



## Expectations and emotions of Olympic athletes<sup>☆</sup>

A. Peter McGraw<sup>a,\*</sup>, Barbara A. Mellers<sup>b</sup>, Philip E. Tetlock<sup>b</sup>

<sup>a</sup> *University of Colorado, Boulder, CO, United States*

<sup>b</sup> *University of California, Berkeley, United States*

Received 24 December 2003; revised 16 August 2004

### Abstract

In an often-cited study about counterfactuals, Medvec, Madey, and Gilovich (1995) found that bronze medalists appeared happier than silver medalists in television coverage of the 1992 Summer Olympics. Medvec et al. argued that bronze medalists compared themselves to 4th place finishers, whereas silver medalists compared themselves to gold medalists. These counterfactuals were the most salient because they were either qualitatively different (gold vs. silver) or categorically different (medal vs. no medal) from what actually occurred. Drawing on archival data and experimental studies, we show that Olympic athletes (among others) are more likely to make counterfactual comparisons based on their prior expectations, consistent with decision affect theory. Silver medalists are more likely to be disappointed because their personal expectations are higher than those of bronze medalists. We provide a test between expectancy-based versus category-based processing and discuss circumstances that trigger each type of processing.

© 2004 Elsevier Inc. All rights reserved.

Medvec, Madey, and Gilovich (1995) asked students to watch videotaped footage of the 1992 Summer Olympics and judge the happiness of medalists immediately after their events or later, on the medal stands. On average, bronze medalists appeared happier than silver medalists, despite the obvious fact that silver medalists performed better. Medvec et al. (1995) argued that the emotional reactions of Olympic athletes were driven by comparisons with the most easily imagined alternative outcome. For silver medalists that outcome was the gold, and for the bronze medalists that outcome was 4th place. Silver medalists were haunted by thoughts of “I almost won the gold,” whereas bronze

medalists were thrilled by thoughts of “I won a medal!” This finding has become a “classic” example of how counterfactuals can influence emotions, and the finding is often presented in social psychology textbooks (e.g., Aronson, Wilson, & Akert, 2001; Baron & Byrne, 2003; Brehm, Kassin, & Fein, 2002; Myers, 2002).

Past theorists who have studied subjective responses to objective outcomes—ranging from Tolman to Edwards to Atkinson—have argued that subjective reactions hinge on the degree to which objective outcomes exceed or fall short of expectations. Numerous studies underscore the importance of expectations, especially personal expectations based on our self-image (Atkinson, 1958; Feather, 1967, 1969; Miller & Turnbull, 1986; Olson, Roese, & Zanna, 1996; Sanna & Turley, 1996; Weiner, 1985; Zajonc & Brickman, 1969).

A surprising aspect of Medvec et al.’s study was the claim that athletes’ prior expectations had no significant effect on their emotions. To make this claim, Medvec et al. predicted the emotions of Olympic athletes from actual finishes, expected finishes, and the athlete’s location (i.e., event or medal stand). Actual finishes were coded

<sup>☆</sup> This research was supported by an NSF grant to the second author (SBR-96-15993). We thank Jonathan Levav and Jeff Larsen for helpful comments on an earlier draft of the paper and Ketan Deoras, Melanie Kenworthy, Ryan Leach, and Natasha Ripp for their research assistance.

\* Corresponding author.

E-mail addresses: [pmcgraw@colorado.edu](mailto:pmcgraw@colorado.edu) (A.P. McGraw), [mellers@haas.berkeley.edu](mailto:mellers@haas.berkeley.edu) (B.A. Mellers), [tetlock@haas.berkeley.edu](mailto:tetlock@haas.berkeley.edu) (P.E. Tetlock).

as “2” and “3” for silver and bronze medal winners, respectively. Expected finishes, based on predictions from a Sports Illustrated Olympic preview issue (Verschoth, 1992), were coded as “1,” “2,” “3,” and “4” for gold, silver, bronze, and no expected medal, respectively. Location at the time of the judgment was coded as 0 and 1 and was included because emotions were more intense immediately after the event than later on the medal stand. Their regression analysis showed that actual finishes and location were the only significant predictors of happiness.

Given the popularity of Medvec et al.’s findings and the apparent discrepancy between their results and the work on expectations, we reexamine the question of what predicts the emotional reactions of Olympic athletes. We offer new results from the 2000 Summer Olympics and then present two laboratory experiments that test a current account of emotions called decision affect theory. We now discuss category-based and expectation-based counterfactuals in more detail.

