A Motivational Account of the Impact Bias

DISSESSATION

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By

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Abstract

The impact bias is the tendency for people to overestimate the intensity and duration of their feelings in response to some future outcome (Gilbert, Driver-Linn, & Wilson, 2002; Wilson & Gilbert, 2003; Wilson & Gilbert, 2005). Most explanations for the bias conceptualize it as an undesirable side effect of how the cognitive system goes about making predictions. Yet, perhaps such mispredictions can serve an important self-regulatory function, helping people achieve their goals.

This research argued for a motivated impact bias. That is, there are times when people may be driven to predict feelings more extreme than they actually will experience. By overestimating one’s feelings to some future outcome, the stakes of succeeding or failing at gaining that outcome are raised. As such, this may energize people to pursue their goals to achieve the desired outcomes. The more one wants to gain (or avoid) some outcome, the more likely s/he will be to exhibit such an impact bias.

To investigate this question, participants were asked to predict their feelings in response to the outcome of a performance task (visual responsiveness task in studies 1-3, creativity task in study 4, and verbal test in study 5) they would complete. It was hypothesized that a motivated impact bias would most likely manifest itself when the motivation to achieve some outcome was high. Using an expectancy-value framework,
motivation was conceptualized as a product of expectancy and value (e.g. Tolman, 1932; Atkinson, 1957).

It was predicted that by measuring (value in study 1; value and expectancy in study 3; value in study 5) and manipulating (value in study 2; value and expectancy in study 4; expectancy in study 5) motivation to achieve some outcome (good visual responsiveness in studies 1-3; high creativity in study 4; successful performance on verbal ability test in study 5) that the impact bias would be observed.

For studies 1-3, there was no overall impact bias, and motivation had no effect on forecasting accuracy. One potential problem was lack of evidence for any motivated behavior on the task. For studies 4 and 5, there was evidence of an overall impact bias, but it was not moderated by expectancy and value. Again, there was no evidence of expectancy-value effects on the task.

However, by using performance on the tasks in studies 4 and 5 as a behavioral measure of motivation, there was evidence to suggest that people who are motivated to achieve (or avoid) some outcome overestimate their future feelings. This is not sufficiently strong evidence to support a motivated impact bias, but it does suggest that the relationship between motivational variables and the impact bias warrant further investigation. These results should encourage researchers to consider that the impact bias is not always an undesired error, but can instead be a desired strategy.
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Publications


Fields of Study

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Table of Contents

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

Acknowledgments ...................................................................................................... iv

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

Publications ................................................................................................................ v

Fields of Study .......................................................................................................... v

Table of Contents ...................................................................................................... vi

List of Figures .......................................................................................................... xiii

Chapter 1: Introduction ............................................................................................. 1
  Review of the Impact Bias ...................................................................................... 1
  The Impact Bias as Motivated .............................................................................. 5
  Previous Research Supporting a Motivated Impact Bias ........................................ 9

Methodological Overview ........................................................................................ 14

Summaries of Studies 1-5 ......................................................................................... 17

Chapter 2: Study 1 ..................................................................................................... 19
  Method ..................................................................................................................... 20
List of Tables

Table 1. Practice RAT items for study 5 ................................................................. 100
Table 2. RAT items for study 5 .............................................................................. 101
Table 3. Overall impact bias for study 1 ............................................................... 103
Table 4. Feedback condition × value on forecasting accuracy for study 1 .......... 104
Table 5. Simple slopes for feedback condition × value on forecasting accuracy for study 1 .............................................................................................................................................. 104
Table 6. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1 ....................................................................................................................................... 105
Table 7. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1 ....................................................................................................................................... 105
Table 8. Simple slopes for feedback condition × value on experienced happiness (adjusted for baseline) for study 1 ....................................................................................................................................... 106
Table 9. Feedback condition × value on BIF scores for study 1 ............................ 107
Table 10. Overall impact bias for study 2 .............................................................. 108
Table 11. Feedback condition X value on forecasting accuracy for study 2 ........... 108
Table 12. Feedback condition × value on predicted happiness (adjusted for baseline) for study 2 ....................................................................................................................................... 109
Table 28. Value × expectancy on performance for study 4 ........................................ 118
Table 29. Overall impact bias for study 5 ................................................................. 119
Table 30. Value × expectancy on forecasting accuracy for study 5 ......................... 119
Table 31. Value × expectancy on predicted happiness (adjusted for baseline) for study 5
........................................................................................................................................... 120
Table 32. Value × expectancy on experienced happiness (adjusted for baseline) for study
5........................................................................................................................................... 120
Table 33. Value × expectancy on BIF scores for study 5 ........................................... 121
Table 34. Value × expectancy on practice items for study 5 ..................................... 122
Table 35. Value × expectancy on RAT score for study 5 ........................................ 122
List of Figures

Figure 1. Overall impact bias for study 1 ................................................................. 24
Figure 2. Feedback condition × value on forecasting accuracy for study 1 ............ 26
Figure 3. Overall impact bias for study 2 ................................................................. 31
Figure 4. Feedback condition × value on forecasting accuracy for study 2 .......... 33
Figure 5. Overall impact bias for study 3 ................................................................. 37
Figure 6. Value × expectancy on forecasting accuracy for study 3 ....................... 38
Figure 7. Overall impact bias for study 4 ................................................................. 46
Figure 8. Value × expectancy on forecasting accuracy for study 4 ....................... 47
Figure 9. Overall impact bias for study 5 ................................................................. 56
Figure 10. Value × expectancy on forecasting accuracy for study 5 ..................... 57
Figure 11. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1 ........................................................................................................... 83
Figure 12. Feedback condition × value on experienced happiness (adjusted for baseline) for study 1 ........................................................................................................... 84
Figure 13. Feedback condition × value on predicted happiness (adjusted for baseline) for study 2 ........................................................................................................... 85
Figure 14. Feedback condition × value on experienced happiness (adjusted for baseline) for study 2 ................................................................. 86
Figure 15. Feedback condition × value (measured) on forecasting accuracy for study 2 87
Figure 16. Value × expectancy on predicted happiness (adjusted for baseline) for study 3 ........................................................................................................... 88
Figure 17. Value × expectancy on experienced happiness (adjusted for baseline) for study 3 ........................................................................................................... 89
Figure 18. Value × expectancy on performance for study 3 .................................. 90
Figure 19. Value × expectancy on predicted happiness (adjusted for baseline) for study 4 ........................................................................................................... 91
Figure 20. Value × expectancy on experienced happiness (adjusted for baseline) for study 4 ........................................................................................................... 92
Figure 21. Value (measured) × expectancy (measured) on forecasting accuracy for study 4 ........................................................................................................... 93
Figure 22. Value × expectancy on performance for study 4 .................................. 94
Figure 23. Value × expectancy on predicted happiness (adjusted for baseline) for study 5 ........................................................................................................... 95
Figure 24. Value × expectancy on experienced happiness (adjusted for baseline) for study 5 ........................................................................................................... 96
Figure 25. Value × expectancy on practice items for study 5 .................................. 97
Figure 26. Value × expectancy on RAT score for study 5 ...................................... 98
Chapter 1: Introduction

Many of the decisions people make are based on the kinds of emotions, as well as the intensity and duration of these emotions, that they anticipate feeling in response to some person, object, or outcome. However, these affective forecasts are often prone to inaccuracy, and one of the most heavily researched of such errors is the impact bias (Wilson & Gilbert, 2003). Some researchers argue that making inaccurate affective forecasts is undesirable because it prevents people from maximizing their happiness (e.g. Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). Yet, perhaps there are times when such mispredictions might serve an important self-regulatory function, helping people navigate toward the things that they desire and away from the things that they want to avoid. That is a question the present research aims to explore.

Review of the Impact Bias

The impact bias is the tendency for people to overestimate how strong their initial feelings will be and/or how long their feelings will last in response to the outcome of some future, emotion-provoking event (Gilbert, Driver-Linn, & Wilson, 2002; Wilson & Gilbert, 2003; Wilson & Gilbert, 2005). People have been shown to overestimate their feelings in response to a number of events including vacations/trips (Mitchell, Thompson, Peterson, & Cronk, 1997), tenure decisions (Gilbert, Pinel, Wilson, Blumberg, &
Wheatley, 1998), HIV test results (Sieff, Dawes, & Loewenstein, 1999), election results (Gilbert et al., 1998), the outcome of football games (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), failure to lose weight (Mellers, 2000), exam scores (Buehler & McFarland, 2001), dorm assignments (Dunn, Wilson, & Gilbert, 2003), experiences after medical procedures (Smith, Loewenstein, Jepsen, Jankovich, Feldman, & Ubel, 2008), and romantic relationship dissolution (Eastwick, Finkel, Krishnamurti, & Loewenstein, 2008). Such evidence suggests the impact bias is fairly pervasive and robust.

There are two main causes of the impact bias. The first is that people fail to realize that their predictions of the future are based on subjective construals (Griffin & Ross, 1991). People do not have direct knowledge of how the future will unfold, so they must construct a representation of what they think will happen (Trope & Liberman, 2010). In doing so, affective forecasters have been shown to differentially weight information, the process of which is influenced by such things as attention (Schkade & Kahneman, 1998; Wilson et al., 2000; Dunn et al., 2003; Lam, Buelher, McFarland, Ross, & Cheung, 2005; Ayton, Pott, & Elwakili, 2007), accessibility (Sanna & Schwarz, 2004), and chronic knowledge structures (Loewenstein & Schkade, 1999; Woodzicka & LaFrance, 2001; Igou, 2004). As a result of these construals, people imagine a future situation much differently than it actually unfolds, leading them to mispredict their affective responses. For example, when college students were asked to predict how they would feel in response to their school winning the big football game, they constructed an image of the future dominated by football celebrations and failed to account for the schoolwork and social activities that also would fill their time (Wilson et al., 2000).
The second reason the impact bias occurs is because people do not appreciate the extent to which their sense-making abilities will deal with both negative and positive events. When bad things happen, people are unaware of the work the psychological immune system puts forth to repair the damage and make people feel better (Gilbert et al., 1998). When good things happen, people fail to realize how quickly they will normalize these outcomes and reactions (Wilson, Centerbar, Kermer, & Gilbert, 2005).

One reason the impact bias remains so prevalent is that people have difficulty learning from past experience (Loewenstein & Schkade, 1999; Wilson & Gilbert, 2003). Here, too, the failure to appreciate the constructivist nature of representations and a lack of awareness of sense-making abilities play a role. People need to exert effort to consult past memories (Wilson, Meyers, & Gilbert, 2001; Buehler & McFarland, 2001). They then need to select an appropriate memory to compare to (Wilson et al., 2001), which is difficult, as situations rarely repeat themselves exactly as they have unfolded in the past (Loewenstein & Schkade, 1999). Memories are a construction, so they will not necessarily be accurate (Ross, 1989), and memories for emotions are particularly poor (Robinson & Clore, 2002). Memories themselves are subject to a number of biases, including a retrospective impact bias (Mitchell et al., 1997; Wirtz, Kruger, Scollon, & Diener, 2003; Wilson, Meyers, & Gilbert, 2003). Inadequate correction is another reason the impact bias persists (Wilson et al., 2001; Gilbert, Gill, & Wilson, 2001). As such, even if people do learn from experience, they might not adjust their predictions appropriately. Finally, people might also apply incorrect or irrelevant lay theories of
affect (McFarland, Ross, & DeCourville, 1989; Igou, 2004) in their adjustments for the impact bias.

It has been argued that the impact bias is undesirable because the accuracy of people’s affective forecasts is linked to the quality of their decisions and the maximization of their happiness (Loewenstein & Schkade, 1999; Dunn & Laham, 2006). Although the consequences of the impact bias have not been the focus of direct empirical observation, there is some evidence to support various potential pitfalls stemming from inaccurately forecasting one’s emotional responses. People are often mistaken in what they think will make them happy. For example, college students overestimated how being assigned to various dorms would make them feel (Dunn, Wilson, & Gilbert, 2003). When making their forecasts, students over-relied on information about the physical qualities of these dorms. In actuality, the social quality of these living arrangements was much more important. Had these students not been randomly assigned to dorms, they may have made their decisions based on feelings about features (e.g. dorm location, room size) that would not impact their happiness all that much. In another line of research, participants predicted they would feel worse if insulted by an interaction partner than a non-partner (Gilbert, Liberman, Morewedge, & Wilson, 2004). In actual experience, participants liked the non-partner much less than their interaction partner after the insult. One could imagine that such erroneous predictions could potentially cause trouble in interpersonal relationships. The impact bias can lead to poor decisions, as demonstrated by Wilson and colleagues (2004). Participants predicted that not receiving a date would
feel worse than it actually did, leading them to desire higher amounts of a mood-

enhancing herbal supplement (Wilson, Wheatley, Kurtz, Dunn, & Gilbert, 2004).

It is possible that committing the impact bias could cause people to experience

undue stress before the event. By overestimating how bad one would feel after failing to
receive a job offer (Gilbert et al., 1998), how painful it would be to visit the dentist (Kent,
1985), how unhappy one would be when his/her favorite sports team loses (Wilson et al.,
2000), or how disappointed one would be when receiving a lower exam grade (Buehler &
McFarland, 2001), one could end up feeling even worse while waiting for the event to

unfold (Golub, Gilbert, & Wilson, 2009).

The impact bias could potentially lead to negative feelings after experiencing the

event. Overestimating how positively one might feel in response to the outcome of some
future emotional event could lead to disappointment when those expectations are not
confirmed (Olson, Roese, & Zanna, 1996). Existing research has not really explored this
claim, but one could envision how things might play out. For example, people have been
shown to overestimate how happy they will feel on Christmas day (Buehler &
McFarland, 2001). If one had predicted a Christmas day full of presents, good food, and
quality time with family, s/he might be disappointed in the fruit cake and the napping
relatives.

The Impact Bias as Motivated

What all this research seems to suggest is that the impact bias is some kind of
ubiquitous systematic error, some undesirable consequence of how the cognitive system
goess about making predictions (e.g. differential attention to information, lack of
awareness, etc.). One might conclude that this overestimation is a bad thing because people are not accurately predicting their future emotional responses. However, accuracy is not the only motive people have when making predictions about the future (Dunning, 2007). Sometimes people desire inaccuracy in service of preferred ends (Kunda, 1990). For example, in an effort to be right, people will sample limited evidence when supporting their hypotheses and opinions (e.g. Snyder & Swann, 1978; Lord, Ross, & Lepper, 1979; Klayman & Ha, 1987). In order to feel good about themselves, people will engage in all sorts of self-enhancing behaviors, such as making self-serving attributions (e.g. Bradley, 1978; Wiley, Crittenden, & Birg, 1979; Lau & Russell, 1980) and comparing themselves to others that are worse off (e.g. Wood, 1989; Lockwood, 2002). People will even sacrifice accuracy to feel socially included (e.g. Asch, 1956). In a similar manner, perhaps there are times when people want to be inaccurate in overestimating their emotions to help them achieve their goals.

