

You Think Failure Is Hard? So Is Learning From It

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Abstract

Society celebrates failure as a teachable moment. But do people actually learn from failure? Although lay wisdom suggests people should, a review of the research suggests that this is hard. We present a unifying framework that points to emotional and cognitive barriers that make learning from failure difficult. Emotions undermine learning because people find failure ego-threatening. People tend to look away from failure and not pay attention to it to protect their egos. Cognitively, people also struggle because the information in failure is less direct than the information in success and thus harder to extract. Beyond identifying barriers, this framework suggests inroads by which barriers might be addressed. Finally, we explore implications. We outline what, exactly, people miss out on when they overlook the information in failure. We find that the information in failure is often high-quality information that can be used to predict success.

Keywords

motivation, learning, failure, barriers

Modern society celebrates failure as a teachable moment. When people fail, they are told to fail forward (Maxwell, 2007). Often, it is successful people who are most evangelical in the conviction that we learn from failure (Stoker, 1897/2003). In a recent graduation speech, U.S. Supreme Court Chief Justice John Roberts went so far as to wish the graduates “bad luck”—so they would have something to learn from (Barnes, 2017).

Do people actually learn from failure? Although common wisdom suggests people should, we find that learning from failure is hard. Emotional and cognitive barriers can keep people from seeing the information in failure and learning from it. Emotionally, failure bruises the ego. When people feel threatened, they tune out and miss the information failure offers. Cognitively, people also struggle. The information in failure is less direct than the information in success. Whereas success points to a winning strategy, from failure, people need to infer what not to do. Perhaps mantras about learning from failure have proliferated precisely because it is so hard. The Italian philosopher Antonio Gramsci once observed that history teaches, though it has no pupils (1977). We find that something similar happens with

failure. Failure contains useful information, but people struggle to learn from it.

We begin by reviewing what people learn when faced with failure (Part I). Next, we present a unifying framework that identifies the emotional and cognitive barriers that make learning from failure difficult and suggest how these barriers might be addressed (Part II). Finally, we explore implications. We review what it is that people miss when they overlook the information in failure (Part III).

Part I: Do People Learn From Failure?

We begin by reviewing research on what people learn in a traditional sense: what information people extract from failure. Next, we review what people learn about themselves—that is, we outline the inferences people

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make about their ability, control, and commitment following failure.

What information do people extract from failure?

The human species appears wired to avoid negative information about the self. People go to great lengths to avoid bad news, even when that news might contain something worth knowing. For example, people regularly ignore risk factors and diagnoses even though this information can be life-saving (Sweeny et al., 2010). In one study, more than 10% of people who were tested for HIV never returned to learn their results (Tao et al., 1999). People avoid potentially useful information because they want to avoid bad news more than they want to learn.

This active avoidance of negative—and even just potentially negative—information is especially pronounced for one specific type of personal news: failure. Novices routinely avoid negative performance feedback (Finkelstein & Fishbach, 2012), just as investors stop checking their finances when the stock market drops—the so-called “ostrich effect” (Sicherman et al., 2015; see also Webb et al., 2013). Yet despite everyone’s efforts to avoid failure, eventually the inevitable occurs. People fail. When this happens, what do people learn from the experience?

To explore this, we developed the Facing Failure game (Eskreis-Winkler & Fishbach, 2019). This game presents participants with a series of binary-choice questions—multiple-choice questions, each with two answer choices. The task has several versions, each of which teaches different content (i.e., language, relationships). In all versions, players first enter a learning phase. In the learning phase, players answer each question and receive success or failure feedback, depending on whether they guess right or wrong. Because each question has only two possible answers, both failure and success feedback provide full information on the correct answer. Success feedback identifies the correct answer, whereas failure feedback identifies the incorrect answer, which allows the participant to infer that the other answer was correct. Following feedback, participants enter the test phase. In the test phase, players answer close iterations of the initial questions. The test assesses whether people learned from feedback in the learning phase and can demonstrate learning. Individuals who do receive a monetary bonus.

For example, in the language-learning version of the task, the learning phase presents questions such as “Which of the following characters in an ancient script represents an animal?” and then provides a choice of two hieroglyph-like symbols, either of which could be

an animal. After guessing, participants are randomly assigned to learn that their guess was correct (success feedback) or incorrect (failure feedback). In the test phase, participants are then presented with the initial two hieroglyph-like symbols again and answer a similar question: “Which of the following characters in an ancient script represents a *non-living* stationary object?” Participants who were “correct” in the learning phase can infer that the symbol they did not select before is the nonliving object (because the one they did select was the animal). Likewise, participants who were “incorrect” in the learning phase can infer that the symbol they did select before is the nonliving object (because the one they did not select was the animal).

