

## ATTITUDES AND SOCIAL COGNITION

## The Streaking Star Effect: Why People Want Superior Performance by Individuals to Continue More Than Identical Performance by Groups

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We present evidence in 9 studies ( $n = 2,625$ ) for the Streaking Star Effect—people’s greater desire to see runs of successful performance by individuals continue more than identical runs of success by groups. We find this bias in an obscure Italian sport (Study 1), a British trivia competition (Study 2), and a tennis competition in which the number of individual versus team competitors is held constant (Study 3). This effect appears to result from individual streaks of success inspiring more awe than group streaks—and that people enjoying being awe-inspired. In Studies 4 and 5, we found that the experience of awe inspired by an individual streak drives the effect, a result that is itself driven by the greater dispositional attributions people make for the success of individuals as opposed to groups (Study 6). We demonstrate in Studies 7a and 7b that this effect is not an artifact of identifiability. Finally, Study 8 illustrates how the Streaking Star Effect impacts people’s beliefs about the appropriate market share for companies run by a successful individual versus a successful management team. We close by discussing implications of this effect for consumer behavior, and for how people react to economic inequality reflected in the success of individuals versus groups.

*Keywords:* streaks, awe, perception of individuals versus groups, identifiability

In May of 2017, Rafael Nadal took the court for a first-round match at the French Open against Frenchman Benoit Pare. Pare, the lower ranked player, entered the court first, and, not surprisingly, the home crowd at Roland Garros gave him a spirited ovation. However, the reaction Pare received paled in comparison with the one that greeted Nadal—a Spaniard—when he entered the court. One journalist described the crowd’s reaction to Nadal’s entrance as “an eruption” (Brown, 2017). A winner of 15 major tennis tournaments at the time, Nadal entered the tournament holding the record for most French Open singles championships at nine.<sup>1</sup> Despite whatever allegiance the crowd may have felt to their compatriot, they were clearly pulling for Nadal to continue his unprecedented run of dominance.

Nine months later, the New England Patriots qualified for the Super Bowl. Having already won five Super Bowl championships, including the previous year’s, the Patriots were attempting to tie

the record for most Super Bowl victories by an NFL franchise. In light of the reaction Nadal received at the French Open, one might have expected the Patriots to have enjoyed a similar groundswell of support as they attempted to extend their run of dominance. However, anyone who tuned in to the build-up to the game would almost certainly have concluded that most football fans were rooting against the Patriots. One study of geo-tagged twitter posts indicated that the majority of people in 45 states across the country were rooting for the Patriots’ opponent, the Philadelphia Eagles (Torgerson, 2018).

It is against this backdrop of conflicting reactions to runs of individual and group dominance that we embarked on the present research. There is a rather large literature on people’s perceptions of streaks of success and failure, much of it focused on how and when streaks are considered likely to continue (for a review, see Oskarsson, Van Boven, McClelland, & Hastie, 2009). Likewise, there has been a considerable amount of research on how people perceive individuals and groups differently (Cricher & Dunning, 2014; Hamilton & Sherman, 1996; Small, 2015). Here we take these questions in a new direction by examining how the characteristics of an entity experiencing a period of extraordinary performance influences people’s desire to see their success continue. We propose that people have a greater desire to see exceptional performances by individuals (like Nadal) continue more than iden-

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<sup>1</sup> As of the writing of this article, Nadal has won 12 French Open Championships and 19 major tournaments overall.

tical performances by groups (like the Patriots)—a bias we call the Streaking Star Effect.<sup>2</sup>

People have long been fascinated by streaks of success and failure (Gould, 1989; Reifman, 2011) and considerable research has been devoted to understanding people's intuitions about whether or not success is likely to run in streaks. This research has focused on two types of sequences—those thought to be generated by random processes and those thought to be generated by skill. When it comes to randomly generated outcomes, people expect more alternation between success and failure, and hence fewer long runs of either type, than would be expected by chance (Ayton, Hunt, & Wright, 1989; Bar-Hillel & Wagenaar, 1991; Nickerson, 2002; Tune, 1964). For example, people expect a family with three boys to be more likely to have a girl as their fourth child (Kahneman & Tversky, 1972) and gamblers expect numbers on a roulette wheel to be more likely to pay off if they have not done so for a disproportionate amount of time (Sundali & Croson, 2006).