I would like to suggest that the impact bias can be motivated. That is, there are times when people may be driven to predict feelings more extreme than they actually will experience. By overestimating one’s feelings to some future outcome, the stakes of succeeding or failing at gaining that outcome are raised. As such, this may energize people to pursue their goals to achieve the desired outcomes. The more one wants to gain (or avoid) some outcome, the more likely s/he will be to exhibit such an impact bias.

For example, many psychology graduate students desire to become academics. They are often asked how they will feel when they complete their doctorates, and one could envision replies involving descriptions of future euphoria and intense relief. Such
an anticipated feeling state may lead these students to pursue their goal of completing their degrees more voraciously. On a less positive note, psychology graduate students are often asked how they will feel if they become unemployed or underemployed academics. The terror, failure, and misery they anticipate experiencing might encourage them to work harder to avoid such an outcome. If the impact bias is simply an error, some by-product of the way our minds naturally function and process information, one’s goals should have no effect on the magnitude of the bias. By that logic, a part-time doctoral student who is not as driven to finish his/her degree should exhibit the same bias as full-time, traditional graduate student when asked to make those same future affective predictions.

It is important to consider the conditions under which a motivated impact bias is most likely to manifest itself. As hypothesized, the desire for the mispredictions of future feelings is more likely to occur when motivation to achieve some outcome is high. Using an expectancy-value framework, motivation can be conceived of as a product of both expectancy and value (e.g. Tolman, 1932; Atkinson, 1957). In terms of expectancy, people must believe that the future outcome to which they are predicting responses must be possible. The impact bias is likely to be motivated, for example, when people believe they can get that job, procure that date, or achieve that exam score, or, stated another way, when people believe there is potential to not receive that job, date, or favorable exam score. People also must value the future outcome for which they are predicting emotional responses. That job, date, or exam must be important and desirable, in terms of something one wants to approach, or undesirable, in terms of something one wants to
avoid. If one already possesses his/her dream job, is in a committed relationship, or does not care about the subject of the exam, s/he will not be motivated to commit the impact bias. High motivation alone, however, is not enough to produce the impact bias. People need to possess the requisite knowledge and skills to utilize the impact bias, although this does not necessarily imply a conscious process. For example, if one has no experience in overestimating future emotions in the service of his/her goals, s/he is likely to not use this strategy. In addition to ability, people must have the opportunity to use the impact bias to assist them in reaching their goals. If the situation does not allow the path to goal pursuit to be altered in any way, for example, the impact bias will be unlikely to occur.

It is useful to consider the mechanism through which motivation might have its effects. As previously noted, the impact bias has been shown to occur because people fail to account for construal processes when making their predictions and because people lack awareness of the operation of their sense-making capabilities. It seems most likely that motivation could have its effects through construal processes. Indeed, there is a rich tradition of research on motivated construal (for review see Griffin & Ross, 1991). For example, whether one sees a penalty in a sports event as fair or not is a function of the team for which one is rooting (Hastorf & Cantril, 1954). What qualities perceived to be necessary for success at school depend on whether or not one possesses those qualities (Kunda, 1987). The seriousness of a medical condition is judged differently depending upon whether or not one has been diagnosed with that condition (Ditto & Lopez, 1992). Even a person’s memories of him/herself in the past are an example of motivated construals (Wilson & Ross, 2000). Therefore, it seems reasonable to suggest that people
motivated to commit the impact bias might do so through the construction of their representations of the future situation. A student, for example, wanting to succeed on an important exam might envision a future dominated by receiving news of his/her results, selectively underweighting the other likely things that could occur during that time, such as receiving the next assignment, finishing lunch, or chatting with a classmate.

Previous Research Supporting a Motivated Impact Bias

The idea of motivated affective forecasts is not new. Gilbert and colleagues (1998) suggested that affective forecasts can serve as “motivated distortions.” For example, extremely positive affective forecasts could make one feel better in the present (e.g. imagining feelings in response to a future vacation and savoring those in the moment), and predicted future negative affect might encourage one to pursue some outcomes over others (e.g. the student anticipating the horrible feeling of failure might choose to spend the evening at the library instead of the bar) (see also Wilson & Gilbert, 2003, and Wilson & Gilbert, 2005 for a discussion). Yet there exists little evidence to support these claims that affective forecasts may be motivated by affective concerns and/or goal pursuit. One exception is work by Buehler, McFarland, Spyropoulos, and Lam (2007) on the use of predictions of future affect to regulate current mood.

Buehler and colleagues (2007) argued that people’s self-regulatory motivations can impact the affective forecasts they make. Participants’ mood (negative vs. neutral) and mood orientation (ruminative vs. reflective) were manipulated, and then they made predictions about how they would feel in response to the occurrence of some mildly positive future events (e.g. seeing family or friends, going shopping for desired items,
and watching a desired TV show), in studies 1 and 2, and some negative events (e.g. friend desiring relationship dissolution, having something stolen, and needing to clean one’s apartment), in study 3. The logic behind these studies was that those participants who wanted to improve their moods (i.e. those with a reflective mood orientation) would predict more positive future feelings when in a negative (vs. neutral) mood. Those who were not motivated to improve their moods (i.e. those with a ruminative mood orientation) would not exhibit this pattern of results. Indeed, hypotheses were supported, as reflectors made more positive predictions when in a negative mood. Additional measures showed that making these more positive forecasts provided some immediate affective benefits, as these participants experienced more positive emotional reactions. This led the authors to conclude that affective forecasts can sometimes be motivated in the service of mood regulation.

However, as Buehler et al. (2007) pointed out, their research does not address a motivational explanation of the impact bias because they did not measure accuracy; that is, they did not compare participants’ predicted affect to their, or a control group’s, actual experienced affect. Participants were only asked to make predictions about how they might feel in the future. Additionally, Buehler et al. (2007) only focused on the affect regulation explanation for affective forecasts as motivated distortions offered by Gilbert et al. (1998). Regardless, this was the first work to examine how motivational, as opposed to cognitive, factors play a role in the process of affective forecasting.

There exists two other studies that have explored potential motivational factors that might contribute to the impact bias, but the results are mixed. Dunn et al. (2007) had
participants report affective predictions and experiences in response to a school basketball game. In addition, they measured team identification as a proxy for personal importance. They found no significant relationship between forecasting (in)accuracy and team identification. Hoerger and colleagues (2010) investigated an impact bias for the 2004 U.S. Presidential election. One of the individual differences they measured was subjective importance of the election. For Kerry supporters, they found a significant relationship between the impact bias and importance, such that those who found the election more important overpredicted how unhappy they would be if Kerry lost. However, this relationship was non-existent for Bush supporters. A potential reason for these weak relationships between motivational variables and the impact bias might be that these outcomes (e.g. basketball game, election) are things over which people perceive very little control. As discussed previously, a motivated impact bias is likely to manifest itself only if people believe they have the ability to bring about some future outcome.

It is not unreasonable to think that people might be motivated to exaggerate their future feelings. Indeed, various distortions of the future have been found to be motivated. For example, defensive pessimists exaggerate the possibility that negative outcomes will occur by setting extremely low expectations for themselves before entering a performance situation (Norem & Cantor, 1986a). This strategy is motivated by desires for competence and self-esteem and is enacted so that defensive pessimists can preemptively cope with the potential failure they might experience, which helps these individuals control their anxiety so they can pursue their goals effectively (Norem &
Cantor, 1986b). The ideal self also might be conceptualized as an exaggerated future state that is motivated. One’s ideal self is the self one dreams and hopes of becoming (Markus & Nurius, 1986; Higgins, 1987). Various motives and values shape the ideal self, which can energize a person to achieve that desired end self-state (Markus & Wurf, 1987; Higgins, 1987).

Despite arguing for a motivational account of the impact bias, I do not want to rule out the cognitive explanations that have been offered. I simply want to suggest that motivational factors may be one of the many things that are responsible for the impact bias. Other temporal biases have been shown to have been caused by both cognitive and motivational factors. For example, much of the research on the hindsight bias, or the tendency to exaggerate how predictable outcomes seem after they have occurred (Fischhoff, 1975), has focused on cognitive explanations. The accessibility of information (Fischhoff, 1975; Agans & Shaffer, 1994; Sanna, Schwarz, & Stocker, 2002), cognitive anchoring (Fischhoff & Beyth, 1975; Hardt & Pohl, 2003; Sedlmeier & Jaeger, 2007), the integration of new biased information into existing knowledge structures (Fischhoff, 1977; Pennington, 1981; Wasserman, Lempert, & Hastie, 1991; Schwarz & Stahlberg, 2003; Ash & Wiley, 2008), and memory impairments (Erdfelder & Buchner, 1998; Bayen, Erdfelder, Bearden, & Lozito, 2006) have all been posited as reasons for this “I knew it all along” phenomenon (Wood, 1978). However, some motivational accounts have been offered as well. A need for predictability (Campbell & Tesser, 1983; Musch, 2003), self-presentational concerns (Campbell & Tesser, 1983; Musch, 2003), and negative affect (Haslam & Jayasinghe, 1995; Renner, 2003) have all
been shown to affect the magnitude of the hindsight bias. It is likely that both cognitive and motivational factors are responsible (Hawkins & Hastie, 1990; Christensen-Szalanski & Willham, 1991).

Another example of a temporal bias driven by both cognitive and motivational factors is the planning fallacy, which is the tendency for people to underestimate how long it will take them to complete some task (Buehler, Griffin, & Ross, 1994; Kahneman & Tversky, 1979). Cognitive mechanisms include focusing too much on the future task by ignoring past experiences (Kahneman & Tversky, 1979; Buehler et al., 1994; Griffin & Buehler, 2005), not taking distributional information into account (Kahneman & Tversky, 1979; Buehler et al., 1994), using biased memories (Roy, Christenfeld, & McKenzie, 2005), failing to unpack all the specific components of a multi-component task (Kruger & Evans, 2004), and anchoring and insufficient adjustment (LeBoeuf & Shafir, 2009). The planning fallacy has been found to have been impacted by motivational factors as well. A desire for reward (Buehler, Griffin, & MacDonald, 1997), self-presentation concerns (Pezzo, Pezzo, & Stone, 2006), and social power (Weick & Guinote, 2010) have all led people to give more optimistic task completion estimates.

In summary, something so prevalent and difficult to correct for as the impact bias might produce more psychological benefits than costs. People might harbor the desire to be inaccurate in their predictions and overestimate the intensity and duration of their future emotions in service of their goals. Indeed, other exaggerated future states have been found to be motivated. Such a strategic use of the impact bias is likely to occur when motivation is high and when people have the ability and opportunity to enact it. It
also is reasonable to suggest that the mechanism responsible for this effect is a motivated construal process. This research aims to show that the impact bias, as with other temporal biases, might be determined by motivational factors in addition to the cognitive factors that already have been established.

Methodological Overview

One of the biggest challenges when investigating affective forecasting is choosing an appropriate methodology. Probably the ideal methodology for studying the impact bias is a prospective longitudinal design (Loewenstein & Schkade, 1999), where people make affective predictions and are followed for a length of time to see if their predictions are accurate or not. Several researchers have used such a strategy to investigate the impact bias (e.g. tracking happiness over the football season—Wilson et al., 2000; measuring emotion over the semester in response to psychology exam scores—Buehler & McFarland, 2001; measuring affective experiences in response to a U.S. Presidential election—Dunn, Brackett, Ashton-James, Schneiderman, & Salovey, 2007). However, there are some limitations to such an approach. The act of making affective predictions may influence the nature of future behavior, for example, making it so these prophecies come true (Sherman, 1980), or people might simply save the effort and report their predictions (see Loewenstein & Schkade, 1999 for a discussion). Of relevance to the current research, a longitudinal design is time-intensive, particularly in search of an initial effect, and does not lend itself well to the short time frame of a controlled experiment in the laboratory.
To overcome some of these challenges, impact bias researchers also have used a between-subjects design, comparing forecasters making predictions to people actually experiencing the events and associated emotions (e.g. tenure predictors and tenure experiencers—Gilbert et al., 1998; people predicting life satisfaction for those living in California vs. those in California reporting life satisfaction—Schkade & Kahneman, 1998). Although this may eliminate the issue of the act of prediction influencing later responses, it does not allow for true error estimates, nor would such a design allow for the investigation of motivational influences.

In light of all the considerations, the optimal choice for the current studies was use of a pre-post experimental design. This made for a tightly controlled laboratory situation and also allowed within-subjects variance to be investigated (e.g. accuracy, motivational factors). However, some of the problems with the previously discussed designs (e.g. people might simply recall their earlier prediction), could potentially be an issue.

Another issue to consider when selecting a methodology for the current research is the nature of the outcome. In accordance with the theory that has been proposed here, the outcome must be something that an individual can potentially bring about (or at least believes that s/he can bring about). This rules out scenarios, for example, that investigate affective forecasting for medical test results (e.g. Sieff et al., 1999; Mellers, 2000; Hawkins, 2005), the weather (Schkade & Kahneman, 1998; Lam et al., 2005), or outcomes for sporting events in which one is not participating (e.g. Wilson et al., 2000; Wood & Bettman, 2007; Dunn et al., 2007). Instead, situations that might be likely to
evoke a motivated impact bias include such things as tenure decisions (Gilbert et al., 1998), romantic relationships (Finkel et al., 2008; Tomlinson, Carmichael, Reis, & Aron, 2010), employment opportunities (Gilbert et al., 1998), health outcomes (Mellers, 2000), and performance tasks (e.g. athletic task—van Dijk, 2009; psychology exam—Buehler & McFarland, 2001; driving test—Ayton et al., 2007). Out of all these scenarios, those that seem most easily transported to the laboratory are performance tasks.

The current studies investigated a motivated impact bias within the context of a performance task. The task needed to be somewhat ambiguous so that the value of the skill, the expectancy of success on the task, and/or the valence of the outcome could be manipulated (e.g. telling the participant that s/he was (un)successful). In addition, the task could not be anything for which there would be too many uncontrolled variables. For example, if participants were to take a math test in the laboratory, it would be difficult to control for things like previous math experience and skill level. Finally, the task needed to be something that was sensitive to effort so that participants, for example, could work harder or faster.

To address these concerns, three tasks that seemed similar to tasks that one might complete outside of the laboratory were used, but they were ambiguous enough that performance outcome and motivation variables could easily be manipulated. In studies 1-3, participants had to predict how they would feel after receiving feedback about their performance on a perceptual task. During this task of “visual responsiveness,” a dot flashed on the computer screen, and participants were asked to identify the location of the
dot as quickly as possible. Participants then were given false feedback that their performance was either above or below average.