Whereas there are some contexts in which failure contains no useful information and disengaging from it is adaptive and desirable (e.g., sunk-costs situations; Arkes & Blumer, 1985; Thaler, 1999), this is not true in the Facing Failure game. In this game, engaging with failure is the optimal thing to do. Participants who answer correctly in the test phase receive a monetary bonus. They are rewarded for learning. Engaging with failure in this game is a sign of successful self-regulation, just as disengaging from failure is a sign of unsuccessful self-regulation.

In one field study, more than 300 U.S. telemarketers played the Facing Failure game. Telemarketers answered questions about customer service, a topic related to their profession. In the learning phase, each question (e.g., “How much money, annually, do U.S. companies lose due to poor customer service?”) had two possible answers (e.g., “A. Approximately \$90 billion, B. Approximately \$60 billion”). After answering each question and receiving feedback, participants entered the test phase, in which they were presented with close iterations of the initial questions. As evidenced by scores on the test, telemarketers underlearned from failure. In fact, from failure feedback, telemarketers learned nothing at all (test scores were not significantly different from 50%, which is what we would expect if they guessed).

This tendency to underlearn from failure was robust. It occurred when changes were made to the game content, samples, and domains—for example, when customer-service questions were replaced by questions about relationships (“Which of these two couples is a real couple?”). It persisted when incentives rose. Even when participants had the chance to earn a learning bonus that was 900% larger than the participation payment, players learned less from failure than success.

Part of the reason players underlearned from failure is because when they failed, they stopped paying attention. Not paying attention compromises recall, which makes learning all but impossible. Consider batters who strike out at the plate and stop paying attention. Batters

will not remember the way the pitch crossed the plate, how they swung, or why they struck out. So, too, in the academic context, researchers may not fully think through experiments that fail and as a result, not realize that they contain useful information.

In a variant of the Facing Failure game, we found evidence for this process. In the learning phase, one group of participants answered a series of binary-choice questions, following which they were randomly assigned to receive failure feedback (“You are incorrect!”) or no feedback at all (Eskreis-Winkler & Fishbach, 2019, Study 3). When we asked participants to recall their answer choices minutes later, participants who received failure feedback remembered less than participants who received no feedback at all.

What do people learn from failure about their ability and control?

The lessons people “learn” from failure are often conclusions they draw about themselves. Failure can prompt people to make inferences about their aptitude and lack of control. For example, when humans find themselves unable to avoid unpleasant noise, they learn that they cannot control their circumstances. Even when control is reintroduced, people do not take action because they have learned that they are helpless (Seligman, 1975). Learned helplessness can have long-term effects. Believing that one lacks control in the face of adverse events is a risk factor for depression (Abramson et al., 1978).

Failure can also undermine perceived commitment if the people who fail infer that they will not succeed or do not care to. Negative feedback lowers people’s confidence that they can achieve a goal (i.e., expectancy) and how much they care about it (i.e., value; Atkinson, 1964; Bandura & Cervone, 1983; Lewin, 1935; Weiner, 1976; Zajonc & Brickman, 1969), which potentially leads to the “what the hell” effect (Cochran & Tesser, 1996; Soman & Cheema, 2004). Realizing their fragile commitment, novices seek positive feedback over negative feedback to maintain motivation (Kluger & DeNisi, 1996). In one study, students in a beginner French class sought an instructor predisposed to give positive feedback, which bolstered their commitment to the class (Finkelstein & Fishbach, 2012).

Experienced individuals or experts (i.e., people who have been pursuing a goal for a while; Finkelstein & Fishbach, 2012) are partially immune. Because experts’ commitment is less fragile, they are less affected by failure (Louro et al., 2007). For example, when students enrolled in an environmental club (i.e., people with a strong interest in the environment) received negative feedback on their recycling habits, they became more

likely to donate to environmental causes. In contrast, negative feedback led the average student to donate less (Finkelstein & Fishbach, 2012). Thus, whereas failure undermines commitment and motivation for non-experts, it can have the opposite effect on experts.

Ironically, when people disengage from failure, it can lead them to develop an inflated self-view. Unlike the negative beliefs that people form about themselves when they reflect directly on failure, not paying attention to failure can lead people to think too highly of themselves. In one study, investors who accumulated an equivalent number of successful and failed investments paid less attention to the failures, which led them to become overconfident over time (Gervais & Odean, 2001; see also Langer, 1975). The problem can be bidirectional: Whereas not learning from failure inflates the ego, people who are narcissistic—those who hold overly inflated positive views of the self—are more emotionally reactive in the face of failure (Rhodewalt & Morf, 1998) and have a harder time learning from failure (Liu et al., 2021).

