

Disability and Sunshine: Can Hedonic Predictions Be Improved by Drawing Attention to Focusing Illusions or Emotional Adaptation?

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People frequently miscalculate the long-term emotional impact of circumstances. The authors examine 2 causes of such miscalculations—a focusing illusion and underappreciation of adaptation. In Experiment 1, the authors found, in 852 adults, that quality of life estimates (for living with disability) were not increased by reducing focusing illusions. In Experiment 2, the authors found, in 698 adults, that people's disability estimates were increased by asking them to reflect on adaptation. In Experiment 3, the authors found, across 312 Midwestern college students, that both approaches reduced the participants' predictions of the life satisfaction of their peers living in southern California. In the case of living in a better climate, the results suggest that attention to either cause influences people's predictions, whereas in the case of chronic disability, the results suggest that it is easier to get people to appreciate adaptation than it is to reduce focusing illusions.

Keywords: affective forecasting, focusing illusion, hedonic adaptation, impact bias

Predicting how one will feel about future events is important for making decisions as trivial as selecting a meal at a restaurant to those as momentous as choosing the right career. Despite the importance of such predictions, however, people frequently miscalculate their own future feelings, overestimating the duration (Frederick & Loewenstein, 1999; Wilson, Meyers, & Gilbert, 2001) and intensity (Buehler & McFarland, 2001) of their reactions to positive and negative events. For example, college professors overestimate how long they will feel happiness if they receive tenure and the duration of their unhappiness if they do not (Gilbert et al., 1998), and football fans overestimate the intensity

of feelings in the days following a victory or a loss (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). College students in California assume that college students in the Midwest are significantly less happy than they are, and Midwestern students also think that California students are happier, when in fact both groups report similar levels of happiness (Schkade & Kahneman, 1998).

One of the most commonly replicated "happiness gaps" (Lacey, Fagerlin, Loewenstein, Smith, & Ubel, 2005) is that observed between the self-rated quality of life of people with health conditions and healthy people's estimates of what their quality of life would be if they had those conditions: Patients with chronic disabilities report that their quality of life is significantly better than the public estimates that it would be. For example, Sackett and Torrance (1978) found that the general public estimates the health-related quality of life (HRQoL) of dialysis at a value of .39 (on a scale where 0 indicates conditions as bad as death and 1 indicates perfect health), whereas dialysis patients estimate their HRQoL at .56. Using online mood assessments, Riis et al. (2005) found that dialysis patients experienced positive moods the majority of their waking hours, yet healthy people predicted that dialysis patients would experience unpleasant moods the majority of the time. Boyd, Sutherland, Heasman, Tritchler, and Cummings (1990) found that patients without colostomies estimated the HRQoL of living with a colostomy at .80, whereas patients with colostomies rated their own HRQoL at .92. A similar discrepancy has been seen between rheumatoid arthritis patients and the general public (Hurst et al., 1994).

What is the source of these happiness gaps? One possible source is measurement bias or error. People's self-reported happiness could be influenced by *scale recalibration*, which occurs if patients (or college students in the Midwest) norm their scale relative

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to other patients (or college students) or renorm it relative to the lower lows that they experience. However, Baron et al. (2003) found that the gap was larger rather than smaller when scale endpoints and midpoint were defined objectively. Likewise using a somewhat different methodology, Lacey et al. (2005) found that people with a serious chronic lung disease not only rated the quality of life associated with lung disease as higher than did those who did not have serious lung disease but also ranked lung disease higher (i.e., less bad) relative to a list of 24 bad things (deliberately chosen to span the range of badness) that could happen. The ranking results, in particular, were inconsistent with scale recalibration.

Alternatively, the happiness gap could result from patients misrepresenting their actual quality of life—for example, reporting high quality of life despite frequent periods of misery. However, such an account would predict a smaller discrepancy if one measured moment-to-moment feelings rather than overall evaluations, which Riis et al. (2005) failed to find. These and other plausible alternative accounts attribute the gap to measurement error. None, however, have been shown to account for the happiness gap (for reviews see Ubel, Loewenstein, & Jepson, 2003; Ubel, Loewenstein, Schwarz, & Smith, in press). Thus, our attention naturally turns to accounts that attribute the gap to miscalibrations on the part of nonpatients.

Two major explanations have been advanced for why people might overestimate the emotional impact of future events. First, some researchers have attributed the happiness gap at least in part to a focusing illusion: When anticipating future events, people focus disproportionately on, and thus exaggerate the importance of, things that would change in the future while ignoring things that would remain the same. For example, Schkade and Kahneman (1998) found that students in both California and the Midwest predict that they would be significantly happier living in California than in the Midwest, and this prediction correlated strongly with how important the students felt weather was to their quality of life. They interpreted the pattern as indicating that miscalibrations arise because students focus disproportionately on the impact of weather on their quality of life. A somewhat different kind of focusing illusion has also been shown to contribute to people's overestimations of how harshly they will be judged by others if they make embarrassing blunders or experience public failures (Savitsky, Epley, & Gilovich, 2001).

A second explanation for overpredictions is that people fail to appreciate the speed and extent to which they will emotionally adapt to changes in life circumstances (Gilbert et al., 1998; Loewenstein & Frederick, 1997). Emotional adaptation occurs in various forms (see Loewenstein & Frederick, 1997, for a review). For example, people often make active efforts to adjust to misfortune by finding new sources of happiness, reducing their expectations of what they need to be happy, or finding positive meaning in their adverse experience (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). In addition, even without intentional efforts to cope, the intensity of emotional responses diminishes over time. The death of a spouse is painful, but over time, the pain decreases for most surviving spouses (Lucas, Clark, Georgellis, & Diener, 2003). The same goes for happy events. A new car is enjoyable for several months, then life returns largely to normal (Suh, Diener, & Fujita, 1996). Yet, despite many experiences with strong emotions

that fade over time, people might forget to consider this characteristic of emotions when predicting their long-term happiness following good or bad events.

In an earlier study, we explored whether a focusing illusion contributes to the tendency for healthy persons to underestimate the quality of life reported by people with disabilities (Ubel et al., 2001). We asked participants to estimate the quality of life associated with paraplegia, below the knee amputation (BKA), or partial blindness. Then we attempted to defocus participants by having them reflect on the impact that these disabilities would have on a wide range of life domains. We felt that this defocusing task would keep people from thinking too narrowly about the life domains affected by the disability. For example, we asked people to think about how such a disability would affect their family life, assuming that for most it would have little effect. Contrary to our hypothesis, we found that the defocusing task did not cause participants to look more favorably (or at least less unfavorably) on a life with disability, but instead decreased their average estimates of the quality of life associated with such disabilities.