In study 4, participants gave their affective forecasts before completing a task that was purported to measure creativity. During this task, participants were presented with five everyday items, each for 60 seconds, and were asked to generate as many unique uses for the objects as possible. Participants then were given false negative feedback on their performance.

In study 5, participants made their affective predictions before completing a Remote Associates Test (RAT; McFarlin & Blascovich, 1984) of verbal ability. For each of the 10 RAT items, participants were presented with three words and then had to generate a fourth, associated word (e.g. \textit{chamber-staff-box}, answer: \textit{music}). To manipulate outcome, participants only completed difficult RAT items. Upon completion, they reported their emotions in response to their scores.

Summaries of Studies 1-5

Overall it is hoped that by measuring (value in study 1; value and expectancy in study 3; value in study 5) and manipulating (value in study 2; value and expectancy in study 4; expectancy in study 5) motivation to achieve some outcome (good visual responsiveness in studies 1-3; high creativity in study 4; successful performance on verbal ability test in study 5) that the impact bias will be observed. If successful, this would be one of the first empirical investigations of a “motivated distortion” explanation of the impact bias (e.g. Gilbert et al., 1998), and the findings would add to the relatively non-existent literature exploring the role of motivational factors in the impact bias. If
successful in establishing the basic phenomenon, I then would additionally be able to explore the proposed mechanism of subjective construal, as well as investigate some potential self-regulatory implications of strategically making these mispredictions of affect.
Chapter 2: Study 1

As previously discussed, to the author’s knowledge, there exists no strong empirical evidence to support the notion that a person’s motivation to gain (or avoid) some future outcome might lead him/her to predict feelings more extreme than s/he would actually experience. Therefore, the purpose of study 1 was to provide an initial demonstration that motivation predicts this impact bias.

To investigate a motivated impact bias, a situation was created for which participants had to predict and experience feelings in response to receiving feedback on their performance on a perceptual test. Participants were told they were completing a task that measured visual responsiveness, a skill that ostensibly had been shown to be an important component of athletic ability. To assess motivation, value was measured, and expectancy of success was held constant. Participants then predicted how happy they would be if they were successful and unsuccessful at the task. They then completed the task, were randomly assigned to receive either successful or unsuccessful performance feedback, and reported their experienced happiness. It was predicted that those who valued athletics/visual responsiveness would be more inaccurate in their forecasts of their future feelings, predicting more negative (positive) feelings in response to an
unsuccessful (a successful) performance than they actually experienced. In addition, a measure of construal was included to potentially explore the hypothesized mechanism.

Method

Participants

Participants were 164 (100 female and 64 male) introductory psychology students at The Ohio State University who completed the study in exchange for course credit. All participants were randomly assigned to performance feedback (successful vs. unsuccessful) conditions.

Procedure

Participants, in groups of up to three, were seated at individual computer workstations and were told they would be reporting their thoughts and feelings in response to a performance task they would be taking. Upon beginning the study, baseline measures of participants’ affect were taken (“In general, how happy would you say you are these days?” 1 = not happy to 11 = very happy). They then were asked to complete a visual responsiveness task. The task was described as follows:

The Eastern Washington Test of Retinal Acuity

During today's study you will be completing a perceptual task that will measure your visual responsiveness. Visual responsiveness is just one of the many skills that make up athletic ability.

People with better visual responsiveness more quickly notice things in their peripheral field of vision. Those with high visual responsiveness also are able to easily track moving objects and can quickly scan their visual environments. These skills are beneficial to several athletic tasks.

The perceptual task involves responding to a dot on the screen. The computer will flash a dot in several different locations. It will be your task to indicate
where you saw the dot. Your score will be based on how accurately you detect the dots, as well as how quickly you respond to the dots.

Expectancy was held constant by telling participants, “Most college students score above average on this task.” Measures of the participants’ value of visual responsiveness then were taken (“How important to you is being athletic?” 1 = extremely unimportant to 7 = extremely important; “How useful do you think visual responsiveness is? 1 = not at all useful to 4 = extremely useful; “How much do you value doing well at the visual responsiveness task?” 1 = do not value at all to 4 = value an extreme amount; “How committed are you to doing well at the visual responsiveness task?” 1 = not at all committed to 4 = extremely committed).

Following the value questions, participants were asked to provide affective forecasts should they be successful (“How happy would you be immediately after you found out you were successful at the visual responsiveness task?” 1 = not at all happy to 11 = very happy) or unsuccessful (“How happy would you be immediately after you found out you were unsuccessful at the visual responsiveness task?” 1 = not at all happy to 11 = very happy) at the visual responsiveness task.

Participants then proceeded to complete what they believed was a visual responsiveness task. A dot flashed in various locations on the computer screen, and participants had to quickly press a directional key on the keyboard to indicate the location of the dot on the screen. Participants completed 42 trials.

Following the visual responsiveness task, participants completed an unrelated filler task asking them to list their thoughts about snack choice. They then were
randomly assigned to receive either successful (“You scored in the 92% percentile. Your performance was above average.”) or unsuccessful (“You scored in the 30% percentile. Your performance was below average.”) feedback on their performance. Participants then reported their experienced feelings in response to the outcome (“How happy are you right now?” 1 = not at all happy to 11 = very happy).

They also completed the Behavior Identification Form (BIF; Vallacher & Wegner, 1989), a measure of the hypothesized mechanism of subjective construal. Participants were presented with a series of actions and had to select either an abstract or concrete description of the action. For example, for the action “voting,” participants could select the abstract description of “influencing the election” or the concrete description of “marking a ballot.” The BIF can be used as an individual difference measure to assess people’s chronic tendency to construe things abstractly or concretely (Vallacher & Wegner, 1989; see also Freitas, Salovey, & Liberman, 2001 & Levy, Freitas, & Salovey, 2002). Finally, participants were thoroughly debriefed and thanked for their time.

Results

Impact bias

Affective predictions first were matched to the feedback conditions. The predicted feelings upon a successful (unsuccessful) performance were selected for analysis for those participants assigned to the successful (unsuccessful) feedback condition.
Following a procedure similar to Wilson et al., 2000, to adjust for initial differences in happiness, baseline happiness was subtracted from both predicted happiness and experienced happiness\(^1\), yielding a measure that indicated predicted change in happiness and experienced change in happiness, respectively. These change scores were analyzed in a 2 (feedback: successful vs. unsuccessful) × 2 (happiness: predicted vs. experienced) mixed-model ANOVA, with repeated measures on the happiness factor, to test for an overall impact bias. In other words, this analysis examined whether or not participants predicted more extreme feelings than they actually experienced. Contrary to predictions, the feedback × measure interaction was not significant, \(F(1, 162) = .07, p = .80\) (see Figure 1). Participants in the unsuccessful condition did not predict they would be less happy than they actually were, \((M_s = -3.49\text{ vs. }-3.49), t(78) = .00, p = 1.00\), and participants in the successful condition did not predict they would be happier than they actually were \((M_s = .82\text{ vs. }.92), t(84) = .63, p = .53\).

\(^1\) The overall means for the happiness items were as follows: baseline happiness—\(M = 8.13, SD = 2.24\); predicted happiness—\(M = 6.87, SD = 2.92\); and experienced happiness—\(M = 6.92, SD = 2.97\).
Motivated impact bias

Even though there was no significant overall impact bias, I still wanted to explore whether or not motivation predicts accuracy. It could be the case that the impact bias exists only for the most motivated. To examine this possibility, an accuracy measure first was created. Following a procedure similar to Dunn et al. (2007), experienced happiness was subtracted from predicted happiness, yielding a measure of forecasting accuracy$^2$. 

$^2$ An interested reader might be curious about any potential effects on the separate components of this accuracy measure. As such, regressions for feedback condition, value, and their interaction, with feedback condition effects coded (-1 = unsuccessful, 1 = successful) and value standardized, were conducted on both predicted happiness adjusted for baseline happiness and experienced happiness adjusted for baseline happiness. For predicted happiness, there was a significant effect for feedback condition, $b = 2.14, SE = .21, p < .01$, such that participants predicted they would be happier if they were successful vs. unsuccessful. There was no significant effect for value, $b = -.29, SE = .21, p = .17$, or the feedback × value interaction, $b = .24, SE = .21, p = .26$ (see Appendix A, Figure 11). For experienced happiness, there was a significant effect for feedback condition, $b = 2.17, SE = .22, p < .01$, such that participants assigned to the successful condition were happier than those assigned to the unsuccessful condition. There also was a significant effect for value, $b = -.62, SE = .22, p < .05$, such that those who valued visual responsiveness were less happy. Finally, there was a significant feedback × value interaction, $b = .51, SE = .22, p < .05$ (see Appendix A, Figure 12). The interaction was probed further to see which simple effects were significant.
The larger the absolute value of the score, the more inaccurate the participant’s predicted happiness\(^3\). An index of the four value measures also was created\(^4\). The four individual value items were standardized to account for differences in scale, and these standardized measures then were averaged to form a value index (\(\alpha = .65\)). Feedback condition, value, and their interaction were regressed onto accuracy, with feedback condition effects coded (-1 = unsuccessful, 1 = successful) and value standardized. It was predicted that those who valued doing well on the visual responsiveness task would be more inaccurate in their forecasts of their feelings upon receiving their results, exhibiting a larger impact bias. Contrary to predictions, the analysis yielded a non-significant feedback \(\times\) value interaction, \(b = -.27, SE = .18, p = .14\) (see Figure 2). The interaction was explored further to see if either of the predicted simple slopes was significant. Contrary to predictions, those in the unsuccessful condition were more inaccurate about their unhappiness when they placed low (vs. high) value on visual responsiveness, \(b = .59, SE = .27, p < .05\), and there were no effects of value on accuracy in the successful condition, \(b = .05, SE = .25, p = .84\).

3 The overall mean for accuracy was as follows: \(M = -.05, SD = 2.35\).
4 The overall means for the individual value items were as follows: importance—\(M = 5.11, SD = 1.59\); usefulness—\(M = 3.34, SD = .70\); value—\(M = 2.79, SD = .71\), and commitment—\(M = 3.00, SD = .74\).
The BIF (Vallacher & Wegner, 1989) was scored such that higher numbers indicated more abstract construals. After reverse scoring the appropriate items, an average BIF score was computed. Because there was no evidence of a motivated impact bias, mediation could not be tested (Baron & Kenny, 1986). However, the link between motivation and construal and the link between construal and the impact bias could be assessed. Feedback condition, value, and their interaction were regressed onto average BIF scores, with feedback condition effects coded (-1 = unsuccessful, 1 = successful) and value standardized. In line with predictions, there was a marginal relationship between value and BIF scores, $b = .03$, $SE = .02$, $p = .07$, such that those who valued visual responsiveness more were more likely to construe actions abstractly. There were no significant effects for condition or the condition $\times$ feedback interaction, $ps > .39$. There

Figure 2. Feedback condition $\times$ value on forecasting accuracy for study 1

Mechanism of construal

The BIF (Vallacher & Wegner, 1989) was scored such that higher numbers indicated more abstract construals. After reverse scoring the appropriate items, an average BIF score was computed. Because there was no evidence of a motivated impact bias, mediation could not be tested (Baron & Kenny, 1986). However, the link between motivation and construal and the link between construal and the impact bias could be assessed. Feedback condition, value, and their interaction were regressed onto average BIF scores, with feedback condition effects coded (-1 = unsuccessful, 1 = successful) and value standardized. In line with predictions, there was a marginal relationship between value and BIF scores, $b = .03$, $SE = .02$, $p = .07$, such that those who valued visual responsiveness more were more likely to construe actions abstractly. There were no significant effects for condition or the condition $\times$ feedback interaction, $ps > .39$. There
was no relationship between construal and the impact bias, as the correlation between average BIF scores and the accuracy measure for both the unsuccessful, \( r(95) = .04, p = .70 \), and successful, \( r(85) = .03, p = .77 \), conditions was not significant.

**Discussion**

The purpose of study 1 was to provide initial support for a motivated impact bias. Despite being a robust finding in the literature, there was no evidence of an overall impact bias in this study. Participants did not predict more extreme feelings than they actually experienced in response to their scores on the visual responsiveness task. Critically, forecasting accuracy was not predicted by motivation, as the value participants placed on visual responsiveness did not predict the impact bias. Because this relationship was not significant, mediation via the hypothesized mechanism of construal could not be explored.
Chapter 3: Study 2

Instead of measuring motivation to achieve some outcome as in study 1, the purpose of study 2 was to manipulate motivation. This offers an improvement over study 1 in that there is more control over the motivational variables. The procedure was the same as in study 1, except that the value of the visual responsiveness task was manipulated by telling participants that visual responsiveness was important to either a highly desirable or undesirable career. It was predicted that those who were assigned to learn that visual responsiveness was related to a desirable (vs. undesirable) career would be more inaccurate in their forecasts of their future feelings, predicting more negative (positive) feelings in response to unsuccessful (successful) feedback than they actually experienced.

Method

Participants

Participants were 117 (49 female and 68 male) introductory psychology students at The Ohio State University who completed the study in exchange for course credit. All participants were randomly assigned to performance feedback (successful vs. unsuccessful) and value (low vs. high) conditions.

Procedure
The procedure was identical to study 1 except that the value of visual responsiveness was manipulated by telling participants that the skill was relevant to desirable (vs. undesirable) careers⁵: “These skills are important to certain professional (manual) careers, such as being an engineer (a factory worker).” In addition, before making affective predictions and completing the task, participants were asked several manipulation check questions: “How desirable is a career of being an engineer (a factory worker)?” 1 = extremely desirable to 7 = extremely desirable; “How important is a career of being an engineer (a factory worker)?” 1 = extremely unimportant to 7 = extremely important; “How useful do you think visual responsiveness is?” 1 = not at all useful to 4 = extremely useful; “How much do you value doing well at the visual responsiveness task?” 1 = do not value at all to 4 = value extremely; “How committed are you to doing well at the visual responsiveness task?” 1 = not at all committed to 4 = extremely committed. As in study 1, a construal measure was included to potentially explore mechanism. Instead of the BIF, participants were asked to complete a different measure of abstraction: “When you think of being successful (unsuccessful) at the visual

⁵ To determine what careers participants would find desirable (undesirable) and hence valuable (less valuable), a pilot study was conducted. Forty-four participants were given a list of careers and asked to rate them on desirability (“How likeable is the career of X?” 1 = extremely unlikeable to 7 = likeable; “How interesting is the career of X?” 1 = extremely interesting to 7 = extremely uninteresting; “College graduates would find this career…” 1 = extremely undesirable to 7 = extremely desirable; “You, personally, would find this career…” 1 = extremely undesirable to 7 = extremely desirable) and value (“How valuable is the career of X?” 1 = not at all valuable to 4 = extremely valuable). They then were presented with the description of visual responsiveness and had to rate the relevancy of visual responsiveness for the various careers (“How useful is visual responsiveness to the career of X?” 1 = not at all useful to 4 = extremely useful). Desirability measures were averaged to create an overall measure of each career’s desirability. The careers of engineer and factory worker were ultimately chosen as stimulus materials because the career of engineer was perceived to be more desirable ($M = 4.76, SD = 1.13$) than the career of factory worker ($M = 2.07, SD = .77$), $t(43) = 11.98, p < .01$, as well as more valuable ($Ms = 3.57(.59)$ vs. $2.80(.80)$), $t(43), = -5.79, p < .01$, and visual responsiveness was perceived as equally useful to both careers, $t(43) = 1.21, p = .23, (Ms = 2.98(.85) vs. 3.16(.83))$. 

