition is that people may share the "I" self with animals, whereas the "me" self may require abilities such as language and self-reflection that are unique to humans (Damasio, 1994; Farb et al., 2007; Gallagher, 2000).

There is also evidence that there are distinct neural systems which correspond to the "I" self and the "me" self (Craig, 2004; Gallagher, 2000; Klein, Rozendal, & Cosmides, 2002; Lieberman, Jarcho, & Satpute, 2004; Northoff & Bermpohl, 2004). One neuroimaging study has produced interesting evidence related to these ideas (Farb et. al., 2007). In this study, participants in an fMRI machine saw trait-related terms. They were
asked to focus on how they felt when the trait words appeared (experiential focus) or focus on how the trait words related to themselves (narrative focus). The researchers found that overall, those who used an experiential focus showed less activation in the area associated with the "me" self than those who used a narrative focus. This provides further evidence that individuals process information related to the "I" self differently than they process information related to the "me" self. In addition to manipulating experiential versus narrative focus, this study included both novices and experts at mindfulness meditation as participants. Experts at meditation showed greater activation of the area associated with the "I" self than the "me" self when they used an experiential focus. Importantly, the researchers found that experts in meditation were able to activate the part of the brain associated with the "I" self without activating the part related to the "me" self; however, the novices were not as adept at decoupling the activation of these two areas. For typical individuals the two selves are married; people may not have the ability to have an online experience without thinking about their self-theories in relation to the event.

There is evidence that the "me" self is taken into consideration when individuals use a third-person perspective as opposed to a first-person perspective. One important aspect of the "me" self is theories about how one changes over time. In one study, individuals only took these theories of change into account when they imagined events from a third-person perspective rather than a first-person perspective (Libby, Eibach, and Gilovich, 2005). The research presented earlier which shows that individuals' self-esteem affects their judgments only when they picture events from a third-person perspective
instead of a first-person perspective provides further evidence for the link between the "me" self and using a third-person perspective.

The above evidence suggests that individuals' actual experiences are constantly colored by their self-theories, and their self-theories are taken into account when they use a third-person perspective. Based on this idea, we hypothesize that using a third-person perspective will lead to more accurate affective forecasts than using a first-person perspective. Individuals' experiences are interpreted in terms of self-knowledge and theories; therefore, their emotional reactions to the events map on more closely to the way they make meaning of the events when using a third-person perspective.

Overview of Current Research

In the current study, we manipulated the visual perspective that participants took to imagine receiving a good grade and a bad grade on an upcoming midterm. Based on these images, participants predicted how they would feel if they received a bad grade and how they would feel if they received a good grade. After participants took the midterm and received their grades, they reported what grades they received and how they actually felt. We were interested in whether participants would make more accurate affective forecasts when using a first-person perspective or a third-person perspective.

We examined the accuracy of affective forecasts in two ways. First of all, we assessed accuracy conventionally, by simply comparing the average affective forecast for a particular time to the average actual affect at that time. This comparison, which we call objective accuracy, explores the objective difference in emotion ratings from the forecasting phase to the actual result. We also determined whether affective forecasts
were correct by examining whether the predictions and results were correlated. In other words, for each incremental increase in predicting feeling bad, did participants show an increase in actually feeling bad? We call this type of accuracy measurement calibration.

Affective forecasts were made for multiple time points and actual affect was measured at multiple time points; therefore, we were able to examine the accuracy of both duration and intensity. We held the content of the events that participants pictured constant which suggests that differences in accuracy in the current research must stem from differences in interpretation. We expected that overall, participants would be more accurate when they pictured receiving their grades from a third-person perspective rather than a first-person perspective.
Chapter 2: Study 1

Participants forecasted how they would feel one day and one week after receiving their midterm grades if they received a good or a bad grade on their upcoming Psychology 100 midterm. They made these forecasts seven to ten days before the midterm. Then, one day after receiving their midterm grades participants reported what grades they received and how they actually felt. Finally, they reported how they actually felt one week after receiving their grades.

Method

Participants

92 undergraduates participated in exchange for partial course credit in Introductory Psychology.

Procedure

Time 1

Participants signed up for the study through a website maintained by the Psychology Department. The study itself took place seven to ten days prior to the students' second Psychology 100 midterm.
The study employed a (2 x 2) design: order (make prediction about good grade first versus bad grade first) by perspective (first-person versus third-person). Thus, each participant pictured two scenarios overall, but participants were randomly assigned to order conditions such that some participants imagined the "good grade" scenario first while others imagined the "bad grade" scenario first. In addition, participants were randomly assigned to picture both scenarios from either a first-person perspective or a third-person perspective.

Participants arrived in the laboratory in groups of ten at the largest. The experimenter instructed participants to choose an individual workstation with a computer at which to complete the study, and the experimenter told the participants that all instructions would be provided on the computer.

On the computer participants were first asked to rate general affect ("How emotionally good or bad or bad would you say you feel these days?") on a seven-point fully-labeled scale ranging from Extremely good to Extremely bad with midpoints Very good, Moderately good, Neither good nor bad, Moderately bad, and Very bad. Next, participants were reminded about their upcoming Psychology 100 midterm, and were asked to define a good grade and then a bad grade on the exam ("What would be a good (bad) grade, for you, on your upcoming Psych 100 midterm?") in an open-ended response.

Then, participants were told that they would be asked to picture a particular event and instructions explained how to picture the event. These instructions were based on a
procedure that has been used in past research (e.g. Libby, Shaeffer, Eibach, and Slemmer, 2007).

In the first-person perspective condition, the instructions were:

You should picture the event from a first-person visual perspective. With the first-person visual perspective you see the event from the visual perspective you would if the event were actually taking place. That is, you are looking out at your surroundings through your own eyes.

In the third-person conditions, the instructions were:

You should picture the event from a third-person visual perspective. With the third-person visual perspective you see the event from the visual perspective an observer would if the event were actually taking place. That is, you see yourself as well as your surroundings in the image.

Next, participants completed the first manipulation check, "Do you understand what we mean by the first-person (third-person) visual perspective?" with Yes and No response options.

Then, participants read details about the event that they should picture:

Imagine yourself sitting down at a computer and logging into Carmen. You click to get into the site for your Psych 100 class. Next, you click on the tab for grades. You wait as the screen loads.
So, close your eyes now, and use the first-person (third-person) visual perspective to picture this event. Remember to use only the first-person (third-person) visual perspective as you are picturing this event.

At this point, participants completed the second manipulation check which varied by condition: "As you’re picturing it right now, do you see the scene from the visual perspective you would have (an observer would have) if the event were taking place?" with response options Yes and No. At this point, the scenario and measures began to differ based on condition. Participants either imagined receiving a good grade and answered the questions related to that scenario and then imagined receiving a bad grade and answered questions related to that scenario or vice versa, depending on order condition. The good grade scenario appeared as follows:

Here is the next part of the event that you should imagine:

The screen loads, and you see that you received a/an <earlier specified good grade inserted> on the exam.