In sum, people struggle to learn from failure. When it is possible to avoid attending to failure, people do. They tune out. When failure cannot be ignored, people look at failure but tend to underlearn from the experience. Reliably, people learn less from failure than from success. The lessons they do “learn” from failure are often about the self. People form maladaptive beliefs about their lack of control or lack of commitment and infer from failure that they cannot succeed or decide that they do not want to.

Part II: Why Failures Are Hidden

Our theoretical framework suggests that when people fail, emotional and cognitive barriers make learning a challenge. First, we elucidate these barriers. Next, we propose how each might be addressed to promote learning.

Emotional barriers

In large part, contemplating failure is hard because failure is a threatening experience. Indeed, when a failure threatens people’s sense of self-worth, they can react in ways that undermine not just their learning but also their mental and physical health in an effort to preserve their sense of self (Crocker & Knight, 2005; Crocker & Park, 2004). Thus, although people may want to learn from failure, they often hold a competing goal that wins out: to feel good about themselves (Grundmann et al., 2020). The desire to see oneself as a good, competent person is a strong motivational force (Baumeister, 1998; Sedikides & Strube, 1997). When this goal triumphs, people disengage from failure.

We found evidence for this emotional barrier in the Facing Failure game. In one iteration of the game, players self-reported their self-esteem after receiving feedback. Players who received failure (vs. success) feedback reported lower self-esteem, and this mediated the effect on their lower levels of learning (Eskreis-Winkler & Fishbach, 2019, Study 4). In our game, people failed to learn when there were economic costs for tuning out from failure. In situations in which the benefits of learning from failure are lower stake, we would expect the emotional barriers to learning from failure to be even more pronounced. If people do not have an immediate reason or incentive to learn from failure, they ought to be even more motivated to tune out, which holds the unchallenged goal to protect the ego.

The desire to feel good about themselves can also lead people to change their beliefs following failure. In one series of studies, participants who initially failed predicted—erroneously—that subsequent success would make them less happy than it actually did, the so-called sour-grapes effect (Sjåstad et al., 2020). This change in beliefs undermined interest in the task in general and interest in learning from failure in particular. After all, if one no longer cares about succeeding in a task, why learn from failure?

The desire to feel good about oneself may also undermine learning from failure by making it difficult for people to engage in processes that would otherwise promote learning. Take regret, for example. Regret is a counterfactual emotion that leads people to consider what they did wrong and how they could have done things differently (Zeelenberg & Pieters, 2007). Counterfactual thinking, more broadly, is a cognitive tool to imagine how things might have turned out better (Byrne, 2005, 2016; Epstude & Roese, 2008; FitzGibbon et al., 2021; Kahneman & Miller, 1986; Miller et al., 1990; Roese, 1997; Roese & Epstude, 2017; Summerville, 2011). For example, in one study, participants prompted to engage in upward counterfactual thinking after working through an anagram task—that is, they were prompted to consider how they might have done better—improved their performance on a subsequent trial (Epstude & Roese, 2008; Reichert & Slate, 1999). Regret likewise leads people to learn from past mistakes and course correct in the future (Baumeister et al., 2007; Zeelenberg & Pieters, 2007). For example, when children become developmentally old enough to experience regret, they learn more from failure (O'Connor et al., 2014).

As helpful as these emotions might be in getting people to focus on and learn from failure, they tend to be infrequent. Counterfactual thoughts are more common following negative events than positive ones (Epstude & Roese, 2008; Roese & Epstude, 2017), but the actual rate at which people spontaneously

counterfactualize is low. For example, in one study that examined 8- to 11-year-old children, only 5% of children generated counterfactual thoughts spontaneously (Guajardo et al., 2016). In another study of college students, only 18% of students spontaneously engaged in counterfactual thoughts when asked to consider their satisfaction with a task they had just completed (Hafner et al., 2012). So, too, the appearance and detectable benefits of regret are not sufficiently widespread. They depend on the type of mistake being reexamined as well as the passage of time (Gilovich & Medvec, 1995).

Given the strong motivation people have to see themselves in a positive light (Baumeister, 1998; Sedikides & Strube, 1997), it is not surprising that psychological processes such as counterfactual thought and regret, which hold promise as tools for learning, are often absent. Moreover, even when these processes do occur, some research suggests that learning from them is not straightforward. For example, in the Monty Hall paradigm, participants who engaged in counterfactual thinking became less likely to learn from their mistakes or to discover the correct answer to the paradigm (Petrocelli & Harris, 2011).

Emotional barriers: how they can be overcome

We advocate two approaches to reduce the ego threat associated with failure. The first is to remove the ego from failure. If failure is not ego-threatening, people have less reason to tune out. The second approach is to shore up the ego so people are secure enough to face an ego-threatening failure and learn from it (see summary in Table 1).

