When Imitating Successful Others Fails: Accidentally Successful Exemplars Inspire Risky Decisions and can Hamper Performance

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All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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Abstract

We examined the impact of viewing exemplars on people's behavior in risky decision-making environments. Specifically, we tested if people disproportionally choose to view and then imitate the behavior of successful (vs. unsuccessful) others, which in the case of risky decision-making increases risk-taking and can hamper performance. In doing so, our research tested how a fundamental social psychological process (social influence) interacts with a fundamental statistical phenomenon (regression to the mean) to produce biases in decision-making. Experiment 1 ($N = 96$) showed that people indeed model their own behavior after that of a successful exemplar, resulting in more risky behavior and poorer outcomes. Experiment 2 ($N = 208$) indicated that people disproportionally choose to examine and then imitate most-successful versus least-successful exemplars. Experiment 3 ($N = 381$) replicated Experiment 2 in a context where we offered participants the full freedom to examine any possible exemplar or no exemplar whatsoever, and across different incentive conditions. The results have implications for decision-making in a broad range of social contexts such as education, health, and finances where risk-taking can have detrimental outcomes, and they may be particularly helpful to understand the role of social influence in gambling behavior.

Keywords: risk; exemplar; decision-making; uncertainty; role model

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The 1997 television advertisement for the United Kingdom's *National Lottery* shows a man looking through a telescope at the night sky. Surprised by the unfamiliar star patterns, he steps back and looks up as the large finger of a glittering gold hand points at him and a deep booming voice declares dramatically: "It is you." Ecstatic with his newly acquired fortune he races down the street, meets two strangers, and chirps "It's me!" This is soon followed by the core message of the advertisement: *It could be you*.

Presumably, the *National Lottery* aimed to recruit customers by exposing them to a previous winner. The advertisement did not highlight the various possible outcomes of prior lottery players, nor the gamble's overall negative expected value (the product of the probability of attaining a potential outcome and the value of that potential outcome). Instead, it presented potential players with the example of a successful lottery winner to increase participation in this risky gamble—a gamble that amasses nearly £7 billion in ticket sales per year (www.national-lottery.co.uk). Yet, imitating the behavior of this protagonist does not tend to pay off; on average people spend more on participating in the lottery than they win. Can this lottery example be generalized further? When people are free to view the decisions made by prior 'winners' or 'losers' from whom do they seek guidance for their own decisions? And, more fundamentally, do these exemplars in turn help people to make decisions that increase their outcomes, or do they inspire decisions that decrease their outcomes?

The aim of our research was to test if people sample and imitate successful exemplars even when their success is purely the result of luck and the risky choice is incontrovertibly inferior to the safe choice, thereby leading to poorer outcomes. Specifically, we propose that when people make decisions, their reliance on successful exemplars tends to increase risk-taking and can hamper their performance. We define 'successful exemplars' as those individuals who obtained comparatively high (versus low) outcomes in a prior decision-making task. We use the term 'risk' to refer to "known variance in outcomes" (Mishra, 2014, p. 1); and the term (good)

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'luck' to refer to obtaining a positive outcome in a situation where a less positive outcome was also possible, with the outcomes being at least partly outside of one's control (Teigen, 2008). Importantly, when decisions involve risk, successful exemplars owe their success at least partially to good luck: their choices tend to be disproportionately risky and result in more gains than might be expected on average. We propose that these successful exemplars subsequently inspire more risky behavior in others even if such risky behavior is inferior to safer alternatives. Specifically, while in some circumstances it may pay off to imitate the behavior of successful others, we examined if people imitate the decisions of successful exemplars even when doing so is associated with objectively poorer outcomes than ignoring the past behavior of others.

We believe that our predictions go against people's intuitions about successful others: It implies that most-successful exemplars tend to benefit *more* from uncontrollable factors (e.g., random or environmental variables not in one's personal control) than less successful others, and hence inspire risk-taking. To illustrate, the winner of the aforementioned lottery example must *by definition* be a person who chose the risky option (purchasing a lottery ticket) over the safe alternative (not purchasing a lottery ticket). When these risky decisions yield poor expected value—a common feature of many problematic high-risk choices in everyday life, including our lottery example—then the most-successful exemplars effectively engender *poorer* outcomes for others, as behaving riskily is an objectively inferior strategy than safer alternatives. Our research thus examines if a fundamental social psychological process (social influence) interacts with a fundamental statistical phenomenon (regression to the mean) to produce biases in decision-making.

Our proposed phenomenon holds important theoretical and practical implications for decision-making, social cognition, and risk perception. It offers a basis for understanding how the presence and performance of (independent) other decision-makers increases risk-taking and may undermine people's performance, with potential applications for risky decision-making behavior that occurs in social contexts (e.g., lotteries, casinos, stock trading floors). In this initial investigation we focused on gambles where skill does not matter (i.e., skill cannot alter the

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probabilities or outcome values of the decision). While many contexts involve some influence of skill, note that settings such as the lottery scenario from our opening illustration hold high societal relevance, with the UK's gambling industry worth approximately £14.5 billion in 2018 alone (Department for Digital, Culture, Media and Sport, 2019).

Many other social contexts also involve decision-making situations in which the probability of an outcome is uncertain. For example, people selecting their career path may disproportionately look at success stories that predecessors in that domain have achieved (Lockwood et al., 2002; Quimby & De Santis, 2011), without being aware that such exemplars can emerge even when the overall prospects of the career path in question are relatively poor. For example, the late co-founder and CEO of Apple Inc., Steve Jobs, had allegedly achieved his success despite not receiving university-level education (Isaacson, 2011; Sharma & Grant, 2011). Exemplars such as Jobs may tempt some people into believing or defending the view that foregoing university-level education in favor of an earlier professional career offers better prospects than opting for university-level education, even though the average career prospects of university graduates are far better than the average career prospects of those without a university degree (at least financially; Nabi, 1999).

The Impact of Exemplar Sampling

We propose an impact of people's reliance on exemplars in decision making: People disproportionately sample and then imitate successful (vs. unsuccessful) exemplars. Importantly, within a decision-making context where outcomes are to a degree determined by chance, these successful exemplars tend to have made relatively risky decisions, resulting in people making more risky choices themselves. While novel, this proposed phenomenon builds on and integrates a number of well-established findings, including the influence of positive role models and attitudes (e.g., Dasgupta & Greenwald, 2001), the fundamental attribution error (e.g., Jones & Harris, 1967; Miller, Jones, & Hinkle, 1981), and regression to the mean (e.g., Fiedler, 1991; Morton & Torgerson, 2003).

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Successful Exemplars Shape Attitudes and Decision-Making

Prior research confirms that exemplars have the capacity to affect attitudes (e.g., Bandura, 1977). For example, Bodenhausen, Schwarz, Bless, and Wänke (1995) found that well-liked, successful, and affluent African American exemplars heightened awareness of discrimination against African Americans. Likewise, priming admired (versus disliked) exemplars led to more positive (vs. negative) implicit attitudes towards particular age, racial, and ideological groups (Dasgupta & Greenwald, 2001; Gregg, Mahadevan, & Sedikides, 2018). Essentially, exemplars have the power to change people's attitudes towards the group they belong to, even if the exemplar is rather atypical (Bless, Schwarz, Bodenhausen, & Thiel, 2001).

In the context of judgment and decision-making, Bowen (2004) found that organizations made more ethical choices after providing them with information about another organization that served a positive exemplary role. People also attribute the basis of their moral decisions partly to exemplary behavior by personal heroes (Kinsella, Ritchie, & Igou, 2015a, b) and leaders (Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016). Furthermore, both students and academic staff in medical education attribute an important part of their educational choices and successes to exemplars (e.g., successful physicians; Maudsley, 2001). Likewise, prospective business entrepreneurs are more willing to start and own a business when they admire exemplars in this domain who exhibited similar behavior (Van Auken, Fry, & Stephens, 2006), and women undergraduates decide upon their careers in part based on successful female exemplars (Quimby & De Santis, 2011). Research on role models—"individuals who have achieved outstanding success" (Lockwood, Jordan, & Kunda, 2002, p. 854; see also Lockwood & Kunda, 1997)—found that people are particularly inspired and motivated by role models that are relevant to their goals. Specifically, participants' (academic) motivation increased after being exposed to a positive role model (a person who was previously successful). When people were asked to select and describe their own role models from memory, they tended to self-select positive role models—a tendency that increased the more they were focused on achieving success.

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Other lines of psychological inquiry also suggest, albeit more indirectly, that people are likely to focus on successful (as opposed to unsuccessful) exemplars when they seek to optimize their own achievements. For example, research on the desire for feedback to facilitate self-improvement (Sedikides & Hepper, 2009) in domains such as abilities, skills, and well-being (Sedikides & Strube, 1997) indicates that people socially compare themselves to their superiors rather than to their inferiors (Collins, 1996; Taylor & Lobel, 1989; Wood & Taylor, 1991). Essentially, a focus on achieving success makes people turn towards successful individuals at the expense of unsuccessful ones.