Please use the first-person (third-person) visual perspective to picture finding out your midterm grade. Hold this image in your mind while you complete the questions on the next page…
The good grade in the scenario was represented by the grade that the participant had identified in response to the earlier question, "What would be a good grade, for you, on your upcoming Psych 100 midterm?", and was automatically pasted into the scenario by the experiment software.

The computer instructed participants to continue when they had a clear image of the scenario in their minds from the specified perspective. Next, participants completed several forecasting measures.

First, participants forecasted how they would feel when they received a good grade: "If you receive a/an (earlier-identified good grade inserted) on the second Psychology 100 midterm, how will you feel when you find out your grade?" on a five-point fully-labeled scale with scale points Not at all good, A little good, Moderately good, Very good, and Extremely good.

Next, participants completed three types of measures for two different time points: one day after receiving a good grade and one week after receiving a good grade. The three types of forecasting measures included how participants would feel in general, how they would feel each time they thought about the exam, and how often they would think about the exam. Specifically, they first answered the question, "If you receive a/an (earlier-identified good grade inserted) on the exam, how will you feel, in general, the day after you find out your grade?" with scale points Not at all good, A little good, Moderately good, Very good, and Extremely good. The following question was, "If you receive a/an (earlier-identified good grade inserted) on the exam, how will you feel each time you think about the exam the day after you find out your grade?" with the following
scale points: Not at all good, A little good, Moderately good, Very good, and Extremely good. Finally, participants responded to the question, "If you receive a/an (earlier-identified good grade inserted) on the exam, how often will you think about the exam the day after you find out your grade?", answered on a fully-labeled five point scale from I won't think about it at all to I won't be able to get it off my mind with midpoints I'll think about it maybe once that day, I'll think about it a few times that day, and I'll think about it several times that day. Next, participants answered the same questions related to how they would feel/ how often they would think about the exam one week after receiving a good grade.

The bad grade scenario was identical to the good grade scenario except that the bad grade in the scenario and the questions was represented by the earlier-identified bad grade (as a response to the question, "What would be a bad grade, for you, on your upcoming Psych 100 midterm?"). In addition, the word "good" was replaced with "bad" in the scale responses for all questions involving feelings. Again, the order of the good grade scenario and measures and the bad grade scenario and measures was counterbalanced.

After completing the affective forecasting measures related to the good grade, participants imagined the scenario related to the bad grade and completed the associated measures (or completed the bad grade scenario/forecasts and then the good grade scenario/forecasts, depending on order condition). At this point participants were told to stop picturing the second scenario. Next, they completed several individual difference measures related to interest and performance in school. Finally, participants completed
the Rosenberg (1965) Self-Esteem Scale. Participants indicated their agreement to the ten statements on a five-item scale with the following response options: Strongly disagree, Disagree, Neutral, Agree, and Strongly Agree. The Rosenberg Self-Esteem Scale concluded the Time 1 measures.

**Time 2**

Each participant who completed the Time 1 measures was recruited to participate in the Time 2 portion of the study, which measured actual grades and actual emotions. One participant was not included in the Time 2 portion because of experimenter error; we sent the survey to 91 participants and received 87 responses.

The Psychology 100 midterms were administered on a Wednesday and a Thursday, and participants were asked to indicate in the Time 1 survey on which day they would take the exam. According to department policy, instructors must post the midterm grades online within 24 hours of the test administration; however, they are often posted before 24 hours. Therefore, those who took the test on Wednesday received a link to the Time 2 online survey at 5:00 p.m. on Thursday while those who took the test on Thursday received a link to the Time 2 online survey at 5:00 p.m. on Friday.

The links were sent via email. When participants signed up for the experiment they were aware that it was a three-part study, and the email specified that the link led to the online survey for the second part of the experiment. The email did not describe the survey; it simply referred to the survey as the second part of the study.

Upon beginning the survey, participants saw, "How emotionally good or bad do you feel today?" and responded on a fully-labeled nine point scale from Extremely good
to Extremely bad with midpoints Very good, Moderately good, A little bit good, Neither good nor bad, A little bit bad, Moderately bad, and Very bad. This measure was taken before any mention of the Psychology 100 midterm so that it could serve as a measure of general affect (corresponding to the question "If you receive a/an good grade/bad grade on the exam, how will you feel, in general, the day after you find out your grade?").

Next, participants were asked, "Do you know what grade you received on your second Psychology 100 midterm?" with response options Yes and No. If participants answered No, they bypassed all questions related to the grades that they received. In addition, they bypassed questions about how they felt each time they thought about the exam and how often they thought about the exam because their predictions were based on receiving a certain grade, which makes these follow-up questions irrelevant.

If they answered Yes, they were asked a series of questions which corresponded to the forecasts they made in the Time 1 portion of the study. First, they were asked, "How did you feel when you found out your grade?". Response options fell on a fully-labeled nine point scale from Extremely good to Extremely bad with midpoints Very good, Moderately good, A little bit good, Neither good nor bad, A little bit bad, Moderately bad, and Very bad. The next question was "How do you feel each time you think about the exam?" answered on the same scale as the previous two measures (a fully-labeled nine point scale from Extremely good to Extremely bad with midpoints Very good, Moderately good, A little bit good, Neither good nor bad, A little bit bad, Moderately bad, and Very bad). The final measure in the Time 2 survey which corresponded to the forecasts made in the Time 1 survey was, "How often have you been thinking about the
exam today?" answered on a five-point scale with the following points: Not at all, Maybe once today, A few times today, Several times today, and I'm not able to get it off my mind.

After completing these measures, participants were asked to report what grades they actually received. Next, they were asked, "How good or bad would you consider your grade?" on a seven-point fully-labeled scale from Extremely good to Extremely bad with midpoints Very good, Moderately good, Neither good nor bad, Moderately bad, and Very bad. At this point, those who had not yet received their grades re-entered the survey. All participants completed measures related to preparing for and taking the exam, and the survey ended.

**Time 3**

All participants who had completed the Time 1 survey were recruited to participate in the Time 3 measures. From Time 1 to Time 3, two participants contacted the researcher and asked to be dropped because of personal conflicts which precluded them from completing the study. The survey was sent to 90 participants and 89 responded. 86 participants completed all three parts of the study. The Time 3 survey was sent exactly one week following the Time 2 survey via email with a similar message as the Time 2 survey.

Like the Time 2 survey, the Time 3 survey included a series of questions which corresponded to the forecasts participants made in the Time 1 portion of the study. First, they were asked, "How emotionally good or bad do you feel today?" and responded on a fully-labeled nine point scale from Extremely good to Extremely bad with midpoints Very good, Moderately good, A little bit good, Neither good nor bad, A little bit bad,
Moderately bad, and Very bad. Next, participants saw, "How do you feel each time you think about your second Psychology 100 midterm?" with the following scale points: Extremely good, Very good, Moderately good, A little bit good, Neither good nor bad, A little bit bad, Moderately bad, Very bad, and Extremely bad. Finally, participants responded to, "How often have you been thinking about your second Psychology 100 midterm today?" on a fully-labeled five point scale ranging from Not at all to I'm not able to get it off my mind with midpoints Maybe once today, A few times today, and Several times today. Participants completed one question related to studying for the exam, and the survey ended.