### Category-based counterfactuals

What makes one counterfactual comparison more compelling than another? Medvec et al. argued that comparisons were governed by the proximity of an outcome to a meaningful category break point. Break points are ego-relevant standards of performance (such as placing first or winning a medal) that direct attention to alternative worlds on the other side of the category. A gold medal is qualitatively different from any other, and a fourth place finish is categorically different from finishing with a medal. Consequently, silver medalists make upward comparisons and bronze medalists make downward comparisons. Medvec et al. bolstered their argument with additional findings that silver medalists were more focused than bronze medalists on thoughts of “*I almost...*” than thoughts of “*at least I...*”.

Category-based counterfactuals were also tested in a follow-up study of grades (Medvec & Savitsky, 1997). When students imagined receiving a B– and just barely made a B, they felt better than students who imagined receiving a B+ but fell just short of an A. Those who got a B– thought about doing worse and narrowly avoiding a C. Those who got a B+ focused on doing better and just falling short of an A. These counterfactuals are known as “close calls” (Kahneman & Varey, 1990).

### Expectation-based counterfactuals

Another source of counterfactuals comes from the athletes’ sense of what they can accomplish prior to the event. Such expectations evolve from an athletes’ recent performance, the recent performance of competi-

tors, predictions of coaches, media forecasts, and much more. Many anecdotes illustrate how prior expectations can, in sports hyperbole, fan the flames of agony and ecstasy. In the “miracle on ice,” the 1980 US Olympic hockey team defeated the Soviet team in the semi-finals and went on to win the gold. Part of the US team’s thrill certainly came from their low expectations. The US team, composed of relatively inexperienced college players, was widely believed to have little chance against the heavily favored Soviet team, a team that had not lost an Olympic championship in twenty years. More recently, in the 2000 Summer Olympics, Marion Jones expressed disappointment with her bronze medal finish in the long jump, an event she had expected to win in her quest for five gold medals.

Mellers, Schwartz, Ho, and Ritov (1997, 1999) proposed an account of judged pleasure called decision affect theory in which the pleasure of an outcome following a choice depends on the utility or satisfaction of the outcome, comparisons between actual and counterfactual outcomes, and the surprise associated with the actual outcome. The theory makes testable predictions about emotional reactions, and it is consistent with a broad range of empirical evidence (Mellers, 2000). For example, decision affect theory can describe instances in which people feel *less* pleasure with an objectively *better* outcome. In a gambling study, for instance, Mellers et al. found that when participants won \$5 and avoided a large loss, they experienced greater pleasure than when they won \$9, but missed an opportunity for an even greater win. Mellers and McGraw (2001) found similar results with grades. Students who received a C and expected a lower grade felt better than students who received a B, but expected a higher grade.

When applied to the happiness of Olympic athletes, decision affect theory is expressed:

$$R_O = J[u_O + d(u_O - u_E) * (1 - s_O)], \quad (1)$$

where  $R_O$  is the judged pleasure of an outcome,  $J$  is a linear function relating a feeling of pleasure to a numerical response,  $u_O$  is the utility of the outcome,  $u_E$  is the utility of the expected finish, and  $d(u_O - u_E)$  is a disappointment function that compares the outcome with the expected outcome. The last term on the right  $(1 - s_O)$  is the complement of  $s_O$ , where  $s_O$  is the strength of the belief (i.e., subjective probability) that the outcome would occur, and  $(1 - s_O)$  is the strength of the belief that the outcome would *not* occur and reflects the degree of surprise associated with the event.

This paper presents three studies that explore expectancy-based counterfactuals. The first is a field study that quantifies athletes’ emotional reactions in the 2000 Summer Olympics. The other two are laboratory experiments that examine the effects of prior expectations and break points on emotions.

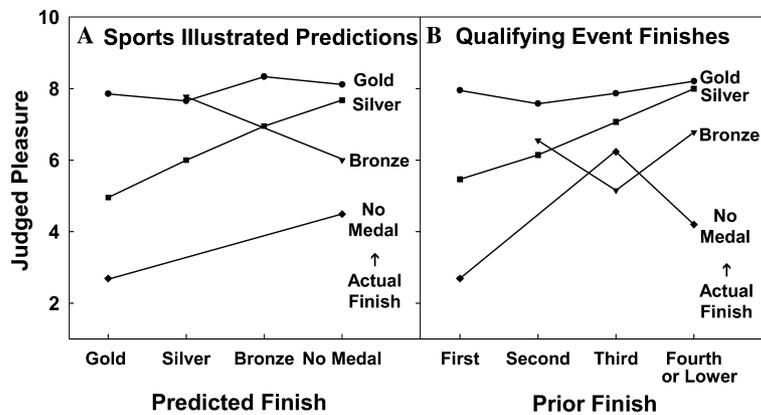


Fig. 1. (A) The judged pleasure of Olympic athletes plotted against predicted finishes from Sports Illustrated with separate curves for each actual finish. (B) The judged pleasure of Olympic athletes plotted against previous from semi-final events or qualifying events with separate curves for each actual finish.