Why do these exemplars influence attitudes and decision-making? One possibility is that priming exemplars directly affects people's behavior through an automatic, associative perception-behavior link (Chartrand & Bargh, 1999), which transforms perceived social cues directly into one's own actions (Dijksterhuis & Bargh, 2001, p. 1; cf. Molden, 2014). Alternatively, people might imitate the behavior of exemplars as a result of observational social learning (Bandura, 1962; Meltzoff & Williamson, 2010). For example, copying the behaviors of exemplars may be a highly efficient way of deciding what to do (Legare & Nielsen, 2015; Toelch, Bruce, Newson, Richerson, & Reader, 2014). Indeed, Dougherty, Gettys, and Ogden (1999) and Glöckner and Witteman (2010) suggest that the reason why exemplars influence decision-making is that, as part of the decision-making process, people retrieve exemplars and prototypes from memory and use these to form intuitions about the decision at hand.

This reasoning fits with the general framework of the fundamental attribution error (Jones & Harris, 1967; Ross, 1977). This phenomenon holds that people tend to "underestimate the impact of situational factors and overestimate the role of dispositional factors in controlling behavior" (Forgas, 1998, p. 318). Specifically, people overestimate the influence of factors such as innate ability or personality on other people's behaviors. In the context of exemplars, people may falsely believe that the acquired outcomes of exemplars solely reflect some kind of personal ability that separates them from less successful individuals, rather than acknowledging the

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influence of non-personal factors (e.g., random or environmental variables not in one's personal control).

In Risky Contexts, Successful Exemplars Tended To Have Behaved In Risky Ways

The tendency to follow the lead of successful exemplars seems reasonable: if someone else adopted a decision strategy that worked out well, then why not do the same? Most decision-making contexts, however, involve some element of risk. In this context, a key caveat emerges: Success is not solely the result of personal factors like ability and hard work, but also the result of non-personal factors like luck. The successful exemplars typically behaved in risky ways and were lucky. Imitating the behavior of the successful exemplar may therefore increase risk-taking, with potential undesirable consequences (e.g., Jessor, 1992; Sitkon & Pablo, 1992), such as in relation to gambling, education, and health (e.g., Koehler & Harvey, 2008). We explain the basis for this proposition next.

The distributions of risk and luck. In most decision-making contexts, success is partially tied to luck—highly risky choices sometimes happen to pay off. Consider the illustration in the opening paragraph: In this example, the successful exemplar in the advertisement was by definition someone who was simply lucky. Other lottery players behaved identically, yet they were simply not as fortunate. In fact, on average, participation in the lottery leads to an overall negative outcome for an individual. Therefore, if one were to decide to participate in the lottery inspired by the risky choice of a previous winner who just happened to be successful, then this would lead, on average, to a loss of money. Stated differently, following the successful exemplar would be a monetarily bad decision. Yet, despite the poor odds of success and the overall negative expected value, it is a decision that many people make, as illustrated by the UK National Lottery's £100 billion-plus revenues in ticket sales between 1994 and 2014 (Department for Digital, Culture, Media and Sport, 2015), and the $73.8 billion in ticket sales reported by the North American Association of State and Provincial Lotteries (2017) in 2015 alone.

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Decisions made in risky contexts can produce *accidental winners*—individuals who, by mere chance, acquire outcomes that are relatively high. This phenomenon becomes particularly evident in repeated decision-making contexts when people choose between a risky high-value option and a safe low-value option. Provided that there exists a sufficiently large group of decision makers, the most successful individual in such a group will very likely be someone who made relatively risky (yet high value) choices and happened to be lucky. Thus, the most-successful exemplar (or exemplars, in case of a tie for the highest outcome) will on average have displayed rather risky behavior. Imitating their choices, however, is likely to result in *less* extreme outcomes due to the phenomenon of regression to the mean (e.g., Morton & Torgerson, 2003). Counter-intuitively, in cases where the risky option is slightly *inferior* to the safe option (e.g., choosing between a *Safe Option*: gaining $1.10 with certainty, or a *Risky Option:* 50% probability of gaining $2 and 50% probability of gaining nothing), a risky strategy (making many risky decisions) adopted by these lucky winners will *on average* be expected to produce *lower* outcomes than a safe strategy (making fewer risky decisions; Table 1). A task with an inferior risky strategy is thus particularly interesting because following the behavior exhibited by a most-successful exemplar is clearly *not* an effective course of action to increase expected outcomes here. If people were indeed to follow the risky lead of the most-successful exemplar, this would leave them with a lower expected value than when they did *not* modify their own behavior in accordance with this individual's decisions.

Some illustrations. To illustrate that successful exemplars indeed tend to have made a disproportionally high amount of risky decisions, consider the gamble in Table 1, repeated six times. Each time, one may choose either the safe option or the risky option. For example, one may choose the risky option once, and the safe option 5 times, or one may choose the risky option 4 times, and the safe one twice. Further assume, for the sake of illustration, that 100 people engage in this repeated gamble and that the mean number of risky choices is 1.89, or 31.5%

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of the time.[1] Figure 1 shows that the most-successful individual is likely to have made relatively more risky decisions (see Appendix for calculation steps). In this figure, the solid grey line represents the likelihood that a unique most successful individual emerges who made 0 through 6 risky choices. The solid black line indicates the likelihood for a unique or non-unique most-successful exemplar to emerge (i.e., also including ties). The vertical reference line shows the average number of risky decisions made (1.89) and the broken line corresponds with the expected values associated with the number of risky choices made.

Figure 1 shows that the most-successful exemplar is very likely to be someone who made *more* risky choices than the average individual. Yet, at the same time, making risky choices is on average likely to *reduce* outcomes, as indicated by the decline in expected values when risk-taking increases. This pattern reveals a general statistical phenomenon: Within a risky decision-making context, the most-successful individuals tend to be those who behave in risky ways. Following these successful individuals will thus lead to *more* risk-taking. In the context of the decision options in Table 1, such choices will ultimately *reduce* expected value. For further illustrations of this phenomenon for different combinations of risk-level and risk-taking see the online Supplementary Materials.

What about the least and average-successful exemplars? It is important to note that a person can be successful or unsuccessful with the same degree of risky behavior, high or low. That is, the tendency for the most-successful exemplars to have displayed risky behavior is paralleled by the least-successful exemplars who were similarly likely to have displayed risky behavior. Specifically, like the most-successful exemplar(s), the least-successful exemplar(s) will tend to have made a relatively high number of risky choices; however, different from the most-successful exemplar(s), will have been relatively *unlucky* (Table 2). This contrast between most versus least-successful exemplars is crucial: Whereas people who examine the past choices of the most-successful exemplars may subsequently *increase* their own risk-taking, those who

[1] The probability in this illustration is based on the baseline choices made in the control condition of Study 2.

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instead examine the past choices of the least-successful exemplars may subsequently *reduce* their own risk-taking. Consequently, the critical contrast in our research is between people's preference for examining the most versus the least-successful exemplars as a basis for their own choices.

Prior research (e.g., Bless et al., 2001; Lockwood & Kunda, 1997) has examined the influence of exemplars located at the relative extremes of dimensions (e.g., liked vs. disliked; Bodenhausen et al., 1995), but not of those located in between these extremes. Lockwood and colleagues (2002), for example, tested people's preferences between successful and unsuccessful individuals. Throughout the current studies, therefore, we decided that it was valuable to consistently include exemplars located in between the most and least successful ones (i.e., the average-successful exemplar). Specifically, doing so gave us the opportunity to compare the impact of the most-successful and least-successful exemplars—both of whom tended to engage in risky behavior—against an alternative who engaged in comparatively less risky behavior (i.e., the average-successful exemplar). Given that, to our knowledge, the inclusion of average exemplars is novel, we took an exploratory approach to the popularity and the potential impact of these exemplars.

Statistically, exemplars who end up with an average outcome will tend to have exhibited slightly *less* risky behavior, closer than both the most and least-successful exemplars to the mean number of risky choices within the sample. Thus, compared to these average-successful exemplars, the most and the least-successful exemplars adopted more risky decision strategies with the most versus least-successful exemplars differing only in terms of luck (Table 2).

How may average-successful exemplars affect decisions? Although it is plausible that people will examine average-successful exemplars, for example, because they reflect normative behavior (Sanfey, Stallen, & Chang, 2014), we anticipate that these average-successful exemplars are unlikely to exert a strong influence on people's subsequent choices. Their outcomes are neither very impressive nor very unimpressive and will therefore presumably not act as a strong motivator to either convert to or divert from their choices. Thus, people may well

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examine average exemplars, yet these average-exemplars are unlikely to alter their behavior substantially.

Overview of the Current Research

We set out to test if people sample and imitate successful exemplars even when their success is purely the result of luck, and the risky option is incontrovertibly inferior to the safe choice, leading to poorer outcomes. We investigated this proposition in the context of relatively straightforward decision-making tasks, which can serve as basis for further extensions to more complex settings. This relatively simple and controlled context offered a number of important methodological advantages, including the ability to test causal directionality, control over self-selection biases, and tests of potential moderation.