29
responsiveness task, how much do you find yourself thinking in mental images (i.e., in mental pictures and sensory impressions)?” 1 = not at all to 9 = very much; “When you think of being successful (unsuccessful) at the visual responsiveness task, how much do you find yourself thinking in words or sentences (e.g. verbal thoughts)?” 1 = not at all to 9 = very much. Thinking in words relative to thinking in pictures is indicative of more abstract thinking (Amit, Algom, & Trope, 2009; Amit, Algom, Trope, & Liberman, 2009).

Results

Manipulation checks

The results for the manipulation check questions were somewhat mixed, despite pilot testing. Participants did rate the career of engineer as significantly more desirable ($M_s = 3.36(2.05)$ vs. $2.02(1.23)$; $t(115) = -4.25, p < .01$) and marginally more important ($M_s = 4.32(2.13)$ vs. $3.64(1.23)$; $t(115) = -1.76, p = .08$) than the career of factory worker. However, there were no significant career condition differences on usefulness ($M_s = 3.18(.72)$ vs. $3.38(.75)$), value ($M_s = 2.80(.75)$ vs. $2.75(.84)$), and commitment ($M_s = 3.05(.64)$ vs. $2.89(.62)$), $ps > .16^6$. This suggests that motivation might not have been manipulated.

Impact bias

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$^6$ The overall means for the manipulation check questions were as follows: career desirability—$M = 2.72$, $SD = 1.83$; career importance—$M = 3.99$, $SD = 2.07$; usefulness—$M = 3.27$, $SD = .74$; value—$M = 2.78$, $SD = .79$; and commitment—$M = 2.97$, $SD = .64$. 

30
As in study 1, affective predictions were matched to feedback conditions. Predicted and experienced change in happiness scores then were computed and submitted to a 2 (feedback: successful vs. unsuccessful) × 2 (happiness: predicted vs. experienced) mixed-model ANOVA, with repeated measures on the happiness factor, to test for an overall impact bias. Contrary to predictions, the feedback × measure interaction was not significant, $F(115) = .01, p = .91$ (see Figure 3). Participants in the unsuccessful condition did not predict they would be less happy than they actually were, ($M_s = -4.00$ vs. $-3.85$), $t(58) = -.46, p = .65$, and participants in the successful condition did not predict they would be happier than they actually were ($M_s = -.19$ vs. $.02$), $t(59) = -.85, p = .40$.

![Figure 3. Overall impact bias for study 2](image)

7 The overall means for the happiness items were as follows: baseline happiness—$M = 8.37, SD = 2.11$; predicted happiness—$M = 6.29, SD = 2.69$; and experienced happiness—$M = 6.47, SD = 3.05$. 
Motivated impact bias

Even though there was no overall impact bias, analyses were conducted to see if perhaps there was evidence of an impact bias only for the high motivation condition. As in study 1, an accuracy measure first was created. This accuracy measure was submitted to a 2 (feedback: successful vs. unsuccessful) × 2 (value: low vs. high) ANOVA. It was predicted that those assigned to learn that visual responsiveness was important for a desirable (vs. undesirable) career would be more inaccurate in their forecasts of their feelings upon receiving their results, exhibiting a larger impact bias. Contrary to predictions, the analysis yielded a non-significant feedback × value interaction, $F(1, 113) = .12, p = .73$ (see Figure 4). The interaction was explored further to see if either of the predicted simple effects was significant. There were no differences between low and high value conditions on accuracy for both the unsuccessful, $(Ms = -.26$ vs. -.06), $t(56) = -.29, p = .78$, and successful, $(Ms = -.45$ vs. -.03), $t(57) = -1.01, p = .32$, conditions.

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8 The overall mean for accuracy was as follows: $M = -.18, SD = 2.21$.
9 An interested reader might be curious about any potential effects on the separate components of this accuracy measure. As such, 2 (feedback: successful vs. unsuccessful) × 2 (value: low vs. high) ANOVAs were conducted on predicted happiness adjusted for baseline happiness and experienced happiness adjusted for baseline happiness. For predicted happiness, there was a significant main effect for feedback condition, such that participants predicted they would be happier if they were successful vs. unsuccessful on the visual responsiveness task, $F(1, 113) = 71.84, p < .01, Ms = -.00$ vs. -.19. There was no significant main effect for value, $F(1, 113) = .42, p = .52$, or the feedback × value interaction, $F(1, 113) = .12, p = .73$ (see Appendix A, Figure13). For experienced happiness, there was a significant effect for feedback condition, such that participants assigned to the successful condition ($M = .02$) were happier than those assigned to the unsuccessful ($M = -.00$) condition, $F(1, 113) = 55.79, p < .01$. There was no significant effect for value, $F(1, 113) = .01, p = .93$, or the feedback × value interaction, $F(1, 113) = .00, p = .98$ (see Appendix A, Figure 14).

10 Because the results of the manipulation check were mixed, the analyses also were conducted using value as a measured, as opposed to a manipulated, variable. Value, usefulness, and commitment were combined to create a value index ($\alpha = .74$). Feedback condition, value index, and their interaction were regressed onto accuracy, with feedback condition effects coded (-1 = unsuccessful, 1 = successful) and value standardized. It was predicted that those who value visual responsiveness would be more inaccurate in


Mechanism of construal

Because there was no evidence of a motivated impact bias, mediation could not be tested (Baron & Kenny, 1986). However, the link between motivation and construal and the link between construal and the impact bias could be assessed. Picture/word representations first were matched to the feedback conditions. The representations for a successful (unsuccessful) performance were selected for analysis for those participants assigned to the successful (unsuccessful) feedback condition. Participants’ representation ratings were submitted to a 2 (feedback: successful vs. unsuccessful) × 2 (value: low vs. high) ANOVA.

Echoing the results with manipulated value, there was a non-significant feedback × value interaction, $b = .06, SE = .21, p = .77$ (see Appendix A, Figure 15). The interaction was probed further to see if either of the predicted simple slopes was significant. Value was not significant in both the unsuccessful, $b = .26, SE = .32, p = .42$, and successful, $b = .14, SE = .27, p = .61$, conditions.

their forecasts of their feelings upon receiving their test results, exhibiting a larger impact bias. Echoing the results with manipulated value, there was a non-significant feedback × value interaction, $b = .06, SE = .21, p = .77$ (see Appendix A, Figure 15). The interaction was probed further to see if either of the predicted simple slopes was significant. Value was not significant in both the unsuccessful, $b = .26, SE = .32, p = .42$, and successful, $b = .14, SE = .27, p = .61$, conditions.
(high) × 2 (thought type: picture vs. word) mixed-model ANOVA, with repeated measures on thought type. There was a main effect of thought type, such that participants reporting thinking more in terms of pictures ($M = 5.76$) than words ($M = 4.36$), $F(1, 113) = 38.14$, $p < .01$. This relationship was not qualified by any interactions, $ps > .09$. As such, there was no relationship between motivation and construal (value × thought type, $F(1, 113) = .62$, $p = .43$). There also was no relationship between construal and the impact bias.

Picture and word ratings$^{11}$ were entered into a regression predicting the accuracy measure. Neither picture, $b = .14$, $SE = .12$, $p = .23$, nor word, $b = .07$, $SE = .11$, $p = .54$, significantly predicted the impact bias.

Discussion

Study 2 was an additional attempt to provide evidence of a motivated impact bias. Making changes from study 1, study 2 manipulated value by telling participants that visual responsiveness was relevant to either a desirable or undesirable career. As in study 1, there was no evidence of an overall impact bias, nor was there evidence of motivation predicting forecasting (in)accuracy. The purpose of study 3 was another attempt to provide evidence of a motivated impact bias by using a slightly different, and more face valid, task.

$^{11}$ Picture and word ratings were not significantly correlated, $r(117) = .10$, $p = .30$. 

34
Chapter 4: Study 3

The purpose of study 3 was to find evidence of a motivated impact bias. One potential issue with studies 1 and 2 is that the visual responsiveness task seems so unfamiliar to participants that they have no basis for predicting how they would feel after learning about their performance. In order to make the task more believable and seem familiar to something participants have experienced, they were told that the visual responsiveness task was relevant to driving ability. The hope was that participants would find this similar to the vision test that must be passed in order to receive a driver’s license. In addition, both value and expectancy were measured in this study. The design of study 3 also was simplified by assigning participants to receive only unsuccessful performance feedback. This negative outcome situation was selected because there are sometimes instances where the impact bias is seen only for negative events or is stronger for negative events (Gilbert et al., 1998; Buehler & McFarland, 2001; Finkenauer, Gallucci, van Dijk, & Pollman, 2007).

It was predicted that those who valued visual responsiveness would exhibit greater inaccuracy, as well as those who had greater expectations of success. These two main effects were expected to be qualified by a significant value × expectancy interaction, such that those in the high value/high expectancy condition, being the most
motivated, would be the most inaccurate in their forecasts of their future feelings in response to their performance on the visual responsiveness task.

Method

Participants

Participants were 200 (107 female and 93 male) introductory psychology students at The Ohio State University who completed the study in exchange for course credit. All participants were drivers.

Procedure

The procedure was identical to study 1 except that participants were told that the skill of visual responsiveness was relevant to driving ability. To assess motivation, measures of value (“How useful do you think visual responsiveness is?” 1 = not at all useful to 4 = extremely useful) and expectancy (“How successful do you think you will be?” 1 = extremely unsuccessful to 7 = extremely successful) were taken. Participants then made their affective predictions, completed the visual responsiveness task, received feedback that their performance was unsuccessful, reported their experienced feelings, and were debriefed and thanked for their time.

Results

Impact bias

As in studies 1 and 2, predicted and experienced\textsuperscript{12} change in happiness scores were computed and then analyzed with a paired-samples t-test. Contrary to predictions, participants did not significantly predict they would be less happy than they actually were

\textsuperscript{12} The overall means for the happiness items were as follows: baseline happiness—\(M = 8.23, SD = 2.04\); predicted happiness—\(M = 4.47, SD = 2.20\); and experienced happiness—\(M = 4.63, SD = 2.57\).
upon receiving task performance feedback ($M_s = -3.76$ vs. $-3.60$), $t(199) = -0.77, p = 0.44$
(see Figure 5).

![Figure 5. Overall impact bias for study 3](image)

**Motivated impact bias**

As in studies 1 and 2, even though there was no overall impact bias, analyses were conducted to see if forecasting inaccuracy might exist only for those highly motivated participants. To examine this possibility, an accuracy measure\(^{13}\) first was created\(^{14}\). Value\(^{15}\), expectancy\(^{16}\), and their interaction were regressed onto accuracy, with

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\(^{13}\) The overall mean for accuracy was as follows: $M = -0.16$, $SD = 2.94$.

\(^{14}\) An interested reader might be curious about any potential effects on the separate components of this accuracy measure. As such, regressions for value, expectancy, and their interaction, with value and expectancy both standardized, were conducted on both predicted happiness adjusted for baseline happiness and experienced happiness adjusted for baseline happiness. For predicted happiness, there was a significant effect for value, $b = -0.65$, $SE = .22$, $p < .01$, such that those participants who thought visual responsiveness was useful predicted they would be less happy after being unsuccessful at the visual responsiveness task. There also was a significant effect for expectancy, $b = -0.60$, $SE = .21$, $p < .01$, such
value and expectancy both standardized. As predicted, there was a marginal main effect for value, \( b = -.42, \ SE = .22, p = .06 \), such that those who thought visual responsiveness was more useful predicted they would be unhappier than they actually were upon receiving feedback that they were unsuccessful at the task. However, contrary to predictions, expectancy of success, \( b = -.16, \ SE = .21, p = .43 \), and the value × expectancy interaction, \( b = -.22, \ SE = .20, p = .28 \), were not significant (see Figure 6).

Figure 6. Value × expectancy on forecasting accuracy for study 3

Discussion

that those participants who expected to be successful on the visual responsiveness task predicted they would be less happy. There was no significant value × expectancy interaction, \( b = -.12, \ SE = .20, p = .55 \) (see Appendix A, Figure 16). For experienced happiness, neither value, \( b = -.22, \ SE = .21, p = .28 \), nor the value × expectancy interaction, \( b = .10, \ SE = .19, p = .58 \), was significant (see Appendix A, Figure 17). However, expectancy was significant, such that those participants who expected to be successful on the visual responsiveness task experienced less happiness, \( b = -.43, \ SE = .20, p < .05 \).

\(^{15}\) The overall mean for usefulness was \( M = 3.68, \ SD = .55 \).

\(^{16}\) The overall mean for success was \( M = 5.35, \ SD = .92 \).
Study 3 attempted to find evidence of a motivated impact bias by using a purported visual responsiveness task that was relevant to driving ability. This was intended to be an improvement on studies 1 and 2, as this task seemed more realistic and similar to something participants have encountered before. Although there was no significant overall impact bias, there was some evidence that motivation predicted forecasting (in)accuracy. Participants who thought that visual responsiveness was more useful predicted they would be unhappier than they actually were upon receiving negative performance feedback. However, considering there was no support for the expectancy component of motivation or the value × expectancy interaction predicting the impact bias, these results should be interpreted with caution.

Summaries of Studies 1-3

Studies 1 through 3 all attempted to provide evidence of a motivated impact bias. Motivation was both measured and manipulated, but the same basic visual responsiveness task paradigm was used throughout. Contrary to predictions, there was no evidence of an overall impact bias, and there was little evidence of a motivated impact bias. To probe why this was the case, additional exploratory analyses were conducted.