## Study 1

We asked undergraduates to judge the emotional reactions of athletes in the 2000 Summer Olympics held in Sydney, Australia. Students watched a videotape created from television coverage of the athletes immediately after their event and on the medal stand. We used the same procedure as Medvec et al. with two exceptions. First, we added gold medalists and non-medalists to our set of silver and bronze medalists. Second, we excluded athletes who were subject to the “just won”—“just lost” effect noted by Medvec et al.<sup>1</sup>

### Procedure

The videos were given to an editor who was unaware of the hypotheses under investigation. He was told to create segments that best captured athletes’ emotions. We eliminated nine segments that were rated by 25% or more of participants as very difficult to judge and had 90 remaining segments. There were 70 segments immediately after the event (38 gold, 14 silver, 10 bronze, and 8 non-medal athletes) and 20 segments at

the medal stand (11 gold, 6 silver, and 2 bronze medal athletes).<sup>2</sup>

Twenty-six undergraduates at Ohio State University who identified themselves as having no knowledge or interest in sports viewed the tapes and judged the feelings of athletes on a 10-point scale, ranging from 1, “Agony,” to 10, “Ecstasy.” We used these participants to avoid interference from prior Olympic knowledge. Tapes were shown without sound or information about the athlete’s name and finish. The order of segments was manipulated, but since it had no effect on responses, the data were collapsed across orders.

### Results

Actual finish had an effect on the perceived happiness of athletes. Gold medalists appeared happiest ( $M = 7.9$ ) followed by silver medalists ( $M = 6.6$ ), bronze medalists ( $M = 6.3$ ), and non-medal winners ( $M = 4.3$ ). Predicted finish also had an effect. Fig. 1 shows the effects of actual finishes and predicted finishes based on Sports Illustrated predictions (Cazeneuve, 2000) in Fig. 1A and qualifying event finishes in Fig. 1B. Sports Illustrated predictions were made after the trials, but before the Olympics. Qualifying event finishes occurred during the Olympics. The upward slopes of the curves show that athletes with lower expectations were happier with their performance. We also find that bronze medalists who were not expecting a medal appeared happier than silver medalists expecting the gold.

We conducted a regression analysis to predict the emotions of athletes. Happiness was predicted from actual finish (Gold = 1, Silver = 2, Bronze = 3, and No Medal = 4), the difference between actual finish and ex-

<sup>1</sup> We did not include bronze medalists who had just won an event and silver medalists who had just lost an event, as occurs in sports such as boxing or basketball, where gold medalists competed against silver medalists and bronze medalists competed against 4th place finishers. The “just won”—“just lost” effect interferes with tests of the theory because bronze medalists could appear happier because of their medal and counterfactual comparison *or* because they won their last competition. Similarly, silver medalists could appear less happy because of their medal and comparison *or* because they lost their last competition. Furthermore, “just won”—“just lost” athletes are no longer subject to the entire counterfactual range of finishes and are left with only one reasonable comparison point. When “just won”—“just lost” cases were excluded from Medvec et al.’s analysis bronze medalists still appeared happier than silver medalists, but the difference was attenuated.

<sup>2</sup> After the editing process began, we noted that NBC’s coverage concentrated on gold medalists. Since we did not want gold medalists to be over-represented, we asked the editor to include gold medalist segments only if there was usable footage for one or more other finishers.

pected finish (where expectations were based on Sports Illustrated predictions; Gold = 1, Silver = 2, Bronze = 3, No Medal = 4) and the location of the segment (after event or medal stand). Actual finish and the difference between actual and expected finish were significant predictors.<sup>3</sup> Eta squared effect sizes,  $\eta^2$ , were .23 and .05 for actual finishes and deviation from expectations. Location was non-significant. Similar results were obtained when expected finish was based on qualifying events. Results are consistent with decision affect theory, with the exception of one data point. That point consists of two bronze medalists, predicted to receive silver medals, who appeared happier than bronze medalists with lower expectations. This point is consistent with the prediction of category-based comparisons, as posited by Medvec et al.

### Discussion

In a study that replicates the videotape portion of Medvec et al.'s experiment, but includes all possible finishers, we find an effect of expectations on happiness. Expectations influence emotions when defined by media predictions or by qualifying events finishes. Athletes with lower expectations were happier than those with higher expectations. Moreover, expectations can make objectively better outcomes seem worse. Bronze medalists who were not expecting a medal were happier than silver medalists with gold medal dreams.<sup>4</sup>

### Study 2

If observers and athletes have similar beliefs about expectations and emotions, observers who know athletes' outcomes, and expectations should be able to predict athletes' feelings. We investigate observers' inferences about the happiness of Olympic athletes when actual and expected finishes are unconfounded. This experiment also allows us to test decision affect theory as a descriptive account of emotions.