The cleanest way to remove the ego from failure is to literally remove the self—that is, to learn from someone else's failure. Others' mishaps do not involve one's ego and therefore are not threatening. If anything, the downward social comparison with a failing other might boost the observer's self-esteem (Suls et al., 2002). Watching another person try and fail allows the observer to learn about wrong moves without compromising the learner's ego or motivating the learner to tune out.

Indeed, in one study, we found evidence that removing the ego from failure would lead people to tune in and learn. In this study, half of participants completed the learning phase of the Facing Failure game themselves and received feedback on their own answers, whereas the other half of players watched someone else play and observed the feedback received by this other person. Replicating prior results, we found that players learned less from their own failure than their own success. But they learned just as much from others' failures as others' successes (Eskreis-Winkler & Fishbach, 2019,

Table 1. Table of Intervention Approaches

Barrier	Intervention target	Description
Emotional	Remove the ego	Learn from others: Look at and learn from others' failures Distancing: Adopt a third-party perspective
	Secure the ego	Advice giving: Give motivational advice to others Expertise/ability: Remind people of their ability or expertise Growth mindset: Teach people that they can grow and develop
Cognitive	Reduce required effort	Highlight information in failure: Tell people that failure can teach them what to avoid Familiar domains: People are less biased in seeking confirmatory information when the domain is familiar to them (e.g., social in nature)
	Increase cognitive resources	Bandwidth: Increase attentional bandwidth by allocating more time to the task and/or engaging with fewer concurrent tasks Practice: With practice, people become more fluent, and fewer cognitive resources need to be devoted to the task at hand
	Culture	Environments that promote learning from failure (e.g., a prevention-focused culture, a culture that celebrates failure)

Study 5). Vicarious learning is often inferior to personal learning because it is less emotionally involving (Bertsch et al., 2007). Yet because it is less emotionally costly to watch someone else fail than to fail themselves (Crocker & Park, 2004), people attend more closely to others' failures than to their own, and this enhances learning.

One implication of this is that negative role models should be effective teachers. Indeed, when people consider others who have experienced some sort of failure or problem—that is, a negative role model—they learn from these models and change their behavior to *not* to be like this model whose actions or outcomes they wish to avoid (Lockwood, 2002; see also Lockwood et al., 2002). In addition to learning from others' failures, people also learn from others' attitudes toward failure. For example, children are more likely to have adaptive beliefs toward challenge and failure when their parents view failure as enhancing as opposed to debilitating (Haimovitz & Dweck, 2016, 2017).

Another way to remove the self from failure is with cognitive-distancing techniques. When people cognitively distance, they think of a personal experience from the perspective of a neutral third party. For example, they might ask "Why did Ethan fail?" instead of "Why did I fail?" (Kross et al., 2014). Distancing techniques remove the ego less completely than learning from others, but distancing techniques are easier to implement and provide a way to learn from personal failure.

A second approach is to shore up the ego. This can be done in several ways. One is to think about failure in a way that flips failure into a source of confidence. For example, in one series of studies, people who had

failed in various domains were invited to draw on their failures to advise others (Eskreis-Winkler et al., 2018). For example, people struggling with weight loss gave advice to others who had broken their diets, and people who were unemployed on the job market gave motivational advice to others who were similarly demotivated. The motivational implication of giving advice is that one possesses, as opposed to lacks, the ability to succeed. Indeed, in one study, middle school students who advised younger students—compared with students who received advice from experienced teachers—spent more time on homework over the following month (Eskreis-Winkler et al., 2018). Likewise, high school students who gave school advice to younger students earned higher grades than did control subjects over the following academic quarter (Eskreis-Winkler et al., 2019).

The ego can also be secured by reminding oneself of one's ability, commitment, or expertise. One of the reasons experts tolerate failure better is because experts feel more secure in their commitment, and this protects them from the ego-threatening effects of negative feedback (Finkelstein & Fishbach, 2012; Louro et al., 2007). Indeed, when seventh-grade teachers accompany their critical, constructive feedback to students with an encouraging note that assures students of their ability and skill, this raises the percentage of students who opt to revise their essays and the quality of the revised essays (Yeager et al., 2014).

A final way to shore up the ego is to recast failure as an opportunity to learn. A failed experience is a success when the goal is learning. Indeed, people who hold a growth mindset—people who believe that their abilities and beliefs can develop—persevere in the face

of failure (Dweck, 2006; Dweck & Leggett, 1988). People who believe they can grow and develop do not view failure as diagnostic. This buoys their confidence in the face of failure, which allows them to attend to and learn from these experiences. In one study, teaching students a growth mindset raised objective academic achievement and likewise increased the rate at which students enrolled in challenging coursework (Yeager et al., 2019). In this population-level study, students who learned a growth mindset benefitted most when they were actively dealing with challenges in school and when teachers in the classroom supported challenge-seeking among students (Yeager & Dweck, 2020).

