

# The Spotlight Effect Revisited: Overestimating the Manifest Variability of Our Actions and Appearance

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Received August 25, 2000; revised April 19, 2001; accepted April 19, 2001; published online July 18, 2001

Three studies examined people's estimates of the perceived variability of their appearance and behavior in the eyes of others. Whether assessing the manifest variability of their physical appearance (Studies 1a, 1b, and 1c), their athletic accomplishments (Study 2), or their performance on a popular videogame (Study 3), participants consistently overestimated the extent to which their ups and downs would be noted by observers. The results of Study 3 suggest that this bias stems in part from a failure to appreciate the extent to which observers are preoccupied with managing their own actions. Discussion focuses on how this corollary of the "spotlight effect" can contribute to social anxiety and gnawing regrets of inaction. © 2001 Elsevier Science

Individuals are often called upon to perform the same activity on numerous occasions. To deliver the same research presentation at several universities and conferences. To give the same lecture year after year on, say, social facilitation or the central limit theorem. Or to perform some athletic activity in contest after contest. The research presented here examines people's assessments of the variability of their performances across time or, more specifically, the accuracy of their estimates of how variable their performance appears to others.

This research was supported by NSF Grants SBR9319558 and SBR9809262. We thank Ginny Carroll, Allison Himmelfarb, Nina Hattiangadi, Shane Steele, and Tyler Story for their help in collecting these data.

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Our analysis begins with the assumption that to the individual performer it is the departures from his or her typical level of performance that are in the foreground. The individual usually knows quite well his or her norm, and it is the ups and downs from that norm that are monitored. To an observer, however, who is rarely as certain of the performer's general ability level and must therefore try to discern it, it is the constancies in performance that are salient, with the departures relegated to the background. The actor, in other words, often focuses on what he or she has done *differently*; the observer on what was *done*. Because of this divergent focus of actors and observers, we predict that individuals tend to overestimate how variable their performance appears in the eyes of others.

As anecdotal support for this thesis, we offer the common fear—so common it is codified in our language—of having a "bad hair day." The concern about having a bad hair day is not simply that on some days one's hair behaves itself and on other days is recalcitrant. Rather, it is that others will *notice* those recalcitrant days. We suggest that such con-

cerns are exaggerated. Others are less likely to notice the troughs in one's appearance than one thinks.

This contention is derived from recent work on the "spotlight effect," or the tendency for people to believe that their actions and appearance are more likely to be noticed, judged, and remembered by others than is actually the case (Gilovich, Medvec, & Savitsky, 2000; Gilovich & Savitsky, 1999; Savitsky, Epley, & Gilovich, in press). In one set of studies, for example, participants who were dressed in an embarrassing T-shirt walked in on a group of people who were filling out questionnaires. When later asked to estimate how many of those present noticed their shirt, they wildly overestimated. In another study, contributors to a group discussion overestimated how salient their contributions to the group—both positive and negative—were to their fellow discussants. People tend to believe that the social spotlight shines more brightly on them than it actually does.

The spotlight effect appears to result, in part, from an anchoring and adjustment process. People are typically quite focused on their own actions and appearance. They recognize that others are likely to be less focused on them than they are themselves, and they try to adjust for that fact when anticipating how they are seen by others. As is typically the case with such adjustment processes, however, the adjustment tends to be insufficient (Gilbert, 1989; Jacobowitz & Kahneman, 1995; Tversky & Kahneman, 1974). The net result is that people's estimates of how salient their actions and appearance are to others is systematically off the mark.

The present research seeks to extend existing research on the spotlight effect—which has dealt with people's assessments of the salience of their momentary actions and appearance—by examining whether people similarly overestimate the manifest *variability* of their actions and appearance over time. We first report the results of three "bad hair day" studies that examine whether people overestimate how variable their own physical appearance seems to others across multiple occasions. We then examine the same question with respect to performance: Specifically, do athletes overestimate the extent to which the variability in their performance is noted by others? Finally, we examine whether the tendency to overestimate the manifest variability of one's performance results in part from a failure to appreciate that others are busy monitoring their own efforts and therefore do not have the attentional resources to monitor sufficiently those around them.