<sup>3</sup> Unless otherwise noted, all reported statistical tests were significant at the .05  $\alpha$  level.

<sup>4</sup> Why do we find a strong effect of expectations when Medvec et al. did not? One possibility is that our proxies for expectations were more valid predictors of performance than those used by Medvec et al. In our data set, the correlation between silver and bronze medal finishes and predictions from Sports Illustrated (Cazeneuve, 2000) was  $r = .47$ . Previous finishes in semi-final or qualifying events and actual finishes had a correlation of  $r = .50$ . Medvec et al. kindly gave us their data, which contained Sports Illustrated predictions from a different author (Verschoth, 1992). The correlation between silver and bronze medal finishes and those predictions was only  $r = .25$ . In short, predictions from 1992 Sports Illustrated were not as accurate as predictions from 2000 Sports Illustrated or from finishes in qualifying events.

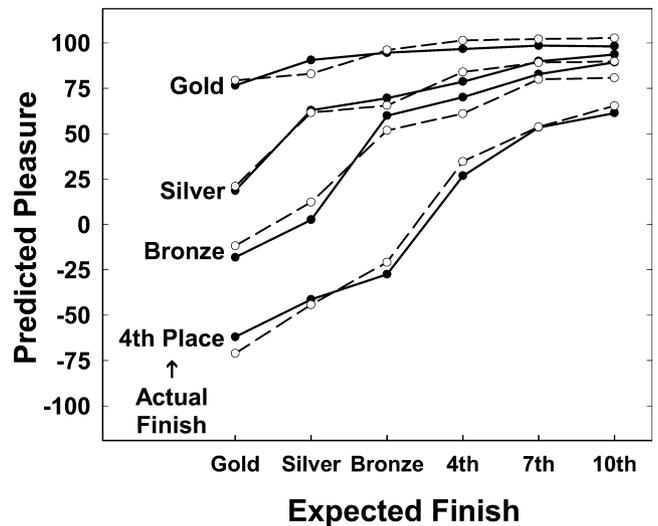


Fig. 2. Predicted pleasure of Olympic athletes plotted against expected finishes with separate curves for each actual finish. Responses are averaged over strength of belief. Solid lines are data, and dashed lines are predictions of decision affect theory.

### Procedure

Undergraduates at Ohio State University ( $N = 77$ ) participated in the study for partial course credit. They judged the emotional reactions of Olympic athletes based on actual finish, expected finish, and the athletes' beliefs in the expected finish in a within-subjects design. This design was a  $4 \times 6 \times 2$  factorial with actual finishes of Gold, Silver, Bronze, and 4th place, expected finishes of Gold, Silver, Bronze, 4th, 7th, and 10th place, and athlete's beliefs about his or her expectations unfolding being either excellent or fair. For example, participants were asked to imagine an Olympic athlete who believes there is an excellent chance of finishing 1st, but actually finishes 2nd and wins a silver medal. Participants judged emotions on a category rating scale from 100 to  $-100$ , where 100 is "Extremely Elated" and  $-100$  is "Extremely Disappointed".<sup>5</sup>

### Results

Fig. 2 shows judged happiness of Olympic athletes with separate curves for actual finishes, plotted against expected finishes, and averaged over strength of beliefs. Solid lines are data, and dashed lines are predictions of decision affect theory. Gold medalists were extremely

<sup>5</sup> This response scale would almost certainly produce results that would be interchangeable with those obtained with a scale labeled "Happy" to "Unhappy." Previous tests of decision-affect theory have shown that results based on the scale, "Extremely Elated" to "Extremely Disappointed," are virtually identical to those obtained with a scale labeled "Very Very Happy" to "Very Very Unhappy" (Schwartz, Mellers, & Metzger, 1999).

elated, with only a slight influence of expectations. Silver medalists were elated, except when they expected the gold. Bronze medalists were happy, except when their expectations were higher. Observers even believed that bronze medalists who exceeded their expectations would be happier than silver medalists who fell short of their expectations.

The dashed lines in Fig. 2 show the predictions of decision-affect theory, with parameters estimated from Microsoft Excel's Solver. Using the 48 data points, we estimated 14 parameters: four utilities for actual finishes, six utilities for expected finishes, and two subjective probabilities using a least-squares procedure. We assumed that  $J$  was an identity function and  $d$  was a power function with exponents that could differ for positive and negative differences. When fit to mean responses, decision affect theory left only 2% residual variance. The median residual variance at the individual level was 8%, with a range of 3.5–31%.