Cognitive barriers

When emotional barriers are removed, people might still struggle to see the information in failure. This is because cognitive barriers keep people from seeing this information, for at least two reasons.

First, no one aims for failure. People almost never *expect* to fail. This makes learning from failure cognitively difficult because people tend to overlook contradictory or unexpected information. People exhibit confirmation bias. They selectively generate and attend to confirmatory evidence (Nickerson, 1998).

In the Wason Selection Task (Wason, 1968), a famous example of biased, confirmatory-information search, participants must determine the truth of a preestablished rule (i.e., “Every card with a circle on one side has yellow on the other side”). Participants then choose which cards to flip to determine the rule’s veracity. Whereas players intuitively flip cards that confirm the hypothesis (e.g., they flip cards with circles to see if the back is yellow), they do not see the use in falsifying the hypothesis (e.g., flipping a red card to be sure there is not a circle on the back). That is, people find it easier to see the value in tests they expect to be successful than in tests they expect to fail. If information that violates expectations receives less attention, failure, which violates expectations, may get ignored.

Second, even when people do in fact attend to failure, learning from failure is less direct than learning from success. Learning from success requires noting what one did right and repeating it. In contrast, for failure to be informative, people need to deduce what an incorrect response teaches about the correct response. Learning by elimination requires more mental effort. Because people are cognitive misers (Stanovich, 2009), they struggle to see the information in failure more than the information in success.

The Mystery Box game demonstrates this empirically (Eskreis-Winkler & Fishbach, 2020). In this game, failure

is engineered to be more objectively informative than success. Players learn about three boxes, each containing a success (i.e., a monetary win) or a failure (i.e., a monetary loss). Specifically, the three boxes contain (a) a large success, (b) a moderate success, and (c) a small failure (e.g., they might contain +\$0.80, +\$0.20, and -\$0.01). The player’s goal is to win as much money as possible. Before beginning the game, players choose which information—information on the moderate success or information on the small failure—will be most valuable to learn.

In this game, the failure contains better information: Learning the location of the losing (i.e., failure) box (-\$0.01) statistically raises a player’s winnings more than revealing the location of the moderate win (\$0.20) because knowing to avoid the failure guarantees a larger gain (\$0.20 or \$0.80). (Although knowing the location of the large win would be most useful, revealing this is not an option.) Nevertheless, across a series of studies, roughly a third of participants failed to reveal the location of the failure because they were unable to see that failure contains better information.

In sum, cognitive barriers make it difficult for people to see the information in failure. Even when “failure” is a reveal, not an actual failure—and thus, not at all ego-threatening—people struggle to see that failure contains useful information.

Cognitive barriers: how they can be overcome

Given that it is cognitively harder to see the information in failure than the information in success, anything that can be done to make spotting this information easier ought to increase learning. This can be done in at least three different ways: Reduce the mental effort required to learn, increase the availability of cognitive resources, or change the culture around failure (see Table 1).

Pointing out to people the information in failure lessens the effort required to learn and thus ought to facilitate learning. We discovered the promise of this approach in a study that used the Facing Failure game (Eskreis-Winkler & Fishbach, 2020). Some participants completed the standard game, but for others, failure feedback was accompanied by the following message: “TAKE NOTE: there were only two answer choices to the question (copied below). Based on the feedback above, you can learn the correct answer! It is whichever choice you did not select initially.” Highlighting the informational value of failure in this way increased players’ ability to see and extract the information in failure.

Another way to reduce the requisite mental effort is to consider the domain. People find it easier to reason

in some domains—for example, the social domain—than others (Cosmides, 1989). For this reason, people are more likely to perform unintuitive cognitive operations for social versus nonsocial stimuli. Thus, we speculate that people may be better able to extract information from failure in the social realm. An adult who loses track of time and misses a meeting with friends may tune in and learn more from this failure than an adult who loses track of time and misses a train. Failures framed from a social angle may increase people's ability to reason and learn from them.

Other strategies could increase the availability of cognitive resources. For example, allocating more time to learning or engaging in fewer concurrent tasks may improve people's ability to learn from failure. So, too, repeated experience and practice could help. We speculate that part of the reason experts find it easier than novices to learn from failure, beyond their stronger commitment, is because their behavior is well practiced, which frees up cognitive resources for learning.