When it comes to nonrandom processes, such as sports performance, people tend to expect sequences of continuous success to continue longer than they actually do (Bar-Eli, Avugos, & Raab, 2006; Caruso, Waytz, & Epley, 2010; Koehler & Conley, 2003). For instance, people overestimate how likely a basketball player is to hit his next shot if he has hit his previous shot than if he missed his previous shot (Gilovich, Vallone, & Tversky, 1985; Simonsohn, 2020). Other work has documented a belief in “psychological momentum,” whereby an entity's future outcomes are thought to be affected by its recent pattern of past performance (Hubbard, 2014; Markman & Guenther, 2007; Pettit, Sivanathan, Gladstone, & Marr, 2013). That is, people tend to believe that individual athletes, teams, and businesses that have experienced recent success are more likely to continue that success than they truly are.

Despite these efforts to understand how people's intuitions about streaks comport with reality, no work, to our knowledge, has focused on what drives observers' *desire* to see a streak continue. One factor that may influence whether people want a streak to continue is whether the entity riding the streak is an individual or a group. Research on perceptions of individuals and groups suggests that people tend to perceive individuals more positively than groups (Critcher & Dunning, 2014). Sears (1983) argued that people are more likely to view a target positively if the target resembles an individual person, a phenomenon he dubbed the “person positivity bias.” People also show a bias toward individuals in comparative judgments, often comparing themselves on a positive trait less favorably against an individual than against a larger or more abstract entity such as “the average person” (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995). This applies whether the comparison individual is a close relative or a complete stranger (Hoorens & Buunk, 1993). Similarly, people tend to rate the individual faces of a group of unattractive individuals as more attractive than the group as a whole (Miller & Felicio, 1990). In a moral context, people predict that an individual will be more likely to exhibit moral behavior than a group (Critcher & Dunning, 2013). Taken together, research on perceptions of individuals and groups lends credence to our thesis that people may want a period of exceptional performance by an individual to continue more than an identical performance by a group.

Although research suggests that people view individuals more positively than groups, there is no existing work that suggests that people might want to see individuals on a streak win more than a

group on a streak. To provide an initial test of our hypothesis, we identified an athlete who is currently on a streak of success in both an individual and a group competition. Jamaican sprinter Usain Bolt has won the gold medal in the 100 m dash at the last three Olympics (2008, 2012, and 2016). He has also been a member of the team that has won the gold medal in the  $4 \times 100$  m relay at those Olympics. In a preregistered study (As Predicted #20037), we recruited two-hundred participants (93 female, two nonbinary, mean age = 28.63) from Prolific Academic and asked them whether they would rather see Bolt continue his streak in the individual or group event. Many more participants indicated that they would prefer to see Usain Bolt win the gold medal in the 100 m dash at the next Olympics (158, 79.0%) than the  $4 \times 100$  m relay (42, 21.0%),  $z = 8.20$ ,  $p < .001$ ,  $d = .73$ . This study provides initial evidence that people may in fact prefer to see runs of individual dominance continue more than identical runs of group dominance.<sup>3</sup>

### Being in Awe of Individuals on Streaks

One reason, we argue, that people may desire to see individual streaks continue more than group streaks is because they may feel a greater sense of awe at the prospect of a long run of individual success. The experience of awe is characterized by a perception of vastness—immenseness in size, scope, number, ability, or hierarchy (fame, authority)—that exceeds a person's existing cognitive structures and thus requires a new schema that expands the person's worldview (Keltner & Haidt, 2003; Shiota, Keltner, & Mossman, 2007). We argue that individual dominance is more likely than group dominance to trigger such processes.

There are several reasons for this. For one thing, individual dominance may be more likely than group dominance to expand our notions of the limits of human potential. Observers confronted with an extreme or unprecedented phenomenon, like a long period of success, are likely to seek to explain it and their explanations are likely to differ depending on whether the target is an individual or a group. Research indicates that people's explanations for the behavior of individuals and groups often differ, with the behavior of individuals more often attributed to dispositional factors and the behavior of groups more often attributed to situational factors (Critcher & Dunning, 2013). There are many possible explanations of group success, such as an unusual collection of talent, effective leadership, good chemistry, or a large payroll (Brown, 1984), all of

<sup>2</sup> By bias, we simply mean “bent” or “tendency” (Webster). We do not mean to suggest that wanting individual streaks to continue more than group streaks violates any normative principle or leads to suboptimal decisions.