Results

We conducted two types of analyses: objective accuracy analyses and calibration analyses. The objective accuracy analyses measured the difference between the participants’ forecasted and actual feelings as result of how good or bad their grades were and the perspective condition to which they were assigned. The calibration analyses measured the relationship between the participants’ forecasted and actual feelings as result of how good or bad their grades were and the perspective condition to which they were assigned. We hypothesized that overall, participants would be both more accurate and more calibrated when using a third-person perspective. Participants who failed either of our manipulation checks (one participant in the first-person condition, two participants in the third-person condition) were excluded from all analyses, resulting in 89 total participants. 83 of these participants had completed all three questionnaires.
Objective Accuracy Analyses

We went through several steps to conduct the objective accuracy analyses. First of all, we coded the perspective variable so that those in the first-person condition were assigned a “-1” while those in the third-person condition were assigned a “1”. Next, we split the continuous variable which measured participants’ subjective ratings of their grades so that we had two groups of participants: those who felt that their midterm grades were bad and those who felt that their midterm grades were good. Because predictions were only made for a good grade and a bad grade, we needed to split the actual grades into two groups so that we could make comparisons between predicted and actual grades. The original question, “How good or bad would you consider your grade?” had response options Extremely good, Very good, Moderately good, Neither good nor bad, Moderately bad, Very bad, and Extremely bad. The responses were recoded such that Extremely good, Very good, and Moderately good were assigned a “1” and Moderately bad, Very bad, and Extremely bad were assigned a “-1”.

To demonstrate how we computed the dependent variable, I will use the feelings related to thinking about the exam one day after receiving a bad grade. For all measures, the dependent variable was a difference score between the actual feelings and forecasted feelings. Using the feelings related to thinking about the exam one day after receiving a bad grade, the original question was, “How do you feel each time you think about the exam?” with nine response options ranging from Extremely good (-4) to Extremely bad (4) (if we were looking at the difference between actual and forecasted feelings among participants who received a good grade, these response options would have been coded in
the opposite direction such that *Extremely bad* = -4 and *Extremely good* = 4). The forecasted feelings question, "If you receive a/an (earlier-identified bad grade inserted) on the exam, how will you feel each time you think about the exam the day after you find out your grade?" had scale points from *Not at all bad* (0) to *Extremely bad* (4). We took the difference between how participants forecasted they would feel if they received a good grade and how they actually felt. Those whose predictions were perfectly accurate had a difference score of zero. Positive difference scores indicated that participants felt better than they predicted they would feel and negative difference scores indicated that they felt worse than they predicted they would feel.

To assess objective accuracy, we analyzed the data using a 2 perspective (first-person versus third-person) by 2 actual grade (good versus bad) ANOVA predicting the difference between forecasted and actual feelings (and forecasted and actual amount of thinking about the exam). We expected that participants would make more accurate forecasts when using a third-person perspective, but only if they received a grade in line with their forecasts (i.e., if they made forecasts about bad grades, they actually received bad grades). Therefore, we expected a significant two-way interaction between perspective and actual grades. Overall, these two-way interactions were significant for all measures involving participants' forecasts about feelings each time they thought about the exam. However, perspective and actual grades did not significantly interact to predict the accuracy of any of the other forecasts (all $F$s < .77, all $p$s > .38).
Feelings each time thinking exam after receiving a bad grade

Feel each time thinking about exam a day after receiving a bad grade

On average, participants felt a lot better than they expected to feel if they received a bad grade a day after receiving a good grade rather than a bad grade ($F(1,67) = 87.52, p < .01$). This makes sense because the predictions were made for the specific case that participants received a bad grade. However, the effect of actual grade (good versus bad) on feelings depended on perspective ($F(1,67) = 7.03, p < .02$). As hypothesized, when participants received a bad grade the difference between how they forecasted they would feel and how they actually felt was smaller for those in the third-person condition (see Figure 1).

Figure 1: Accuracy scores for feelings each time an exam was thought about a day after receiving a bad grade by actual grade and perspective.
Our hypothesis pertained to those who received a bad grade, because the affective forecasts were made for the case in which participants received a bad grade. Looking among those who received a bad grade, the effect of perspective was significant \(F(1,63) = 4.36, p < .05\). In addition, the difference was marginally significantly different from zero for those in the first-person condition \(t(16) = 2.09, p < .06\); however, the difference was not significantly different from zero for those in the third-person condition \(t(13) = -1.1, p = .29\). Because perfect accuracy occurs at the point where the difference is zero, this suggests that those using a third-person perspective were more accurate than those using a first-person perspective. The effect of perspective was not significant for those who received a good grade \(F(1,63) = 2.71, p = .11\), although within this group those in the third-person condition were close to significantly less accurate than those in the first-person condition.

**Feel each time thinking about exam a week after receiving a bad grade**

A similar pattern occurred for the difference between how participants forecasted they would feel one week after receiving a bad grade and how they actually felt. On average, participants felt a lot better than they expected to feel a week after they received a good grade rather than a bad grade if they made predictions about receiving a bad grade \(F(1,67) = 50.06, p < .01\), but again the effect of actual grade depended on perspective \(F(1,67) = 4.63, p < .04\). The direction of the effect was as hypothesized in this analysis; among those who received a bad grade, the difference between how participants forecasted they would feel and how they actually felt was smaller for those in the third-
person condition, which suggests that those who used a third-person perspective were more accurate than those who used a first-person perspective (see Figure 2).

![Bar graph showing predicted feelings minus actual feelings for exam one week after receiving a bad grade by actual grade and perspective.]

Figure 2: Accuracy scores for feelings each time an exam was thought about a week after receiving a bad grade by actual grade and perspective.

The predictions were relevant to those who received a bad grade; among these participants, perspective did not have a significant effect ($F(1,63) = 1.50, p = .23$). However, as expected, among those who received a bad grade the difference is not close to significant for those in the third-person condition ($t(13) = -.14, p = .89$) while the effect is much closer to significant in the first-person condition ($t(16) = 1.59, p = .13$).
We would expect that the first-person difference scores would be significantly different from zero because perfect accuracy occurs at the point where the difference is zero. The effect of the difference in accuracy by perspective condition was marginally significant for those who received a good grade ($F(1,63) = 3.41, p < .07$) such that those who used a first-person perspective were more accurate than those who used a third-person perspective. We were interested in accuracy in the case that the predictions were relevant to the actual grade; we did not have expectations about those who received different grades than those about which they made predictions.