#### STUDIES 1a, 1b, AND 1c: BAD HAIR DAYS

We ran three replications of the same basic study. In each, an experimenter arrived, unexpectedly, at several sessions of a small seminar and administered the instructions. We asked each person in attendance to rate everyone in the seminar—themselves included—in terms of their physical appearance that day. We took care to explain that we were

not interested in their views of each person's *general* level of physical attractiveness, but in how each person looked relative to how he or she typically looked. Was each of the students having a good or bad day in terms of physical attractiveness? We also took care to explain that when rating themselves they were to rate how they thought the group as a whole would rate them—not as they saw themselves.

These ratings allowed us to compare how people thought they would be rated by everyone else with how others actually rated them. Because we elicited these ratings during five class sessions, we could compare how much variability each person expected in others' ratings of them with how variable those ratings actually were. To be specific, we compared the standard deviation of participants' five estimates of how they would be rated (on average) by everyone else with the actual average standard deviation of everyone else's ratings of them. We predicted that the former would be significantly higher than the latter—that participants would anticipate others' ratings of them to be more variable than others' ratings actually were.

#### Method

*Participants.* The participants were 23 students enrolled in seminars at Cornell University. In Study 1a, there were 5 women and 2 men; in Study 1b, 2 women and 4 men; and in Study 1c, 6 women and 4 men.

*Procedure.* An experimenter arrived, unannounced, for the first time several weeks into the semester, after students had been able to get a sense of one another's physical attractiveness. The experimenter explained that most people are familiar with the phenomenon of having good days and bad days in terms of physical appearance. The experimenter then handed out rating sheets and asked everyone to "... rate everyone in the class in terms of what type of day they are having. Keep in mind, we are NOT asking you to rate how attractive everybody is. Rather, we are asking you to rate everyone only in terms of how good a day they are having relative to their own other days." Participants made these ratings on a 7-point scale with endpoints labeled (1) "much worse than average" and (7) "much better than average" and the midpoint labeled (4) "perfectly average day."

When rating themselves, participants were asked to "... rate yourself AS YOU FEEL THE OTHER MEMBERS OF THE CLASS WOULD RATE YOU. Indicate as accurately as you can how you think the other people in the class would see your appearance today *relative to your appearance on other days.*"

After collecting everyone's questionnaires, the experimenter thanked everyone for participating and left without any mention of returning. The experimenter did in fact return, however, on four more occasions spread unpredictably throughout the semester. On each occasion, the exper-

imenter's visit had not been announced and no mention was made of returning another time. The surprise nature of the experimenter's visits was to ensure that the students did not engage in any special primping beforehand to enhance their appearance.

### Results

In each of the three courses we computed the standard deviation, across the five sessions, of participants' predictions of how they would be rated, on average, by everyone else in the group. We also computed, for each individual, the standard deviation of each of his or her fellow students' actual ratings of them and then calculated the mean of these standard deviations. Our analysis is based on a comparison of these measures of anticipated and actual variability in the participants' ratings.

Participants in all three studies substantially overestimated how variable their day-to-day appearance would seem to their fellow classmates. In Study 1a, the average standard deviation of participants' predictions of how they would be rated by their classmates was 1.02, whereas the corresponding actual standard deviation of their classmates' ratings was only .76, paired  $t(6) = 1.32, p > .05$ . In Study 1b, the average standard deviation of the anticipated ratings was .89 and the corresponding actual standard deviation was .78, paired  $t(5) = 1.40, p > .05$ . In Study 1c, the average standard deviation of the anticipated ratings was .97 and the corresponding actual standard deviation was .78, paired  $t(9) = 2.92, p < .02$ . Because of the small sample sizes, only the results from Study 1c were statistically significant. However, when the data from all three studies were combined meta-analytically, the overall pattern of results was highly significant, Stouffer's  $z = 2.74, p < .01$ . Considering the data as a whole, then, participants quite clearly expected the ups and downs of their physical appearance to register more with their classmates than they actually did.