One possibility is that participants exhibited no evidence of motivated behavior on the visual responsiveness task. Regardless of whether or not a motivated impact bias exists, there should be motivational effects on performance (Tolman, 1955; Atkinson, 1957; McClelland, 1985). Participants who value the task and expect to do well should put in more effort, generally leading to better performance.
In each of the studies, participants were told that part of doing well on the visual responsiveness task would involve quickly identifying the location of the dots on the screen. Therefore, a motivated participant should show some evidence of working quickly on the task. To assess performance, participant reaction times, in milliseconds, to each dot flashed on the screen were log transformed and then averaged. The motivation variables for each of the studies then were used to predict average reaction time.

For study 1, the value index did not predict performance\(^{17}\), \(b = -0.01, SE = 0.01, p = .32\). In study 2, there was no significant difference between the low and high value conditions on performance, (\(M_s = 2.75\) vs. \(2.76\)), \(t(109) = -0.24, p = .81\). For study 3, value, expectancy, and their interaction were regressed onto performance\(^{18}\). There were no significant effects for value, \(b = -.00, SE = .01, p = .65\), expectancy, \(b = .00, SE = .01, p = .96\), or their interaction, \(b = .01, SE = .01, p = .18\), on performance (see Appendix A, Figure 18). What this seems to suggest is that, at least for these participants, the visual responsiveness task was not a suitable task for investigating motivated behavior. To attempt to overcome some of these issues, study 4 utilized a different performance task.

\(^{17}\) The overall mean of performance was as follows: \(M = 2.75, SD = .12\).

\(^{18}\) The overall mean of performance was as follows: \(M = 2.76, SD = .10\).
The purpose of study 4 was to provide evidence that the impact bias is motivated by using a task other than visual responsiveness. Participants were asked to complete a task that ostensibly measured their creative ability. Creativity was chosen as it is still somewhat ambiguous and therefore allows for effects of my manipulated variables, and it seems more interesting than visual responsiveness. This should hopefully increase the likelihood of finding some evidence of motivated behavior.

In this study, both the value of creativity and expectancy for task success were manipulated. It was predicted that those participants in the high value condition would be more inaccurate in their affective forecasts than those in the low value condition, and those in the high expectancy condition would be more inaccurate in their affective forecasts than those in the low expectancy condition. These two main effects were hypothesized to be qualified by a significant value × expectancy interaction, such that those in the high value/high expectancy condition, being the most motivated, would be the most inaccurate in their forecasts of their future feelings in response to their performance on the creativity task. As in study 1, the BIF (Vallacher & Wegner, 1989) was included to potentially explore the mechanism of construal.

Method
Participants

Participants were 138 (88 female and 50 male) introductory psychology students at The Ohio State University who completed the study in exchange for course credit. They were randomly assigned to conditions of value (low vs. high) and expectancy (low vs. high).

Procedure

Participants, in groups of up to three, were seated at individual computer workstations and were told they would be reporting their thoughts and feelings in response to a creativity task they would be taking. Upon beginning the study, baseline measures of participants’ affect were taken. They then were randomly assigned to low and high value conditions:\n
- **Low value condition:** Creativity is a fun skill to have. Creative people tend to like more flavors of ice cream, are better at playing Scrabble, and are easily able to find alternate uses for their garbage. Creativity can have long term impacts as well. Creative people tend to give their children more unusual names and they tend to purchase more colorful houses than non-creative people.
- **High value condition:** Creativity is a valuable skill to have. Creative people are resourceful, possess excellent problem solving skills, and are easily able to get

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19 As part of a larger, unrelated study, the creativity descriptions were piloted to ensure that the high value description of creativity was perceived as more valuable than the low value description of creativity. In a random order, 216 participants were presented with both descriptions of creativity and were asked to answer the following questions: “Based upon this description, how desirable is creativity?” 1 = extremely undesirable to 7 = extremely desirable; “Based upon this description, how interesting does creativity seem?” 1 = extremely uninteresting to 7 = extremely interesting; “Based upon this description, how creative would you rate yourself?” 1 = not creative to 5 = creative; “Based upon this description, how important is creativity?” 1 = extremely unimportant to 7 = extremely important; “Based upon this description, how useful is creativity?” 1 = not at all useful to 5 = extremely useful; “Based upon this description, how much would you value doing well at a task that measured creativity?” 1 = do not value at all to 5 = value extremely; “Based upon this description, how much would you like to be identified as creative?” 1 = not at all to 5 = extremely. The measures were standardized to account for differences in scale and then averaged to create value indices for the high ($\alpha = .84$) and low ($\alpha = .88$) value descriptions. A paired-samples t-test confirmed that the high value description of creativity ($M = 4.73; SD = .91$) was perceived as more valuable than the low value description of creativity ($M = 3.73; SD = 1.06$), $t(215) = 13.01, p < .01$. 

42
along well with all types of people. Creativity can have long term benefits as well. Creative people make more money at their jobs and tend to live longer and be happier than non-creative people.

Participants then were presented with a description of a creativity task they were asked to complete.

During today's study you will complete a task that will measure your creative ability. This task has been nick-named the MacGyver task. You will be presented with several items, and you will have 60 seconds to come up with as many unique uses for each of the objects as possible.

To manipulate expectancy, the perceived malleability of creativity was manipulated:

Low expectancy condition: Research shows that creativity is something that you are born with and have a genetic predisposition for. Therefore, it is very difficult to alter your creative ability. For example, on the following creativity task, just because you work harder to provide more answers does not mean they will be original and unique. Overall, please try your best and see how creative you can be.

High expectancy condition: Research shows that creativity is something that you must work at to develop over your lifetime. There are many things you can do to improve your creativity. For example, on the following creativity task, the harder you work on providing more answers, the more likely you will come up with original and unique answers. Overall, please try your best and see how creative you can be.

Participants completed manipulation check questions for value (“How important to you is being creative?” 1 = extremely unimportant to 7 = extremely important; “How useful do you think creativity is?” 1 = not at all useful to 4 = extremely useful; “How much do you value doing well at the creativity task?” 1 = do not value at all to 4 = value extremely; “How committed are you to doing well on the creativity task?” 1 = not at all committed to 4 = extremely committed) and expectancy (“How well do you expect to perform on this task?” 1 = extremely poorly to 7 = extremely well; “How likely is it that the effort you put forth on this creativity task will bring about the score you desire?” 1 =
extremely unlikely to 7 = extremely likely; “How certain are you that you will bring about the score you desire?” 1 = extremely uncertain to 7 = extremely certain; “How successful do you think you will be?” 1 = extremely unsuccessful to 7 = extremely successful). They then made predictions of their feelings should they be successful/unsuccessful at the task. They proceeded to complete what they assumed was a creativity task. Participants were given 60 seconds to list as many unique uses as possible for the following items: ink pen, grape jelly, rubber band, textbook, and shoestring.

After the creativity task, participants completed an unrelated filler task asking them to list their thoughts about snack choice. As in study 3, to simplify the design, participants only experienced a negative event, receiving information that they were unsuccessful at the creativity task. Participants then reported their experienced feelings in response to their score on the creativity task, completed the BIF (Vallacher & Wegner, 1989), and were debriefed and thanked for their time.

Results

Manipulation checks

To assess if the manipulations were effective, data from the value and expectancy manipulation check questions were analyzed. The four value items\(^{20}\) were standardized to account for differences in scale and then were averaged to create a value index (\(\alpha = .78\)). Despite pilot testing the creativity descriptions to ensure differences in value, the value manipulation check index showed no condition differences, (\(M_s = -.01\) vs. .01),

\(^{20}\) The overall means for the value items were as follows: importance—\(M = 5.31, SD = 1.32\); usefulness—\(M =3.42, SD = .69\); value—\(M = 3.02, SD = .72\); and commitment—\(M = 2.97, SD = .69\).
\[ t(136) = -2.22, p = .83. \] The four expectancy items\(^{21}\) were averaged to create an expectancy index (\(\alpha = .85\)). Although in the expected direction, there was no significant difference between the low (\(M = 4.85\)) and high (\(M = 5.11\)) expectancy conditions on the expectancy index, \(t(136) = -1.47, p = .15\).

Impact bias

As in the previous studies, predicted and experienced\(^{22}\) change in happiness scores were computed and then analyzed with a paired-samples t-test. There was a significant overall impact bias, \(t(137) = -2.50, p < .05\), such that participants predicted that they would be less happy than they actually were upon receiving feedback that they were unsuccessful at the creativity task (\(Ms = -3.80\) vs. -3.21) (see Figure 7).

\(^{21}\)The overall means for the expectancy items were as follows: performance expectancy—\(M = 4.80, SD = 1.27\); efficacy—\(M = 5.32, SD = 1.12\); certainty—\(M = 4.79, SD = 1.26\); and expectancy of success—\(M = 4.98, SD = 1.23\).

\(^{22}\)The overall means for the happiness items were as follows: baseline happiness—\(M = 8.23, SD = 2.08\); predicted happiness—\(M = 4.43, SD = 2.44\); and experienced happiness—\(M = 5.01, SD = 2.93\).
Motivated impact bias

To examine the focal hypothesis that motivation predicts the impact bias, as in the previous studies, an accuracy measure first was created. This accuracy measure was submitted to a 2 (value: low vs. high) × 2 (expectancy: low vs. high) ANOVA. Value was marginally significant, $F(1, 134) = 2.89, p = .09$, but contrary to predictions, there was a tendency for those in the low value condition to be more inaccurate in their forecasts ($M_s = -0.98$ vs. -0.18). Expectancy was significant, $F(1, 134) = 5.08, p < .05$, but

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23 The overall mean of accuracy was as follows: $M = -0.59, SD = 2.44$.

24 An interested reader might be curious about any potential effects on the separate components of this accuracy measure. As such, 2 (value: low vs. high) × 2 (expectancy: low vs. high) ANOVAs were conducted on predicted happiness adjusted for baseline happiness and experienced happiness adjusted for baseline happiness. For predicted happiness, there were no significant effects for value, $F(1, 134) = .63, p = .43$, expectancy, $F(1, 134) = .05, p = .82$, or the value × expectancy interaction, $F(1, 134) = .00, p = .95$ (see Appendix A, Figure 19). For experienced happiness, value, $F(1, 134) = .48, p = .49$, and the value × expectancy interaction, $F(1, 134) = .87, p = .35$, were not significant (see Appendix A, Figure 20). However, there was a marginal main effect for expectancy, $F(1, 134) = 3.05, p = .08$, such that those in the high expectancy condition experienced less happiness than those in the low expectancy condition ($M_s = -3.68$ vs. -2.76).
contrary to predictions, those in the low expectancy conditions were more inaccurate in their forecasts ($M_s = -1.10$ vs. -.05). The value × expectancy interaction was not significant, $F(1, 134) = 1.29, p = .26^{25}$ (see Figure 8).

Figure 8. Value × expectancy on forecasting accuracy for study 4

Mechanism of construal

The BIF (Vallacher & Wegner, 1989) was scored as it was in study 1. Because there was no evidence of a motivated impact bias, mediation could not be tested. However, the link between motivation and construal and the link between construal and the impact bias could be assessed. Average BIF scores were submitted to a 2 (value: low

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25 Because the results of the manipulation check were unfavorable, the analyses also were conducted using value and expectancy as measured, as opposed to manipulated, variables. Value index, expectancy index, and their interaction were regressed onto accuracy, with value and expectancy both standardized. There was no main effect for value, $b = .18, SE = .27, p = .52$, or expectancy, $b = .09, SE = .28, p = .75$, and the value × expectancy interaction also was non-significant, $b = -.27, SE = .18, p = .14$ (see Appendix A, Figure 21). These results are not in line with predictions, nor do they echo the analyses using the manipulated variables.
vs. high) × 2 (expectancy: low vs. high) ANOVA. None of the effects were significant, 
$p s > .30$. In addition, there was no relationship between construal and the impact bias, as 
the correlation between average BIF scores and the accuracy measure was not significant, 
$r(139) = -.06, p = .48$.

Discussion

Study 4 aimed to provide evidence of a motivated impact bias. Participants were 
asked to predict their future feelings in response to receiving performance feedback on a 
creativity task. Evidence for a general impact bias was found in that participants 
predicted they would be less happy than they actually were after receiving feedback that 
they were not very successful at the creativity task. However, this impact bias was not 
moderated by motivation.

As with studies 1-3, additional ancillary analyses were undertaken to determine 
why the results were not in line with predictions. Again, one possibility might be that 
there was no evidence of motivated behavior. The creativity task instructions asked 
participants to generate as many unique responses as possible for each of the five items. 
Therefore, a participant who values the task and expects to do well should generate more 
items. To assess performance, the total number of responses given for all the creativity 
items was used$^{26}$. This performance measure was submitted to a 2 (value: low vs. high) × 
2 (expectancy: low vs. high) ANOVA. There was no significant effect for value, 
$F(1, 134) = .41, p = .53$, expectancy, $F(1, 134) = 2.11, p = .15$, or their interaction, 
$F(1, 134) = .54, p = .46$ (see Appendix A, Figure 22).

$^{26}$ The overall mean number of items generated was as follows: $M = 23.51, SD = 9.96.$
However, if one considers the number of creativity items generated as a behavioral measure of motivation, there is a significant relationship between motivation and the impact bias, $r(138) = -.21, p < .05$, such that those participants who performed better on the creativity task reported they would be less happy than they actually were after receiving feedback that they did not do well on the creativity task$^{27}$. Such an analysis seems warranted, as there is a tradition in motivational research to consider behaviors like task effort and task performance as largely a function of the activated drive(s), or motive(s) (Tollman, 1955; Atkinson, 1957). Overall, what these results seem to suggest is that, at least for these participants, performance on the task was not impacted by the manipulations of motivation. However, performance on the task did predict forecasting inaccuracy, providing some evidence from study 4 to support a motivated impact bias$^{28}$. Study 5 will use a different performance task in hopes of finding a paradigm that is sensitive to the manipulation of motivation in terms of expectancy and value.

$^{27}$Although the behavioral measure of motivation predicted the impact bias, there still was no potential for mediation, as the link between performance and the BIF was not significant, $r(138) = .00, p = .96$.

$^{28}$An interested reader might be curious about any potential effects on the separate components of this accuracy measure. The correlation between the behavioral measure of motivation and predicted happiness adjusted for baseline happiness was significant, $r(138) = .17, p = .05$. An increase in generating items for the creativity task was associated with a decrease in predicted happiness upon being unsuccessful at the task. In terms of experienced happiness adjusted for baseline happiness, there was no significant correlation with motivation, $r(138) = .02, p = .79$. This suggests that the effect of motivation on the impact bias was largely driven by differences in prediction.
Chapter 6: Study 5

Although there was evidence of a general impact bias in study 4, there was no evidence of motivated behavior when considering the manipulation of value and expectancy. That is, how much participants valued creativity and doing well on the creativity task, as well as how malleable participants thought the skill of creativity was, had no effects on their performance. Therefore, the purpose of study 5 was to use a scenario that was likely to produce motivated behavior as assessed by expectancy and value.