Interestingly, estimated utilities of actual finishes reflected Medvec et al.'s qualitative and categorical distinctions. The psychological difference between gold and silver finishes was greater than the psychological difference between silver and bronze finishes, with the largest difference occurring between the bronze finish and fourth place. Similar patterns were found in the expected finishes.<sup>6</sup>

### Discussion

Observers' beliefs that actual finishes, expected finishes, and beliefs influenced athletes' emotional reactions, and decision affect theory could describe the results. Gold medalists who met their expectations were judged happiest, followed by silver medalists, bronze medalists, and 4th place finishers. Whenever expectations were lower than actual outcomes, happiness increased slightly. Whenever expectations were higher than actual outcomes, pleasure decreased sharply. Finally, bronze medal winners expecting no medal were judged as happier than silver medal winners expecting the gold. This experiment suggests that observers infer effects of expectations on athletes' happiness in a way that parallels the experiences of actual Olympic athletes. We now examine an experiment that compares expectation-based and category-based counterfactuals.

### Study 3

The study provides a test between expectancy-based counterfactuals and category-based counterfactuals. Undergraduates took a test of verbal ability. Some took a practice test and received feedback designed to create prior expectations, while others took a practice test, but received no feedback. After the actual test, all of the students received feedback that placed them into categories with adjacent breakpoints akin to those of silver and bronze medal winners. Their outcomes depended on their performance, and payments were either \$3 or \$2. After learning their rewards, students rated their emotional reactions and described their thoughts.

If students were influenced by their expectations, they would be happier when their outcome exceeded their expectations and less happy when their outcome fell short of their expectations. However, if they were influenced by breakpoints, they would be happier when their outcome was compared to no reward (\$0) than when their outcome was compared to the large reward (\$7). Finally, both types of counterfactual comparisons could occur if expectations were most salient when feedback was provided, and break points were most salient when feedback was not provided.

### Procedure

Undergraduates at Ohio State University ( $N = 126$ ) participated in the study in exchange for partial course credit. They were told the purpose of the study was to investigate the effect of monetary incentives on academic performance, and they would be asked to take a computer-based practice test followed by an actual test of memory questions and analogies. After the practice test, students were randomly assigned to conditions. Some received no feedback, and others received false feedback in the form of a normally distributed histogram of eleven percentile categories (0–10th, 10th–20th, . . . , 80th–90th, 90th+) that represented the performance of other undergraduates on the practice test. Students were told that they either scored in the 90th–100th percentile or in the 50th–60th percentile.

Participants learned that they could win money based on their performance on the actual test. They were shown the following graphic:

If you score in the 90+ percentile, you will win \$7.  
 If you score between the 80th and 90th percentile, you will win \$3.  
 If you score between the 70th and 80th percentile, you will win \$2.  
 If you score below the 70th percentile, you will win \$0.

Winnings were designed to resemble the qualitative and categorical breakpoints discussed earlier. First,

<sup>6</sup> Estimated utilities for Gold, Silver, Bronze, and 4th place were 99.9, 87.3, 78.6, and 63.9, respectively. Estimated utilities for expected finishes were 120.4, 111.7, 103.7, 90.8, 72, and 55.2 for the gold, silver, bronze, 4th, 7th, and 10th, respectively. Parameters for strength of belief were .66 for an excellent chance and .60 for a fair chance.

there is a categorical distinction between winning and not winning money (\$0 vs. \$2). Then there is a qualitative distinction between winning \$7 and lesser amounts of \$3 and \$2.

Participants took the actual test and were given false feedback in the form of a histogram of normally distributed category scores. They were randomly assigned feedback conditions of \$3 (80th–90th percentile) or \$2 (70th–80th percentile). These categories were highlighted with a congratulatory message. All possible outcomes were shown so that all possible comparisons could be made.

Participants were then asked a series of questions, including their feelings about their performance on a scale from –4 (Very Unhappy) to 4 (Very Happy) and on a second scale from –4 (Very Disappointed) to 4 (Very Elated). Then participants were asked if they were surprised by their performance. If they indicated yes, they rated the magnitude and valence of their surprise on a scale from –4 (Very Unpleasant Surprise) to 4 (Very Pleasant Surprise).

A few more questions focused on counterfactual thoughts. Participants were asked whether they expected to have done better or worse. Then they were asked to state their expected score from a list of categories (e.g., 90+, 80th–90th). Finally, they rated the extent to which their thoughts were concerned with “I almost...” (coded as 10) to “At least I...” (coded as 1).

Results

If participants used expectancy-based counterfactuals, those who won \$3 would be happier than those who won \$2, except when the \$3 recipients expected better (\$7) and the \$2 recipients expected worse (\$0). If participants used category-based counterfactuals, those who won \$3 would make upward comparisons to \$7 and feel disappointed, while those who won \$2 would make downward comparisons to \$0 and feel elated.