We predicted that people would disproportionately examine and subsequently follow the strategy of the successful exemplars, increasing their own risk-taking. We investigated this in context of a repeated decision-making task in which the risky strategy was inferior in expected value to the safe alternative (Table 1). We had good reason to adopt a task with an inferior risky alternative: By doing so, we could ensure that following the behavior exhibited by the most-successful exemplar would *not* reflect an actually effective course of action to increase expected outcomes. Rather, imitating the risky behavior performed by the most-successful exemplar would lead to lower returns on average.

In Experiment 1, we randomly assigned participants to view the behavioral strategies adopted by one of three exemplars: one who was the least successful, one who achieved average success, and one who was the most successful in a prior decision-making task. We tested whether participants who viewed the strategies of the most-successful exemplar made more risky decisions and faced lower expected values than those who viewed the choices of the other exemplars. In Experiment 2, we gave participants the choice to view the decisions of the least-successful, average, or most-successful exemplars, and tested whether people disproportionately elect to view, and then follow, the strategy adopted by the most-successful exemplar. In Experiment 3, we expanded this freedom of selection by giving participants the choice of

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viewing any exemplar from the range of their possible outcomes, or not to view an exemplar at all. Furthermore, in Experiment 3 we varied, between-subjects, the magnitude of decision outcomes to explore if relatively high versus low incentives might moderate the results.

We determined sample sizes before data analysis and we report all measures, manipulations, and exclusions. The target sample sizes for the experiments were determined by two main criteria: First, we aimed for a minimum power of (1- β) = 0.80 for detecting effects sizes of η_p^2 = 0.10 (two-tailed α = .05) for the most comprehensive statistical tests in each experiment. Our second criterion was based on the specific methodology: in Experiment 1 and 2 we exposed participants to alleged exemplars from an identical previous decision task. In these cases, the sample size had to correspond to the described task from which the exemplar arose. For Experiment 1, we adopted a target sample size of N = 100, corresponding to the simulated exemplar values of Figure 1. For Experiment 2, which featured a condition without exemplars and a condition with exemplars, we accordingly targeted N = 200 (i.e., approximately 100 for each condition). Experiment 3 used a somewhat different methodology and we estimated the sample size using effect size estimates from a pilot study (details in Experiment 3 and online Supplementary Materials). This resulted in a target sample size of N = 400 for Experiment 3.

Experiment 1: Do People Imitate Successful Exemplars' Decisions?

In Experiment 1, using the repeated decision-task described in Table 1, we tested whether people who were randomly assigned to inspect an exemplar's strategy subsequently adjusted their own decision-making behavior based on these exemplars. These exemplars were allegedly the least-successful, average-successful, or most-successful in an identical previous study. Specifically, we tested if participants who viewed the strategy adopted by the most-successful exemplar adopted a more risky strategy themselves, even when this strategy was objectively inferior to a safer strategy (i.e., offered lower expected value to the participant). The risk-taking behavior of participants who viewed the choices made by the most-successful exemplar was compared against the risk-taking behavior of participants who instead viewed the choices of an average-successful exemplar or the least-successful exemplar. Critically, the most and least-

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successful exemplars were said to have adopted identical risky strategies and only differed in their respective outcomes. By randomly allocating exemplars to participants we ruled out a potential self-selection bias. We predicted that participants would exhibit more risky behavior, and would face lowered expected values, after viewing the strategy of the most-successful exemplar as compared to the other exemplar conditions.

Method

Participants and design. Participants living in the USA ($N = 96$: 53 men, 43 women; $M_{age} = 33.25$, $SD_{age} = 9.80$) were recruited via Amazon's Mechanical Turk™. The study followed a between-subjects design with three conditions (exemplar: least-successful vs. average-successful vs. most-successful).

Materials and procedure. Participants were presented with the following decision-making task: They were asked to choose between a safe choice (100% probability of gaining \$1.10), and a risky choice (50% probability of gaining \$2; 50% probability of gaining \$0), six times. They were informed that a prize draw would be held afterwards and that one random participant would receive the amount they had earned in the task. This was added to the small participation remuneration (\$0.20) awarded to all participants. To ensure that participants fully understood the straightforward decision-making task and reward draw, we required them to explicitly confirm their understanding of this simple task prior to proceeding.

Before making their choices, participants viewed the choices and outcomes of an alleged other participant from an identical previous study who had either won the least amount in that sample (the least-successful exemplar), an average amount (average-successful exemplar), or the highest amount (the most-successful exemplar). Specifically, participants were randomly assigned to one of three conditions (exemplar: least-successful vs. average-successful vs. most-successful). The most-successful exemplar was said to have earned \$11.10, resulting from 5 risky choices and 1 safe choice, the average-successful exemplar \$6.40, resulting from 2 risky choices and 4 safe choices, and the least-successful exemplar only \$1.10, resulting from 5 risky choices and 1 safe choice, the same strategy as the most-successful exemplar. After inspecting

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these choices of the alleged previous subject, participants indicated their own six choices. Participants then reported demographic information and were debriefed. The instructions and materials are included in the online Supplementary Materials.

Results and Discussion

A one-way ANOVA indicated significant differences in the amount of risky choices made by participants across conditions, $F(2, 92) = 4.56$, $p = .013$, $\eta_p^2 = .090$. Note that the expected values by definition yield a negative one-to-one relation ($r = -1$) with the amount of risky choices; hence the expected values were also significantly different across conditions. Contrast analyses confirmed that those who inspected the most-successful exemplar's strategy subsequently made significantly more risky choices ($M_R = 2.56$, $SD_R = 2.11$), and faced significantly lower expected values ($M_E = \$5.06$, $SD_E = 1.26$), than those who inspected the average-successful exemplar's strategy ($M_R = 1.59$, $SD_R = 1.50$; $M_E = \$5.65$, $SD_E = 0.90$), $t(92) = 2.34$, $p = .021$, $d = 0.488$, and those who inspected the least-successful exemplar's strategy ($M_R = 1.33$, $SD_R = 1.36$; $M_E = \$5.80$, $SD_E = 0.82$), $t(92) = 2.78$, $p = .007$, $d = 0.580$. These differences were modest in size. These latter conditions did not differ significantly, $t(92) = 0.58$, $p = .564$, $d = 0.121$. These results suggest that people indeed follow successful exemplars and increase their own risk-taking even if these choices are inferior in expected value. [2]

Experiment 2: Do People Choose Successful over Unsuccessful Exemplars?

The previous experiment demonstrated that a successful exemplar can increase risky decision-making. In Experiment 2, we tested if people orient towards such successful exemplars *spontaneously* by showing them the behavior of their choice of exemplar. Specifically, we tested if people prefer to examine the strategy of the most-successful exemplar over that of the least-successful exemplar, and if they subsequently use these exemplars' strategies to guide their own decision-making. If so, then this asymmetric preference for successful exemplars may impair

[2] The online Supplementary Materials contain results from Poisson regression as alternative to the analyses of variance in risk-taking for all three experiments. Results were similar to those reported in the main text unless where stated.

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outcomes, as evident from Experiment 1. In addition, we included in Experiment 2 a control group of participants who did *not* examine an exemplar strategy. This condition served to test whether viewing a successful exemplar *increases* risk-taking or whether viewing an unsuccessful or average exemplar *reduces* risk-taking relative to not viewing an exemplar at all.

Method

Participants and design. Participants living in the USA ($N = 208$; 108 women, 96 men, 1 androgynous, 3 of undeclared gender; $M_{age} = 34.58$ $SD_{age} = 12.18$) were recruited via Amazon's Mechanical Turk™. The study followed a between-subject design (exemplar availability: yes vs. no); those in the condition that featured exemplars were further divided across exemplar conditions (least-successful vs. average-successful vs. most-successful), depending on their own exemplar selection.

Materials and procedure. As in Experiment 1, participants were instructed to choose six times between a safe choice that offered a 100% pay-off of $1.10, and a risky choice that offered a 50% chance of gaining $2 and a 50% chance of gaining $0. They were informed that a prize draw would be held afterwards and that two random participants would receive the amount they had earned in the task. This was added to the small participation remuneration ($0.20) awarded to all participants. As in Experiment 1, we required participants to explicitly confirm their understanding prior to proceeding to ensure that they fully understood the decision-making task and reward draw. Participants were then randomly assigned to one of the two exemplar availability conditions (yes vs. no).

Participants allocated to the control condition (which did not involve viewing exemplars) directly proceeded to make their six choices. Those in the exemplar condition, on the other hand, were asked which one of three exemplars from an identical previous study they wanted to view the choices and outcomes of. They then viewed the choices and outcomes of the exemplar of their choice (see Experiment 1).[3] After inspecting the choices and outcomes of their chosen

[1] We also examined in this study the role of perceived status to explore its link with social risk-taking (Mahadevan, Gregg, Sedikides, & De Waal-Andrews, 2016; Mahadevan, Gregg, &

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exemplar, these participants also made their six choices. All participants then reported demographic information and were debriefed. The instructions and materials are included in the online Supplementary Materials.