We also computed the mean anticipated and actual ratings and found that overall participants thought they would be rated more negatively ( $M = 4.0$ ) than they actually were ( $M = 4.4$ ). This raises the possibility that our main finding—significantly greater variability in predicted ratings than in actual ratings—is an artifact of there being more “room” for the predicted ratings to vary because they are at the midpoint of the scale. Closer inspection of the data, however, shows that this is not the case. The difference between actual and anticipated ratings is almost entirely due to the anticipated ratings of three participants (one in each group) who thought they would be judged harshly by their classmates ( $M$ 's = 2.40, 1.67, and 2.33). The impact of these three participants' ratings can be seen in the fact that the *median* anticipated and actual ratings do not differ (4.20 and 4.25, respectively). More important, the atypically low anticipated ratings of these three participants are not responsible for the fact that the anticipated ratings overall are more

variable than the actual ratings: The mean standard deviation (*SD*) of these three participants' anticipated ratings (.88) is exactly the same as the mean *SD* of participants anticipated ratings as a whole (.88). Thus, the effect we report is not an artifact of the observed mean differences in anticipated and actual ratings.

### Discussion

The three replications of this “bad hair day” study provided consistent support for our thesis that people believe that the variability in their appearance is noticed by others more than it actually is. The blemishes and cowlicks that are so noticeable and vexatious to oneself are often lost on all but the most attentive observers. These results thus extend our earlier research on the spotlight effect: Because individuals overestimate the extent to which others notice their actions and appearance, it stands to reason that they overestimate the extent to which others are likely notice the *variability* of their actions and appearance as well. These three studies dealt exclusively with people's assessments of how salient the variability of their appearance is to others. Study 2 was designed as a parallel investigation of people's estimates of the manifest variability of their performance. For that study we turn from the domain of physical attractiveness to athletic competition.

#### STUDY 2: ATHLETIC COMPETITION

There are few areas in life in which performance—and variability in performance—is more scrutinized and quantified than in athletics. Whether during a stint in the big leagues or a pickup game in the schoolyard, athletes are typically aware that others are monitoring their performance, and the public nature of their efforts serves to intensify the “thrill of victory” and the “agony of defeat.” But are others typically as attentive to an athlete's efforts as athletes believe? More specifically, is the variability of their performance noticed by others as much as athletes think it is? Television cameras and slow-motion replays almost guarantee that it will be, with respect to professional or big-time collegiate athletics. But what about less high-profile, nontelevised athletics? Do the fluctuations in game-to-game performance—like the fluctuations in day-to-day appearance—command less attention than the athletes suspect?

To examine this question, we enlisted the help of the women's intercollegiate volleyball team at Cornell. We asked each player to rate the performance of everyone on the team, themselves included, after each of a series of intrasquad scrimmages in a manner similar to the previous study. Our predictions were also the same: If people overestimate the salience of the ups and downs of their performance, then the variability of the predicted ratings ought to exceed the variability of the actual ratings.

By moving from personal appearance to athletic competition, this study allowed us to determine whether the tendency to overestimate others' perceptions of the variability in one's performance is limited to domains in which feedback about others' impressions is minimized. After all, few domains offer less in the way of unambiguous social feedback—among adults at least—than physical appearance. There are strong social norms, to put it mildly, that prohibit all but the very young from honestly and unambiguously communicating—directly—their impressions of others' appearance (Goffman, 1955; Blumberg, 1972). Feedback in the athletic world, in contrast, is frequent and pointed. Players do not hesitate to offer clear feedback about their teammates' performance in an effort to correct mistakes and reward good performance (Felson, 1981). Opponents can also be counted on to comment on a player's shortcomings in the form of brutally frank "trash talk." As a result, athletes may be in a better position to gauge the extent to which the variability in their performance is noticed by others than are students interested in their classmates' impressions of their physical appearance. Nevertheless, we predicted that because people are so focused on their own behavior, and because people have a difficult time adjusting from the "anchor" of their own phenomenology, the volleyball players in this study would overestimate how salient the variability in their performance would be to their teammates.

### Method

*Participants.* Each member of the Cornell women's volleyball team was asked to participate on a voluntary basis. All 15 agreed.

*Procedure.* Players were approached at the end of eight randomly chosen practice sessions and asked to rate the performance of everyone on the team, themselves included, on that particular day. The women's volleyball team was chosen because it scrimmages during every practice after running drills to improve particular skills. For our study the team members were asked to compare each player's performance during that day's scrimmage with that player's typical level of play on a 7-point scale ranging from  $-3$  (much worse than average) to  $+3$  (much better than average). When rating themselves, players were asked to estimate how they would be rated—on average—by their teammates.