Finally, culture matters because culture can influence goal orientation in ways that implicate learning. People vary in their goal orientations. Prevention-focused individuals aim to minimize negative outcomes (e.g., to prevent loss), whereas promotion-focused individuals aim to maximize positive outcomes (e.g., to achieve gain; Elliot & Thrash, 2002). Prevention-focused individuals are therefore more likely to notice failure and recall it later than promotion-focused individuals, who notice and recall success (Higgins & Tykocinski, 1992). These key variations in goal orientation have emerged on a societal level; some cultures encourage a prevention focus and thereby change people's attitudes toward failure. For example, Eastern cultures emphasize the value of fitting in (Markus & Kitayama, 1991), which encourages people to adopt a prevention focus. In these cultures, people have heightened attention to failure and mistakes compared with individualistic cultures, which emphasize pursuing success (Elliot et al., 2001; Heine et al., 2001; for a replication see Shu & Lam, 2016; for further discussion see Lockwood et al., 2005).

Extrapolating from these findings, we believe individuals with a prevention focus—because of personality or culture—may also be more likely to learn from failure. Although it is unlikely that these individuals learn more from failure than success (recall that in our Facing Failure and the Mystery Box game, we found that failure has a main effect on lowering learning), they might learn more from failure than individuals with a promotion-focus goal orientation. One potential remedy to increase learning from failure involves developing a local culture that emphasizes learning from failure (Edmondson,

2011). Indeed, many organizations undergo cultural shifts to embrace learning from failure.

In Part II, we suggest that both emotional and cognitive barriers block people from seeing the information in failure and learning from it. Because of both types of barriers, people struggle to attend to the information in failure and, as a result, fail to learn.

Part III: What People Miss

If people overlook the information in failure, does this matter? We argue that it does. First, ignoring the information in failure means missing out on useful lessons. If individuals miss out on useful lessons, this has implications for the self and also for the social group. If people do not learn from failure, this information does not transfer to broader society, and society misses out on the lessons in failure.

Second, ignoring failures may do more than simply slow learning. It may mean that information gets lost if the information in failure is different from the information in success. Thus, we also explore what, specifically, people miss out on when they overlook failure.

Losses for the social group

The struggle to see information in failure naturally slows down learning for the individual. When people do not look at their own failures—because of the emotional and cognitive barriers explained above—they do not learn from a large chunk of their own experiences.

Beyond the individual, this tendency to ignore failure also affects society at large because it means failures do not get shared. People share failure less than success. When they interact with others in person (Tesser & Rosen, 1975) and online (Berger & Milkman, 2012; Wojnicki & Godes, 2008), people remain mum on negative news. In fact, a quick Google search yielded several billion results for the word “success,” in contrast to 553 million—less than half as many—for the word “failure.” This imbalance recurs across major websites and social media platforms. For every two “success” videos on YouTube (~25 million), there is just one about “failure” (~10.9 million). Contrary to the pervasive belief that the news is negative, since 1851, *The New York Times* has published double as many articles containing the word “success” (~596,000) versus “failure” (~370,000).

If the information in failure is undershared, this compromises social learning and group knowledge. If people do not talk about the car mechanic who offers horrible service, no one will know which shop to avoid. More generally, if people do not discuss failed purchases, products, and experiences, this knowledge is

lost to the larger group. Social knowledge transmission determines many decisions, including the medicines clinicians prescribe (Iyengar et al., 2011), the movies people watch (Chintagunta et al., 2010), and approximately 50% of consumer purchases (Bughin et al., 2010). People regularly adopt others' memories (Wegner, 1987), tastes (Fishbach & Tu, 2016), and even attitudes (Hardin & Higgins, 1996) as their own. The boundaries between individual and group knowledge are so blurred that most people are unaware where social knowledge ends and their personal knowledge begins (Sloma & Rabb, 2016).

When people do not share failures, which leaves failures hidden in the larger world, this is a loss for social learning not only because this information is simply unavailable but also because negative information on others' failures leads to learning. People react more strongly to negative events than positive ones (Baumeister et al., 2001; Kahneman & Tversky, 1979; Rozin & Royzman, 2001; Taylor, 1991) in ways that stimulate learning. For example, compared with positive stimuli, negative stimuli get more attention (Öhman, 2007; Pratto & John, 1991) and deepen information processing (Bless & Fiedler, 2006; Ohira et al., 1998; Puig & Szpunar, 2017; Taylor, 1991). It follows that if people shared information on failure in their social groups, others would likely look at that information, process it, remember it, and learn from it—as much or more than they learn from success.

We found evidence that people undershare failure in the lab and in the field. In the lab, using a “sharing” version of the Mystery Box game (see Fig. 1), we discovered that people share success instead of failure even when sharing failure is objectively more helpful to the recipient (Eskreis-Winkler & Fishbach, 2020; for a full description of the game, see Part II). In one study, 41% of players erroneously chose to share the location of the moderate win instead of the loss. Participants continued to undershare failure when they were highly (and selfishly) incentivized to help the next participant and did so regardless of whether the failure was large or small. Even when knowledge of failure was objectively more helpful than knowledge of success, people did not realize this and undershared failure with others.