Results

Exemplar selection. Results indicated that, among those participants who examined an exemplar ($N = 98$), preferences for the least, average, and most-successful exemplars were significantly different, $\chi^2(2) = 29.65$, $p < .001$. Most people selected the average-successful exemplar (56.1%), followed by the most-successful exemplar (32.7%), and then the least-successful exemplar (11.2%). Most importantly, as hypothesized, significantly more people selected the most-successful exemplar than the least-successful exemplar, $\chi^2(1) = 10.26$, $p = .001$. The difference between the selection of average and least-successful exemplars was also significant, $\chi^2(1) = 29.33$, $p < .001$, as was the difference between the average and most-successful exemplar, $\chi^2(1) = 6.08$, $p = .014$.

Risk-taking and expected values. A one-way ANOVA on participants' choices indicated significant differences in the amount of risky choices made by participants across the total of four conditions (no exemplar vs. least-successful exemplar vs. average-successful exemplar vs. most-successful exemplar), $F(3, 201) = 5.82$, $p = .001$, $\eta_p^2 = .080$. Figures 2a and 2b display the number of risky choices made and the corresponding expected values.

Contrast analyses confirmed that those who chose to inspect the most-successful exemplar's strategy subsequently made significantly more risky choices ($M_R = 3.22$, $SD_R = 1.98$),

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Sedikides, 2019 a, b). Participants in the exemplar condition indicated the perceived status of the exemplar they had selected on two items (Nelissen & Meijers, 2011), that we modified to fit our decision context ("This person has high status within this decision-task", "This person is respected within this decision-task"; 1 = *not at all*, 7 = v*ery much*; α = .88). There were significant differences in the status attributed to these exemplars, $F(2, 95) = 16.14$, $p < .001$, $\eta_p^2 = 0.254$. The most-successful exemplar ($M = 5.41$, $SD = 1.15$) had higher status than the average-successful exemplar ($M = 4.46$, $SD = 1.28$), $t(95) = 3.35$, $p = .001$, $d = 0.688$, and the least-successful exemplar ($M = 2.95$, $SD = 1.47$), $t(95) = 5.55$, $p < .001$, $d = 1.138$. The average-successful exemplar also had higher status than the least-successful exemplar, $t(95) = 3.61$, $p < .001$, $d = 0.742$.

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and obtained lower expected value (M_E = \$6.28, SD_E = 0.20), than those who inspected the average-successful exemplar (M_R = 2.13, SD_R = 1.50; M_E = \$6.39, SD_E = 0.15), $t(201) = 2.69$, $p = .008$, $d = 0.379$, although the magnitude of this effect was relatively modest. Those who chose to inspect the most-successful exemplars also made more risky choices and faced lower expected values than those who inspected the least-successful exemplar (M_R = 1.00, SD_R = 1.67; M_E = \$6.50, SD_E = 0.17), $t(201) = 3.48$, $p = .001$, $d = 0.490$, or no exemplar (M_R = 1.89, SD_R = 1.94; M_E = \$6.41, SD_E = 0.19), $t(201) = 3.62$, $p < .001$, $d = 0.510$. A marginally significant difference emerged between those who viewed the average versus the least-successful exemplars, $t(201) = 1.87$, $p = .063$, $d = 0.264$.[4] There were no significant differences in the amounts of risky choices and expected values of participants who viewed the average or least-successful exemplars versus those who did not view any exemplar, $t(201) = 0.79$, $p = .430$, $d = 0.111$, and, $t(201) = 1.54$, $p = .126$, $d = 0.217$, respectively. These results indicate that people indeed modify their choices in line with those made by a successful exemplar, resulting in inferior outcomes, even when given a free choice in which exemplars to examine.

Discussion

In Experiment 2 we found that people indeed disproportionally oriented towards the most-successful as opposed to the least-successful exemplars as a basis for their decision-making. Furthermore, this self-imposed exposure to most-successful exemplars subsequently increased risk-taking and reduced expected values, consistent with Experiment 1. The most-successful and least-successful exemplars adopted identical strategies (5 risky choices, 1 safe choice), and only differed in the extent to which they were lucky. Despite, however, the success of the most successful exemplar being due to luck, people chose to follow more closely in their footsteps, and consequently suffered poorer outcomes.

[4] This difference reached significance ($p = .002$) in the Poison regression (see online Supplementary Materials).

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Experiment 3: Extensions to Optional and Continuous Exemplar Selection

We conducted a third experiment to test the generalizability of the previous studies. Specifically, in Experiment 3 (a) we made it entirely optional for participants to examine the choices of an exemplar or not, allowing us to test if, when given the choice, many people will indeed consult the behavior of an exemplar; (b) we offered the full scale of possible exemplar outcome positions rather than restricting available exemplars to those who were the least, average, or most successful; (c) we varied, between subjects, the outcome magnitudes of the decision-task by a factor of 10, to test if outcome magnitude might affect exemplar selection and influence; (d) we doubled the odds for participants to receive their outcomes as a bonus payment on top of their regular remuneration; and (e) we ran an initial pilot, identical in design to the main study, to obtain indicative effect size estimates for a priori power-analysis (pilot and power-estimates included in online Supplementary Materials). We predicted that (1) the majority of people would indeed opt to examine the choices of an exemplar rather than not; (2) people who examined exemplars would display a preference for highly successful exemplars; and (3) people's own risk-taking behavior would be higher if they examined more (vs. less) successful exemplars, at the cost of expected value. To clarify, this last prediction corresponds to a positive [negative] association between the outcome position of the selected exemplar and number if risky choices by [expected value for] the participant. We did not make a prediction regarding possible moderation by magnitude of outcomes.

Method

Participants and design. A sample of 401 participants recruited through *Prolific.co* participated in the main experiment. Of these, we excluded one participant who indicated that he did not understand the task, 12 participants with duplicate IP addresses (suggesting taking part multiple times), and seven participants who skipped one or more of the critical decision-making questions. This resulted in a final sample of 381 participants (177 women, 203 men, 1 non-binary; $M_{age} = 28.61$, $SD_{age} = 9.42$). Participants were randomly assigned to the conditions of a 2-cell (outcome magnitude: low, high) between-subject design.

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Materials and procedure. Participants were presented with a similar decision-making task as in Experiments 1 and 2. Those assigned to the low outcome magnitude condition were asked to choose between a safe choice (100% probability of gaining £1.10), and a risky choice (50% probability of gaining £2; 50% probability of gaining £0), six times; these outcomes were multiplied by 10 for the high outcome magnitude condition (i.e. £11, £20, £0). In addition, participants read that a prize draw would be held afterwards and that one random participant for every 50 participants would receive the amount they had earned in the task. Note that this could range from £0 to £12 in the low outcome magnitude condition, and from £0 to £120 in the high outcome magnitude condition. This amount was added to the small participation remuneration (£0.75) awarded to all participants. As before, to ensure that participants fully understood the straightforward decision-making task and reward draw, we required them to explicitly confirm their understanding of this simple task prior to proceeding.

Before making their choices, participants were offered the opportunity to view the choices and outcomes of an alleged other participant from an identical previous study. They could then decide not to view an exemplar, or, instead, select one of 28 exemplars. These exemplars were presented in order of outcome magnitude, counterbalanced as either ascending or descending. These exemplars represented each of the possible outcome configurations of the decision-task. Participants were then presented with the outcomes and choices of their selected exemplar, and moved on to indicate their own six choices. Participants who did not select an exemplar instead immediately proceeded to make their choices. Finally, participants reported demographic information, and were debriefed. The instructions and materials are included in the online Supplementary Materials.

Results

Exemplar selection. The majority of participants opted to see the choices of an exemplar (N = 239, 62.7%) rather than not (N = 142, 37.3%); this difference was statistically significant, $\chi^2(1) = 24.70$, $p < .001$. Preferences for viewing an exemplar did not significantly differ across the two outcome magnitude conditions, $\chi^2(1) = 0.93$, $p = .760$. These results show that as

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predicted, when given a choice, a substantial proportion of people indeed opted to examine the choices of an exemplar rather than not do so.

Figure 3 displays frequencies of selected exemplars by outcome position. The mean and median outcomes of the selected exemplars revealed a preference for successful exemplars in both the low (*Mean* = £8.37, *SD* = £4.01, *Median* = £10.00; *Range* = £0.00-£12.00) and the high outcome magnitude condition (*Mean* = £76.78, *SD* = £42.91, *Median* = £81; *Range* = £0- £120). A signed ranks test indicated that the overall median (after rescaling the exemplar outcomes in the high outcome magnitude condition to £0.00 through £12.00) was significantly higher (*Median* = £8.20) than the median of the scale (£6.30), $Z = 5.17$, $p < .001$. Furthermore, the most successful exemplar proved most popular (37.2%), followed by the least successful one (11.3%). Mean exemplar ranks did not significantly differ between low and high outcome magnitudes ($M_{low} = 125.68$, $M_{high} = 114.37$), $Z = -1.30$, $p = .193$, indicating that this preference for successful exemplars was not significantly affected by outcome magnitudes. These findings support our second prediction that people who examine exemplars tend to prefer viewing the highly successful ones.