In contrast to earlier studies that have documented focusing illusions in domains as diverse as geographic location and reactions to ball games, our prior results do not provide support for the existence of a focusing illusion when it comes to chronic health conditions. What could account for this discrepancy? One possibility is that healthy people's ratings are, in fact, biased by a focusing illusion, but we failed to detect it because our defocusing task was ineffective. If this is true, then we should be able to demonstrate a focusing illusion by using a superior defocusing task. Alternatively, it is possible that the focusing illusion exists only for some types of events and not others. If this is true, then no focusing illusion should be detected even when a proven defocusing task is used.

We report results from three experiments that extend our previous work in an attempt to tease out these alternative explanations for the differences between our research and the earlier research on focusing. In Experiment 1, we attempted three new defocusing methods, all suggested to us in correspondence with authors who have demonstrated a focusing illusion in other studies. In Experiment 2, we explored whether asking people to think about adaptation influences their evaluations of chronic disabilities. We asked people to estimate the quality of life associated with paraplegia before and/or after reflecting on how their emotional reaction to past experiences (both good and bad) changed over time. In Experiment 3, we tested the impact that our defocusing and adaptation exercises had on nonhealth-related predictions. Specifically, we asked students at the University of Michigan to estimate how happy someone like them would be were they attending UCLA, either before and after, or only after, receiving one of our exercises.

Distinguishing Between a Focusing Illusion and a Failure to Predict Adaptation

Before presenting our research methods and results, it is important to draw a clear distinction between a focusing illusion and failure to consider adaptation. We define a *focusing illusion* as a failure to appreciate that not all life domains or life events will be equally affected by a given change in circumstances. For example,

when considering the impact of paraplegia on their quality of life, people may fail to consider that paraplegia will not affect their ability to enjoy a good TV show, a pleasant conversation, or a dinner with family and friends. This usage of what constitutes a focusing illusion is consistent with how others have defined the phenomenon. For example, Schkade and Kahneman (1998) described a focusing illusion as follows: "When a judgment about an entire object or category is made with attention focused on a subset of that category, a focusing illusion is likely to occur, whereby the attended subset is overweighted relative to the unattended subset" (p. 340). Loewenstein and Frederick (1997) likewise postulated that the tendency to exaggerate the hedonic impact of future events may result from a tendency to

overestimate the impact of any one factor on . . . quality of life. . . . Clearly, quality of life depends on a wide variety of different things, any one of which is likely to have only a small impact. However, perhaps when a respondent's attention is focused on a particular type of change—for example, in opportunities for fishing—they exaggerate its overall importance. (p. 66)

In addition, Wilson et al. (2000), who refer to this phenomenon as *focalism*, define it as a process "whereby people focus too much on the occurrence in question (termed the focal event) and fail to consider the consequences of other events that are likely to occur" (p. 822).

By contrast, a *failure to consider adaptation* is the failure to appreciate that one's emotional response to the given change in circumstances will diminish over time. To appreciate adaptation, it is not sufficient simply to estimate what will happen to one's life as a result of the change in circumstances; it is also necessary to have some degree of insight into a set of dynamic psychological processes, some of which are involuntary, that produce a change in the relationship between what happens and how one feels. People who have read a description of paraplegia should recognize that paraplegia does not affect the person's ability to enjoy a good TV show. However, they may fail to consider that the grief they will feel upon finding out that they have paraplegia will subside over time and that the sense of loss that they feel because they have to abandon favorite pastimes will be replaced by the joy they derive from other pastimes.

Failure to consider adaptation can be thought of as a distinct type of focusing illusion. In one type of focusing illusion, people mispredict the emotional impact of circumstances by focusing too narrowly on the difference between their current circumstances and the imagined ones. For example, college students misestimated the emotional impact of dormitory lotteries (determining where they will live on campus) because they focused too narrowly on the differences between various living spaces (good location vs. not so good) while paying less attention to the similarities across spaces (namely that their happiness would largely be determined by their living companions; Dunn, Wilson, & Gilbert, 2003). A second type of focusing illusion occurs when people focus on a specific change in circumstances while paying too little attention to other emotionally laden events likely to intervene over time. For example, a college football fan might imagine feeling elated on the Wednesday following a Saturday victory because he forgets to think about the organic chemistry test to take place Thursday morning (Wilson et al., 2000).

Failure to adequately account for adaptation is a third, and distinct, type of focusing illusion. If people focus too narrowly on the immediate emotional impact of a change in circumstances, they will underestimate how their feelings change over time. In part, their misestimates will arise because they ignore the way their mental attention will shift over time. Immediately after moving to California, they might wake up each day delighted to discover that it is 70° and sunny outside and look at the newspaper to glance at the miserable weather they left behind in Michigan. But as time passes, they will likely pay less attention to the weather, a broadening of their attention that people do not always consider when imagining life in Southern California. For the purposes of the experiments we present here, we treat failure to adequately consider adaptation as a separate cause of mispredictions and explore whether mispredictions are reduced more by targeting the first two kinds of focusing illusions or, instead, getting people to think more about adaptation.

Focusing illusions and failure to predict adaptation should also be distinguished from several other phenomena described in the literature. In characterizing people's hedonic mispredictions, experts have uncovered intensity biases (Buehler & McFarland, 2001), durability biases (Gilbert et al., 1998), and immune neglect (Gilbert et al., 1998). Intensity biases occur when people overestimate the immediate emotional impact of specific events (Buehler & McFarland, 2001). For example, college students predict that receiving a lower than expected grade on a test will cause a much greater level of immediate disappointment than they actually feel when they receive such grades. Durability biases, in contrast, center not on people's mispredictions of their immediate responses to circumstances but on their mispredictions of how long and strong their emotional reactions will be (Gilbert et al., 1998). People are elated when their football team wins a game but mispredict how rapidly such elation will fade.

The terms *intensity bias* and *durability bias* describe the type of mispredictions people make, without characterizing the mechanisms of such mispredictions. Immune neglect, by contrast, characterizes one mechanism accounting for mispredictions, that is, people's tendency to underestimate the speed with which they will find ways to rid themselves of unpleasant emotions (Gilbert et al., 1998). For example, when people receive positive feedback about themselves, they are happy, but eventually, their affect returns to baseline. People underestimate how quickly it will return to baseline. However, when they receive negative feedback, they quickly begin to rationalize the event leading up to the feedback; they engage in an active process designed to move their emotions back to baseline, and thus typically reach this baseline faster than if they had received positive feedback (Wilson et al., 2001). The term *immune neglect* refers to people's greater mispredictions in their response to negative events than positive ones. People overlook the active processes with which they will rid themselves of negative emotions.

Our experiments focus on two possible mechanisms of mispredictions (focusing illusions and failure to predict adaptation) that contribute to durability biases. In our studies, we do not explore intensity biases, nor do we look for asymmetry between people's predictions of how they would respond to positive and negative events.

Experiment 1: Further Exploration of the Role of a Focusing Illusion in Disability Ratings

In our previous research, we asked people to estimate the quality of life they would experience if they had paraplegia, BKA, or partial blindness (Ubel et al., 2001). Some participants provided quality of life estimates both before and after a defocusing task, whereas others provided estimates only after the defocusing task. In some questionnaires, this task consisted of asking people to imagine how the disability in question would affect a set of prespecified life domains, which is illustrated in the following example.