*Feelings each time thinking about exam after receiving a good grade*

**Feel each time thinking about exam a day after receiving a good grade**

On average, participants felt a lot better than they expected to feel a day after they received a good grade rather than a bad grade if they made predictions about receiving a bad grade ($F(1,67) = 146.69, p < .01$). Once again, accuracy depended on perspective ($F(1,67) = 6.26, p < .02$). The direction of the effect was as hypothesized; the difference between how participants who received a good grade forecasted they would feel and how they actually felt was smaller for those who pictured receiving a good grade from a third-person perspective rather than a first-person perspective (see Figure 3).
Because our hypothesis pertained to those who received a good grade, we looked at the effect that perspective had on accuracy among these participants. This effect was marginally significant \((F(1,63) = 3.55, p < .07)\). As expected, among those who received a good grade, the difference was significantly different from zero for those in the first-person condition \((t(17) = -3.89, p < .01)\). Also in line with our hypothesis, the difference from zero was non-significant for those in the third-person condition \((t(17) = -1.24, p = .23)\). This suggests that those who imagined receiving a good grade from a third-person perspective made more accurate forecasts than those who used a first-person perspective. The effect of perspective was not significant for those who received a bad grade \((F(1,63)\)
= 2.77, \( p = .10 \)), which suggests that the effect of perspective on the forecasting accuracy was driven more strongly by those who received a good grade.

**Feel each time thinking about exam a week after receiving a good grade**

Finally, on average participants felt a lot better than they expected to feel a week after they received a good grade rather than a bad grade if they made predictions about receiving a bad grade (\( F(1,67) = 74.95, p < .01 \)). However, perspective and actual grades interacted significantly, which suggests that the effect of actual grades on accuracy depended on perspective (\( F(1,67) = 6.96, p < .02 \)). Again, as hypothesized, for those who received a good grade, the difference between how participants forecasted they would feel and how they actually felt was smaller for those in the third-person condition (see Figure 4).
Because our hypothesis was relevant to those who received a good grade, we looked at the strength of the effect of perspective only among those to whom the forecast was relevant, those who received a good grade. The effect of perspective was marginally significant ($F(1,63) = 3.58, p < .07$). Next, we looked at whether perspective influenced the effect of differences from zero. As expected, among those who received a good grade, the effect of the difference from zero was not at all close to significant for those in the third-person condition ($t(17) = 0.00, p = 1.00$). However, the difference from zero was significant for those in the first-person condition ($t(17) = 4.49, p < .01$). These results indicate that those who used a third-person perspective were more accurate than those who used a first-person perspective. The effect of perspective was marginally
significant for those who received a bad grade ($F(1,63) = 3.40, p < .08$); this effect of perspective for those whose predictions were irrelevant to their actual grade has shown up fairly consistently across the accuracy analyses. Again, we did not make specific predictions about this effect.

**Calibration Analyses**

Whereas the accuracy analyses explored the absolute difference between forecasted and actual feelings, the calibration analyses looked at the relationship between the forecasted and actual feelings. To complete these analyses, we entered perspective, actual grades, forecasted feelings, and all of their interactions as independent variables in a regression predicting actual feelings. I will again use the feelings when thinking about the exam one day after receiving a bad grade as an example. We entered perspective, actual grades, participants' forecasted feelings for each time they thought about the exam a day after receiving a bad grade, and all of their interactions as independent variables in a regression predicting how participants actually felt each time they thought about the exam a day after receiving a bad grade. We hypothesized that when participants made forecasts about the grade they had actually received (i.e. they made forecasts about a bad grade and actually received a bad grade or vice versa), participants would be more calibrated when using a third-person perspective to make forecasts. Therefore, there would be a positive relationship between the forecasted feelings and actual feelings in the third-person condition. Building on the example above, we would expect that for those who received what they considered a bad grade there would be a more positive relationship between how they forecasted they would feel each time they thought about
the exam a day after receiving a bad grade and how they actually felt each time they thought about the exam a day after receiving a bad grade in the third-person condition than in the first-person condition. Based on this logic, we expect the three-way interactions to be significant and for the two-way interaction to be significant among those who received the grade they made predictions about. The three-way interactions were significant for forecasts of how participants would feel one day after receiving a bad grade, how participants would feel one week after receiving a bad grade, and how participants would feel when they received a bad grade. In addition, the three-way interaction was significant for how much participants would think about the exam a day after receiving a bad grade. All other three-way interactions were non-significant (see Tables 1 and 2). Significant effects are graphed later.
<table>
<thead>
<tr>
<th>Prediction, interacting with perspective and actual grade</th>
<th>Unstandardized Beta Coefficient</th>
<th>t Statistic</th>
<th>Significance Value</th>
<th>Prediction, interacting with perspective and actual grade</th>
<th>Unstandardized Beta Coefficient</th>
<th>t Statistic</th>
<th>Significance Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feel when receiving a bad grade</td>
<td>$B = -0.57$</td>
<td>$t(66) = -2.05$</td>
<td>$p &lt; 0.05$</td>
<td>Feel when receiving a good grade</td>
<td>$B = -0.12$</td>
<td>$t(66) = -0.35$</td>
<td>$p = 0.73$</td>
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<tr>
<td>Feel a day after receiving a bad grade</td>
<td>$B = -0.56$</td>
<td>$t(66) = -2.13$</td>
<td>$p &lt; 0.04$</td>
<td>Feel a day after receiving a good grade</td>
<td>$B = -0.24$</td>
<td>$t(66) = -0.09$</td>
<td>$p = 0.48$</td>
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<tr>
<td>Feel a week after receiving a bad grade</td>
<td>$B = -0.56$</td>
<td>$t(66) = -2.03$</td>
<td>$p &lt; 0.05$</td>
<td>Feel a week after receiving a good grade</td>
<td>$B = 1.24$</td>
<td>$t(66) = 4.13$</td>
<td>$p = 0.68$</td>
</tr>
<tr>
<td>Frequently think about exam a day after receiving a bad grade</td>
<td>$B = -0.42$</td>
<td>$t(66) = -3.23$</td>
<td>$p &lt; 0.01$</td>
<td>Frequently think about exam a day after receiving a good grade</td>
<td>$B = 16$</td>
<td>$t(66) = 1.05$</td>
<td>$p = 0.30$</td>
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<tr>
<td>Frequently think about exam a week after receiving a bad grade</td>
<td>$B = 0.01$</td>
<td>$t(66) = 0.05$</td>
<td>$p = 0.97$</td>
<td>Frequently think about exam a week after receiving a good grade</td>
<td>$B = 10$</td>
<td>$t(66) = 1.21$</td>
<td>$p = 0.23$</td>
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<tr>
<td>Feel each time thinking about exam a day after receiving a bad grade</td>
<td>$B = -0.09$</td>
<td>$t(66) = -0.47$</td>
<td>$p = 0.64$</td>
<td>Feel each time thinking about exam a day after receiving a good grade</td>
<td>$B = -0.02$</td>
<td>$t(66) = -0.07$</td>
<td>$p = 0.94$</td>
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<tr>
<td>Feel each time thinking about exam a week after receiving a bad grade</td>
<td>$B = -0.09$</td>
<td>$t(66) = -0.47$</td>
<td>$p = 0.66$</td>
<td>Feel each time thinking about exam a week after receiving a good grade</td>
<td>$B = 0.15$</td>
<td>$t(66) = 0.65$</td>
<td>$p = 0.52$</td>
</tr>
</tbody>
</table>

Table 1: Three-way interaction of perspective, actual grades, and forecasted feelings/frequency of thought. The shaded cells pertain to the significant three-way interactions for the accuracy analyses; the bold-bordered cells represent the variables which had significant two-way interactions for objective accuracy analyses.
Table 2: Two-way interaction of perspective and forecasted feelings/frequency of thought among those who received a bad grade.