To select a motivated behavior scenario, I turned to the task performance literature and adapted a paradigm from some work on self-handicapping and self-esteem (Niiya, Brook, & Crocker, 2010) that utilized the Remote Associates Test (RAT; McFarlin & Blascovich, 1984). Originally developed by Mednick (1962), the RAT has been used as a test of verbal ability. In this test, participants are presented with a series of three stimulus words, and they must determine the fourth, associated word. For example, for the set “red-car-go,” one would answer “stop.”

One benefit of using the Niiya et al. (2010) procedure is that it has a successful expectancy manipulation. By displaying either two easy or two difficult sample RAT items, the perceived likelihood of success on the RAT can be manipulated. Another
advantage of the Niiya et al. (2010) procedure is that it allows participants the option of practicing before taking the RAT. If a motivated impact bias exists as hypothesized, one way in which affective mispredictions might be functional is that they encourage people to ramp up their efforts to achieve (or avoid) some outcome. One way this might manifest itself is via increased preparation, and this task would allow practice to be measured.

Study 5 manipulated expectancy, measured value, and, as in studies 3 and 4, created a negative outcome situation. It was predicted that those who value and expect to do well on the RAT would overpredict how unhappy they would be upon receiving a poor score. These main effects are predicted to be qualified by a value × expectancy interaction, such that those in the high value/high expectancy condition, being the most motivated, would be the most inaccurate in their forecasts of their future feelings in response to their performance on the RAT. In addition, as in studies 1 and 4, the BIF (Vallacher & Wegner, 1989) was included to potentially explore the hypothesized mechanism of subjective construal.

Method

Participants

Participants were 144 (47 female and 97 male) introductory psychology students at The Ohio State University who completed the study in exchange for course credit. They were randomly assigned to conditions of expectancy (low vs. high).

Procedure
Participants, in groups of up to three, were seated at individual computer workstations and were told they would be reporting their thoughts and feelings in response to a performance task they would be taking. Upon beginning the study, baseline measures of participants’ affect were taken (“In general, how happy would you say you are these days?” 1 = not happy to 11 = very happy). Adapting a procedure from Niiya et al. (2010), participants then were told they would be completing a test of verbal ability, specifically a Remote Associates Test (RAT; McFarlin & Blascovich, 1984). The RAT provides participants with three words and then requires them to generate a fourth, associated word (e.g. for red, go, short, the associated word is stop). To manipulate expectancy, participants then were presented with either two easy sample RAT items (shelf-read-cook, answer: book; tooth-stomach-head, answer: ache) or two difficult sample RAT items (shape-boat-hard, answer: ship; bass-complex-sheep, answer: deep) that were successfully used by Niiya and colleagues (2010). The effectiveness of the expectancy manipulation also was measured (“How well do you expect to perform on the RAT?” 1 = extremely poorly to 7 = extremely well; “How successful do you think you will be?” 1 = extremely unsuccessful to 7 = extremely successful).

Measures of the participants’ value of verbal ability then were taken (“How important to you is verbal ability?” 1 = extremely unimportant to 7 = extremely important; “How useful do you think verbal ability is? 1 = not at all useful to 5 = extremely useful; “How much do you value verbal ability?” 1 = do not value at all to 5 = value extremely; “How much do you value doing well on the RAT?” 1 = do not value at
all to 5 = value extremely; “How committed are you to doing well on the RAT?” 1 = not at all committed to 5 = extremely committed).

Following the value questions, participants were asked to provide affective forecasts should they be successful (“How happy would you be immediately after you found out you were successful at the RAT?” 1 = not at all happy to 11 = very happy) or unsuccessful (“How happy would you be immediately after you found out you were unsuccessful at the RAT?” 1 = not at all happy to 11 = very happy) at the RAT.

Adhering to the procedure of Niiya et al. (2010), participants were given the opportunity to practice for the RAT. They indicated their choice by selecting one of two buttons, “Yes, I want some practice” or “No, I am ready for the real RAT.” If participants chose to practice, they saw a set of three words followed by a blank text box in which they were prompted to enter their answer. After hitting the Enter key, answers were recorded, and the correct answer appeared on the screen. Participants were given the opportunity to either continue with more practice trials or proceed to taking the real RAT. They could continue to practice for a total of 25 trials. All participants were given the same practice items that contained a mix of easy and difficulty RAT items. These items were selected from Form1 of the original RAT (Mednick, 1962; Mednick & Mednick, 1967) and a modified RAT used by Bowers (1990). Item difficulty was determined by using the RAT solution norms collected by Shames (1995).

When done with the practice items or after electing to proceed to the RAT, participants took a RAT (McFarlin & Blascovich, 1984). However, the difficulty of the
RAT was such that most participants were expected to do poorly\(^{29}\). McFarlin and Blascovich (1984) found that the advantages of using difficult RAT items are that participants believe the feedback and experimenters do not need to resort to deception (e.g. telling participants that they score “below average,” as in studies 1-4) to manipulate perceptions of performance.

The RAT items were presented on the computer screen, and participants were asked to write their answers down on the sheet provided in front of them. After completing all 10 items, participants brought their answer sheets to the research assistant to grade, and they returned to their computers to answer some filler questionnaires while awaiting their scores. The research assistant marked an X next to each incorrect answer and a √ next to each correct answer. The score (e.g. 2/10) was written on the bottom of the page and was returned to the participant after s/he completed the filler questionnaires. After receiving their scores, participants then reported their experienced feelings (“How happy are you right now?” 1 = not at all happy to 11 = very happy) and completed the BIF and a few additional personality questionnaires. Finally, they were thoroughly debriefed and thanked for their time.

Results

Manipulation checks

To assess if the expectancy manipulation was effective, data from the expectancy questions were analyzed. Indeed, those participants assigned to see easy sample RAT

\(^{29}\) Participants completed the RAT items from the Failure Condition from McFarlin & Blascovich (1984) with one exception. The first set from their difficult list, “bass-complex-sheep,” was not utilized as a RAT item, as it was used as part of the expectancy manipulation for study 5 following the procedure of Niiya et al. (2010). The set, “hot-butterflies-pump” was taken from the difficult items from the McFarlin & Blascovich (1984) control condition and was used instead.
items believed they would perform better \((Ms = 4.85 \text{ vs. } 2.66; t(142) = 9.59, p < .01)\) and be more successful \((Ms = 5.07 \text{ vs. } 3.03; t(142) = 9.26, p < .01)\) on the RAT than those who saw difficult sample items.

Scores ranged from 0 to 6 on the RAT, and the average number of items solved was 1.35. Results are in line with McFarlin & Blascovich (1984) and seem to confirm the creation of a negative outcome situation for participants.

**Impact bias**

As in the previous studies, predicted and experienced\(^{30}\) change in happiness scores were computed and then analyzed with a paired-samples t-test. There was a significant overall impact bias, \(t(143) = -6.60, p < .01\), such that participants predicted that they would be less happy \((M = -4.07)\) than they actually were upon receiving feedback that they were unsuccessful on the RAT \((M = -2.36)\) (see Figure 9).

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\(^{30}\) The overall means for the happiness items were as follows: baseline happiness—\(M = 8.15, SD = 2.10\); predicted happiness—\(M = 4.08, SD = 2.32\); and experienced happiness—\(M = 5.78, SD = 2.34\).
Motivated impact bias

To examine the focal hypothesis that motivation predicts the impact bias, as in the previous studies, an accuracy measure first was created. Then an index of the five value measures was created. These items were standardized to account for differences in scale, and the standardized measures were then averaged to form a value index ($\alpha = .78$). Value index, expectancy, and their interaction were regressed onto accuracy, with

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31 The overall mean for accuracy was as follows: $M = -1.71$, $SD = 3.12$.
32 An interested reader might be curious about any potential effects on the separate components of this accuracy measure. As such, regressions for value, expectancy, and their interaction, with value standardized and expectancy effects coded (-1 = difficult sample items, 1 = easy sample items), were conducted on both predicted happiness adjusted for baseline happiness and experienced happiness adjusted for baseline happiness. For predicted happiness, there were no significant effects for value, $b = -.43$, $SE = .27$, $p = .11$, expectancy, $b = -.01$, $SE = .27$, $p = .98$, or the value × expectancy interaction, $b = -.19$, $SE = .27$, $p = .48$ (see Appendix A, Figure 23). For experienced happiness, there was a significant effect for value, $b = -.53$, $SE = .25$, $p < .05$, such that participants who valued verbal ability experienced less happiness upon receiving their scores. There was no significant effect for expectancy, $b = -.06$, $SE = .24$, $p = .82$, or the value × expectancy interaction, $b = .00$, $SE = .25$, $p = 1.00$ (see Appendix A, Figure 24).
33 The mean for the individual values items were as follows: importance—$M = 5.62$, $SD = 1.22$; usefulness—$M = 4.20$, $SD = .84$; verbal ability value—$M = 3.84$, $SD = .94$; performance value—$M = 2.42$, $SD = 1.05$; and commitment—$M = 3.09$, $SD = 1.01$. 

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value standardized and expectancy effects coded (-1 = difficult sample items, 1 = easy sample items). It was predicted that those who valued doing well on the RAT and those who expected to do well on the RAT would predict they would be less happy than they actually were upon receiving a poor score on the RAT. However, there was no significant main effect for value, $b = .10$, $SE = .28$, $p = .72$, or expectancy, $b = .05$, $SE = .28$, $p = .86$. Additionally, it was predicted that the largest impact bias would be seen for those participants with the highest motivation. However, the value $\times$ expectancy interaction was not significant, $b = -.19$, $SE = .28$, $p = .50$ (see Figure 10).

![Figure 10. Value $\times$ expectancy on forecasting accuracy for study 5](image)

**Practice items**

It was hypothesized that the functionality of a motivated impact bias would manifest itself by increasing behaviors, such as practice, that might make a person more
likely to succeed at his/her goals. However, the correlation between the number of practice items completed\(^{34}\) and accuracy was not significant \(r(144) = -.06, p = .45\), indicating no relationship between the impact bias and increased preparation. Yet, the number of practice items completed was significantly related to improved performance on the RAT, \(r(144) = .19, p < .05\).

*Mechanism of construal*

The BIF (Vallacher & Wegner, 1989) was scored the same as in studies 1 and 4 with one exception. Instead of using the typical BIF scale of 1-2, participants were given a 1-5 scale. Because there was no evidence of a motivated impact bias, mediation could not be tested (Baron & Kenny, 1986). However, the link between motivation and construal and the link between construal and the impact bias could be assessed. Value index, expectancy, and their interaction were regressed onto average BIF scores, with value standardized and expectancy effects coded (-1 = difficult sample items, 1 = easy sample items). None of the effects were significant, \(ps > .18\). In addition, there was no relationship between construal and the impact bias, as the correlation between average BIF scores and the accuracy measure was not significant, \(r(144) = .03, p = .76\).

**Discussion**

Study 5 aimed to provide evidence of a motivated impact bias using a different performance scenario (Niiya et al., 2010). Participants were asked to predict their future feelings in response to receiving performance feedback on a test of verbal ability, the RAT (McFarlin & Buehler, 1984). Evidence for a general impact bias was found in that

\(^{34}\) The overall mean for practice items completed was as follows: \(M = 2.49, SD = 3.24\).
participants predicted they would be less happy than they actually were after receiving feedback that they had done poorly on the RAT. However, this impact bias was not moderated by expectancy and value. In addition, it was hoped that some evidence could be found to support the functionality of a motivated impact bias. It was hypothesized that overestimating one’s future emotional responses to receiving feedback on the RAT might ramp up one’s efforts at goal pursuit. Contrary to predictions, the relationship between the number of practice items completed and accuracy was not significant.

As with previous studies, additional ancillary analyses were undertaken to determine why the results were not in line with predictions. Again, one possibility might be that there was no evidence of value and expectancy effects on behavior. A motivated participant should engage in such behaviors as practicing more and/or scoring relatively well on the RAT. To examine the notion that participants were not motivated to perform well on the task, the value index, expectancy, and their interaction were regressed onto the number of total items practiced, with value standardized and expectancy effects coded (-1 = difficult sample items, 1 = easy sample items). There was a marginal effect for value, $b = .55, SE = .29, p = .06$, such that participants who valued verbal ability practiced more items. However, expectancy, $b = -.14, SE = .29, p = .64$, and the interaction, $b = -.27, SE = .29, p = .36$, were both not significant (see Appendix A, Figure 25). After controlling for number of items practiced, the same regression was conducted
on average number of correct RAT items (see Appendix A, Figure 26). Only the number of items practiced was significant, $b = .04, SE = .11, p < .05$, all other $ps > .14^{35}$.

However, similar to study 4, if one considers performance (i.e. score on the RAT) a behavioral measure of motivation, there is a significant relationship between motivation and the impact bias, $r(144) = -.14, p = .05$ (one-tailed), such that those participants who performed better on the RAT reported they would be less happy than they actually were after learning they did poorly$^{36}$. What this seems to suggest is that performance on the RAT was not significantly affected by manipulations of expectancy and measures of value for these participants. Yet, by using a behavioral measure of motivation, there is evidence from study 5 to support a motivated impact bias$^{37}$.

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$^{35}$ A parallel analysis also was conducted on the average reaction time, in milliseconds, for the RAT items. The pattern mimics the results for the average number of correct RAT items. Only the number of items practiced was significant, $b = 5168.13, SE = 1765.17, p < .01$, all other $ps > .86$.

$^{36}$ Although the behavioral measure of motivation predicted the impact bias, there still was no potential for mediation, as the link between performance and the BIF was not significant, $r(144) = .05, p = .52$.

$^{37}$ An interested reader might be curious about any potential effects on the separate components of this accuracy measure. The correlation between the behavioral measure of motivation and predicted happiness adjusted for baseline happiness was not significant, $r(144) = -.02, p = .41$. In terms of experienced happiness adjusted for baseline happiness, there was a marginally significant correlation with motivation, $r(144) = .13, p = .06$. Higher scores on the RAT were associated with increased happiness. This suggests that the effect of motivation on the impact bias was largely driven by differences in experienced happiness after completion of the RAT.
Chapter 7: General Discussion

Summary

The tendency for people to overestimate the intensity and duration of their future emotions (Gilbert et al., 2002) is a pervasive and robust finding in the literature. Most affective forecasting researchers argue that the impact bias is an undesirable consequence of how the cognitive system goes about making predictions. Yet, the ubiquity of such an error has left some wondering if there might be some functionality to these mispredictions (Gilbert et al., 1998; Wilson & Gilbert, 2003; Dunn & Latham, 2006; Hoerger et al., 2010).