<sup>3</sup> One possible explanation for these results is that people wanted to see Usain Bolt win the 100 meters because they like him and, therefore, want to see him experience individual success. Indeed, in 2017 Bolt was named by ESPN as the 7th most popular athlete in the world. We asked the participants to rate how much they liked Bolt and, to examine whether Bolt's popularity is driving the result reported above, we performed a binomial logistic regression with liking as the independent variable and preference for Bolt to win the 100 meter dash or the  $4 \times 100$  relay as the dependent variable. The model revealed that liking did not predict preference,  $t < 1$ , consistent with our preregistered hypothesis. Although respondents preferred to see Usain Bolt continue his streak in an individual event more than a group event, it appears that factors other than his notable popularity are responsible for this result.

which can be viewed as the result of a fortuitous combination of situational factors. People's attributions for group success are, therefore, likely to be not only less dispositional, but less clear or certain as well (Reyes-Jacquez & Echols, 2017; Weary, Tobin, & Edwards, 2010).

In contrast, an individual competitor who achieves dominance over his or her rivals is likely to leave little doubt in the minds of observers as to what is largely responsible for their success. The outsized, consistent success that makes up a period of dominant performance elicits a clear, confident attribution to the successful individual (Kelley, 1967). The concentrated "credit" that people assign an individual who achieves a run of dominance is likely, in turn, to prompt observers to believe that they have witnessed an accomplishment that has pushed the limits of human potential and is something unique or extraordinary that could not be replicated by others. At the same time, the less clear, more diffuse, and more situational attributions for group success may make observers less inclined to conclude that a group's run of success reflects something awe-inspiring about the special talents of the individuals involved. Thus, individual dominance, more so than group dominance, may be more likely to be seen as pushing the limits of human potential, requiring observers to update their existing schemas about the frontiers of human performance. This experience of witnessing an extreme phenomenon and adjusting one's existing schemas to fit it into one's world view reflects the very definition of awe.

The idea that individual dominance is more awe inspiring than group dominance may seem counterintuitive. Achieving the cohesion necessary for team success can be a considerable challenge (one need look no further than a typical academic faculty meeting). As a result, continued group success may seem more difficult to sustain, which could lead to a greater sense of awe when witnessing continued group success. As plausible as this might seem on the surface, it should be noted that success on difficult tasks does not necessarily lead to greater feelings of awe (Keltner & Haidt, 2003). People complete difficult tasks all the time, but their success rarely generates much awe in observers. Indeed, awe may be more likely to be elicited when observing someone completing a challenging task with *ease* rather than with difficulty. Rafael Nadal, for example, has never appeared to have much difficulty winning the French Open year to year. All he seemingly has to do is prepare for the tournament, stay healthy, and play his style of game. The fact that Nadal's success does not seem especially hard for him has not diminished the awe his feats have inspired in tennis fans around the world. Quite the opposite. Impressive human achievements that come easily may be more likely to trigger feelings of awe because they highlight a pronounced discrepancy between the person who pulled it off and the rest of humanity.

Another reason that streaks of individual success may be more likely to inspire awe than equivalent streaks of group success is that people may believe the former are less common and hence more exceptional. After all, in many circumstances, groups are more enduring than individuals and, therefore, have more opportunities to get on a streak. Although their individual members may change from year to year (and change entirely from generation to generation), the Red Sox are still the Red Sox and Apple is still Apple, and over the long haul each has many opportunities to achieve a sustained run of success. Individuals, in contrast, have relatively short careers and therefore a limited amount of time to

establish dominance. Although Rafael Nadal has only a limited number of years to leave his mark on the sport of tennis, the New England Patriots will have the opportunity to do so as long as football is played. Rare events often loom large in judgment (Tversky & Kahneman, 1992), and the smaller window individuals have to sustain a run of success may make such success seem more improbable, which may add to the awe they inspire.