### Results

Consistent with the results of our bad hair day studies, players overestimated the extent to which their teammates would be attuned to the variability of their performance. The mean standard deviation ( $M = .92$ ) of the players' predictions of how their teammates would rate them across the eight scrimmages was an average of 28% higher than the

mean standard deviation ( $M = .72$ ) of their teammates' actual ratings, paired  $t(14) = 2.22, p < .05$ .

Also consistent with the results of Studies 1a–1c, the players thought they would be judged, on average, more harshly by their teammates ( $M = -0.26$ ) than they actually were ( $M = +0.23$ ),  $t(14) = -2.99, p < .01$ . This was true for 14 of the 15 players (binomial  $p < .01$ ). This result is consistent with our earlier research that shows that people overestimate the extremity of others' judgments of them, whether positive or negative, but that the effect is more robust in the aftermath of personal failures and mishaps (anticipated negative judgments) than in the aftermath of personal triumphs (anticipated positive judgments) (Savitsky et al., in press). It is important to note, however, that this difference in mean actual versus anticipated ratings cannot account for the primary finding of greater anticipated variability in others' ratings because the mean actual and anticipated ratings were equally near the midpoint of the scale, albeit on different sides. The primary finding, then, is not an artifact of there being more "room" on the rating scale for variability in anticipated ratings to be expressed.

### Discussion

Most people are familiar with the maxim "it's not whether you win or lose, it's how you play the game." The results of this study suggest that "how you play the game" is considerably less conspicuous than people think. Across eight scrimmages, volleyball players assumed that their teammates would detect an average of 28% more variability in their performance than they actually did. This indicates that the spotlight effect is not limited to domains in which feedback is minimized: Players overestimated the extent to which their teammates would notice variability in their game-to-game performance despite the fact that feedback about others' impressions of an athlete's performance is readily available (Felson, 1981).

### STUDY 3: VIDEOGAME PERFORMANCE

Why do others detect less variability in our performances than we think? One possibility is that whereas our own actions are salient and of paramount concern to us, the attentions of others may be directed elsewhere. The volleyball players in the previous study, for example, were not sitting idly on the sidelines scrutinizing each other's performances—they were busy playing as well. Some portion of the present effect may thus stem from people's tendency to correct insufficiently for the fact that others are preoccupied and cannot focus solely on them.

To investigate this possibility, participants in the present study played several rounds of a videogame and rated themselves and their teammates in a manner similar to that in the earlier studies. Unlike the previous studies, however,



participants also estimated how an audience member—uncumbered by his or her own active participation—would rate them. If people overestimate the degree to which others notice the variability of their performance in part because they fail to realize that others' attention is directed elsewhere, then the effect observed earlier should be attenuated when people consider the evaluations of someone whose attentions are exclusively focused on them. Thus, we expected the spotlight effect to be greater when participants considered the evaluations of a teammate than when they considered the evaluations of an audience member.

### Method

**Participants.** Seventy-five Cornell University undergraduates participated in groups of three. They were recruited from an introductory psychology course and earned extra credit for their participation.

**Procedure.** After being screened to ensure that they were unacquainted with one another, participants were randomly assigned the role of “blue player,” “red player,” or “observer” and given name tags specifying their roles. The experimenter informed everyone that the study was designed to investigate people's ability to monitor their own and other people's performance. Players then engaged in several rounds of a Nintendo game called “Contra,” in which two players assume the role of Nicaraguan “Contras” out to destroy an army of “Sandanistas.” After three practice games, participants played a total of five rounds of the game lasting approximately 5 min each.

After each round, the two players rated their own and their teammate's performance on a 10-point scale from 1 (very poorly) to 10 (very well). Specifically, the two players rated (1) how they thought they had performed themselves; (2) how well they thought their teammate had performed; and (3) how they thought their teammate would rate them. Players also estimated how the observer would gauge their performance, and the observers rated the performance of each player.

As in the previous studies, participants were instructed to compare a player's performance with that player's “general ability” and to rate his or her performance relative to that standard. Because participants in the present study did not know each other (and thus were unfamiliar with one another's videogame talents), they were instructed to compare the player's performance with his or her efforts during the three practice rounds.