Risk-taking and expected values. We tested next if those who viewed the choices of successful exemplars subsequently made more risky decisions themselves. Using a Poisson regression, we regressed participants' number of risky choices on mean-centered exemplar outcome (after rescaling the exemplar outcomes in the high outcome magnitude condition to £0.00 through £12.00). We also added effect-coded magnitude condition (-1 = *low*, 1 = *high*) to this regression analysis as well as the effect coded magnitude condition × mean-centered exemplar outcome product term to examine if this factor might act as moderator. This analysis produced a significant association between exemplar outcome position and participant risk-taking, $B = 0.05$, $SE = .01$, 95%$CI = [.03, .07]$, $\chi^2(1) = 23.45$, $p < .001$. The manipulation of outcome magnitudes neither exerted a significant partial effect, $B = 0.03$, $SE = .04$, 95%CI = [-.05, .11], $\chi^2(1) = 0.48$, $p = .488$, nor acted as moderator, $B = -0.00$, $SE = .01$, 95%CI = [-.02, .02], $\chi^2(1) = 0.059$, $p = .809$. Expected values, examined using a linear regression analysis

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with the same predictors, revealed a significant association between exemplar outcome position and participant risk-taking, B = -0.02, SE = .00, $t(235) = 4.44$, $p < .001$, β = -.28. The manipulation of outcome magnitude neither exerted a significant partial effect, B = -0.01, SE = .01, $t(235) = 0.60$, $p = .546$, β = -.04, nor acted as moderator, $B = 0.00$, SE = .00, $t(235) = 0.11$, $p = .914$, β = .01. Thus, participants made increasingly more risky decisions, and faced lower expected values, when they viewed a more (vs. less) successful exemplar, as predicted. Regression slopes in Figures 4a and 4b illustrate this association.

Aside from the positive association between the outcome of the selected exemplar and participants' own risk taking, did those who viewed a successful exemplar take more risks than those who did not select an exemplar at all (Figure 4a & 4b), or compared to those who selected another exemplar? An exploratory ANOVA comparing these three groups revealed that they significantly differed in risk-taking, $F(2, 378) = 3.35$, $p < .001$, $\eta_p^2 = .05$. Indeed, those who viewed the most successful exemplar made more risky choices and faced lower expected values ($M_R = 3.22$, $SD_R = 1.96$; M_E = £6.28, SD_E = £0.20) than those who selected another exemplar ($M_R = 2.24$, $SD_R = 1.65$; M_E = £6.38, SD_E = £0.17), $p_{Bonferroni} < .001$, or than those who did not view an exemplar at all ($M_R = 2.20$, $SD_R = 1.92$; M_E = £6.38, SD_E = £0.19), $p_{Bonferroni} < .001$. Risk-taking and expected values did not significantly differ between those who did not view any exemplar and those who selected an exemplar which was not the most successful one, $p_{Bonferroni}$ = 1.000.

Discussion

The results of Experiment 3 offer a number of important confirmations and extensions of the previous two studies. We found that the majority of people indeed preferred looking at exemplars when given the opportunity, and that among those who do there was a preference for successful exemplars (i.e., those with high outcome positions). People who viewed the choices of exemplars subsequently made more risky choices and faced lower expected values, especially if the selected exemplar held a high outcome position and thus had made more risky choices themselves. Furthermore, those who viewed the most successful exemplars showed more risk-

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taking, and lower expected values, than those who did not opt to view an exemplar. Moreover, the outcome magnitude of the decision-making task, varied by a factor of 10 between subjects, neither significantly influenced, nor moderated, the selection of exemplars and participants' subsequent risk-taking. Overall, these results supports our hypotheses that people disproportionally sample successful exemplars and subsequently take more risks, at the cost of somewhat lower expected value.

General Discussion

Summary of Findings

We proposed and tested that people overly rely on the behaviors exhibited by exemplars when making decisions. In particular, we hypothesized that people disproportionately sample successful exemplars, relative to unsuccessful ones, as a basis for their own strategy. Although such a strategy intuitively appears to make sense, it fails to take into account that in many contexts success is at least partly determined by luck—successful individuals are often those who made risky choices that luckily turned out well for them. Moreover, in risky decision-making contexts highly successful exemplars tend to be those who took more risks, hence leading people to subsequently take more risks themselves when given the opportunity to examine the strategy of the exemplar of their choice. When a risky choice yields lower expected value than its safe alternative, this focus on successful exemplars will cause greater risk-taking and a reduction in expected value. In three experiments, we tested these novel predictions.

In Experiment 1, people were randomly informed of the decision strategies of a most, average, or least-successful exemplar. Consistent with our predictions, those who were presented with the most-successful exemplar's strategy subsequently made more risky choices, paralleled by a reduction in their expected value. These initial findings indicated that people indeed follow the lead of most-successful exemplars as a basis for their own decision-making. This is particularly noteworthy given the inferiority of the risky option compared to the safe one. Importantly, by allocating participants to conditions at random (as opposed to showing them the exemplar of their choice), we ruled out a potential self-selection bias.

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Experiment 2 extended Experiment 1 by allowing participants to view the strategy of the exemplar of their choice, rather than randomly allocating them to one of the three exemplars. It also included a control condition in which no exemplars were present. Results indicated that people disproportionately chose to view the strategy of the most-successful relative to the least-successful exemplar. Consistent with Experiment 1, people who viewed this most-successful exemplar subsequently exhibited more risky behavior and faced lower expected values relative to those who examined the strategy of average or least-successful exemplars; they also exhibited more risky behavior and lower expected values relative to a no-exemplar control. Importantly, the most and least-successful exemplars exhibited the same (highly risky) behavior; the only difference between them was that the most-successful exemplar was luckier than the least-successful one.

In Experiment 3, we offered participants the opportunity to view an exemplar of any possible outcome position or to view no exemplar at all. Furthermore, we varied between subjects the magnitude of the choice payoffs by a factor 10 to explore if this might alter risk-taking or exemplar selections. The results of this study revealed that most people indeed preferred to view an exemplar. Of those that did, successful exemplars were more popular in general and the most successful exemplar was most popular in particular. Furthermore, we found a positive association between the outcome position of the selected exemplar and participants' risk-taking (and a negative association with expected value), suggesting that viewing more successful exemplars caused higher risk-taking. Those who viewed the popular most successful exemplar indeed made more risky-decisions than those who selected another exemplar or no exemplar at all. Moreover, these findings were not affected by outcome magnitude.

Taken together, our findings suggest that successful exemplars can increase risk-taking, and this can have somewhat detrimental consequences for one's own outcomes. In doing so, our research demonstrates how a fundamental social psychological process (social influence) interacts with a fundamental statistical phenomenon (regression to the mean) to produce biases in decision-making.

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Implications

Exemplar priming and role models. Our research shows that people orient towards successful rather than unsuccessful exemplars as a basis for making their own decisions. Although this finding is novel, it is broadly consistent with and integrates earlier research on exemplar priming (e.g., Bless et al., 2001; Maudsley, 2001; Quimby & De Santis, 2011; Van Auken et al., 2006) and the use of positive role models (e.g., Lockwood et al., 2002). People use exemplars as a source of concrete information when forming attitudes (Bodenhausen et al., 1995; Gregg & Mahadevan, 2014; Gregg, Mahadevan, & Sedikides, 2017a, b; Legare & Nielsen, 2015; Toelch et al., 2014), and retrieved exemplars indeed serve as basis for intuitions about decision alternatives (Glöckner & Witteman, 2010). People focus on positive role models when trying to achieve success (Lockwood et al., 2002), as in the case of decisions tasks that offer gains (vs. losses; Higgins, 2000; Tversky & Kahneman, 1981). We integrate these lines of research by establishing that people indeed sample and follow successful exemplars in particular when deciding which strategy to adopt in a risky decision-task.

The fundamental attribution error. In addition to the finding that people disproportionally focus on successful (as opposed to unsuccessful) exemplars as a basis for their own decisions, we also theorized and found that such most-successful exemplars are those who tended to adopt relatively risky strategies as a direct result of the probabilistic nature of risky decision-making. This phenomenon is important: most-successful exemplars tend to benefit *more* from uncontrollable factors, such as chance, compared to exemplars who were less successful. By implication, people who follow the strategy adopted by most-successful exemplars will likewise become dependent on events that are beyond their control. We suspect that this implication goes strongly against people's intuitions about successful exemplars. However, it is consistent with work on the fundamental attribution error (Jones & Harris, 1967; Ross, 1977). Paradoxically, successful exemplars owe much of their success to a gamble, sometimes with worse prospects (e.g., low expected value) than their less successful counterparts.