The theory proposed here argued that, in addition to the cognitive mechanisms already put forth, there may be motivational explanations for the impact bias. It was suggested that there are circumstances when people desire inaccuracy in their forecasts. If an individual is motivated to achieve (or avoid) some future outcome, s/he might be motivated to overestimate his/her future emotions in response to that outcome as a way of facilitating self-regulation. These mispredictions up the ante for success (or failure), thereby pushing people to pursue their goals more vigorously.

To provide initial support for a motivated impact bias, various performance scenarios were created in the laboratory for which participants had to predict, and later
report, their emotional responses to the outcome. The tasks were such that motivation (conceptualized in terms of an expectancy-value framework) to achieve some outcome and outcome could be manipulated.

In studies 1, 2, and 3, there was no evidence of an impact bias. One potential reason for this is that the visual responsiveness task might have seemed too insignificant to participants. Perhaps some threshold of event importance must be met before people commit these overpredictions of emotions. An additional problem with these studies was that there was no evidence of motivated behavior. Those participants who valued visual responsiveness and expected to do well on the task performed no better than those participants who were not motivated to do well on the visual responsiveness task. The lack of a motivated impact bias also made it so that the mechanism of construal could not be tested.

The purpose of study 4 was to utilize a performance task that seemed more important and engaging than visual responsiveness. Participants were asked to predict how they would feel after learning their scores on a creativity task. In study 4, there was evidence of a significant impact bias. Participants predicted they would be less happy than they actually were after learning they did poorly on the creativity task. However, contrary to predictions, there was no evidence of a motivated impact bias. Again, as in studies 1-3, there was no evidence of expectancy and value effects on behavior. Those participants who valued creativity and expected to do well on the task performed no better than those participants who were not motivated to do well on the creativity task. Yet, using performance as a behavioral measure of motivation, those participants who
performed better on the creativity task were more likely to overestimate their feelings in response to their scores. This does provide some limited support for the notion of a motivated impact bias.

Study 5 also utilized a performance task that seemed like it would be more significant to participants. Participants were asked to predict how they would feel after learning about their scores on a test of verbal ability, the Remote Associates Test (RAT; McFarlin & Blascovich, 1984). It also was hypothesized that if committing a motivated impact bias is functional, it should encourage participants to engage in goal-facilitating behaviors, such as increased preparation. As such, participants were given the opportunity to practice before taking the RAT. As with study 4, there was evidence of an overall impact bias. Participants predicted they would be less happy than they actually were after doing poorly on the RAT. Yet, there was little evidence of expectancy-value effects on behavior. Motivated participants did not practice significantly more, nor did they perform better on the RAT. However, as in study 4, using performance as a behavioral measure of motivation, there was evidence of a motivated impact bias. Additionally, there was no evidence to support the functionality of a motivated impact bias.

Overall, the manipulations and measures of value and expectancy were not successful predictors of impact bias. However, using performance as a behavioral measure for motivation in studies 4 and 5, there was evidence that participants motivated to achieve a successful task outcome predicted more extreme feelings than they actually experienced, providing some support for the overall hypothesis. This is not sufficiently
strong evidence to support a motivated impact bias, but it does suggest that the relationship between motivational variables and the impact bias warrant further investigation. It is unclear why the results did not conform to expectations, but potential alternative approaches are discussed below as a way of addressing these shortcomings.

Potential Alternate Approaches

Despite carefully selecting and constructing various tasks to investigate a motivated impact bias in controlled laboratory settings, it may be a phenomenon that is best explored with a longitudinal, real-world design. Indeed, there might be some benefits to this approach. There are two situations that seem most suitable for such an investigation—predictions of feelings in response to an exam score, such as in Buehler and McFarland (2001), or to the outcome of an athletic endeavor, such as in van Dijk (2009).

The first advantage to such approaches is that an impact bias has been found for each of these scenarios in conditions outside of the laboratory. Therefore, it might be wise to adapt the methodology of previous research for the purposes of investigating a motivated impact bias.

A second advantage of a longitudinal, real-world design is that it would allow the potential functionality of the process to be examined more thoroughly. For example, in study 5, one of the assumptions was that intentionally committing an impact bias would ramp up participants’ efforts at goal pursuit, leading them to engage in behaviors, such as practice, to help them achieve their goal. If a motivated impact bias was to be investigated in the context of making predictions about psychology exam grades, for
example, measures could be taken at various points after the affective predictions have been made to see if people who commit the impact bias study more, seek extra help, and/or dedicate more time to the class. It also might be useful to include measures of self-confidence and self-efficacy, as this might be another way in which a motivated impact bias might have its effects. Such findings could help support the claim that the impact bias is indeed a strategy and that it is functional.

Finally, using such an approach would allow the time course of a motivated impact bias to be investigated. Committing an impact bias means overestimating the intensity and/or duration of one’s future feelings. The research presented here focuses solely on the intensity aspect of the impact bias. Using a longitudinal design would make it easier to follow up to see how long people’s feelings last in response to the focal event, thereby examining the durability component of the impact bias. For example, will a football player who wants to do well and win the upcoming game predict that he will feel fantastic (horrible) if they win (lose) and that this victory (defeat) will make him feel happy (devastated) for quite some time?

It also might be important to rethink how motivation has been conceptualized and approach this research question from a different perspective. The work discussed here has used a traditional expectancy-value approach (e.g. Tolman, 1932; Atkinson, 1957). However, it is unclear in the current tasks what the underlying motive is that is shaping people’s assessments of expectancy and value. Multiple motives, such as need for achievement or self-image management, could be at work in these performance tasks. Depending on the predominant motive, these motives might have opposite effects on
expectancy and value. For example, a participant who wants to achieve probably will rate his/her likelihood of success high and report valuing the task. A participant with self-image goals, on the other hand, might want to do well on the task, but would de-emphasize the potential for success and de-value the task in an effort to save face should s/he be unsuccessful at the task. This is not an unreasonable assumption, as there is evidence of a host of other pre-performance defensive processing strategies (e.g. defensive pessimism—Norem & Cantor, 1986; self-handicapping—Berglas & Jones, 1978; and bracing—Shepperd, Ouellette, & Fernandez, 1996).

One solution may simply be to assess the motive (e.g. need for achievement, McClelland, Atkinson, Clark, & Lowell, 1958) directly, assuming it would lead to high expectancy and value, and use that motive to predict the impact bias. Another option would be to focus less on the underlying motive and instead manipulate the goal using something like goal priming, for example. This would ensure that the same goal is active for one group of participants but not the other. If the group primed with the goal were to commit a larger impact bias than the one not primed with the goal, this would suggest that the impact bias was motivated.

Another strategy for exploring a motivated impact bias would be to capitalize on other goal properties (e.g. Förster, Liberman, & Friedman, 2007). For example, committing the impact bias could be thought of as a means to achieving some desired outcome. If there were an alternate way of achieving the outcome (Shah, Friedman, & Kruglanski, 2002; Kruglanski, Shah, Fishbach, Friedman, Chun & Sleeth-Keppler, 2002), then a person would be less likely to overpredict his/her future feelings. With respect to
the research discussed here, if one group of participants had been given help on the RAT in study 5 and another group had not received any assistance, it would be predicted that the first group would be less likely to commit the impact bias than the second group.

Future Research Questions

Once solid evidence of a motivated impact bias has been found, there are a number of other research questions that should be explored, and the first likely candidate is the hypothesized cognitive mechanism of motivated construal. Although the Behavior Identification Form (Vallacher & Wegner, 1989) and picture-word measures of abstraction (Amit, Algom, & Trope, 2009; Amit, Algom, Trope, & Liberman, 2009) were included in the current research to assess construal, there was no evidence to support this as a mechanism. One reason for this is that there was no evidence of motivated behavior in studies 1-3 and only behavioral measures of motivation in studies 4-5, which makes it difficult to assess motivated construal using mediation. If future studies are more successful at manipulating and/or measuring motivation, then perhaps these measures of construal would show effects. However, there also are other ways of investigating the hypothesized mechanism. For example, one could measure how participants weight the information (i.e. focalism) via a self report measure (e.g. Lam et al., 2005). One also could use an accessibility measure to assess how much people are thinking about focal, non-focal, and irrelevant future events pre and post event.

A second possibility for why there was no evidence of construal is that it is not the mechanism for a motivated impact bias. As discussed earlier, one of the reasons the impact bias occurs is that people fail to appreciate the extent to which their sense-making
abilities will make the future outcome seem not so extreme (e.g. Gilbert et al., 1998; Wilson et al., 2005). However, it seems unlikely that a motivated impact bias will occur because of sense-making neglect. Most people do not recognize their sense-making abilities most of the time (Wilson & Gilbert, 2005). If they were to become aware, those sense-making abilities would lose their power (Gilbert et al., 1998). In terms of a motivated impact bias, people would have to first recognize that they have these sense-making abilities and know when they would be used. Yet, if people were to overestimate their feelings because they knew their sense-making abilities would make everything seem normal, that would seem to cancel out the ability of that overestimation to be functional. Why work for an end that would seem to be quickly undone (Gilbert et al., 1998)? If people anticipated that they would find the results of their job interviews, dates, and exam performances unremarkable, they likely would be less motivated to pursue these goals at all. Therefore, it seems reasonable to conclude that this is not a mechanism for a motivated impact bias, but future research should rule out this explanation.

Another avenue to explore is the potential individual difference moderators of a motivated impact bias. Because it is hypothesized that the impact bias is motivated to aid in self-regulation, it seems that those who are successful self-regulators and/or who have some history of success in the task domains should exhibit a larger impact bias. It also is interesting to consider the influence of something like regulatory focus (Higgins, 1997; Higgins, Friedman, Harlow, Idson, Ayduk, & Taylor, 2001). Even though impact bias effects are often stronger for negative events (Gilbert et al., 1998; Buehler & McFarland,
2001; Finkenauer, et al., 2007), perhaps individuals who are promotion focused might show stronger motivated impact bias effects when focusing on positive future outcomes, with an overestimation of positive feelings being more beneficial for their goal pursuit than an overestimation of negative feelings. Finally, it might be important to consider the influence of future thinking. Those who spend more time thinking about the future (e.g. “future-focused” from the Zimbardo Time Perspective Inventory—Zimbardo & Boyd, 1999) or considering the effects their future actions may have (e.g. Consideration of Future Consequences Scale—Strathman, Gleicher, Boninger, & Edwards, 1994) might be the ones most likely to let their predicted future feelings guide their present behavior and exhibit a larger motivated impact bias.

To help strengthen the case that a motivated impact bias is functional, future research could focus less on the desire to achieve some future outcome and more on the impact bias itself. The impact bias would now be the independent variable. One could have some participants commit a larger impact bias than others and measure the effects on goal success. Those making larger mispredictions of affect should engage in more goal-promoting behaviors and ultimately be more successful in achieving their desired outcomes than those who are more accurate in their affective predictions.

The notion of outcome controllability also must be addressed in future research. As theorized earlier, a motivated impact bias should only occur to the extent that a person believes s/he can achieve (or avoid) some outcome, but this assumption remains untested. Such considerations may shed light on the Hoerger et al. (2010) research discussed previously. They asked participants to predict their future feelings in response to the
2004 election outcome, measured personal importance of the event, a motivationally-relevant variable, and followed up on participants’ affective responses after the election. For some participants, there was a positive relationship between personal importance and inaccuracy (i.e. the impact bias), which supports the current hypotheses, but for other participants, there was no relationship. Perhaps these two groups of participants differed in how much they believed their own personal actions could bring about the desired, or undesired, election result. If a person does not have the ability to alter the path to goal pursuit, an impact bias will not be functional.

Conclusion

Using performance as a behavioral measure of motivation, there was evidence to suggest that people who are motivated to achieve (or avoid) some outcome overestimate their future feelings. These results should encourage researchers to consider motivational factors, in addition to cognitive factors, when studying the causes and consequences of the impact bias. This also suggests that the impact bias is not always an undesired error, but can instead be a desired strategy. Future research should investigate the hypothesized mechanism of subjective construal, as well as explore the self-regulatory implications and provide evidence for the functionality of a motivated impact bias.
References


Appendix A: Additional Graphs
Figure 11. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1
Figure 12. Feedback condition × value on experienced happiness (adjusted for baseline) for study 1
Figure 13. Feedback condition × value on predicted happiness (adjusted for baseline) for study 2
Figure 14. Feedback condition × value on experienced happiness (adjusted for baseline) for study 2
Figure 15. Feedback condition × value (measured) on forecasting accuracy for study 2
Figure 16. Value × expectancy on predicted happiness (adjusted for baseline) for study 3
Figure 17. Value × expectancy on experienced happiness (adjusted for baseline) for study 3
Figure 18. Value × expectancy on performance for study 3
Figure 19. Value × expectancy on predicted happiness (adjusted for baseline) for study 4
Figure 20. Value × expectancy on experienced happiness (adjusted for baseline) for study 4
Figure 21. Value (measured) × expectancy (measured) on forecasting accuracy for study 4
Figure 22. Value × expectancy on performance for study 4
Figure 23. Value × expectancy on predicted happiness (adjusted for baseline) for study 5
Figure 24. Value × expectancy on experienced happiness (adjusted for baseline) for study 5
Figure 25. Value × expectancy on practice items for study 5
Figure 26. Value × expectancy on RAT score for study 5
Appendix B: Study 5 Materials
<table>
<thead>
<tr>
<th>Items</th>
<th>Answers</th>
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</thead>
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<tr>
<td>Broken</td>
<td>Clear</td>
</tr>
<tr>
<td>Ticket</td>
<td>Shop</td>
</tr>
<tr>
<td>Blank</td>
<td>White</td>
</tr>
<tr>
<td>Gold</td>
<td>Stool</td>
</tr>
<tr>
<td>Square</td>
<td>Cardboard</td>
</tr>
<tr>
<td>Off</td>
<td>Trumpet</td>
</tr>
<tr>
<td>Notch</td>
<td>Flight</td>
</tr>
<tr>
<td>Bump</td>
<td>Throat</td>
</tr>
<tr>
<td>Sandwich</td>
<td>Golf</td>
</tr>
<tr>
<td>Time</td>
<td>Hair</td>
</tr>
<tr>
<td>Zone</td>
<td>Still</td>
</tr>
<tr>
<td>High</td>
<td>Book</td>
</tr>
<tr>
<td>Stick</td>
<td>Light</td>
</tr>
<tr>
<td>Ink</td>
<td>Herring</td>
</tr>
<tr>
<td>Playing</td>
<td>Credit</td>
</tr>
<tr>
<td>Cotton</td>
<td>Bathtub</td>
</tr>
<tr>
<td>Cracker</td>
<td>Union</td>
</tr>
<tr>
<td>Barrel</td>
<td>Root</td>
</tr>
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<td>Magic</td>
<td>Push</td>
</tr>
<tr>
<td>Rabbit</td>
<td>Cloud</td>
</tr>
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<td>Silk</td>
<td>Cream</td>
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<td>Salt</td>
<td>Deep</td>
</tr>
<tr>
<td>Foot</td>
<td>Collection</td>
</tr>
<tr>
<td>Pure</td>
<td>Blue</td>
</tr>
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<td>Measure</td>
<td>Desk</td>
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Table 1. Practice RAT items for study 5
<table>
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<th>Answers</th>
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</thead>
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<tr>
<td>Chamber</td>
<td>Staff</td>
</tr>
<tr>
<td>Desert</td>
<td>Ice</td>
</tr>
<tr>
<td>Base</td>
<td>Show</td>
</tr>
<tr>
<td>Inch</td>
<td>Deal</td>
</tr>
<tr>
<td>Soap</td>
<td>Shoe</td>
</tr>
<tr>
<td>Blood</td>
<td>Music</td>
</tr>
<tr>
<td>Skunk</td>
<td>Kings</td>
</tr>
<tr>
<td>Jump</td>
<td>Kill</td>
</tr>
<tr>
<td>Shopping</td>
<td>Washing</td>
</tr>
<tr>
<td>Hot</td>
<td>Butterflies</td>
</tr>
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Table 2. RAT items for study 5
Appendix C: Analyses
Table 3. Overall impact bias for study 1
### Table 4. Feedback condition × value on forecasting accuracy for study 1