How much do you think having paraplegia would affect: (a) your overall health?; (b) your standard of living?; (c) your work?; (d) your love life?; (e) your family life?; (f) your social life?; (g) the spiritual side of your life?; (h) your leisure activities, such as hobbies, pastimes, travel, and entertainment?

In other questionnaires, we presented participants with an open-ended defocusing task, as follows. First, before presenting the description of the health condition to be rated, we asked participants to generate a list of five activities and pastimes important to them. Then, after an initial rating of the health condition, these participants were asked to consider how that condition would affect each of the five life domains they specified. We found no evidence that a focusing illusion has an aggregate effect on people's disability ratings. Instead, average disability ratings after the defocusing tasks were either unchanged or lower than participants' baseline ratings (with lower ratings reflecting worse quality of life).

In correspondence, several investigators who have demonstrated a focusing illusion in other domains questioned whether our previous study used appropriate defocusing methods. Specifically, the life domains used in our defocusing task did not involve the type of concrete events that some of these authors say contribute to the focusing illusion. By asking people to consider broadly defined life domains, we might have created a focusing illusion within each domain. For example, when asked to consider how paraplegia affects family life, people might have considered only those aspects of family life that would be detrimentally affected, while failing to consider other aspects that would be unaffected (or even improved).

Through discussions with these investigators, we developed three new defocusing tasks. The first asks people to think about concrete life events rather than vague life domains. For example, rather than asking people how paraplegia would affect their social life, we ask how it would affect their experience of a conversation with a good friend. The second defocusing task asks people to think about concrete events in proportion to the time they spend experiencing these events. For example, a focusing illusion might occur if people think about how paraplegia affects their ability to play tennis, despite playing tennis only 2 hr a week. If, instead, people are asked to think about how they spend most of their time, they should recognize that paraplegia will have little effect on many common activities (this defocusing task resembles the diary used by Wilson et al., 2000, to defocus football fans). The third defocusing task asks people to think specifically about aspects of life that would be worse, unchanged, or better after becoming

disabled. This task avoids encouraging people to focus disproportionately on those life events that are made worse by having a disability.

In Experiment 1, we explored how these three new defocusing tasks would influence participants' ratings of paraplegia or BKA. Specifically, we hypothesized that each of these defocusing tasks would increase participants' estimates of the quality of life they would experience if they developed paraplegia or experienced a BKA (an increase at least moderate in size per Cohen's [1977] definition).

Method

Participants

Participants were 852 prospective jurors in the Philadelphia County courthouse, who were selected from voter registration and drivers' license records. All participants were recruited by announcing in the juror waiting room that anyone who filled out a survey would receive a candy bar. Their average age was 41.5 ($SD = 12.8$). Their average number of years of education was 14.3 ($SD = 2.6$); 67% were female; 44% were African American, and 50% were Caucasian.

Construction of the New Defocusing Tasks

Concrete events questionnaire. To generate a list of concrete events for people to consider in the defocusing task, we surveyed prospective jurors in Philadelphia (a separate sample from those described above) and asked them to list common life events that caused them small amounts of happiness, large amounts of happiness, small amounts of unhappiness, or large amounts of unhappiness. To prevent participants from being aware of our purpose for developing such a list, the questionnaire made no mention of any disability and was not presented in connection with any other studies we were doing. The research team then read through the events and ranked them according to the frequency with which they were mentioned. (We counted only those events that we deemed to be concrete, e.g., "reading a book" as opposed to more general events like "social life.") We then created a list of the four most common good events and the four most common bad events. This list was included in the new questionnaire.

In the new questionnaire, we first asked participants to consider what it would be like to have the disability in question (either BKA or paraplegia), and then to think about how the disability would affect their experience of the eight concrete events illustrated below.

When people first think about a disability, it might seem pretty catastrophic. But many disabled people are surprised to find that many aspects of their life remain relatively unaffected. Of course, this depends on the nature of the disability and the particular person involved.

We are interested in knowing your thoughts about how certain aspects of your life might be affected by this condition. Here are some questions about how your life would change if you had paraplegia. Please think carefully about what your life would really be like and answer as honestly as you can.

If you had paraplegia, what would your experience of these things be like compared to now?

Visiting with friends and/or family

Paying bills and taxes

Vacation and travel

Getting caught in traffic

Physical recreational activities

Arguing with family and/or friends

Reading and/or watching TV or movies

Coping with death and/or illness in family

For each event, participants were asked to state what their experience of these things would be like on a 7-point scale ranging from -3 (*much worse than now*) to +3 (*much better than now*).

Time-weighted questionnaire. In this questionnaire, before any mention of either disability, we asked participants to write down five events that took up the largest amount of their time on the preceding day.

Think about the past day, starting from when you woke up yesterday to when you woke up this morning. What did you do yesterday? In the spaces provided, we would like you to list the things that took up the largest amount of time from yesterday when you woke up to today when you woke up.

We then asked participants to imagine how these five activities would be affected if they had the disability in question and rate them on the same 7-point scale described above. This defocusing task was similar to that used by Wilson et al. (2000), who defocused college football fans by having them write out a diary of how they would spend time in the week following the game. We felt that this activity would defocus participants by getting them to think about mundane and routine aspects of life that would be unaffected by a disability.

Changes for better or worse questionnaire. In this questionnaire, after asking people to think about the disabilities, we asked them to list aspects

of their life that would probably change for the worse, not change at all, or probably change for the better if they had the disability. Unlike the defocusing tasks previously described, this task explicitly instructs participants to defocus—to attend to things that would not be affected.

Study Design

We randomly assigned participants to receive 1 of 12 questionnaires. The questionnaires varied according to which defocusing task was used (concrete events, time weighted, or change for better or worse), which disability the participants were asked to rate (paraplegia or BKA), and whether they rated this disability before and after the defocusing task or only after.

For participants who rated the disability both before and after defocusing, we performed paired *t* tests to see whether their ratings changed significantly. Recognizing the possibility that these participants might anchor on their initial rating and therefore fail to exhibit defocusing, we also performed independent-samples *t* tests comparing the postdefocusing ratings of participants who gave only postratings with the predefocusing ratings of participants who gave both. In this and subsequent experiments, we chose sample sizes that provided us a minimum of 80% power in between-subjects analysis to find moderate differences between groups (*SDs* = ±0.50, α = .05).