Although the experience of awe can be negative under certain conditions (Gordon et al., 2017), it is typically an uplifting experience that gives rise to a variety of positive outcomes. The experience of awe makes people more likely to help others (Piff, Dietze, Feinberg, Stancato, & Keltner, 2015), less likely to embrace materialistic values (Rudd, Vohs, & Aaker, 2012), more likely to challenge themselves (Rudd, Hildebrand, & Vohs, 2018), and more likely to experience a high degree of well-being (Rudd et al., 2012). The prospect of witnessing something awe-inspiring, then, is something that people should view with eager anticipation. Furthermore, because we expect the experience of awe to be greater when an individual extends a run of successful performance, we expect people to root more eagerly for periods of sustained success by individuals than periods of sustained success by groups.

### A Streaking Star Effect? Or an Identifiable Victor Effect?

As noted earlier, people tend to view individuals more favorably than groups (e.g., Critcher & Dunning, 2014), and so an alternative explanation for the Streaking Star Effect is that it reflects a general preference to see individuals win more than groups—whether or not the individual or group is riding a period of sustained success. Is dominance necessary for people to want individuals to win more than groups?

Research on the identifiable victim effect suggests that people may prefer to see individuals prosper more than they want to see groups prosper. People tend to allocate more resources to a single, identifiable victim than a statistical group of victims (Cameron & Payne, 2011; Kogut & Ritov, 2005a, 2005b; Small, 2015; Small & Loewenstein, 2003; Small, Loewenstein, & Slovic, 2007; Smith, Faro, & Burson, 2013) and the contributions to business owners seeking microfinance loans tend to be greater for individual business owners than groups of business owners (Galak, Small, & Stephen, 2011). Given these results, it is possible that the bias we have proposed—the Streaking Star Effect—may be just a narrower instance of a broader phenomenon that might be called the Identifiable *Victor* Effect.

Although the literature on people favoring individuals is extensive, we do not believe that the Streaking Star Effect is an artifact of a putative Identifiable Victor Effect. The mechanism we have proposed to explain the Streaking Star Effect—the greater causal clarity and specificity that inspires more awe over sustained individual success—requires a period of exceptional performance. Awe is triggered by a sense of vastness, and an inability to accommodate extreme stimuli into existing schemas. Absent an extended period of success, there is no reason to believe that people will feel the sense of unfathomable vastness that elicits awe. It is only the rarest one-off victory, whether by an individual or a group, that is likely to be similarly hard to accommodate. Accordingly, we examine in Studies 7a and 7b whether there is a general preference for individual over

group success, or whether such a preference only (or largely) arises after periods of sustained dominance.

### Broader Implications of the Streaking Star Effect

Watching and playing sports consumes a lot of time in both the developed and developing worlds, and it contributes substantially to the world economy, with the global sports market reaching nearly a half trillion dollars in 2018 (Business Wire, 2019). As a result, even if the streaking star effect only impacted fans' interest in seeing individual versus group streaks continue, it would be a notable psychological phenomenon. But its impact is broader and deeper than that. We have found that it influences collectors' willingness to pay for memorabilia associated with individual and group streaks, and sports fans' willingness to pay for tickets to see an athletic contest in which an individual versus a team might continue a streak (Walker & Gilovich, 2020). We suspect that it would also influence fans' willingness to bet on the outcome of contests with individual or group streaks on the line.

The Streaking Star Effect has influence outside the world of sports as well. It appears in people's interest in seeing individual versus group streaks continue when it comes to trivia contests (Study 2) and prizes awarded for solving homicide cases (Study 4). More broadly, and more importantly, we have found that it can influence peoples' attitudes toward economic inequality (Walker, Tepper, & Gilovich, 2020). People seem to be more accepting of rising inequality when it is seen as inequality between individuals than inequality between groups or classes of people. The increasing gap between the earnings of an individual CEO and someone who works in the company's cafeteria is less likely to get people out in the streets to protest than a similar increase in the gap between the earnings of CEOs as a class and cafeteria workers generally. We return to this particular manifestation of the Streaking Star Effect in Study 8 and in the General Discussion.