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
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<tbody>
<tr>
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<td>0.183</td>
<td>-0.341</td>
<td>0.734</td>
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<td>Cond</td>
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<td>-0.159</td>
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<td>-0.270</td>
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<td>-1.472</td>
<td>0.143</td>
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</table>

*a. Dependent Variable: happy_bias*

### Table 5. Simple slopes for feedback condition × value on forecasting accuracy for study 1

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<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.840</td>
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*a. Dependent Variable: happy_bias*
### Table 6. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1

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<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
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<td>(Constant)</td>
<td>-1.321</td>
<td>.212</td>
<td>-6.219</td>
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<td></td>
<td>Cond</td>
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<td>.212</td>
<td>.618</td>
</tr>
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<td></td>
<td>Zscore(value_quick)</td>
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<td>-.084</td>
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<td>.213</td>
<td>.070</td>
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*a. Dependent Variable: happy_pred_index*

### Table 7. Feedback condition × value on predicted happiness (adjusted for baseline) for study 1

<table>
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<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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<td>Std. Error</td>
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<td>.600</td>
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<td>.219</td>
<td>.141</td>
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*a. Dependent Variable: happy_actual_index*
The table below presents the simple slopes for feedback condition \times value on experienced happiness (adjusted for baseline) for Study 1.

<table>
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<tr>
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<th>Standardized Coefficients</th>
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<td>Std. Error</td>
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**Note:** Dependent Variable: happy_actual_index

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<td>.200</td>
<td>2.334</td>
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**Note:** Dependent Variable: happy_actual_index

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**Note:** Dependent Variable: happy_actual_index

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<td>-3.430</td>
<td>.315</td>
<td>-10.889</td>
</tr>
<tr>
<td>cond_fail</td>
<td>4.342</td>
<td>.438</td>
<td>.600</td>
<td>9.926</td>
</tr>
<tr>
<td>Zscore(value_quick)</td>
<td>-1.127</td>
<td>.317</td>
<td>-.311</td>
<td>-3.560</td>
</tr>
<tr>
<td>cond_failXZvalue_quick</td>
<td>1.025</td>
<td>.439</td>
<td>.203</td>
<td>2.334</td>
</tr>
</tbody>
</table>

**Note:** Dependent Variable: happy_actual_index

Table 8. Simple slopes for feedback condition \times value on experienced happiness (adjusted for baseline) for study 1
Table 9. Feedback condition × value on BIF scores for study 1

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.601</td>
<td>.017</td>
<td></td>
<td>94.466</td>
</tr>
<tr>
<td>Cond</td>
<td>-.015</td>
<td>.017</td>
<td>-.068</td>
<td>-.869</td>
</tr>
<tr>
<td>Zscore(value_quick)</td>
<td>.031</td>
<td>.017</td>
<td>.140</td>
<td>1.797</td>
</tr>
<tr>
<td>condXZvalue_quick</td>
<td>.012</td>
<td>.017</td>
<td>.057</td>
<td>.728</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: bif*
Table 10. Overall impact bias for study 2

Table 11. Feedback condition X value on forecasting accuracy for study 2
Table 12. Feedback condition × value on predicted happiness (adjusted for baseline) for study 2

Table 13. Feedback condition × value on experienced happiness (adjusted for baseline) for study 2
Table 14. Feedback × value (measured) on forecasting accuracy for study 2

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-.179</td>
<td>.206</td>
<td></td>
<td>-.808</td>
</tr>
<tr>
<td>feedback</td>
<td>-.026</td>
<td>.206</td>
<td>-.011</td>
<td>-.121</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>.200</td>
<td>.210</td>
<td>.090</td>
<td>.949</td>
</tr>
<tr>
<td>Zvalue_index×feedback</td>
<td>-.062</td>
<td>.210</td>
<td>-.028</td>
<td>-.295</td>
</tr>
</tbody>
</table>

a. Dependent Variable: bias_index

Table 15. Simple slopes for feedback × value (measured) on forecasting accuracy for study 2

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-.154</td>
<td>.293</td>
<td></td>
<td>-.525</td>
</tr>
<tr>
<td>feedback_unsucc</td>
<td>-.025</td>
<td>.206</td>
<td>-.011</td>
<td>-.121</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>.282</td>
<td>.322</td>
<td>.119</td>
<td>.813</td>
</tr>
<tr>
<td>Zvalue_index×feedback_unsucc</td>
<td>-.062</td>
<td>.210</td>
<td>-.043</td>
<td>-.295</td>
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</tbody>
</table>

a. Dependent Variable: bias_index
Table 16. Feedback condition × value × thought type (picture/word) for study 2
Table 17. Overall impact bias for study 3

<table>
<thead>
<tr>
<th>Paired Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paired Differences</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Pair 1: happy_pred_index - happy_actual_index</td>
</tr>
</tbody>
</table>

Table 18. Value × expectancy on forecasting accuracy for study 3

<table>
<thead>
<tr>
<th>Coefficients a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>Zscore(use)</td>
</tr>
<tr>
<td>Zscore(succ)</td>
</tr>
<tr>
<td>Zuse×Zsucc</td>
</tr>
</tbody>
</table>

a. Dependent Variable: bias_index
### Table 19. Value $\times$ expectancy on predicted happiness (adjusted for baseline) for study 3

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-3.735</td>
<td>.206</td>
<td>-18.152</td>
</tr>
<tr>
<td></td>
<td>Zscore(uno)</td>
<td>-.646</td>
<td>.217</td>
<td>-.217</td>
</tr>
<tr>
<td></td>
<td>Zscore(succ)</td>
<td>-.598</td>
<td>.207</td>
<td>-.201</td>
</tr>
<tr>
<td></td>
<td>ZuseXZsucc</td>
<td>-.117</td>
<td>.197</td>
<td>-.043</td>
</tr>
</tbody>
</table>

a. Dependent Variable: happy_pred_index

### Table 20. Value $\times$ expectancy on experienced happiness (adjusted for baseline) for study 3

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-3.622</td>
<td>.198</td>
<td>-18.326</td>
</tr>
<tr>
<td></td>
<td>Zscore(uno)</td>
<td>-.224</td>
<td>.208</td>
<td>-.081</td>
</tr>
<tr>
<td></td>
<td>Zscore(succ)</td>
<td>-.432</td>
<td>.199</td>
<td>-.156</td>
</tr>
<tr>
<td></td>
<td>ZuseXZsucc</td>
<td>.104</td>
<td>.189</td>
<td>.041</td>
</tr>
</tbody>
</table>

a. Dependent Variable: happy_actual_index
Table 21. Value × expectancy on performance for study 3

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>2.756</td>
<td>.007</td>
<td>385.731</td>
<td>.000</td>
</tr>
<tr>
<td>Zscore(use)</td>
<td>-.003</td>
<td>.008</td>
<td>-.036</td>
<td>-.451</td>
</tr>
<tr>
<td>Zscore(succ)</td>
<td>.000</td>
<td>.007</td>
<td>-.004</td>
<td>-.056</td>
</tr>
<tr>
<td>ZuSeXZsuc</td>
<td>.009</td>
<td>.007</td>
<td>.102</td>
<td>1.340</td>
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</tbody>
</table>

a. Dependent Variable: rtlog_mean
### Table 22. Overall impact bias for study 4

<table>
<thead>
<tr>
<th>Pair</th>
<th>happy_pred_index-happy_actual_index</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>happy_pred_index-happy_actual_index</td>
<td>-5.9420</td>
<td>2.79373</td>
<td>.23782</td>
<td>-1.06447, -1.2393</td>
<td>-2.499</td>
<td>137</td>
<td>.014</td>
</tr>
</tbody>
</table>

### Table 23. Value × expectancy on forecasting accuracy for study 4

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>67.164</td>
<td>3</td>
<td>22.388</td>
<td>2.994</td>
<td>.033</td>
<td>.063</td>
</tr>
<tr>
<td>Intercept</td>
<td>46.204</td>
<td>1</td>
<td>46.204</td>
<td>6.176</td>
<td>.014</td>
<td>.044</td>
</tr>
<tr>
<td>value_manip</td>
<td>21.602</td>
<td>1</td>
<td>21.602</td>
<td>2.889</td>
<td>.092</td>
<td>.031</td>
</tr>
<tr>
<td>Exp_manip</td>
<td>37.971</td>
<td>1</td>
<td>37.971</td>
<td>5.077</td>
<td>.026</td>
<td>.037</td>
</tr>
<tr>
<td>Value_manip ×</td>
<td>9.631</td>
<td>1</td>
<td>9.631</td>
<td>1.268</td>
<td>.258</td>
<td>.010</td>
</tr>
<tr>
<td>Exp_manip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>1002.112</td>
<td>134</td>
<td>7.473</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1118.000</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1069.275</td>
<td>137</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

a. R Squared = .063 (Adjusted R Squared = .042)
Table 24. Value × expectancy on predicted happiness (adjusted for baseline) for study 4

Table 25. Value × expectancy on experienced happiness (adjusted for baseline) for study 4

116
Table 26. Value (measured) × expectancy (measured) on forecasting accuracy for study 4

Table 27. Value × expectancy on BIF scores for study 4
### Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>299.749*</td>
<td>3</td>
<td>99.916</td>
<td>1.007</td>
<td>.382</td>
<td>0.022</td>
</tr>
<tr>
<td>Intercept</td>
<td>76225.577</td>
<td>1</td>
<td>76225.577</td>
<td>768.292</td>
<td>.000</td>
<td>0.851</td>
</tr>
<tr>
<td>Value_manip</td>
<td>40.377</td>
<td>1</td>
<td>40.377</td>
<td>40.7</td>
<td>.525</td>
<td>0.003</td>
</tr>
<tr>
<td>Exp_manip</td>
<td>209.534</td>
<td>1</td>
<td>209.534</td>
<td>2.112</td>
<td>.148</td>
<td>0.016</td>
</tr>
<tr>
<td>Value_manip *</td>
<td>53.508</td>
<td>1</td>
<td>53.508</td>
<td>5.39</td>
<td>.044</td>
<td>0.004</td>
</tr>
<tr>
<td>Total Error</td>
<td>13294.722</td>
<td>134</td>
<td>99.214</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total</td>
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<td>130</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>13594.471</td>
<td>137</td>
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<td></td>
</tr>
</tbody>
</table>

a. R Squared = .022 (Adjusted R Squared = .000)

Table 28. Value × expectancy on performance for study 4
Table 29. Overall impact bias for study 5

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-1.036</td>
<td>.282</td>
<td></td>
<td>-5.808</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>.102</td>
<td>.203</td>
<td>.033</td>
<td>.359</td>
</tr>
<tr>
<td>expectancy</td>
<td>.050</td>
<td>.292</td>
<td>.018</td>
<td>.179</td>
</tr>
<tr>
<td>Zvalue_index×expectancy</td>
<td>-.192</td>
<td>.283</td>
<td>-.057</td>
<td>-3.860</td>
</tr>
</tbody>
</table>

Table 30. Value × expectancy on forecasting accuracy for study 5
Table 31. Value × expectancy on predicted happiness (adjusted for baseline) for study 5

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-3.997</td>
<td>.269</td>
<td>-14.844</td>
<td>.000</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>-.431</td>
<td>.271</td>
<td>-.144</td>
<td>.114</td>
</tr>
<tr>
<td>expectancy</td>
<td>-.006</td>
<td>.269</td>
<td>-.002</td>
<td>.983</td>
</tr>
<tr>
<td>Zvalue_index×expectancy</td>
<td>-.193</td>
<td>.271</td>
<td>-.063</td>
<td>.476</td>
</tr>
</tbody>
</table>

a. Dependent Variable: happy_pred_index

Table 32. Value × expectancy on experienced happiness (adjusted for baseline) for study 5

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-2.362</td>
<td>.244</td>
<td>-9.866</td>
<td>.000</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>-.532</td>
<td>.245</td>
<td>-.194</td>
<td>.032</td>
</tr>
<tr>
<td>expectancy</td>
<td>-.056</td>
<td>.244</td>
<td>-.023</td>
<td>.229</td>
</tr>
<tr>
<td>Zvalue_index×expectancy</td>
<td>-.001</td>
<td>.245</td>
<td>.000</td>
<td>.967</td>
</tr>
</tbody>
</table>

a. Dependent Variable: happy_actual_index
### Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>3.263</td>
<td>.070</td>
<td></td>
<td>43.749</td>
</tr>
<tr>
<td>Zscore(value_index)</td>
<td>-.016</td>
<td>.070</td>
<td>-.021</td>
<td>-2.228</td>
</tr>
<tr>
<td>expectancy</td>
<td>.032</td>
<td>.070</td>
<td>.041</td>
<td>.452</td>
</tr>
<tr>
<td>Zvalue_index*expectancy</td>
<td>-.094</td>
<td>.070</td>
<td>-.113</td>
<td>-1.340</td>
</tr>
</tbody>
</table>

a. Dependent Variable: bif_avg

Table 33. Value × expectancy on BIF scores for study 5
Table 34. Value × expectancy on practice items for study 5

Table 35. Value × expectancy on RAT score for study 5