Results

If, as we hypothesized, a focusing illusion was causing participants to overestimate the emotional impact of the given disabilities, their quality of life ratings should increase after the defocusing tasks. As shown in Table 1, however, asking participants to think about the effect of these disabilities on concrete life events

Table 1
Experiment 1 Results: Quality of Life Ratings (QoLR) Before and After Defocusing Tasks

Questionnaire	Disability	<i>n</i>	QoLR: Before		QoLR: After		<i>t</i>	<i>d</i>
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Concrete events								
1	Paraplegia	50	53.7	27.2	55.3	26.2	vs. Q1: 0.87	.12
2	Paraplegia	51			45.1	23.7	vs. Q1: 1.70	.34
3	BKA	53	71.5	19.6	72.6	19.1	vs. Q3: 1.83	.25
4	BKA	50			67.0	24.0	vs. Q3: 1.05	.21
Time-weighted daily events								
5	Paraplegia	57	50.7	29.2	49.6	26.9	vs. Q5: -0.54	.07
6	Paraplegia	60			44.6	24.9	vs. Q5: 1.22	.23
7	BKA	53	75.0	20.7	73.8	22.2	vs. Q7: -0.53	.07
8	BKA	54			66.9	26.9	vs. Q7: 1.74	.34
Change for better or worse								
9	Paraplegia	105	52.6	26.8	54.6	27.7	vs. Q9: -0.54	.16
10	Paraplegia	98			57.2	24.9	vs. Q9: 1.22	.18
11	BKA	117	74.5	19.2	75.4	17.6	vs. Q11: -0.53	.09
12	BKA	104			72.9	21.6	vs. Q11: 1.74	.08

Note. In the defocusing task, participants were instructed to imagine the impact of disability on life events. Disabilities were rated on a scale ranging from 0 (*quality of life as bad as death*) to 100 (*quality of life as good as perfect health*). Comparisons within a single questionnaire version are paired *t* tests. Comparisons across versions are independent samples *t* tests comparing the after defocusing task disability rating in one group with the before task rating in the other group. Blank cells indicate that these data are not applicable because there was no survey version. BKA = below the knee amputation.

did not increase their estimates of the quality of life of either disability. Those who rated the disabilities both before and after the defocusing task did not significantly change their ratings. Similarly, the postdefocusing ratings of those who gave only postratings did not differ significantly from the predefocusing ratings of those who gave both.

Similar results occurred for the time-weighted questionnaires. Participants who rated the disabilities both before and after the defocusing task did not significantly change their ratings, nor did those who gave ratings only after the defocusing task.

Participants who received the change for better or worse questionnaires and rated the disabilities both before and after defocusing also did not significantly change their ratings. The postdefocusing ratings of those who gave only postratings did not differ significantly from the predefocusing ratings of those who gave both. The sample size for these questionnaires is larger than for others in Experiment 1 because early evidence showed a nonsignificant trend toward increased health state ratings after this defocusing task. We wanted to see if this trend would turn out to be significant with a larger sample, but it did not.

In each of the questionnaires from Experiment 1, some of the participants who gave both pre- and postdefocusing health state ratings did exhibit increased ratings after defocusing, whereas for others, ratings decreased or remained unchanged. Specifically, 8 (7.8%) of 103 participants who received the concrete events questionnaire had decreased ratings, 80 (77.7%) had no change, and 15 (14.6%) had increased ratings. Of 110 participants who received the time-weighted questionnaire, the numbers were 13 (11.8%), 80 (72.7%), and 17 (15.5%), respectively; of 222 participants who received the changes for better or worse questionnaire, the numbers were 19 (8.6%), 164 (73.9%), and 39 (17.6%), respectively. Sign tests indicated that the percentages that decreased and increased did not differ significantly for the concrete events or time-weighted questionnaires, whereas for the changes for better or worse questionnaire, the difference was significant ($z = -2.50$, $g = .17$, $p < .05$). It should be noted, however, that the sign test ignores cases in which ratings did not change.

Table 2 illustrates how people responded to the concrete events defocusing task (the only task which had identical items for all participants). Besides *reading, watching TV/movies*, participants

were inclined to think that their experience of each concrete event would be either worse or unchanged if they had the disability. We examined associations between responses to these defocusing items and participants' quality of life estimates. To do this, we created a summary index of defocusing as the mean of responses to the eight defocusing items. This index therefore had a potential range of -3 to $+3$, with higher scores denoting a belief that paraplegia or BKA would have less of an adverse effect (or, in the case of positive scores, a salutary effect) on the participant's current quality of life. The index had high internal consistency (Cronbach's $\alpha = .83$ for ratings of paraplegia, $.86$ for ratings of BKA, and $.85$ for all ratings combined). For each of the two health states, we then performed a linear regression of the postdefocusing health state ratings on the defocusing index, controlling for predefocusing ratings. The defocusing index contributed significantly to the model of paraplegia ratings, $t(46) = 3.71$, $p < .01$, $R^2_{\text{change}} = .05$, indicating that participants with higher scores on the defocusing index displayed more of an increase in their ratings of paraplegia than did other participants. The index did not contribute significantly to the model of BKA ratings, $t(50) = -0.19$, ns , $R^2_{\text{change}} < .01$.

Discussion

The results of Experiment 1 corroborate and extend the findings of our previous research. Exercises designed to reduce the focusing illusion have no aggregate effect on participants' ratings of the quality of life associated with paraplegia and BKA and actually caused many participants to give lower ratings than they would have otherwise. This was true even for a task that explicitly instructs participants to consider aspects of life that would remain unaffected or be improved by the disability. The failure of any of these different defocusing interventions to raise people's estimates of the quality of life associated with either disability provides further, albeit negative, evidence that the discrepancy between healthy people's predictions, and patients' self-reports, of the quality of life associated with disabilities is not the result of a focusing illusion.

Table 2
Percentage of Experiment 1 Participants Perceiving That Disability Would Make the Experience of Concrete Events Worse, the Same, or Better

Concrete event	Paraplegia			BKA		
	Worse	Same	Better	Worse	Same	Better
Visiting with friends/family	68	20	12	33	56	11
Paying bills/taxes	36	53	11	24	69	7
Vacation/travel	84	9	7	66	23	10
Getting caught in traffic	48	38	13	34	56	10
Physical recreational activities	84	7	9	81	11	8
Arguing with family/friends	28	58	13	15	76	10
Reading, watching television/movies	12	61	27	4	82	15
Coping with death/illness in family	30	57	13	22	59	20

Note. Percentages do not always sum to 100 because of rounding. BKA = below the knee amputation.

Experiment 2: Are Disability Ratings Influenced by Failure to Adequately Consider Adaptation?

The results of Experiment 1 suggest that, to whatever extent the general public overestimates the impact of disabilities on their quality of life, it is unlikely that trying to reduce a focusing illusion will improve their predictions. This raises the question of whether the other misprediction mechanism we discussed, failure to consider adaptation, might be contributing to people's overestimates of the impact of disabilities on quality of life.

In Experiment 2, we asked people to predict their quality of life if they had paraplegia. We asked some participants to estimate the quality of life of paraplegia before and after an adaptation exercise. We asked others to estimate the quality of life only after one of these adaptation exercises. We hypothesized that each of these adaptation exercises would increase participants' estimates of the quality of life they would experience if they developed paraplegia (an increase at least moderate in size per Cohen's [1977] definition).