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Indeed, those who emerge as most-successful individuals also tend to have been the most lucky (i.e., obtaining the high but risky outcome).

Practical contexts. Our results have implications for lottery sales and regulation, a highly economically and socially relevant context (Department for Digital, Culture, Media and Sport, 2015; Jessor, 1992; North American Association of State and Provincial Lotteries, 2017). Yet, the idea that focusing on most-successful exemplars when devising a fruitful decision-making strategy can increase risk-taking and can reduce payoffs is perhaps not limited to the lottery settings illustrated in the introduction example, or the relatively harmless repeated gambles we used in the current research. Many contexts in which success is partially dependent on chance can impose such a risk, including areas that may hold major implications for individual or organizational prosperity. Stock trading, for example, presents an impactful domain in which modeling successful exemplar strategies might foster detrimental outcomes. Given that market changes can be difficult to anticipate (Hogarth & Kunreuther, 1989; Sarin & Weber, 1993), traders may look at exemplars as a basis for their own judgment. Momentarily successful traders will likely have made more risky decisions than the average trader, even if these successful traders' risky decisions have a lower expected value than less risky decisions. Following the lead of successful traders may therefore have a negative impact on people's own outcomes, in case the actual expected value of the risky option is lower than that of safer alternatives. Likewise, organizations that modify their own business strategies after those of successful competitors should make sure to sample a variety of exemplars of different outcome positions.

Critically, the most-successful exemplars are more likely to have been lucky, whereas the least-successful exemplars are more likely to have been unlucky, than others, despite behaving in similar ways. This observation has interesting practical implications. For example, organizations and businesses that adapt work or performance incentives (e.g., financial rewards, promotions, or privileges for excellence in performance; Jenkins, Mitra, Gupta, & Shaw, 1998; Skaggs, Dickinson, & O'Connor, 1992) may prefer, if possible, to reward behavior that yields *high*

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expected value as opposed to rewarding high actual outcomes which might or might not reflect actual excellence. As an example in the academic context, consider the celebration of highly successful grant applicants who are subsequently asked to share their strategy with their less successful colleagues. Those who applied for high risk, high outcome bids will disproportionally occupy the positions of most successful (and least successful) applicants. Yet, rather than reflecting skill, ability, or a winning strategy, this extreme positioning may merely reflect the high outcome variability inherent in high-risk decisions (see also: Marsh, Jayasinghe, & Bond, 2008; von Hippel & von Hippel, 2015). As another example, consider the recent replication crisis in psychology (e.g., Loken & Gelman, 2017). The effect sizes in studies that leave a lot 'up to chance' (e.g., due to poor measurement or small sample sizes) will be subject to greater variation, potentially resulting in publication bias (Button et al., 2013). If researchers model their own designs on prior studies that yielded large effect sizes then they may risk falling prey to the unwarranted reliance of successful exemplars.

The most obvious practical context in which our findings may prove insightful is gambling in social contexts. Performance in casino games such as playing slot machines or roulette do not depend on the decisions of others, and skill does not fundamentally alter the odds of winning or losing (as opposed to, for example, games like poker or blackjack). Yet, these games are often played within a social context: while someone's performance on a slot machine is independent of another person's play, the performance of these others is highly visible (e.g., because the person sits nearby, or because loud sounds and flashing lights signal success). Our research suggests that these others' successes may tempt people to take more risks. In a game of roulette, for example, the high-risk strategy of betting on a single number rather than a color comes with the (unlikely) possibility of high reward. Based on our findings, we might anticipate that the mere presence of a lucky winner who plays a specific number will tempt people to follow this (highly risky) strategy. As such, our findings may offer a basis for understanding the influence that the objectively independent yet influential social environment has on gambling

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behavior, beyond factors such as reward-schemes or incentives (Hartstra, Oldenburg, Van Leijenhorst, Rombouts, & Crone, 2010).

Caveats, Limitations, and Future Directions

Risk-taking and expected value. One might falsely conclude from our research that following successful exemplars is generally bad for decision outcomes. To be clear, this need not be the case. Rather, following the strategy exhibited by a most-successful exemplar typically increases *risk-taking*. Expected value subsequently only drops *to the extent that the risky option is lower in expected value compared to the safe alternative*. Consider, for example, what would happen if one were to modify our repeated decision-task in Table 1 such that the risky alternative has *equal* expected value to the safe one (e.g., changing the outcome for the safe option from $1.10 to $1.00). After this modification, the most-successful exemplars will still tend to have taken more risks. However, the expected values of that risky strategy will no longer be lower than that of safer strategies. Following the successful exemplar would thus affect risk-taking, but not expected value. Moreover, if the expected value of the risky decision alternative is made to be *higher* than that of the safe option then it will in fact pay off to follow the most-successful exemplar's strategy (who have still tended to take more risks, and subsequently been luckier, than the average).

The average successful exemplar. We found in Experiment 2 that the average successful exemplar was very popular. Perhaps the reason for the relative popularity of the average successful exemplar in this experiment is a geometrical one. Possible exemplar outcomes fall on a range (line segment) from least successful to most successful. The majority of points on a line segment (e.g., least to most successful exemplars) are closer to the line segment's midpoint (or near-average) than either one of its limits. Specifically, 50% of points are closer to this midpoint than to either one of the limits. Only 25% of points are closer to the upper limit (most successful exemplar) than midpoint, and another 25 is closer to the lower limit (least successful exemplar) than midpoint (Van Tilburg, 2019). By 'forcing' participants to choose either one of the two exemplars at the limits or the average exemplar, we may push participants

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towards this average exemplar. Interestingly, when we offered participants the opportunity to select from the full range of possible exemplar outcome positions in Experiment 3, we found that the relative preference for the most successful exemplar compared to any other specific position was substantial. It seems that the use of few exemplar categories in Experiment 2 boosted the popularity of the average exemplar as opposed to the full range of exemplars in Experiment 3.

Sample diversity and inclusiveness. For the first two experiments we sampled residents of the USA using Amazon's Mechanical Turk panel (www.MTurk.com), and we used on online UK population from Prolific (Prolific.co) for the third experiment. We did not design our studies to investigate conclusively how generalizable the impact of successful exemplar is (e.g., across genders, ethnicity, nationality, or age). While these online platforms allowed us to access a more diverse population (in terms of age, income, gender, education, ethnicity, geographical location; Huff & Tingley, 2015) relative to conventional psychology samples (e.g., students, local residents), future investigations may investigate how generalizable our findings are across populations. We hope that by establishing an initial demonstration for the impact of successful exemplars, we enable researchers to develop and then test moderators present in different populations.

Skill. In the current investigation we focused on decision contexts in which the outcomes of a risky choice were fully determined by chance. By restricting our studies to, essentially, lotteries, we did not investigate the potential impact of skill on decision outcomes. In some decision tasks the outcomes of a risky choice may instead be the result of both skill and luck. In such contexts, whether it is wise to follow the strategy exhibited by a most successful exemplar will likely depend on several factors, such as how strongly skill and outcome are correlated, whether the exemplar's skill is transferrable to others, what the expected values are of the choices at different skill levels, and what the relative proportions are of low- and high-skilled exemplars as most successful exemplars. These are interesting and testable questions that will enrich our understanding of the strength and pervasiveness of the impact of successful exemplars

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in contexts that involve a mixture of skill and chance. Given the scope of these questions, researchers could investigate the implications of skill in future research.

When the winner takes it all. Are there decision contexts in which it pays to follow the lead of an exceptionally risky successful exemplar? A particularly interesting case emerges when only the most-successful individual(s) receive their earnings. Such 'winner takes all' contexts would fundamentally alter the decision-making task, transforming the risky alternative into a more likely strategy to achieve success, even if the risky alternative yields a somewhat lower immediate expected value than the safe option. In this 'winner takes all' context, individuals who inspect and follow most-successful exemplars may subsequently have better prospects.

Conclusions

We proposed and tested that when people make decisions under uncertainty they disproportionately sample, and then imitate, the behavior of successful (relative to unsuccessful) exemplars. Due to the probabilistic nature of risky-decision making, however, these successful exemplars tend to be those who took more risks and were subsequently lucky. Consequently, imitating the behavior of successful exemplars inspires risk-taking. Yet, imitating this risky behavior tends to result in lower outcomes than those of these successful exemplars themselves due to the statistical phenomenon of regression to the mean. In fact, when a risky choice is lower in expected value than the safe alternative, then following in the footsteps of these successful exemplars effectively reduces expected value compared to when a successful exemplar is not used. Three studies confirmed the existence of the unwarranted reliance on and influence of successful exemplars and its specific foundations: Experiment 1 indicated that people indeed imitate the behavior of successful exemplars, leading to higher risk-taking, and lower expected values. Experiment 2 confirmed that people choose to sample successful exemplars over unsuccessful ones when given the choice themselves, again resulting in greater risk-taking and somewhat reduced expected values. Experiment 3 extended these findings by offering participants the opportunity to view any exemplar or none at all, and by varying the outcome magnitude. Results confirmed that most people prefer to view an exemplar, and especially the

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most successful, which resulted in increased risk-taking and reduced expected values. Together, these results demonstrate the existence of the impact of the unwarranted sampling and influence of successful exemplars, and illuminate its potentially problematic impact on decision making across domains. These findings hold implications for risk-taking in a range of social contexts where risk-taking can have detrimental outcomes, such as gambling, education, and health.