<table>
<thead>
<tr>
<th>Predictors interacting with perspective</th>
<th>Unstandardized Beta Weights</th>
<th>t Statistics</th>
<th>Significance Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feel when receiving a <strong>bad</strong> grade</td>
<td>B = .7</td>
<td>t(59) = 1.66</td>
<td>p = .10</td>
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<tr>
<td>Feel a <strong>day</strong> after receiving a <strong>bad</strong> grade</td>
<td>B = .33</td>
<td>t(59) = .89</td>
<td>p = .38</td>
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<td>Feel a <strong>week</strong> after receiving a <strong>bad</strong> grade</td>
<td>B = .62</td>
<td>t(59) = .16</td>
<td>p = .11</td>
</tr>
<tr>
<td>Frequently think about exam a <strong>day</strong> after receiving a <strong>bad</strong> grade</td>
<td>B = .38</td>
<td>t(59) = 2.39</td>
<td>p &lt; .03</td>
</tr>
</tbody>
</table>

*Feel when receiving a bad grade*

There was a main effect of perspective such that on average, participants who received a good grade felt better than those who received a bad grade ($B = -4.92$, $t(66) = -11.79$, $p < .01$). In addition, there was a significant two-way interaction between perspective and actual grades ($B = -.96$, $t(66) = -2.29$, $p < .03$); however, these effects were qualified by a significant three-way interaction between perspective, actual grades, and participants' forecasted feelings when receiving a bad grade ($B = -.57$, $t(66) = -2.05$, $p < .05$). As expected, those who received a bad grade in the third-person condition were more calibrated than those in the first-person condition (see Figure 5).
Figure 5: Actual feelings when receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean.
We first explored the data among those who received a bad grade, the group to which our hypothesis is relevant. Among these participants, the interaction between perspective and forecasted feelings was close to significant ($B = .70$, $t(59) = 1.66$, $p = .10$). The effect of forecasted feelings was not significant within the first-person perspective condition ($B = -.82$, $t(59) = -1.09$, $p = .28$) and it was also non-significant for those in the third-person condition ($B = .58$, $t(59) = 1.51$, $p = .14$), but, in line with our hypothesis, the effect was closer to being significant for those who used a third-person perspective than a first-person perspective. Among those who received a good grade, the effect of the interaction between perspective and forecasted feelings was non-significant ($B = -.44$, $t(59) = -1.22$, $p = .22$). This general pattern of findings supports our hypothesis, as we expected the two-way interaction to be stronger for those who received a bad grade. In addition, we expected forecasts and actual feelings to relate more strongly among those in the third-person condition than the first-person condition, and this is what we found.

*Feel a day after receiving a bad grade*

Overall, participants who received a good grade felt better than those who received a bad grade ($B = -.66$, $t(66) = -2.91$, $p < .01$). There was also a marginally significant two-way interaction between affective forecasts and actual grades ($B = -.45$, $t(66) = -1.70$, $p < .01$). Again, these effects were qualified by a significant three-way interaction involving perspective, actual grades, and participants' forecasted feelings if they received a bad grade predicting how participants actually felt in general a day after receiving a bad grade. This suggests that the effect of the grade depended on perspective
and participants' affective forecasts ($B = -.560$, $t(66) = -2.13$, $p < .04$). As hypothesized, those in the third-person condition who received a bad grade were more calibrated than those in the first-person condition (see Figure 6).
Figure 6: Actual feelings a day after receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean.
Because the interaction between perspective and forecasted feelings was only be relevant to our hypothesis among those who received a bad grade, we looked at the two-way (perspective x forecast) interaction for those who received a bad grade. This interaction was not significant within this group ($B = .33, t(59) = .89, p = .38$). However, to probe for evidence consistent with our hypothesis, we broke this interaction down even further. We expected that among those who received a bad grade, the forecasted feelings would be related to actual feelings more strongly for those in the third-person condition than the first-person condition. Although the effect was non-significant for those in the first-person condition ($B = -.07, t(59) = -.10, p = .92$) and those in the third-person condition ($B = .59, t(59) = -.15, p = .14$), these results fit the general pattern we expect; the relationship between predicted and actual feelings was much closer to significant for those who used a third-person perspective than a first-person perspective, suggesting that those in third-person condition were more calibrated. Next, we explored whether the relationship between predicted and actual feelings depended on perspective among those who received a good grade. The effect of the interaction between perspective and forecasted feelings was significant ($B = .79, t(59) = -2.12, p < .04$). This interaction was not relevant to our hypothesis. We were interested in the effect of perspective on the relationship between forecasted and actual feelings in the case that the forecasts were made about the grade that participants actually received; we did not have expectations for the case in which the forecasts were made about a different grade than was actually received.
*Feel a week after receiving a bad grade*

We found a significant three-way interaction involving perspective, actual grades, and participants' forecasted feelings a week after receiving a bad grade predicting how participants actually felt in general a week after they received a bad grade ($B = -.55$, $t(66) = -2.03$, $p < .05$). Again, those who received a bad grade were more calibrated in the third-person condition than in the first-person (see Figure 7).
Figure 7: Actual feelings a week after receiving grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean.
Our expectations were relevant to those who received a bad grade, so we explored the effects within this group. First of all, the interaction between perspective and forecasted feelings a week after receiving a bad grade was not significant ($B = .62$, $t(59) = 1.63, p = .11$), but it was close to significant. In addition, among those who received a bad grade, the effect of forecasted feelings was non-significant for those in the first-person condition ($B = -.33$, $t(59) = -.62, p = .54$) as well as the third-person condition ($B = .92$, $t(59) = -1.65, p = .11$), but as expected, the effect was much closer to significance in the third-person condition than the first-person condition. Next, we looked at the effect of perspective on the relationship between predicted and actual feelings among those who received a good grade; the interaction between perspective and forecasted feelings was not significant for those who received a good grade ($B = -.48$, $t(59) = -1.24, p = .22$). These results generally support our hypothesis that the two-way interaction between perspective and forecasted feelings would be stronger for those who received a bad grade. In addition, we expected that forecasted feelings would be more strongly related to actual feelings for those in the third-person condition rather than the first-person condition, and this was the case.