Method

Participants

Participants receiving the broad adaptation exercise (see below) were 179 prospective jurors in the Philadelphia County Courthouse. Their average age was 42.7 ($SD = 12.6$). Their average number of years of education was 14.3 ($SD = 2.6$); 69% were female; 35% were African American, and 58% were Caucasian. Participants receiving the narrow adaptation questionnaires and the multiple time points questionnaires (see below) were visitors to the University of Michigan Hospital and were recruited from the hospital cafeteria. The average age of those receiving the narrow adaptation exercise was 45.1 ($SD = 15.6$). Of these participants, 19% completed high school only, and 79% received schooling beyond high school; 57% were female; 7% were African American, and 88% were Caucasian. For those receiving the multiple time points questionnaire, the average age was 45.7 ($SD = 15.4$); 16% had completed high school, and 83% had received schooling beyond high school; 58% were female; 7% were African American, and 87% were Caucasian.

Materials

Broad adaptation exercise. To get participants to think about whether they would adapt to the disability in question, we asked them to consider a previous life experience that was emotionally difficult. Then we asked them to think about whether their emotions changed over time and whether they ended up feeling worse, about the same, or better than they would have predicted after this experience. In addition, we asked people to think about how they might specifically attempt to adapt to the disability in question. We asked what they would do to adapt physically, what activities they might begin if they had paraplegia, and what they might do to cope emotionally with paraplegia. We then asked whether they thought they would be more or less likely than the average person to cope well with paraplegia. Finally, we asked them whether they thought the experience of paraplegia would become more or less upsetting over time. The specific wording of the broad adaptation exercise is shown in the Appendix.

Narrow adaptation exercise. The broad adaptation exercise asks people not only to think about how the experience of disability is likely to change over time but also to imagine what they would do to minimize the emotional impact of the disability. In separate questionnaires, we narrowed our adaptation exercise to see whether views of life with a disability change if we narrow the intervention to asking people to think solely about how

their emotional response to prior negative and positive circumstances had changed over time. We asked participants to think back to a negative emotional experience and indicate whether their emotional response to the experience got stronger or weaker over time and whether their long-term emotional reaction was better or worse than they would have predicted, which is a subset of the broad adaptation exercise summarized previously. To minimize demand effects, we then asked them the same questions for an emotionally positive experience that occurred 6 or more months earlier.

Multiple time points adaptation exercise. As a third approach to the same problem, we simply asked people to rate the quality of life they imagined they would experience both 1 month and 5 years after developing paraplegia. We randomized participants across three questionnaires. One group rated the quality of life with paraplegia after 1 month on the first page of the questionnaire and then rated the quality of life at 5 years on the second page. A second group of participants performed these tasks in reverse. On the first page of the questionnaire, the remaining participants were told that they would be asked to provide both ratings and then provided those ratings on the second page. Our idea was that contrasting the 5-year interval to the 1-month interval, through either sequential or simultaneous presentation, would increase attention paid to adaptation. As we did not think that people presented with the 5-year interval first would think about adaptation, we did not expect their responses to change when we subsequently asked them about the 1-month interval.

Results

Table 3 shows participants' estimates of the quality of life associated with paraplegia before and after the broad and narrow adaptation exercises. Participants who provided quality of life estimates both before and after the broad adaptation exercise increased their estimates, from a mean of 47.0 to 51.6 on the 0–100 scale. Participants who provided quality of life estimates only after the adaptation exercise rated the quality of life of paraplegia at 62.2 (which is significantly higher than the preadaptation rating of the first group of participants). Of the 123 participants who rated paraplegia both before and after the adaptation exercise, 45 (37%) increased their ratings, with 33 (27%) increasing their ratings by 10 points or more and 18 (15%) increasing their ratings by 20 points or more; only 11 (9%) participants' ratings decreased. A sign test indicated that the proportion of participants whose ratings increased was significantly greater than the proportion whose ratings decreased ($z = 4.41, g = .30, p < .01$).

Further analysis of responses to the broad adaptation exercise confirmed that people's beliefs about adaptation can influence their quality of life estimates. More specifically, we examined associations between participants' responses to three closed-ended items in the exercise (Questions 1, 6A, and 7 in the Appendix) and their quality of life estimates. First, among participants who rated paraplegia both before and after the adaptation exercise, we explored the relationship between their responses to the three closed-ended items and the change in their quality of life ratings. Specifically, we performed linear regressions of the postratings on responses to each of the three items, controlling for preratings. Responses to the item about a previous experience that turned out better than predicted did not contribute significantly, $t(117) = 1.18, ns, R^2_{\text{change}} = .004$. Belief that one would be more likely than the average person to cope well with paraplegia, however, did contribute significantly, $t(115) = 3.44, p < .01, R^2_{\text{change}} = .03$, as did belief that paraplegia would become less upsetting over time,

Table 3

Experiment 2: Quality of Life Ratings (QoLR) Before and After the Broad and Narrow Adaptation Exercises

Questionnaire	<i>n</i>	QoLR: Before		QoLR: After		<i>t</i>	<i>d</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
1 Broad exercise: Pre/post	123	47.0	27.3	51.6	27.2	vs. Q1: 3.03**	.27
2 Broad exercise: Post only	56			62.2	19.7	vs. Q1: -3.73**	.61
3 Narrow exercise: Pre/post	151	50.6	26.8	58.5	23.8	vs. Q3: 6.48**	.30
4 Narrow exercise: Post only	145			52.7	23.7	vs. Q3: 0.05	.08

Note. The quality of life associated with paraplegia was rated on a scale ranging from 0 (*quality of life as bad as death*) to 100 (*quality of life as good as perfect health*). Comparisons within a single questionnaire version are paired *t* tests. Comparisons across versions are independent samples *t* tests comparing the after defocusing task disability rating in one group with the before task rating in the other group. Blank cells indicate that these data are not applicable because there was no survey version.

** $p < .01$.

$t(113) = 4.68, p < .01, R^2_{\text{change}} = .06$. In a linear regression of the postratings on all three items plus the preratings, only the belief that paraplegia would become less upsetting over time contributed significantly to the model, $t(111) = 4.52, p < .01, R^2_{\text{change}} = .05$.

Next, we tested for associations between responses to the adaptation items and initial quality of life ratings to see whether these initial ratings, uninfluenced by the adaptation exercise, were nevertheless associated with beliefs about adaptation. We found strong correlations of initial quality of life estimates with having had a previous experience that turned out better than predicted, $r(118) = .23, p = .01$; with the belief that one would be more likely than the average person to cope well with paraplegia, $r(116) = .39, p < .01$; and with the belief that paraplegia would become less upsetting over time, $r(114) = .35, p < .01$. In a linear regression, responses to these three items explained 22% of the variance in initial quality of life ratings, $F(3, 109) = 10.38, p < .01$; all three contributed significantly to the model, $t(109) = 2.14, 2.48, \text{ and } 2.24$, respectively; all $ps < .05$; $R^2_{\text{change}} = .03, .04, \text{ and } .04$, respectively. These results suggest that, even without going through an adaptation exercise, people's beliefs about the effect of paraplegia on their quality of life were connected with their beliefs about adaptation.