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Supplementary Material

The Supplementary Material is available at: qjep.sagepub.com

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Figure Captions

Figure 1: Likelihood of Most-Successful Exemplar(s) to Emerge

Figure 2a: Risky Choice Frequency by Exemplar Condition (Experiment 2)
Figure 2b: Expected Value by Exemplar Condition (Experiment 2)

Figure 3: Exemplar Selection Frequencies (Experiment 3)

Figure 4a: Risky Choice Frequency by Exemplar (Experiment 3)
Figure 4b: Expected Value by Exemplar (Experiment 3)

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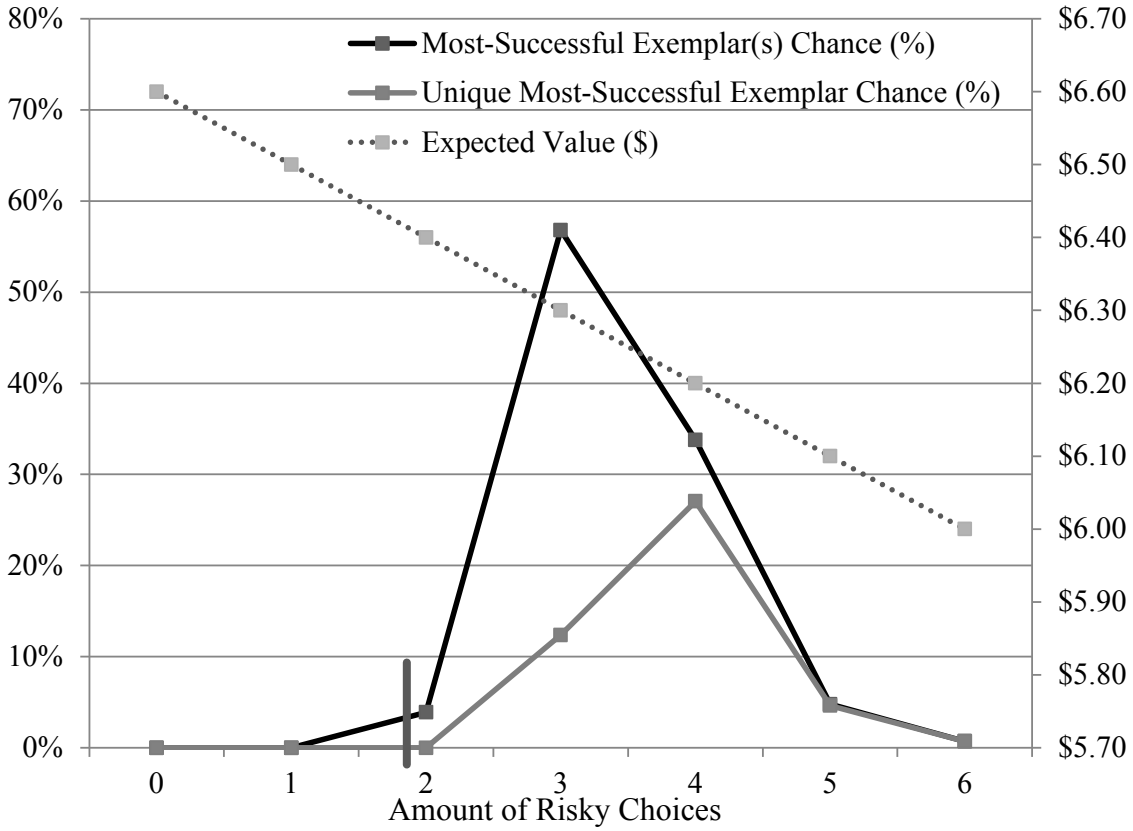
Figure 1: Likelihood of Most-Successful Exemplar(s) to Emerge



Note: See Appendix for the calculations on which this graph is based.

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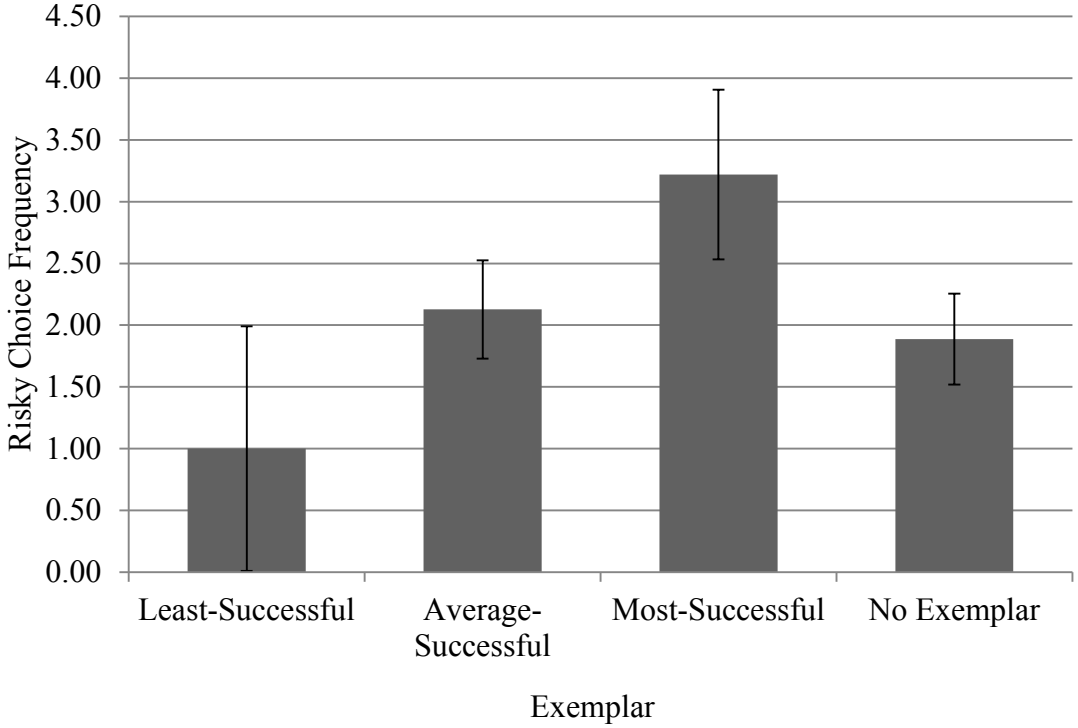
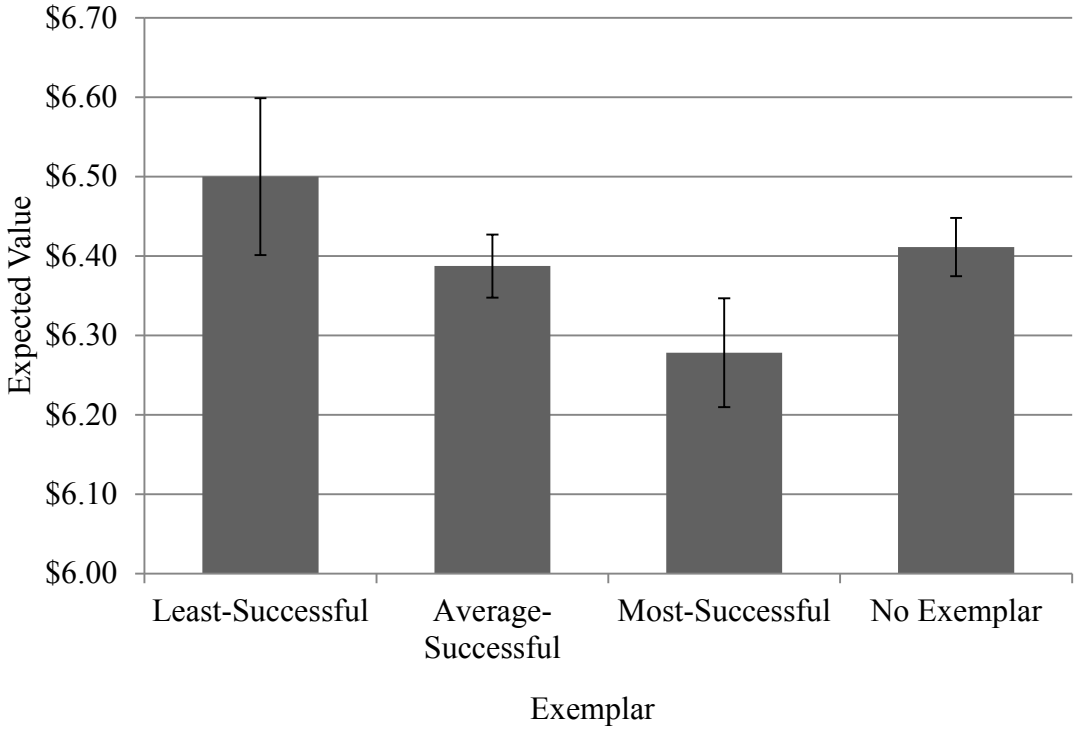
Figure 2a: Risky Choice Frequency by Exemplar Condition (Experiment 2)



Note: Error bars correspond to 95% confidence intervals above/below the mean.