### Results

To compare the variability in players' estimates of how their audience and teammate would rate them with the actual variability of these ratings, we conducted a 2 (predicted vs actual standard deviation)  $\times$  2 (teammate vs audience) ANOVA. Because the ratings made in each ses-

TABLE 1  
Predicted and Actual Manifest Variability in Performance,  
Videogame Study

Rater	SD <sup>a</sup>	
	Predicted	Actual
Teammate	2.09	1.87
Nonplayer observer	2.02	2.18

<sup>a</sup> Predicted values correspond to the mean SD of participants' estimates of how they would be rated after each of five rounds by the two other participants. Actual values are the mean SD of the raters' actual assessments across the five rounds.

sion were not independent, the data were analyzed at the level of the experimental session by averaging the results for the two players in each session. As predicted, this analysis revealed a significant interaction,  $F(1, 24) = 6.97$ ,  $p < .025$ , indicating that the difference between perceived and actual ratings depended on whether the ratings were made by teammates or observers. Examined more closely, players overestimated the extent to which their teammates would notice the variability in their game-to-game performance, consistent with the results of Study 2. As Table 1 indicates, the average standard deviation of players' round-to-round estimates of how they would be evaluated by their teammates was 17% higher than the average standard deviation of the ratings actually made by the other player, paired  $t(24) = 2.21$ ,  $p < .05$ .

Players did not overestimate the variability of the observer's ratings, however. Here, the average standard deviation of the estimated ratings was actually somewhat lower than the average standard deviation of the actual ratings, although this difference was not significant, paired  $t(24) = 1.13$ , *ns*.

An analysis of the mean ratings provided by participants revealed a similar pattern: players overestimated how harshly their teammate would rate them,  $M$ 's = 6.46 (predicted) vs 7.06 (actual),  $t(24) = 2.63$ ,  $p < .025$ , but not how harshly the observer would rate them,  $M$ 's = 6.42 (predicted) vs 6.62 (actual),  $t(24) < 1$ , *ns*. A 2 (predicted vs actual mean rating)  $\times$  2 (teammate vs audience) ANOVA revealed a marginal interaction,  $F(1, 24) = 3.22$ ,  $p = .085$ .

Because players evaluated their own performance, not just how they thought they would be rated by others, we could also test whether the data are consistent with the anchoring and adjustment account that we have shown elsewhere is responsible for the spotlight effect (Gilovich et al., 2000). In particular, if participants anchor on their own experience and then adjust, insufficiently, in recognition that others are less likely to be focused on their performance than they are themselves, then their ratings of their own performance ought to differ from their ratings of how the others will rate them in predictable ways. Specifically, when

participants feel they have performed *above* their mean level of performance, their estimates of how the observers will rate them should be *lower* than their self-ratings for that particular round. When participants feel they have performed *below* their mean level of performance, their estimates of how the observers will rate them should be higher than their self-ratings for that round.

We tested this hypothesis by first computing each player's mean rating of his or her own performance across the five rounds. We next examined, for each round, whether the player thought he or she performed better than average on that round, worse than average, or exactly average. We determined whether players anticipated less extreme ratings on the part of the other participants by subtracting players' self-ratings from how they expected to be rated by the other participants when participants thought they had performed better than average, and subtracted how they expected to be rated by the other participants from their self-ratings when they thought they had performed worse than average, so that in both cases negative numbers indicate regressive predictions. These difference scores were then averaged across the five rounds: once for participants' predictions of how they would be rated by the other player and once for how they would be rated by the observer.

As predicted, players' estimates of how they would be rated by the two observers were less extreme than their self-ratings. With respect to their teammates, participants' anticipated ratings were, on average, .20 scale points less extreme than their own ratings of their performance,  $t(24) = 3.33, p < .005$ . With respect to the observer, participants' anticipated ratings were .22 scale points less extreme,  $t(24) = 3.09, p < .005$ . These data are thus consistent with the claim that participants anticipate how they will be evaluated by others by adjusting from their own assessments of their performance.<sup>1</sup>

### Discussion

The results of this study provide further evidence that people assume that the variability of their performance is more conspicuous than it really is. Furthermore, these results suggest that this bias stems in part from people's failure to appreciate the extent to which the thoughts and attention of others are focused elsewhere. Participants whose sole task was to observe the players noticed more variability in the players' performance than did participants who were preoccupied with their own participation,  $t(24) =$

2.07,  $p < .05$ —yet players' estimates of how these two differentially burdened participants would rate them did not differ,  $t(24) = 1.49, ns$ . Thus, the spotlight effect manifested itself only when participants considered how their teammates would rate them.