Responses to the narrower adaptation exercise were less dramatic. Those who rated paraplegia only after receiving the adaptation exercise provided ratings similar to those of participants who had not yet undergone the exercise. However, consistent with the broader adaptation exercise, those who rated paraplegia both before and after the narrow exercise significantly raised their estimates of the quality of life of paraplegia. Among this group, 27 raised their quality of life estimate after completing the adaptation exercise, 39 did not change their estimate, and only 4 lowered their estimate (sign test: $z = -3.40, g = .37, p < .01$). Unlike the broader adaptation exercise, we found no correlation between participants' responses to the adaptation exercise and their initial ratings of the quality of life of paraplegia.

Table 4 shows responses to the multiple time point adaptation exercise. The two groups who rated the two time periods one at a time did not rate the quality of life at 5 years significantly higher

than the quality of life at 1 month. Those who were told beforehand that they would rate both time periods, however, rated the quality of life at 5 years as being significantly higher than at 1 month, $t(72) = -4.81, p < .01, d = .61$. However, as can be seen from the table, these participants did not give higher 5-year quality of life ratings than did the others but, rather, gave lower 1-month ratings.

Discussion

Across three adaptation exercises, we found evidence that people believe on average that the experience of chronic disability improves over time and that asking them to think about these changes over time increases their estimates of the quality of life that they would experience if they developed paraplegia. Not surprisingly, the less attention we drew to the process of adaptation, the less impact our exercise had on people's ratings, with effect sizes, in some cases, diminishing to only small effects. When we asked participants to think not only about how the emotional experience of events would change over time but also about the measures they might take to influence their long-term emotional reaction to disability, they significantly altered their ratings. When we did not draw their attention to these adaptive measures, their

Table 4

Experiment 2: Means and Standard Deviations of Quality of Life Ratings (QoLR) for Paraplegia at 1 Month and 5 Years

Questionnaire (Q) and order of rating	<i>n</i>	QoLR: 1 month		QoLR 5 years	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Q1: 1 month first	72	46.4	25.3	59.0	29.0
Q2: 5 year first	76	47.7	30.2	49.8	26.7
Q3: Simultaneous	75	38.3	29.8	56.5	30.1

Note. The quality of life associated with paraplegia was rated on a scale ranging from 0 (*quality of life as bad as death*) to 100 (*quality of life as good as perfect health*).

responses diminished. And when we asked them only to think about the quality of life at two time points, either they did not pay attention to how their emotions would change over time or they downgraded their estimates of how they would feel in the first month after developing paraplegia. Taken together, these results show that in contrast with our defocusing interventions, each of the adaptation interventions had at least a small influence on people's evaluations of life with disability. Stronger interventions hold the potential for eliciting stronger effects.

The results from this experiment may have been influenced by the disparate samples of participants across experimental conditions. However, we had no a priori reason to expect that people's responses to our adaptation exercises would differ across samples. Moreover, the pattern of our results fits the intensity of our stimuli, with participants' responses being influenced more by the broad adaptation exercise than by the narrow one.

Experiment 3: How Hot Is California, When You Think About It?

In Experiment 1, we found no evidence that aggregate disability ratings are influenced by defocusing exercises. To the extent that a focusing illusion contributes to people's estimates of what it would feel like to experience disability, the focusing illusion is difficult to eradicate. By contrast, in Experiment 2 we found that people's estimates were significantly altered by adaptation exercises, suggesting that people's overestimation of the impact of disability on their lives can be reduced by getting them to think explicitly about how their emotions are likely to change over time. We also found that people's initial estimates of the quality of life associated with disability were associated with the degree to which they personally recalled adapting to a negative experience.

These findings have implications for the interpretation of other published studies on this topic. In other domains, where overestimates of the impact of hypothetical events have been attributed to a focusing illusion, was a failure to consider adaptation also at work? And if so, what practical ramifications might this have? In other words, when trying to help people make better predictions about their emotional reaction to life events, is it always more fruitful to ask them to consider adaptation than to try to defocus them?

Wilson et al. (2000) have previously demonstrated that a focusing illusion can be reduced by asking people to fill out an imaginary diary of the way they would spend their time in the days following a football game; this diary exercise reduced their overestimations of the emotional impact of winning or losing the football game. The impact of this exercise on their predictions suggests that defocusing can improve people's hedonic estimates, in contrast to evidence we presented in our earlier work (Ubel et al., 2001) and from Experiment 1 reported here. We did not reproduce the Wilson et al. defocusing exercise in our experiments because their diary exercise is better suited to transitory events like football games than to chronic ones like living with disability. Nevertheless, our defocusing exercises resembled the Wilson et al. exercise in several important ways—one of our exercises asked people to think about how they spend their time, which is a major focus of the Wilson et al. diary exercise, and another of our defocusing exercises asked people to think about how disability

would affect their experience of concrete events, which is another main component of the Wilson et al. diary exercise.

So why did the Wilson et al. (2000) defocusing exercise work whereas ours failed? One possibility is that defocusing works better for transient events, like emotional reactions to football games, than for chronic ones. Another possibility is that their diary exercise did not work solely as a defocusing exercise but also worked because it got people to think about adaptation. The diary exercise might have caused people to think more explicitly about how their emotions would change over time, much the way our adaptation exercise did in Experiment 2.

To sort out these potential explanations, we conducted an experiment to test whether mispredictions in nondisability domains would be altered by either the defocusing or adaptation exercises. We studied University of Michigan students' predictions of what life would be like in southern California. We chose this prediction for three reasons. First, it is a prediction in which a focusing illusion has been well established; second, it is a prediction about a chronic event, thereby making it more comparable to our health scenarios; and third, our team is centered at the University of Michigan, which facilitated data collection. We hypothesized that each of these tasks would reduce students' estimates of the life satisfaction experienced by peers in California (a reduction at least moderate in size per Cohen's [1977] definition).

Method

Participants

We surveyed University of Michigan undergraduates, recruiting them in common meeting places on campus by offering a candy bar in exchange for their participation. All participants ($N = 312$) completed questionnaires. Their mean age was 19.8 ($SD = 2.2$), 62% were female, and 72% were Caucasian.

Questionnaire Design

We randomized students to one of five questionnaires. In all cases, we asked students to predict the life satisfaction of someone like them on a scale ranging from -5 (*extremely dissatisfied*) to $+5$ (*extremely satisfied*). This is the same scale used in the Schkade and Kahneman (1998) original focusing illusion experiment.

One group of students predicted the life satisfaction of a student with the same values and interests attending the University of Michigan. The remaining four groups predicted the satisfaction of a student with the same values and interests attending UCLA. Two of these groups received a defocusing exercise similar to one from our previously published study (Ubel et al., 2001), and two received the narrow adaptation exercise modified from that used in the present Experiment 2. Some students made predictions before and after the exercise and some only after the exercise. The randomization scheme is shown in Table 5.