Figure 2b: Expected Value by Exemplar Condition (Experiment 2)



Note: Error bars correspond to 95% confidence intervals above/below the mean.

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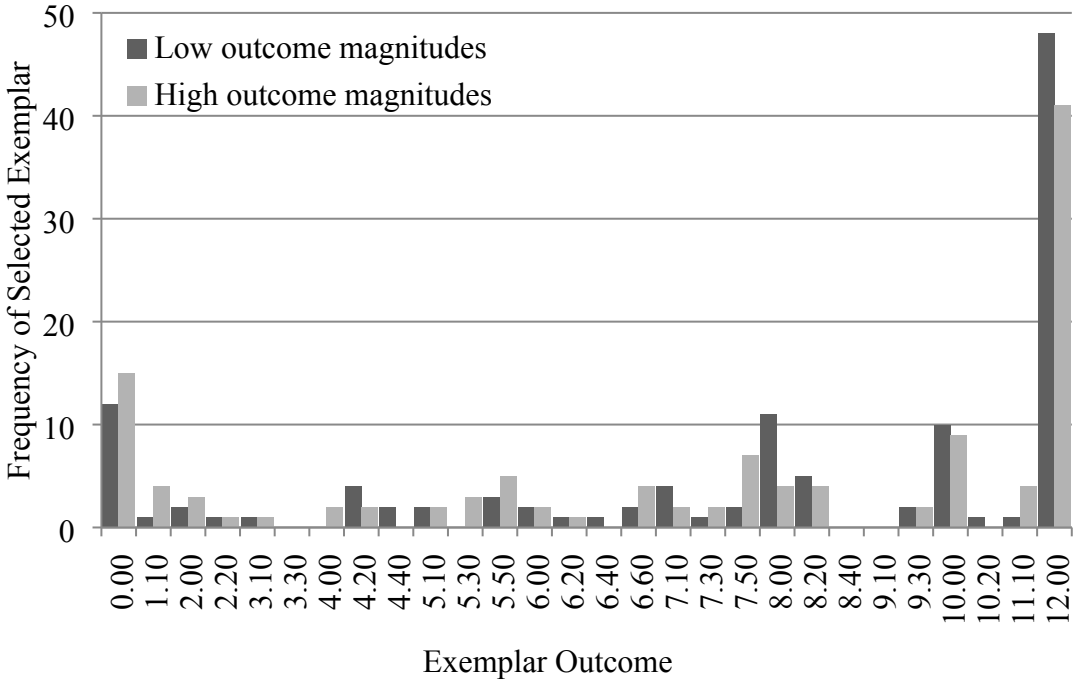
Figure 3: Exemplar Selection Frequencies (Experiment 3)



Note: Displayed exemplar outcomes are divided by 10 in the high outcome magnitudes condition.

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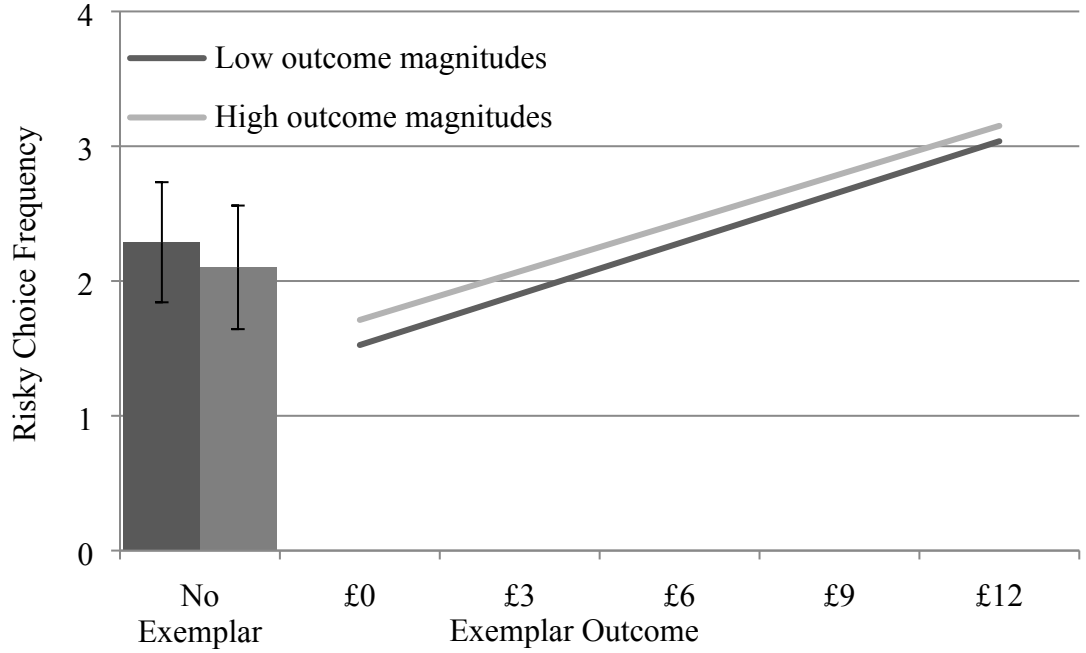
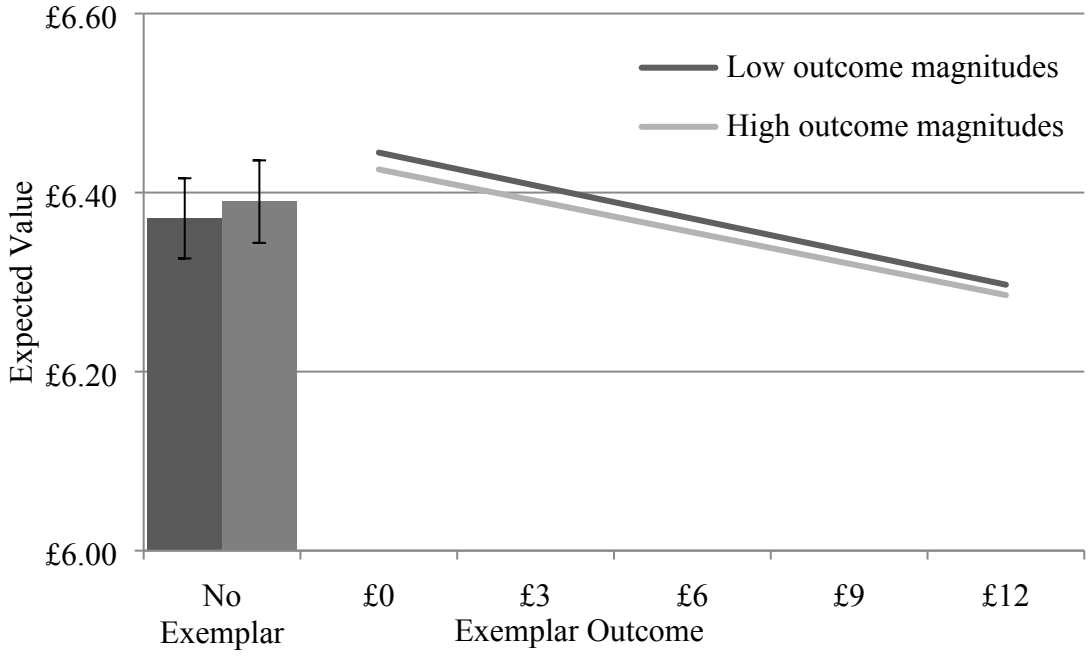
Figure 4a: Risky Choice Frequency by Exemplar (Experiment 3)



Note: Displayed exemplar outcomes are divided by 10 in the high outcome magnitudes condition. Error bars correspond to 95% confidence intervals above/below the mean.

Figure 4b: Expected Value by Exemplar (Experiment 3)



Note: Displayed exemplar outcomes are divided by 10 in the high outcome magnitudes condition. Error bars correspond to 95% confidence intervals above/below the mean.

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Table 1: Risky Decision-task (Repeated)

	Safe Choice	*Risky Choice*	
Outcome	$1.10%	$2.00	$0.00
Probability	100%	50%	50%
Expected Value	$1.10	$1.00	

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Table 2: Behavior and Outcomes Across Exemplars

	Least-Successful	*Average-Successful*	*Most-Successful*
Risk-taking	High	Average/Low	High
'Good' Luck	Low	Average	High

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