*Frequently think about exam a day after receiving a bad grade*

We found a significant three-way interaction between perspective, actual grades, and frequency of thinking about the exam a day after receiving a bad grade ($B = -.42$, $t(66) = -3.23, p < .01$). Again according to our hypothesis, those who received a bad grade were more calibrated in the third-person condition than in the first-person condition (See Figure 8).
Figure 8: Actual frequency of thinking about the exam a day after receiving a bad grade by perspective, forecasted feelings if received a bad grade, and actual grades. Forecasted feelings graphed at 1 SD above and below the mean.
Looking only at those who received a bad grade, the group to which our hypothesis was relevant, the interaction between perspective and forecasted frequency of thought was significant \((B = .38, t(59) = 2.39, p < .03)\). In addition, the effect of forecasted frequency of thought was not significant within the first-person perspective condition \((B = -.07, t(59) = -.30, p = .77)\), but it was highly significant for those in the third-person condition \((B = .70, t(59) = 3.08, p < .01)\). These results suggest that the forecasted frequency of thought is positively related to actual frequency of thought in the third-person condition, yet these variables are not related in the first-person condition. These findings support our hypothesis that who used a third-person perspective would be more calibrated than those who used a first-person perspective. Among those who received a good grade, the effect of the interaction between perspective and forecasted feelings was also significant \((B = -.46, t(59) = -2.23, p < .03)\). These results fit the pattern we expect; perspective and forecasted frequency of thought influence actual frequency of thought for those who received a bad grade, and among those who received a bad grade, those in the third-person condition were more calibrated than those in the first-person condition.
Chapter 3: General Discussion

The purpose of the current research was to explore whether imagery perspective would influence the accuracy of affective forecasts. The results of our study suggested that to the extent that perspective had an effect, participants' affective forecasts in relation to performance on a test were more accurate when they imagined receiving their grades from a third-person perspective rather than a first-person perspective. Specifically, this perspective effect emerged in regards to the objective accuracy of participants' predictions about how they would feel each time they thought about the exam and the calibration of their predictions about how they would feel/their frequency of thought about the exam if they received a bad grade.

We believe that affective forecasts are more accurate when participants imagine events from a third-person perspective because a third-person perspective causes them to make meaning of events in a way that maps on more closely to our online experiences. When using a third-person perspective individuals make meaning of events by incorporating their broader knowledge and self-theories into their interpretations of the events. In contrast, we believe that when individuals use a first-person perspective to imagine events, they make meaning of them in terms of their visceral responses to the
events. There is evidence that most individuals are incapable of actually experiencing an event without thinking about the event in terms of their self-theories without training; therefore, it seems likely that using a third-person perspective to picture future events should produce more accurate affective forecasts than using a first-person perspective.

Implications for affective forecasting research

The current study contributes to the existing research on affective forecasting. Existing research has explored the general accuracy of affective forecasts and many of the mechanisms behind accuracy effects. The present research provides evidence for factors that may enhance or dampen the mechanisms which lead to affective forecasting inaccuracy.

Affective forecasting accuracy: The imagery perspective account versus the CEST account

One way in which the current research contributes to existing research on affective forecasting is that it both challenges and supports existing theories. One previous theory that has been used to explain affective forecasting inaccuracy is Cognitive-Experiential Self Theory. Our findings do not conflict with the general claim of this account that affective forecasts may be inaccurate because individuals use the cognitive system to make forecasts about emotions, yet they use the experiential system to actually experience emotions. However, it may intuitively seem that first-person perspective would map on to the experiential system and that the third-person perspective would map on to the cognitive system, and that therefore, using a first-person perspective to imagine events would result in greater affective forecasting accuracy than using a
third-person perspective. Our data suggest that this is not the case. Most likely neither a
first-person perspective nor a third-person perspective maps on perfectly with online
experience; however, we argue that taking a third-person perspective brings one closer to
online experience.

The CEST account of affective forecasting accuracy provides explanations of
both focalism and immune neglect, claiming that rationally processing events lead to
these errors. However, we believe that using third-person perspective as opposed to a
first-perspective should not contribute to these errors, which further suggests that using a
third-person perspective does not function by activating a "rational system". For
example, according to the CEST account, that focalism occurs because individuals think
about an event out of its context and analyze it. This causes them to ignore other events
and to focus all of their attention on that one event. Because using a third-person
perspective causes them to think about how the event fits into their lives as a whole as
opposed to focusing completely on just one event, they are actually likely to combat
focalism when they take this perspective. This account also claims that the rational
system contributes to immune neglect. According to the CEST account, this
phenomenon occurs because when individuals think rationally they are unable to respond
emotionally and take into consideration the ways in which their experiential system
would process the event, interpreting it in such a way to maximize pleasure. This
reasoning does not suggest that immune neglect is more likely to occur when using a
third-person perspective compared to a first-person perspective; both perspectives can
cause individuals to experience emotion depending on the content of the event. One
common misconception is that individuals do not respond emotionally when we use a third-person perspective; in reality, people are capable of responding with more emotion to some events when they picture them from a third-person perspective as opposed to a first-person perspective. The source of the emotion determines which visual perspective will cause a greater emotional response: if the event is emotion-evoking because of visceral reactions to the event, emotional responses will be stronger when picturing the event from a first-person perspective. However, if the emotion stems from incorporating the event into broader self-theories, emotional responses will be stronger when picturing the event from a third-person perspective. This suggests that the rational system and the use of a third-person perspective do not map on to each other; while the rational system may contribute to affective forecasting inaccuracy, the third-person perspective may actually help to make forecasts more accurate.

One reason why we may not see results that indicate that a first-person perspective invokes the experiential system and a third-person perspective calls upon the rational system is because we believe that the two types of perspective activate different process as opposed to different systems. A systems approach, exemplified by CEST, suggests that individuals use distinct systems to make meaning of events. In contrast, a processes approach proposes that individuals use the same system, but that they process the events differently (Chaiken and Trope, 1999). In terms of the current research, a systems approach would suggest that people hold both experiential responses and self-theories related to an event in separate, competing systems at the same time. Adopting a processes approach, we believe that the more likely reality is that individuals have
different starting points, but that both concepts influence their judgments. When people picture an event from a first-person perspective, their gut reactions represent the starting point, yet they may incorporate some self-theories as they reflect on the event. In contrast, when they picture an event from a third-person perspective, they begin by considering their self-theories and over time their gut reactions to the event may have an influence. Each process results in a different judgment.

Although we agree with the general idea of the CEST account of affective forecasting which claims that individuals' affective forecasts will be more accurate as the way in which they interpret events when making predictions becomes more similar to the way in which they interpret online experiences, we want to clarify that a first-person perspective does not call upon the experiential system and a third-person perspective does not invoke the rational system. Our claim may argue against intuition, but we have several reasons for this case. First of all, our data suggest that using a third-person perspective results in more accurate forecasts than using a first-person perspective, whereas the CEST account claims that using the rational system instead of the experiential system makes affective forecasting inaccuracy more likely. Second, the CEST account proposes that using the rational system should lead to affective forecasting error such as focalism and immune neglect; however, we propose that these errors may be less likely when using a third-person perspective as opposed to a first-person perspective. One difference between the imagery perspective account and the CEST account which may help to explain why they do not map on to each other is that the imagery perspective account is a processes account whereas the CEST account is a
systems account. The current research contributes to existing research on affective forecasting by challenging and supporting aspects of existing theories.