Ratings of happiness and elation with one’s performance were highly correlated ( $r = .73$ ) and had good reliability (Cronbach’s  $\alpha = .84$ ), so we averaged the scores. Fig. 3 shows average pleasure when students received feedback, plotted against their expectations with separate curves for \$2 and \$3 winnings. Outcomes and expectations were statistically significant ( $\eta^2 = .07$  and  $.07$ , respectively). Participants felt better with higher outcomes and lower expectations. Once again, expectations made objectively better outcomes feel subjectively worse. Those who received \$2, but expected \$0, felt better than those who received \$3, but expected \$7. Fig. 3 also shows the emotions of participants who received no practice feedback. If their emotions were influenced ex post by the category breakpoints, \$2 winners would be happier than \$3 winners. However, the \$3 winners were happier than the \$2 winners.

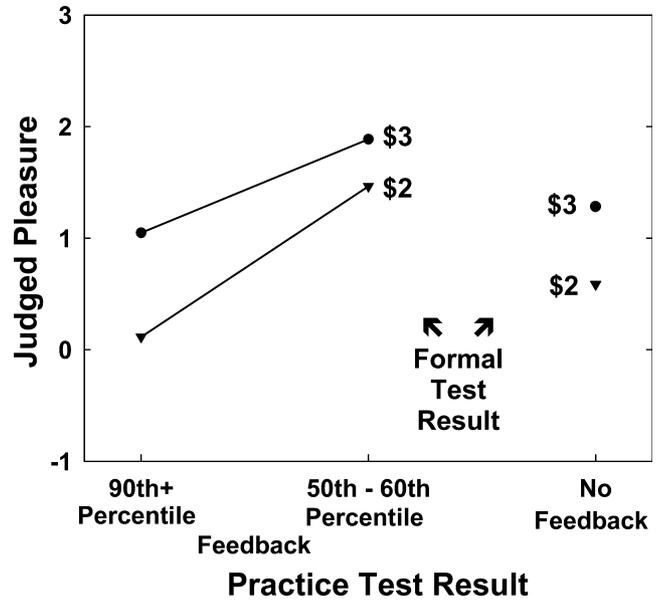


Fig. 3. Judged pleasure after the formal test plotted against results of the practice test with separate points for outcome.

Surprise was a significant predictor ( $\eta^2 = .16$ ) of emotions. The more pleasantly surprised people felt about their performance, the greater their pleasure even after controlling for feedback and actual finish (see Kahneman & Miller, 1986).

We also examined the direction of counterfactual thinking. Table 1 shows the percentage of respondents who said they could have done better, thereby signifying upward counterfactual comparisons. A chi-square ( $\chi^2$ ) test indicated a significant effect of feedback, but not actual outcome on counterfactual thoughts. Participants who believed that they would win \$7 were more likely than those who believed they would win \$0 to make upward counterfactual comparisons. Contrary to the category-based processing hypothesis, \$2 winners were more likely to make upward counterfactuals than \$3 winners.

Fig. 4 shows average expected outcomes plotted against practice feedback with separate points for actual outcomes. The effect of feedback on expected outcome was significant ( $\eta^2 = .28$ ). Naturally, occurring expectations without feedback fell between expectations with feedback.

Finally, although not statistically significant, participants who received \$3 were more likely to endorse

Table 1  
Percentage of participants making upward comparisons

Actual Test result	Practice feedback		No feedback (%)
	90th (\$7) (%)	50th–60th (\$0) (%)	
\$3 (80th–90th)	74	58	60
\$2 (70th–80th)	92	60	71

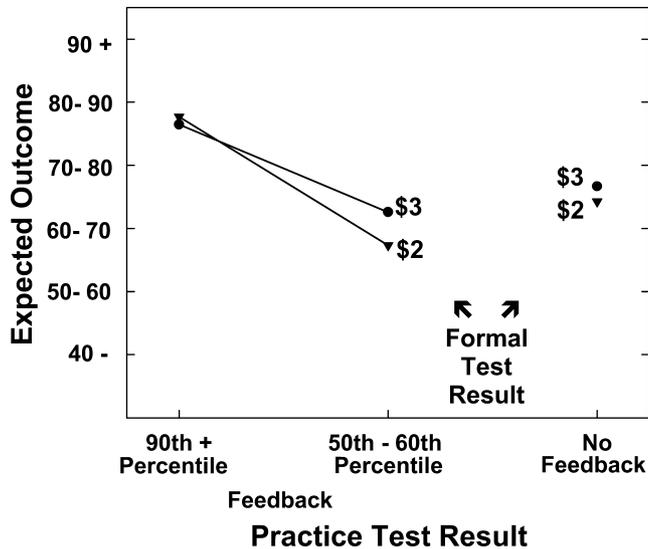


Fig. 4. Expected outcome after the formal test plotted against results of the practice test with separate points for outcome.

thoughts of “*I almost*” ( $M = 6.6$ ) than participants who received \$2 ( $M = 5.8$ ). The result is similar to previous findings of Medvec et al. and could indicate a tendency to generate counterfactual thoughts that were in line with break points, although there was no discernable effect of these thoughts on emotions.