### Overview of the Present Research

We conducted nine studies to explore the Streaking Star Effect and its underlying psychology. In three initial studies, we examined whether this preference would emerge in domains unfamiliar to participants—an obscure Italian sport (Study 1) and a British trivia competition (Study 2). In Study 3, we ruled out the possibility that individual streaks are preferred because they are simply more impressive due to the fact that individual competitions often draw from a larger pool of competitors than group competitions. We then turned our attention to the mechanism driving this effect. In Study 4, we asked participants to consider a homicide detective who was on an unprecedented streak of solving cases or a homicide department that was on the same streak. We measured participants' desire for the streak to continue and the amount of awe they would feel if it did. Study 5 was a close replication of Study 4 in the context of male and female Olympic speed skating competitions, and Study 6 examined the relationship between the Streaking Star Effect, the experience of awe, and the attributions people make for periods of exceptional performance on the part of individuals versus teams. Studies 7a and 7b were designed to investigate whether the Streaking Star Effect is simply a variant of the identifiable victim effect—that is, an identifiable *victim* effect. We find that it is not. Finally, we examine in Study 8 whether the

Streaking Star Effect has implications beyond people's desire to see individual streaks continue. In particular, we examined whether it leads people to feel that a successful company run by an individual deserves to be more profitable than an equally successful company run by a group of executives.

We report the results from all conditions and all measures in each study below. No data were excluded from any of the studies except where noted, and sample sizes in all studies were determined before data were collected and analyzed. All materials, data, and analysis for each study are publicly available at the following link: [osf.io/9znks](https://osf.io/9znks). All materials for this study were approved under Institutional Review Board (IRB) #1804007914 by the Cornell Office of Research Integrity and Assurance.

### Study 1: Calcio Fiorntino (Florentine Kick Game)

Although the degree to which people reported liking Usain Bolt in our pilot study did not predict their preference to see him win the individual event, our participants had likely heard of Bolt and had preexisting opinions about him. Therefore, we examined the Streaking Star Effect in Study 1 in a context in which participants had no previous knowledge of the players or even the competition itself. To do so, we relied on an obscure sport, Calcio Fiorntino (the English translation is *Florentine Kick Game*), which is an amateur Italian sport in which teams of 27 players compete against each other to move a ball from one end of a dirt field to another. Although modestly popular in Italy (Calcio games usually draw a couple thousand spectators), it is not played outside of Italy. The defining aspect of Calcio Fiorntino is that there are no fouls. Players are allowed to contact each other in any manner, including kicking and punching. The sport has been described as a combination of mixed martial arts and rugby. Because Calcio is largely unknown outside of Italy, it allowed us to test the strength of the Streaking Star Effect when observers had no preexisting knowledge or feelings about the competitors.

### Method

**Participants.** Two hundred seven American participants (123 female, one nonbinary, mean age = 34.92) were recruited from Amazon Mechanical Turk (MTurk) in exchange for modest compensation.<sup>4</sup> This sample allowed us to detect a significant result for an effect size of  $d = .35$  with 80% power.

**Procedure.** In a preregistered study (As Predicted #20087), all participants read about the history and rules of Calcio Fiorntino and then were randomly assigned to the *team* or *individual* condition. In the *team* condition, participants read that Calcio is traditionally played as a team sport and that the team from Milan is generally recognized as the best in the world. We then asked participants to imagine that Milan had won the Calcio Championship six times in a row, more than any other team, and had once again made it to this season's final. In the *individual* condition, participants read that although Calcio is traditionally a team sport,

<sup>4</sup> In all of our studies, we did not ask our participants to indicate their ethnicity. However, we collected data from online survey platforms that collect ethnicity information from their users. The distribution of their participant pool by race is as follows: 70.95% White; 10.50% Asian; 5.80% Latino; 2.52% African American; and 10.23% other/unspecified.

there is a variant of the sport that is played individually, or “one-on-one.” Participants then read about a player, Roberto Moretti, who was said to be the best individual player in the world. We asked them to imagine that Moretti had won the Individual Calcio Championship six times in a row, more than any other player, and to imagine that he had once again made it to this season’s final. Participants in both conditions were then asked to imagine that they were in Italy watching the Calcio championships this year. Participants then indicated how much they would be pulling for Moretti/Milan to win this year’s championship, how much they would like to see Moretti/Milan extend the record for consecutive championships, how exciting they thought it would be to see Moretti/Milan to extend the record for consecutive championships, and how much they would be thinking to themselves “I want to see this streak come to end,” all on a 1 to 9 scale, with higher numbers on all but the last question indicating more interest in the streak continuing—and responses to the last question reverse scored.