Results

The first finding of note is shown in the third column of Table 5. In contrast to the Schkade and Kahneman (1998) study, students did not predict that life would be better in California than it would be in Michigan, (satisfaction ratings: $M = 2.8$ for life in Michigan vs. 2.7 and 2.5, respectively, for life in California). This finding cannot be attributed to the timing of our data collection. We

Table 5
 Experiment 3: Pre- and Postintervention Life Satisfaction Ratings (LSR)

Questionnaire (Q) and group	<i>n</i>	LSR: Preintervention		LSR: Postintervention		<i>t</i>	<i>d</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Q1: University of Michigan	71	2.8	1.7			vs. Q2 ^a : 0.08 vs. Q4 ^a : 0.69	.02 .13
Q2: UCLA defocusing—Pre/post	43	2.7	2.0	2.1	2.3	vs. Q2: -3.26**	.28
Q3: UCLA defocusing—Post	76			1.7	2.2	vs. Q2: 2.49*	.47
Q4: UCLA adaptation—Pre/post	45	2.5	1.7	1.8	1.8	vs. Q4: -2.33*	.37
Q5: UCLA adaptation—Post	77			2.5	1.6	vs. Q4: 0.03	.01

Note. The University of Michigan group was asked to estimate the life satisfaction of someone like them who was attending the University of Michigan. University of California, Los Angeles (UCLA) groups were asked to estimate the life satisfaction of someone like them who was attending UCLA. (All participants were University of Michigan students.) Satisfaction was reported on a scale ranging from -5 (*extremely dissatisfied*) to +5 (*extremely satisfied*). Blank cells indicate that these data are not applicable because there was no survey version.

^a These are preintervention questionnaires.

* $p < .05$. ** $p < .01$.

collected our data late in the fall semester, after the weather began getting cold, to minimize the chance that we would catch people on warm, sunny days when they would dismiss thoughts of California weather as being better. The average high temperature during the time of our data collection was 29 °F. It was cloudy during 80% and rainy or snowy during 7% of the data collection.¹

Our second major finding was that Michigan students' ratings of what it would be like to go to school in California were diminished by both the defocusing exercise and the adaptation exercise. For example, among students receiving the defocusing exercise, the within-subject estimate of life satisfaction in California declined from 2.7 to 2.1 after the exercise. Those who rated life in California only after the exercise estimated a satisfaction level of 1.7 compared with preexercise ratings of 2.7 for the other group of students. Among students receiving the adaptation exercise, the within-subject estimate of life satisfaction declined from 2.5 to 1.8 after the exercise. However, those who rated life in California only after the exercise did not provide lower estimates than did those rating it prior to the exercise, with a mean rating of 2.5 compared with the preexercise rating of 2.5 for the other group of students. Thus if Michigan students had erroneously predicted that their life would be better in California, either intervention would have decreased the bias though somewhat more robustly for the defocusing exercise than for the adaptation exercise.

General Discussion

There is by now a large and consistent body of evidence showing that healthy people predict that their quality of life with various disabilities would be lower than the quality of life actually reported by people who have those disabilities (Ubel et al., 2003). However, although this "happiness gap" is well established, its causes are not well understood. Some researchers have speculated that the happiness gap might be caused by scale artifacts or other measurement issues, but tests of such accounts have not been supportive. As a result, attention naturally turns to explanations that implicate miscalibrations on the part of nonpatients.

Two psychological mechanisms have been identified in the broader literature on affective forecasting that could potentially

explain why nonpatients underestimate the quality of life of people with disabilities: a focusing illusion and underappreciation of adaptation. The goal of the current article is to examine the likelihood that each is contributing to the happiness gap observed for disabilities by testing the effectiveness of different interventions designed to mitigate them. To the extent that either mechanism actually contributes to the happiness gap, and to the extent that an experimental intervention successfully debiases the mechanism, we should observe a reduction in the magnitude of the gap.

In Experiment 1, which includes responses from several hundred participants, we found no evidence that attempting to minimize the focusing illusion changes nonpatients' estimates of the quality of life associated with chronic disabilities. It is, of course, possible that the failure of the defocusing interventions, rather than reflecting negatively on the role of focusing in the happiness gap, might result from the inadequacy of our defocusing methods. However, we think that this is unlikely. Wilson et al. (2000) found that having students complete a diary exercise designed to "defocus" them improved their predictions of their emotions in the week following a football game, specifically making them realize that the game would not have as enduring an impact on their mood as they otherwise predicted that it would. The success of the Wilson et al. intervention suggests that defocusing is a viable tool for testing for a focusing illusion. Moreover, in addition to attempting an intervention similar to that used by Wilson and his collaborators, we tested the impact of a variety of defocusing tasks, some of which were suggested by defocusing researchers, and none significantly reduced the happiness gap.

¹ One year prior to collecting the data we report here, we collected similar data from 747 Michigan students, with the same pattern of results reported here (i.e., Michigan students rated the happiness of Michigan students as being greater than that of UCLA students). At that time, we requested a copy of the Schkade and Kahneman (1998) original questionnaire and discovered subtle differences in wording, which we eliminated in the current study. Nevertheless, we failed to replicate Schkade and Kahneman's finding over 2 successive years in a sample of over 1,000 students.

In contrast to the negative results for focusing, we found positive evidence that asking people to think about adaptation increases their estimates of the quality of life associated with disabilities. After thinking about how they had adapted to adversity in the past, people tended to estimate that disabilities would have less impact on their quality of life than they would have otherwise estimated in the absence of such an intervention. The finding that directing people's attention to adaptation reduces the size of the gap strongly supports (a) the conclusion that failure to consider adaptation contributes to the gap and (b) the general idea that people often underestimate their own powers of adaptation (Gilbert et al., 1998).

These results do not prove that focusing illusions play no role in people's estimates of unfamiliar disabilities. In fact, some participants in Experiment 1 did increase their quality of life estimates after the defocusing task, and in our earlier published study (Ubel et al., 2001), we quoted several examples of people whose written explanations of their disability ratings were consistent with a focusing illusion. However, such participants were in the minority. The majority of participants were either uninfluenced by our defocusing tasks or, after thinking more broadly about the impact of the disabilities in question, ended up concluding that the disabilities would have an even greater impact on their quality of life than they had first estimated.

There is no inherent contradiction, however, between our results and those of Wilson et al. (2000). It is entirely possible that a focusing illusion contributes to students' exaggeration of how long they will feel good or bad if their sports team wins or loses but not to their predictions of the quality of life associated with disabilities. Focusing is a plausible explanation for people's miscalculations of their long-term reactions to the outcome of a ball game, which, in the scheme of things, is in fact a relatively trivial outcome with few long-term consequences. It is a less likely explanation for miscalculations of the quality of life associated with serious disabilities, where the consequences are in fact broad, lasting, and profound. Perhaps disabilities seem nontrivial and so one-sidedly bad that, even after reflection, people find it too counterintuitive to imagine that their overall quality of life would not be strongly affected. Maybe even imagining such a disability would seem like "tempting fate." By contrast, most people should find it relatively easy to acknowledge that a sports victory is relatively trivial and transient and that a move to a different region could have both advantages and disadvantages, least profound of which is the weather. This suggests that, in the domain of disability, the focusing illusion may be like a compelling visual illusion—even though one knows it is an illusion, one can still see it.