**Irrelevant Grade Reversals in Results**

Another way in which the current research contributes to existing research on affective forecasting is that it provides information related to the linearity of forecasts and their related outcomes by way of some results that were unexpected. Interestingly, we found reversals of both accuracy and calibration for those who used a third-person perspective to picture the grade that they did not receive. In other words, participants in the third-person condition were more accurate and more calibrated when they made affective forecasts about the grades that they actually received than those in the first-person condition, but if they make predictions about the grade that they did not receive, they were consistently less accurate and less calibrated than those in the first-person condition. We did not come in with a hypothesis related to the case in which individuals did not receive the grades about which they made forecasts. In the case of the objective accuracy analyses, we are still somewhat unsure why this reversal is occurring. However, our explanation of why the reversal could be appearing in the calibration results may provide information which contributes to existing research on affective forecasting.

**Irrelevant Grade Reversal in Calibration Results**

We found a pattern in the calibration results for those who received a grade that was irrelevant to the predictions (i.e. in the case that the predictions were made about a bad grade and participants received a good grade or vice versa). This pattern represented
a reversal of the pattern that emerged for those who had actually received the grade about which they were making predictions. On several measures participants made predictions about how they would feel if they received a bad grade, and there was a positive relationship between forecasted and actual feelings for those in the third-person condition who received a bad grade. However, for those in the third-person condition who received a good grade, there was a negative relationship between forecasted and actual feelings (see Figures 5 - 8). This suggests that those who predicted that they would feel worse than others if they actually received a bad grade actually felt worse than others if they received a bad grade; however, they also felt better than others if they received a good grade. In general, among those who predicted they would feel worse if they received a bad grade, the effect of the actual grade on feelings was greater than it was among those who predicted that they would not feel as bad if they received a bad grade. This suggests that the emotions that result from different grades may occur in a linear fashion. For example, the decrease in happiness that occurs from receiving an ‘A’ to receiving a ‘B’ may be the same decrease in happiness that occurs from receiving a ‘C’ to receiving a ‘D’.

This finding contributes to the existing research on valence and intensity of affective forecasts. It would be interesting to explore individual differences in this phenomenon; there may be certain types of individuals who would be less likely to exhibit this linearity effect. For example, we expect that those who have a negativity bias might forecast that they will feel very bad if they receive a bad grade but forecast that they will feel only slightly good if they receive a good grade. In addition, there may be
certain individuals who forecast that they will feel very good if they receive a good grade but only slightly bad if they receive a bad grade. Incorporating these ideas with the current research, we still predict that these individuals would make more accurate forecasts if they imagine events from a third-person perspective instead of a first-person perspective. It would contribute to research on affective forecasting to further explore for which types of people the linearity effect holds up.

Implications for research on imagery perspective and mindset

Previous research has demonstrated that the visual perspective taken to imagine events can influence various psychological constructs such as judgment, emotion, goal pursuit, and self-prediction. Imagery perspective affects the way in which individuals make meaning of events, which influences various outcomes. The present research provides further evidence for this meaning-making process which differs as a result of perspective, and it extends the influence of imagery perspective into the domain of affective forecasting.

Implications for using affective forecasts to inform decision-making and improve well-being

One important question is whether affective forecasting accuracy is adaptive, and how people can use the current research to improve decision-making. Intuitively, it may seem that accuracy would benefit individuals. For example, in many cases it seems that people would make better decisions if they could accurately predict how those decisions would make them feel. They might decide not to cede their souls to their significant others in fear of them breaking up with them if they know that the breakup will not be as
painful as they expect. They might not spend $100 in vain in May to buy tickets for a concert in September if they realize that a lot of other events will conflict with their experience of the concert. There may be select cases in which affective forecasting inaccuracy may help individuals to make decisions that will benefit them in the future. Think back to the example of the student who predicts that she will feel bad if she does poorly on her test, but she actually feels okay because she is getting ready to go to a party with her friends. If she had been accurate about her original predictions, she may not have studied as much and she could have received a very poor grade, which might have actually made her feel bad. Therefore, her inaccurate prediction may have served to protect her from actually feeling bad. However, in this case the student made a misprediction about what amount of studying would result in the grade she wanted. If she had been correct about this, she may have been better off with an accurate affective forecast.

Assume that we take the perspective that a decision is "good" if it improves well-being, and that well-being stems from happiness. Individuals should feel more positive emotion and less negative emotion over the long run. If this is the case, then it seems indisputable that if all of the information regarding an event is known and correct, then accurate affective forecasts will lead to better decisions than inaccurate forecasts. Individuals will know what will make them happy so they know for what to strive. In this case, using a third-person perspective as opposed to a first-person perspective may represent a strategy to help individuals make better decisions.
The previous claim makes the assumption that well-being stems from happiness; however, the proposition that well-being is hedonic is debatable (Ryan and Deci, 2001). Another account of well-being, a eudaimonic account, may lead us to different conclusions. The eudaimonic well-being account suggests that individuals' well-being results from them feeling as if they have a meaning to live, and that they have something to contribute to the world (Ryan and Deci, 2001). The path to achieving eudaimonic well-being may not be as clear-cut as the path to hedonic well-being. Decisions that make individuals feel good over the long run may not actually contribute to eudaimonic well-being; therefore, affective forecasting accuracy may not increase well-being. The contribution of one visual perspective over the other to eudaimonic well-being by way of affective forecasting is unclear.

Overall, especially when adopting the hedonic well-being account, it seems that using a third-person perspective instead of a first-person perspective when making affective forecasts could lead to better decision-making and improved well-being. However, further research must be conducted to explore some of the assumptions of this account, such as the source of well-being.

Future Directions

Methodological Issues

There are several possible directions in which we can take the current research in the future. First of all, we would like to resolve a couple of methodological issues. In the current study, participants predicted how they would feel if they received a good grade on a five-point unipolar scale and how they would feel if they received a bad grade on a
five-point unipolar scale. However, after receiving their grades, they reported how they actually felt on a nine-point bipolar scale. Although the four most extreme points on the five-point scales apply directly to four most extreme points on the corresponding ends of the bipolar scale, the midpoint of the bipolar scale is labeled differently than the least extreme point of the unipolar scale. In addition, responding on a bipolar scale may be psychologically different from responding on a unipolar scale. We are unsure about exactly how answering on a bipolar scale is psychologically different from answering on a unipolar scale, so we cannot say how this methodological issue would qualify the fact that those who imagined future events from a third-person perspective were more accurate than those who used a first-person perspective. Because of this uncertainty it would be beneficial to resolve the issue. We have recently run a second version of the current study in which all feelings (in both the prediction phase and the actual phase) were reported on nine-point bipolar scales. We did not obtain enough participants to adequately analyze the data, but this is an issue that will be addressed in future studies.