People also undershared failure in the field. Teachers saw less value in anonymously telling other teachers about their professional failures versus their professional successes, just as employees were less likely to anonymously share information about their failed versus successful work habits. In the field, whether failure or success is objectively more informative depends on several factors. For example, an outcome that is rarer carries more information (e.g., a bad apple among good ones or a good apple among bad ones), and knowing about the best option (vs. a mediocre one) is better

than knowing about the worst one. So, too, knowing about an outcome that resulted from internal factors (e.g., one's decision vs. external circumstances) is often more informative. Yet when these factors were controlled for, people shared failure less than success.

Why do people undershare failure? The same emotional and cognitive barriers that stymie learning also stymie sharing. Emotionally, people feel threatened by failure. This leads them to tune out from failure experiences and not share them. By not sharing, they can present their best selves to others (Baumeister, 1998; Sedikides & Strube, 1997). Cognitively, people also have a hard time seeing the information in failure, which undermines sharing.

Groups with fluid knowledge transfer—in which knowledge and experience is transferred between group members (Argote & Ingram, 2000)—perform better (e.g., Arthur & Huntley, 2005; Collins & Smith, 2006; Mesmer-Magnus & DeChurch, 2009). Along the same lines, stymied knowledge transfer harms performance (Sunstein & Hastie, 2015). Researchers who study knowledge transfer in organizations have traditionally studied how fluidly best practices transfer through a company (Holdt Christensen, 2007; O'Dell & Jackson Grayson, 1999). It stands to reason that sharing failures is also critical for improving performance. Sharing failure-related knowledge provides observers with a safe way to learn from costly, risky, failed actions (Bandura, 1961). As a result, there ought to be pronounced benefits that accrue from seeking and sharing failure-related information with others. If people do not share information about things that have gone poorly, others will not know what mistakes to avoid and are likely to repeat them.

The information in failure is a public good. When it is shared, society benefits. Yet failures are largely undershared. The unfortunate implication is that the information in failed actions fails to transfer to the group.

The high quality of failure information

There are reasons to believe that the information in failure may be qualitatively different and sometimes more useful than the information in success. Negative outcomes tend to be distinct; they vary from each other, compared with positive outcomes, which are more alike (Alves et al., 2017; Unkelbach et al., 2008). If failures are more unique, there is more to learn from them. A second and a third failure that are distinct from the first contain useful, additional information. For example, two people that are appropriately friendly behave similarly in a party. In contrast, a person who is too chatty misses the mark on social etiquette in a different way than one who is too quiet. There is new information in each “failure.”

Mystery Box Game Instructions

Time to play! You are going to play two rounds, below. In each round, you choose one box.

ROUND 1:

RED BOX	ORANGE BOX	GREEN BOX
0	0	0

Ok, now time for round 2. You must choose a DIFFERENT box from the one you chose in Round 1.

ROUND 2:

RED BOX	ORANGE BOX	GREEN BOX
0	0	0

Here's what was in the box you chose in Round 1: **LOSE 1 CENT.**

Here's what was in the box you chose in Round 2: **WIN 20 CENTS.**

So far, you learned two things today:

You learned which box has WIN 20 CENTS and you learned which box has LOSE 1 CENT.

As a reminder, here are the contents of all three boxes, two of which you have now selected:

- ~Win 80 cents
- ~Win 20 cents
- ~Lose 1 cent

Now, your goal is to share some of your knowledge with the next group of participants to help them succeed on the mystery box task. As a coach, you are only allowed to share ONE tip with the next group of participants to help them win the most possible money. The next group of participants will see your tip before they play the game. Which of the two tips below do you want to share?

- ~ I want to tell the next group of participants which box has LOSE 1 CENT
- ~ I want to tell the next group of participants which box has WIN 20 CENTS

Fig. 1. The sharing version of the mystery box game. Note that the ordering of the answer choices was counterbalanced across participants.

Failure also contains better information than success when failure is rarer—that is, in situations in which the key to success is avoiding mistakes. Consider a team in which all managers can mentor with varied success, except one inept manager who provides horrible mentoring. In such a scenario, knowing which mentor is bad is more informative than learning which mentor is good because knowing the bad apple tells a person which to avoid.

There is yet another reason failure often contains superior information: Failure violates expectations.

People almost never intend to fail. Thus, independent of the relative distinctiveness of success versus failure, or the relative rarity of success versus failure, the fact that failure violates people's expectations may lead the information in failure to be qualitatively better than the information in success.