What does our experiment say about previous research that has demonstrated a focusing illusion in other domains? Were college students' overpredictions of their quality of life in a different region actually examples of failure to consider adaptation rather than a focusing illusion? We do not think so. To begin with, our defocusing exercise had a slightly more consistent influence on students' attitudes toward living in California than did our adaptation exercise. Second and more importantly, a focusing illusion and a failure to consider adaptation are not mutually exclusive processes. Schkade and Kahneman (1998) demonstrated that Midwestern students were especially likely to rate the quality of life of hypothetical California students as being high when they placed

great importance on weather in their evaluations, which is strong evidence of a focusing illusion. At the same time, failure to consider adaptation might contribute to this focusing illusion—people may recognize that their moods are often improved on sunny days but fail to anticipate how they would emotionally adapt to such weather when it happens every day, thus causing them to focus too narrowly on the weather when imagining life in California.

Unfortunately, Experiment 3 failed to replicate one of the major findings of Schkade and Kahneman (1998)—that Midwestern students perceive life in California to be better than life in the Midwest. We have no explanation for this failure. We used methods similar to theirs. We sampled from one of the same Universities that they used (and Schkade reported to us, in a personal communication, that the pattern of results in their study was similar among University of Michigan students and other Midwestern students), and we made sure to collect data on days when the weather was far from idyllic. Despite not replicating the basic finding that Midwestern students think they would be happier in California, it does seem plausible that those who do believe they would be happier base this opinion on a consideration of climate. The defocusing and adaptation exercises appear to dampen much of these students' enthusiasm for living in California.

These findings have important implications for how best to get people to think about disabilities that they might experience. Patients often need to consider possible disabilities or illnesses when considering treatment choices. For example, men with prostate cancer need to consider the influence that incontinence or impotence would have on their quality of life when choosing among treatments that have different probabilities of leading to these side effects. It would be useful to devise ways to improve people's abilities to estimate how illness and disability will affect their overall quality of life.

If we had found that focusing illusions were easily eradicated, then one or another of our defocusing tasks could have been a useful way to get people to think about unfamiliar health states. As it stands, however, defocusing does not look like a promising way to help people think about chronic disability. On the other hand, evidence suggests that a more fruitful approach to helping people consider the effect of illness and disability on their quality of life is to get them to think about how they might adapt to such adversities. In effect, such an approach forces people to consider whether they might be susceptible to durability biases (Gilbert et al., 1998). Our first two adaptation exercises specifically asked people to think back on how their emotions had changed over time after experiencing good or bad events in the past. People were able to recognize that emotions typically fade over time and to draw on that recognition in evaluating life with a chronic disability.

The findings from Experiment 3, however, point to the need for caution when it comes to applying defocusing and adaptation interventions to enhance the accuracy of hedonic predictions. In Experiment 3, getting respondents to think about adaptation, and especially defocusing their attention, caused them to lower their ratings of what it would be like to live in California. This could have led to an increase in accuracy if respondents had in fact miscalculated their own happiness in California. However, because their initial estimates were in fact relatively accurate, on average (to the degree that we accept the Schkade and Kahneman [1998]

finding that there is, in fact, no difference in happiness between the groups), both interventions in fact led to a decrease in accuracy. These results, in combination with Experiment 1 (showing that defocusing increased the discrepancy between patients' and nonpatients' estimates of quality of life associated with chronic conditions), show that neither type of intervention necessarily increases accuracy.

Moreover, even when there is an initial discrepancy and one or both of these interventions change estimates in the desired direction, it cannot be assumed that they increase accuracy. First, there is no guarantee that respondents will adjust their estimates to the correct degree; it is quite possible that any adjustments made as a result of defocusing or adaptation interventions could produce excessive responses that overshoot the true values. Second, even to the extent that group averages become more in line with one another, individual respondents' estimates may not. For example, participants who were off to begin with might not change their inaccurate estimates whereas participants who were accurate could make adjustments, leading to two groups straddling both sides of accuracy. Even to the degree that these types of interventions change ratings in the direction that would cancel the types of errors that would be caused by a focusing illusion or failure to appreciate adaptation, it cannot be assumed that they increase accuracy.

In summary, although both the focusing illusion and underappreciation of adaptation undoubtedly contribute to misprediction of affect in a variety of settings, our experiments suggest that of these two mechanisms only the underappreciation of adaptation contributes to the tendency of nonpatients to underestimate the quality of life associated with disabilities.

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Appendix

Broad Adaptation Exercise From Experiment 2

Now that you have thought a little about paraplegia, we would like to ask you some more questions about how paraplegia might affect your life. To help you with that, we will first ask you to think about how you have lived through past upsetting events.

1. Think back and write down one emotionally difficult life experience that happened to you (e.g., divorce, break up with a significant other, loss of loved one, setback in school or work). Please make sure to think about an experience that occurred at least 6 months prior to now.

Immediately after this emotionally difficult experience, you probably felt pretty awful. But think about the 6 months following the event. Concentrate on how you felt at the end of that 6-month period. How had your emotions concerning this event changed? Please explain.

At the end of those 6 months, would you say that you felt much worse, felt about the same, or felt much better than you would have predicted immediately after it happened?

2. When thinking about a disability like paraplegia, it might seem pretty traumatic to consider how your life would change. What two things would be most upsetting to you about becoming paraplegic?
3. Although some aspects of your life will become more difficult, there are ways to make your daily life a little easier. List two things that would help you to adapt physically if you had paraplegia. (For example, if you lost your eyesight, you could learn Braille, use a cane, and/or employ a seeing-eye dog to help with your everyday activities.)

4. Having paraplegia would certainly interfere with some athletic activities, but many people with paraplegia maintain an active lifestyle by either changing the way they participate in activities or engaging in entirely new ones. List two athletic activities that you might start doing (or do differently) if you had paraplegia.
5. Similarly, some current hobbies might become impossible to do. However, you might concentrate on other ones you can still do or pick up new activities. List two nonathletic activities (such as hobbies or leisure activities) that you might start doing (or doing more) if you had paraplegia.
6. Just as there are ways to help you to adapt physically to paraplegia, there are also ways to help handle the immediate and long-term emotional reactions. List two strategies that you would use to emotionally cope with having paraplegia.
- 6A. Compared with the average person, do you think you would be more or less likely to cope well with having paraplegia?
7. After answering the above questions and having a chance to think about how your life would change, please think about the two most upsetting things about developing paraplegia.
- 7A. Do you think these two things would become more or less upsetting over time?

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