## Results

The four dependent measures were highly correlated (Cronbach’s  $\alpha = .88$ ) and so we averaged them to create a composite measure. A  $t$  test performed on the composite indicated that participants wanted to see Roberto Moretti continue his streak ( $M = 6.62$ ,  $SD = 1.72$ ) significantly more than they wanted to see the team from Milan continue its streak ( $M = 5.28$ ,  $SD = 2.23$ ), unequal variances  $t(187.82) = 4.99$ ,  $p < .001$ ,  $d = .69$ . This result indicates that the Streaking Star Effect emerges even when people have no prior knowledge of the event or the individuals or teams involved.<sup>5</sup>

### Study 2: The British Quizzing Championship

We designed Study 2 with two goals in mind. First, we wanted to test the Streaking Star Effect in a domain outside of athletics. Second, we wanted to examine whether the results of Study 1 might be because of participants being asked how much they would root for an identified person in the individual condition while those in the group condition were asked how much they would root for an unidentified group of players. Therefore, we examined whether the effect would hold when the members of the group on a streak were individually identified. To accomplish these goals, we turned to the preeminent trivia competition in Britain, the British Quizzing Championship (BQC). Every year, 5,000 competitors enter the BQC and compete in regional competitions to earn a place in the final. Champions are crowned in both individual and team competitions, a fact that we exploited to test the Streaking Star Effect.

## Method

**Participants.** Two hundred one American participants were recruited from MTurk in exchange for modest compensation. Three of them were excluded for not completing each aspect of the study. That left a final sample of 198 participants (94 female, mean age = 37.5). This sample allowed us to detect a significant result for an effect size of  $d = .36$  with 80% power.

**Procedure.** Participants first read about the history and rules of the BQC. They were then randomly assigned to the *individual*

or *team* condition, at which point they read that over 5,000 individuals/teams enter the competition each year and only 20 individuals or teams earn a spot in the finals. In the *individual* condition, participants read about a competitor in the BQC, Kevin Ashman, who was said to have won the last four championships (2013, 2014, 2015, 2016), more than any other player in history, and that he would be competing in this year’s final. In the *team* condition, participants read about a team of five competitors—Ian Bayley, David Edwards, Gareth Aubrey, Pat Gibson, and team captain Kevin Ashman—that had won the last four consecutive team quizzing championships, more than any other team, and that their team would be competing in this year’s final.

All participants were then asked to imagine that they were in Britain watching the BQC this year. Next, participants answered the same four questions from Study 2 to assess their desire to see the streak continue. They were asked how much they would be pulling for Ashman/Ashman’s Team to win this year’s championship, how much they would like to see Ashman/Ashman’s Team extend the record for consecutive championships, how exciting they thought it would be to see Ashman/Ashman’s Team extend the record for consecutive championships, and how much they would be thinking to themselves “I want to see this streak come to end,” all on a 1 to 9 scale with higher numbers on all but the last question indicating more interest in the streak continuing—and responses to the last question reverse scored.

## Results

The four questions that measured participants’ desire to see the streak continue were highly correlated (Cronbach’s  $\alpha = .92$ ) and so we averaged participants’ responses to create a composite measure. A  $t$  test on this composite indicated that participants wanted to see Kevin Ashman continue his streak ( $M = 6.82$ ,  $SD = 1.84$ ) more than they wanted to see Kevin Ashman’s team continue its streak ( $M = 5.96$ ,  $SD = 2.05$ ),  $t(196) = 3.11$ ,  $p = .002$ ,  $d = .44$ . The Streaking Star Effect emerged once again even though the members of the group were identified in the same manner as the individual.

### Study 3: Examining the Impact of the Pool of Individual and Group Competitors

One possible explanation for the Streaking Star Effect is that individual streaks may be “objectively” more impressive because individual competitions often involve a much larger pool of competitors than team competitions. For example, there are 750 players in Major League baseball, but only 30 teams. Thus, a streak of success by an individual may seem more impressive because the individual in question may have had to vanquish more opponents, or a more select and formidable set of opponents, along the way.

<sup>5</sup> A reviewer of a previous version of this article expressed concern that our stating in the instructions to participants that Calcio Fiorentino is traditionally a team sport may have produced the observed effect. To examine this possibility, we performed an exact replication, but with that phrase removed from the instructions. Despite this change, we obtained similar results,  $t(201) = 2.25$ ,  $p = .02$ ,  $d = .32$ . We have also run another replication of this study and found in that study as well that participants in the individual condition expressed a greater desire to see the streak continue than those in the group condition,  $t(176) = 3.04$ ,  $p = .003$ ,  $d = .44$ .