When schemas are violated, people are surprised (Meyer et al., 1991), and surprising experiences (if they are noted) prompt cognitive elaboration (Pyszczynski & Greenberg, 1981; Wong & Weiner, 1981). For example, journalists write more elaborated articles when

reporting on unexpected sports outcomes (e.g., underdog wins) versus expected ones (e.g., the defending champion wins; Lau & Russell, 1980).

Thus, when people communicate about successes or other positive events, they are recounting experiences that confirmed expectations. In contrast, people who communicate about failures or other negative events are typically recounting experiences that violated expectations. This suggests that positive and negative communications will differ in informational value: Negative communications will be rarer but more elaborated. Whereas consumers who purchase shoes and consider the purchase a success need not elaborate when they tell people about it (e.g., "Great shoes!"), people who purchase a pair of shoes that they dislike will mention that the shoes were bad and likely tell other people why—providing more arguments, details, and unique information.

The notion that communications about failure are more elaborated and thoughtful is further consistent with people's hesitation to share negative news with others (Rosen & Tesser, 1970; see also Berger & Milkman, 2012). People hesitate to relay negative information and prefer to discuss positives (Stasser & Titus, 2003). As a result, failures that do get shared ought to be more detailed and thought through. Because social norms and people's attitudes impede the sharing of negative information, people who clear these hurdles to share negative experiences will likely have thought long and hard about their experience and what they are sharing, which will also result in more elaborated communication.

If information about failure is more elaborated, it ought to be more telling. For example, a consumer who reads two negative (vs. positive) reviews of competing products should be better able to distinguish the relative quality of the two products, just as a student who reads two negative (vs. positive) course reviews of competing courses should be better able to tell which course was a greater success. In a vivid test of this effect, we invited participants to compare only negative or only positive reviews of the same set of theatre films and then to predict the relative box office success of these films 1 week later. Whereas consumers who wrote positive reviews were recounting a personal success—they thought a movie would be good, they bought tickets to the movie, and indeed it was good—consumers who wrote negative reviews were recounting a personal failure because these consumers thought a movie would be good, bought tickets to it thinking it would be good, and yet found that it was bad. Participants who compared negative reviews were able to predict which movie earned more money at the box office the following week, whereas participants who compared

positive reviews could not (Eskreis-Winkler & Fishbach, 2021).

This telling, predictive power of negative communications—those that recapped failure—generalized across many different types of products and situations. When they compared negative reviews of a series of products, but not positive reviews, people were able to predict the relative rankings of colleges, restaurants, and bestselling books. Likewise, participants who viewed negative reviews of Oscar-nominated films could predict which movie would win the Oscar at a rate above chance, whereas participants who compared positive reviews could not (Eskreis-Winkler & Fishbach, 2021). Despite the robustness of these results, laypeople overlooked the superior informational value of negative reviews and sought positive reviews before negative ones when they tried to determine the quality of products on the market.

Never has the desire to predict success been more apparent. There is currently an explosion in the growth of prediction markets and geopolitical forecasting tournaments in which participants bet on the success of policies, candidates, and even governments (Goldstein et al., 2016; Mellers et al., 2015; Tetlock & Gardner, 2016). Usefully, we find that communications about failure can be used to predict success, whereas communications about success cannot. This finding has actionable implications for anyone with an interest in predicting success. People ought to attend to negative (vs. positive) communications—that is, the information on failure over the information on success—when deciding which employee to hire, which book to read, which school to attend, or which restaurant to dine in.

In sum, when people avoid negative communications and, more broadly, the information in failure, they miss out—on a lot. First, there is a general loss to social knowledge because failures are hidden from the group. Second, there is a loss in not just the quantity of available information but also its quality. When people ignore the information in failure, they miss out on information that is unique: They miss out on the most elaborated, diagnostic, predictive information. This is an unfortunate paradox: The information that people tend to overlook because it seems uninformative is in fact the information with the greatest value.

Conclusion

From a young age, people are told that there is information in failure and that they ought to learn from it. Yet people struggle to see the information in failure. As a result, they struggle to learn. We present a unifying framework that identifies the emotional and cognitive barriers that make it difficult for people to learn from failure.

Understanding these barriers is especially important when one considers the information in failure. The information in failure is both rich and unique—indeed, it is often richer, more informative, and more useful than the information in success.

What to do in a world in which the information in failure is rich yet people struggle to see it? One recommendation is to explore the solutions that we propose here. Remove the ego from failure, shore up the ego so it can tolerate failure, and ease the cognitive burdens of learning from failure to promote it in practice and through culture. We believe such techniques are well worth understanding and investing in because there is so much to learn from the information in failure when we see it.

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