Another potential methodological issue is that we used participants' subjective ratings of whether their grades were good or bad instead of the objective grades that they received in comparison to the grades about which they made forecasts. Participants only made forecasts about two specific grades; we had no way of knowing how they perceived any other possible grades. For this reason, we felt that it was necessary to use the subjective grade ratings. In addition, we dichotomized this variable. Because predictions were made about a good grade and a bad grade, it makes sense that the actual grades received would also be divided into these two categories.
One potential problem with this approach is that participants' perceptions of how good or bad grades are could change as a result of receiving a particular grade. One study demonstrates the possibility of this effect. In this study participants reported which candidate they preferred to win a gubernatorial election and how they would feel if their preferred candidate won and lost. They also rated the abilities of both candidates in terms of their potential as governor. After the election, those whose preferred candidate lost the election were happier than they forecasted they would be. In addition, they rated the unpreferred candidate higher after she won the election than they rated her before the election (Gilbert et. al., 1998). This suggests that participants adjusted their attitudes to help them cope with the situation. Similarly, it could be the case that if a participant feels that a ‘B’ is a bad grade before the test, he might feel that a ‘B’ is a decent grade following receiving a 'B' on the exam. This would be his way of reconstruing the situation to make himself feel better. It could even be possible that affect is influencing grade ratings, when we expect the causal arrow to go in the opposite direction. Essentially, this brings an additional variable into the equation, which leaves us unsure about the source of affective forecasting accuracy or inaccuracy. We really want to know how grades influence affect and how the affect that results compares to forecasts; if we are unsure whether grades are influencing affect or vice versa, we cannot examine the effect in which we are truly interested.

For example, imagine the following scenario. An individual predicts how she will feel if she receives a bad grade and how she will feel if she receives a good grade. Although she does not report this, at this point she would consider a 'B' or below a bad
grade and a 'B+' or above a good grade. She actually receives a 'B-', and she is asked to report whether she received a good grade or a bad grade. She feels better than she would have predicted for receiving a 'B-'. This is the comparison in which we are interested: she received a "bad grade" (or what she would have considered a bad grade when she made the prediction), and she feels better than she expected. However, imagine she is asked to report whether her grade is good or bad, but she takes her positive affect into account when making this judgment; therefore, she reports that she received a good grade. If she predicted she would feel good if she received a good grade and she actually feels good, it appears that she is accurate according to her subjective grade rating. However, her forecast was actually quite inaccurate. This is relevant to the current research because our findings could indicate that individuals who use a third-person perspective rely on affect more (or more broadly interpret their grades differently) when they subjectively rate their grades, which could make it appear that their forecasts are more accurate (compared to those using a first-person perspective).

One potential way to combat this problem would be to explore the relationship between imagery perspective and affective forecasting in domains in which there is a higher likelihood that the objective event about which individuals make predictions actually occurs. In the present research, participants only made predictions about how they would feel as a result of receiving two grades despite the fact that a wide spectrum of grades is actually achievable. It would be beneficial to have a greater number of objective outcomes about which participants make predictions or a smaller number of
possible objective outcomes so that we can rely on comparisons between objective ratings rather than subjective ratings.

**Additional contexts**

Even if imagery perspective functions in the way that we posit, there may be cases in which using first-person perspective results in more accurate forecasts than using a third-person perspective. One example relates to situations in which individuals must make comparisons between experiences. Research suggests that individuals take comparisons into account when they make forecasts about an experience, yet the comparisons do not influence their actual experiences. For example, one study involved forecasters and experiencers evaluating sardines, chips, and chocolate. In pretesting, chocolate was rated better than chips which were rated better than sardines. Forecasters had imagine eating either the chips and the chocolates (superior alternative condition) or the chips and the sardines (inferior alternative condition) and rate how much they would enjoy the chips. Experiencers were assigned to the same conditions, but they actually ate the foods instead of predicting how much they would enjoy them. Forecasters in the superior alternative condition predicted that they would enjoy the chips less than those in the inferior alternative condition; however, the experiencers enjoyed the chips equally regardless of condition (Morewedge, Gilbert, Myrseth, Kassam, and Wilson, *in prep*.). This suggests that forecasters take the alternative (chocolate or sardines) into account, whereas the experiencers do not. In relation to the current study, recent research has shown that alternatives are more salient when picturing experiencing the target from a third-person perspective as opposed to a first-person perspective. This result is consistent
with our account for two reasons. First of all, this represents another case in which accuracy increases as the way in which individuals interpret events becomes similar from the forecasting phase to online experience. However, in this case, the way in which individuals interpret the imagined experience becomes less similar to the way in which they interpret online experience when they use a third-person perspective rather than a first-person perspective. The results of the comparison research are also consistent with our account because we claim that when using a third-person perspective, individuals use their broader knowledge in their interpretations of events. Essentially, by taking alternatives into account, they are incorporating broader knowledge as opposed to simply focusing on the experience. This research suggests that according to our account, not all affective forecasting situations would result in more accurate forecasts when using a third-person perspective compared to a first-person perspective.

We might also obtain different results in domains in which self-theories are not as relevant. In the current research we asked participants to predict how they would feel if they received a good or a bad grade on a test. The outcome of the test is highly dependent on participants' abilities and performance, so self theories are quite relevant. Because participants take their self theories into account when making meaning of the event both when they are making predictions and when they actually experience the event when they use a third-person perspective to picture the event, their forecasts are more accurate when using a third-person perspective as opposed to a first-person perspective.

Would our results differ if the outcome of the event was not dependent on the individual making the prediction? For example, imagine a case in which average United
States citizens make predictions about how they will feel if the U.S. team wins a World Cup game. These individuals are affiliated to the team only because they are Americans; they have not done research and chosen a team by skill or other factors and they have not had any direct influence on the team. A win by the U.S. could be self-relevant to the individuals because of their pride in being American, but imagine that they just enjoy watching soccer and want to have a team for which to cheer. If the U.S. loses, the team will be kicked out of the tournament, and the Americans will not have a team to cheer for. If these individuals imagined the U.S. winning and losing from a first-person or a third-person perspective (manipulated) and then reported how they actually felt after the game, would those who used a third-person perspective be more accurate than those who used a first-person perspective? We believe that this would be the case, but that the effect would not be as strong as it is in the current research. It is possible that for most individuals, all events which cause them to feel emotion are at least slightly tied to their self theories. We believe that the more self theories are involved in outcomes, the greater the difference in accuracy between those who picture the events from a third-person rather than a first-person perspective. If self theories are not highly involved in making meaning of an event in online experience, then the accuracy of forecasts may not depend as much on perspective. In the future, it would be beneficial to empirically examine this question to work towards a better understanding of both imagery perspective and affective forecasting.
Conclusion

The current research demonstrated that in some situations, individuals make more accurate affective forecasts when picturing events from a third-person as opposed to a first-person perspective. We believe that this effect occurs because when individuals use a third-person perspective, they take their self-theories into account as they interpret events. In addition, there is evidence that individuals tend make meaning of online experiences in terms of their self-theories. Because individuals process events more similarly to the way they process online experience when they use a third-person perspective as opposed to a first-person perspective, they make more accurate affective forecasts when picturing events from a third-person perspective than a first-person perspective. The current research has implications for existing research on affective forecasting and imagery perspective. In addition, it may have implications for improving well-being by way of helping to inform better decision-making. In the future, various methodological issues should be addressed and further research should demonstrate that our account holds in other contexts.
References