Although it is possible that this feature of many individual and group competitions may contribute to the Streaking Star Effect, we do not believe that that is all there is to the effect, or that individuals must be seen as battling a larger pool of opponents than groups for the Streaking Star Effect to emerge. Note, for example, that we controlled for the number of competitors in Study 2 by telling participants that over 5,000 individuals or teams entered the BQC. A robust Streaking Star Effect nevertheless emerged even though both the individual and the group that was riding a streak of success were involved in a competition consisting of an equally large number of competitors. Nevertheless, we designed Study 3 to further examine whether people want to see an individual streak continue more than a group streak even when the size of the individual and group competition is held constant.

## Method

**Participants.** One hundred ninety-nine American participants (81 female, one gender fluid, mean age = 32.74) were recruited from Prolific Academic in exchange for modest compensation. This sample allowed us to detect a significant result for an effect size of  $d = .36$  with 80% power (an effect size smaller than those observed in the first two studies).

**Procedure.** Participants were told that the highest ranked female college tennis players from around the country had been invited to play a series of tournaments at an academy in Florida over several weeks. It was said that the purpose of the tournaments was to keep the players' skills sharp after the college tennis season was cancelled because of coronavirus disease 2019 (COVID-19). Participants were then randomly assigned to the *individual* or *team* condition. In the *individual* condition, participants were told that the top 16 players in the country had been invited to participate, and that Makenna Jones from the University of North Carolina had won each of the first four tournaments, and was preparing for the next. In the *group* condition, participants were told that four players from each of the top 16 teams from around the country had been invited to participate and represent their school in the tournaments. They were told that all the players would play a series of singles matches, and the team with the most wins at the end of a given tournament would be declared the winner. Makenna Jones, Sophie Whittle, Ingrid Gamarra, and Eden Richardson from The University of North Carolina were said to have won the first four tournaments, and were preparing for the next. Note that in both the individual and group conditions, the winner had to outperform the same number of competitors—15.

Participants were then asked the same three of the four questions from the previous studies to measure how much they would like to see the streak continue (not including the reverse-scored question about wanting to see the streak come to an end): how much they would be pulling for Jones/UNC to win the next tournament, how much they would like to see Jones/UNC win the next tournament, and how exciting they thought it would be to see Jones/UNC win the next tournament. They were also asked to take a moment to think about the size of this particular competition and the number of competitors or teams involved, and to rate, on a 7-point scale from 1 = *small* to 7 = *large*, the extent to which they thought it was a large competition with many competitors or teams, or a small competition with few competitors or teams.

## Results

The questions measuring participants' desire to see the streak continue were highly correlated and, therefore, collapsed into a composite (Cronbach's  $\alpha = .91$ ). Participants in the *individual* condition indicated that they wanted to see the individual streak continue ( $M = 6.35$ ,  $SD = 2.02$ ) more than those in the *team* condition ( $M = 5.37$ ,  $SD = 2.17$ ),  $t(196) = 3.31$ ,  $p = .001$ ,  $d = .47$ . Notably, they also thought that the individual competition was smaller ( $M = 3.03$ ,  $SD = 1.42$ ) than the team competition ( $M = 4.13$ ,  $SD = 1.45$ ),  $t(196) = -5.42$ ,  $p < .001$ ,  $d = .77$ , and the Streaking Star Effect holds when controlling for the perceived size of the competition,  $b = 1.28$ ,  $SE = .31$ ,  $t(196) = 4.10$ ,  $p < .001$ .

Because there may have been some uncertainty about exactly what participants were rating when they rated the size of the competition and the number of competitors involved, we ran an exact replication of this study ( $n = 201$ ), but with the size-of-competition measure replaced with a question asking participants to rate on a 9-point scale the extent to which the competition "drew from a large pool of competitors or a small pool of competitors." A significant Streaking Star Effect emerged once again ( $d = .40$ ,  $p = .005$ ), but participants in the two conditions did not differ in their assumptions about the size of the pool of competitors from which the individual or team tennis players they read about were chosen ( $t < 1$ ). It is clear that people want to see individual streaks continue more than identical streaks by groups even when the individual competition is not thought to involve a larger pool of competitors than the group competition.