### Discussion

Students taking a test of verbal achievement received test results and monetary rewards that fell just below a category in which substantially more money could have been won or just above a category in which no money could have been won. A practice test created prior expectations. Students were led to believe their performance on the practice test was exceptional or average. Expectations influenced emotions when feedback was provided. As expectations decreased, pleasure increased. When students received no feedback, their pleasure was directly related to actual outcomes and not to nearby breakpoints.

### Conclusion

Medvec et al. found that bronze medal winners in the 1992 Olympics appeared happier than silver medal winners. They advanced the argument that outcomes near salient categories breakpoints spontaneously evoked counterfactual comparisons. Furthermore, they ruled out the prediction that silver medalists had higher personal expectations than bronze medalists with a regression analysis that showed no effect of expected finish on happiness ratings.

In three studies, we demonstrate the potent effect of expectations on emotions. Study 1 used television footage of the 2000 Olympic athletes with gold, silver, bronze, and non-medal winners. With this expanded sample, we found a strong effect of expectations and minimal effects of category breakpoints. Study 2 shows that people make inferences about the emotions of athletes that are consistent with the results obtained in Study 1. Study 3 tests expectancy-based counterfactuals against category-based counterfactuals and finds strong support for expectations.

The claim that the most compelling counterfactual comparisons are psychological break-points is intriguing and may, indeed, occur. It is doubtful that any *single* type of counterfactual occurs in the minds of Olympic athletes or people in general. So what determines the counterfactual comparisons we make?

### Counterfactual determinants

Close calls can be salient counterfactuals (Kahneman & Varey, 1990). Imagine, for instance, a silver medalist who loses a race by the closest of margins to the gold medalist, but soundly beats the bronze medalist. Despite lower expectations before the race the silver medalist probably makes upward comparisons, and feels worse. Now, imagine instead that the silver medalist falls well short of the gold medalist, but just edges out a bronze medalist. The close call is a downward counterfactual and the silver medalist should feel better. In fact, the only reasonable way to imagine the silver medalist making an upward comparison would be if the silver medalist had prior gold medal expectations. In sum, close calls can quickly override prior expectations, particularly when the points of comparisons take on Medvec et al.’s categorical or qualitative distinctions.

Social comparisons also trigger ex post counterfactual processing (Bunnk, Collins, Taylor, & Van Yperen, 1990; Tesser, 1988). An athlete could make a downward counterfactual comparison by thinking “I only won the silver, but at least I beat out my rival.” Social comparisons can also lead to upward counterfactuals. Would Mary Decker have been as upset if she had been tripped by someone other than her biggest rival, Zola Budd, during the 1984 Olympics?

Beliefs about expectations can strengthen or weaken counterfactuals (Mellers et al., 1999). As demonstrated in Study 3, surprising outcomes produce stronger emotional reactions. Violations of strong beliefs can lead to greater counterfactual processing, as predicted by norm theory (Kahneman & Miller, 1986). As actual outcomes become more disparate from expected outcomes, emotions are amplified (Kahneman & Miller, 1986; Rose & Olson, 1995; Sanna & Turley, 1996).

### Mixed emotions

Recent research has shown that people can simultaneously experience emotions of opposite valences, such as happiness and sadness (Larsen, McGraw, & Cacioppo, 2001; Larsen, McGraw, Cacioppo, & Mellers, 2004). What happens when a silver medalist with low expectations falls just short of a gold medal? Perhaps the direction of counterfactual thinking vacillates upward and downward due to conflicting influence of expectations and category cutoffs, resulting in mixed feelings. We leave this question to future research.

### Contrast vs. assimilation

Medvec et al.'s results are powerful reminders of affective contrast. Yet we know that affective assimilation could also occur. Athletes could have positive thoughts of "I almost succeeded" (Markman & Tetlock, 2000). McMullen and Markman (2002) examined counterfactual situations in which the importance of extracting the correct lessons from history. Reactions of basketball players, coaches, and the media were more likely to show assimilation effects and view a close loss positively for the early games of a playoff series, but in final games they were more likely to show contrast effects and view a close loss negatively. In the Olympics, a close-call, second-place finish in a qualifying heat could lead to assimilation and increased satisfaction, but a close-call, second-place finish in the final event could lead to a contrast and diminished satisfaction.

In sum, the current results show the powerful effects of expectations on human happiness. Olympians are also humans, with expectations about their likely performance. They compare what they achieve to what they expected, and these comparisons can make inferior outcomes feel better than superior ones. Category-based counterfactuals can also occur, but expectation-based counterfactuals provide a simple, parsimonious explanation for the data.