### GENERAL DISCUSSION

The studies presented here provide support for a corollary of the spotlight effect (Gilovich et al., 2000; Gilovich & Savitsky, 1999; Savitsky, Epley, & Gilovich, in press). Not only do people overestimate the extent to which their isolated actions and appearance are noted by others, but they similarly overestimate the extent to which the *variability* in their actions and appearance are noted as well. The ups and downs that are such a big part of one's own experience rarely register so forcefully in others. As the results of Study 3 indicate, one reason that others are less attentive to one's actions than one might think is that others are typically busy monitoring their own actions. Because participants in Study 3 thought the variability in their performance would be noted equally by busy and unbusy observers, it seems that people fail to appreciate fully the importance of their audience's attentional demands.

There are a couple of areas of academic life that illustrate this tendency to overestimate the manifest variability of one's actions. As teachers, there are years in which we throw our hearts and souls into a course to make it the best it can be. There are other years, however, in which the demands on our time make it impossible to devote as much effort to the classroom. To borrow a stage term, we "mail it in." What is remarkable to observe, however, is how little the student evaluations differ from year to year despite this massive difference in effort expended. A giant difference in devotion to the classroom is rarely matched by a similar difference in student evaluations.

As scientists, there are times when we give essentially the same research presentation to different universities and conferences. Although we might wish it were otherwise, some small portion of the audience is frequently present on several of these occasions. Here too there is often a mismatch between how we think such observers are apt to respond and how they actually respond to the variability in the quality of the presentation from one time to another. Although the speaker may be obsessed with a flubbed line on one occasion and a crisp retort or an inspired quip on another, these deviations from the core presentation are rarely as salient to the audience. To them it is the same talk, and it is what is common to the different versions that is likely to command their thought and attention.

If there is a practical message of this research—and of the earlier research on the spotlight effect that inspired it—it is one of liberation. People are often anxious about how the tiniest details of their actions and appearance are likely to

<sup>1</sup> As an alternative test of this hypothesis, we compared the *SD* across the five rounds of players' estimates of how they themselves had performed with the *SD* of how they expected to be rated by the other participants. As predicted, the *SD* of participants' own ratings (2.12) exceeded the average *SD* of the anticipated ratings reported in Table 1, although only the self *SD* vs anticipated-observer *SD* comparison approached significance,  $t(24) = 1.72, p < .10$ .

come across to others (LaFrance, 2000). This anxiety can cause people to refrain from taking actions that are in their best interests to take, leading to regret over their inactions as a result (Gilovich & Medvec, 1994, 1995; Hattiangadi, Medvec, & Gilovich, 1995). The present findings suggest that some of this anxiety may be misplaced. Many of the details of our appearance or performance are likely to be lost on the audience whose opinions we so assiduously court. Thus, a more calibrated sense of how preoccupied and inattentive others often are can serve to diminish this anxiety and perhaps lead to more gratifying courses of action.

Study 3 points to an important limit to this conclusion, of course. When people's efforts are monitored by an unencumbered audience, their intuitions about what is likely to be noticed tend to be on the mark. A professional athlete, for example, whose every move is captured on videotape that can be endlessly replayed in exquisitely slow motion would be hard pressed to overestimate the variability of his or her game-to-game performance that is apparent to the most avid fan. But athletes might nevertheless overestimate how variable their performance will seem to their teammates, whose attentions are (hopefully) devoted to monitoring their own performance. Outside of such carefully monitored arenas, of course, the effect we have documented may be quite general. Strangers, colleagues, and even friends rarely have the luxury of devoting their full attention to either our triumphs or our slips and solecisms. They are typically busy managing their own actions and appearance and the impressions they hope to make. Their preoccupation will make *them* subject to the exaggerated estimates we have documented here, and so the various manifestations of the spotlight effect may be closer to the rule than the exception.

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