### References

- Aronson, E., Wilson, T. D., & Akert, R. M. (2001). *Social psychology* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Atkinson, J. W. (1958). *Motives in fantasy, action, and society*. Princeton, NJ: Van Nustrand.
- Baron, R., & Byrne, D. (2003). *Social psychology* (10th ed.). Boston: Allyn & Bacon.
- Brehm, S. S., Kassin, S. M., & Fein, S. (2002). *Social psychology* (5th ed.). Boston, MA: Houghton Mifflin.
- Bunnk, B. P., Collins, R. L., Taylor, S. E., & Van Yperen, N. W. (1990). The affective consequences of social comparisons: Either direction has its ups or downs. *Journal of Personality and Social Psychology*, 59, 1238–1249.
- Cazeneuve, B. (2000, September). Olympic preview. *Sports Illustrated*.
- Feather, N. T. (1967). Valence of outcome and expectations of success in relation to task difficulty and perceived locus of control. *Journal of Personality and Social Psychology*, 7, 372–386.
- Feather, N. T. (1969). Attribution of responsibility and valence of success and failure in relation to initial confidence and task performance. *Journal of Personality and Social Psychology*, 13, 129–144.
- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, 93, 136–153.
- Kahneman, D., & Varey, C. A. (1990). Propensities and counterfactuals: The loser who almost won. *Journal of Personality and Social Psychology*, 59, 1101–1110.
- Larsen, J. T., McGraw, A. P., & Cacioppo, J. (2001). Can people feel happy and sad at the same time?. *Journal of Personality and Social Psychology*, 81, 684–696.
- Larsen, T., McGraw, A. P., Cacioppo, J., & Mellers, B. (2004). The agony of victory and the thrill of defeat: Mixed emotional reactions to disappointing wins and relieving losses. *Psychological Science*, 15, 325–330.
- Markman, K. D., & Tetlock, P. E. (2000). Accountability and close call counterfactuals: The loser who almost won and the winner who almost lost. *Personality and Social Psychology Bulletin*, 26, 1213–1224.
- McMullen, M. N., & Markman, K. D. (2002). Affective impact of close counterfactuals: Implications of possible futures for possible pasts. *Journal of Experimental Social Psychology*, 38, 64–70.
- Medvec, V. H., Madey, S. F., & Gilovich, T. (1995). When less is more: Counterfactual thinking and satisfaction among Olympic medalists. *Journal of Personality and Social Psychology*, 69, 603–610.
- Medvec, V. H., & Savitsky, K. (1997). When doing better means feeling worse: The effects of categorical cutoff points on counterfactual thinking and satisfaction. *Journal of Personality and Social Psychology*, 72, 1284–1296.
- Mellers, B. A. (2000). Choice and the relative pleasure of consequences. *Psychological Bulletin*, 126, 910–924.
- Mellers, B., & McGraw, A. P. (2001). Anticipated emotions as guides to choices. *Current Directions in Psychological Science*, 10, 210–214.
- Mellers, B. A., Schwartz, A., Ho, K., & Ritov, I. (1997). Decision affect theory: Emotional reactions to the outcomes of risky options. *Psychological Science*, 8, 423–429.
- Mellers, B. A., Schwartz, A., & Ritov, I. (1999). Emotion-based choice. *Journal of Experimental Psychology: General*, 3, 332–345.
- Miller, D. T., & Turnbull, W. (1986). Expectancies and interpersonal processes. *Annual Review of Psychology*, 37, 233–256.
- Myers, D. G. (2002). *Social psychology* (7th ed.). New York: McGraw-Hill.
- Olson, J. M., Roese, N. J., & Zanna, M. P. (1996). Expectancies. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 211–238). New York: Guilford Press.
- Roese, N. J., & Olson, J. M. (Eds.). (1995). *What might have been: The social psychology of counterfactual thinking*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Sanna, L. J., & Turley, K. J. (1996). Antecedents to spontaneous counterfactual thinking: Effects of expectancy violation and outcome valence. *Personality and Social Psychology Bulletin*, 22, 609–919.
- Schwartz, A., Mellers, B. A., & Metzger, T. (1999). Manipulating hedonic strategies in choice. In J. Shanteau, B. Mellers, & D. Schum (Eds.), *From bayesian to normative systems* (pp. 65–80). Boston, MA: Klumer.
- Tesser, A. (1988). Toward a self-evaluations maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181–227). New York: Academic Press.

Verschoth, A. (1992, July). Who will win what. *Sports Illustrated*.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*, 548–573.

Zajonc, R. B., & Brickman, P. (1969). Expectancy and feedback as independent factors in task performance. *Journal of Personality and Social Psychology*, *11*, 148–156.