## Study 4: Individual Dominance Is More Awe Inspiring

Having established the reliability of the Streaking Star Effect, we turned to the exploration of its underlying causes. We examined whether a streak of individual success inspires greater feelings of awe that, in turn, make people want to see an individual streak continue more than a group streak. We also wanted to examine the Streaking Star Effect in a domain far removed from sports and games.

## Method

**Participants.** Two hundred five American participants (116 female, mean age = 39.0) were recruited from MTurk in exchange for modest compensation. This sample allowed us to detect a significant result for an effect size of  $d = .35$  with 80% power.

**Procedure.** All participants read about the (real) law enforcement entity, the National Association of Police Organizations (NAPO), that hands out awards to police officers and police departments. Participants were then randomly assigned to the *individual* or *group* condition. In the *individual* condition, participants read about an award that NAPO gives out every year to the best homicide detective in the country based on closure rate on assigned homicide cases. They then read about Detective Edwin Sorensen who was said to have won the award each of the last 4 years and was also being evaluated for the award this year. Detective Sorensen was described as working for either the Kansas City or Los Angeles Police Department.<sup>6</sup> In the *group* condition,

<sup>6</sup> We manipulated the city police department—Kansas City or Los Angeles—simply for the sake of generality.

participants read about an award that NAPO gives out to the best homicide department in the country based on closure rate on assigned homicide cases. Participants read that either the Kansas City or Los Angeles Police Department had won the award 4 years in a row and was also under review for the award this year. We then asked all participants to imagine that they were watching the NAPO awards live this year.

Participants were then asked the same four questions from Studies 2–4 that measured their desire to see the streak continue. Participants indicated how much they would be pulling for Sorensen or the KC/LA Police Department to win the award, how much they would like to see Sorensen or the KC/LA Police Department win the award again, how exciting they thought it would be to see Sorensen or the KC/LA Police Department win the award again, and how much they would be thinking to themselves “I want to see this streak come to end,” all on a 1 to 9 scale, with higher numbers on all but the last question indicating more interest in the streak continuing—and responses to the last question reverse scored.

Next, participants indicated the extent to which they would feel three awe related emotions if the streak were to continue. Using a scale from previous work (Stellar et al., 2018), participants indicated on a 1 = *not at all* to 9 = *a great deal* scale how much awe, amazement, and wonder they would feel if the streak were to continue. To distinguish any effect of awe from general positive emotion, participants also indicated how happy and amused they would feel, and how much compassion they would feel, if the streak were to continue, all on a 1 = *not at all* to 9 = *a great deal* scale.

## Results

Participants’ responses to the four questions that tapped participants’ desire to see the streak continue were averaged to create a composite measure (Cronbach’s  $\alpha = .82$ ). A 2 (condition: individual, group)  $\times$  2 (city: Los Angeles, Kansas City) analysis of variance (ANOVA) on the composite measure yielded a main effect of condition, no main effect of city ( $F < 1$ ), and no interaction ( $F < 1$ ). Participants who read about the success of the individual detective wanted to see him extend his streak of consecutive awards ( $M = 6.36$ ,  $SD = 1.54$ ) more than participants who read about the success of one of the police

departments ( $M = 5.75$ ,  $SD = 1.83$ ),  $F(1, 201) = 6.67$ ,  $p = .01$ ,  $d = .36$ .

Next, the three questions that assessed the amount of awe participants would feel if the streak were to continue were averaged to form a composite measure of awe (Cronbach’s  $\alpha = .74$ ). A 2 (condition: individual, group)  $\times$  2 (city: Los Angeles, Kansas City) ANOVA on this composite measure yielded a main effect of condition, no main effect of city ( $F < 1$ ), and no interaction ( $F < 1$ ). Participants indicated that they would feel more awe if the detective were to continue his streak of success ( $M = 6.55$ ,  $SD = 1.77$ ) than if the police department were to continue its streak ( $M = 5.73$ ,  $SD = 2.23$ ),  $F(1, 201) = 8.55$ ,  $p = .004$ ,  $d = .41$ . The three questions that assessed the degree of positive emotion participants would feel if the streak were to continue were likewise averaged to create a composite measure of positive emotion (Cronbach’s  $\alpha = .79$ ) and analyzed using the same model. There was no main effect of condition, no main effect of city, and no interaction (all  $F$ s  $< 1$ ).

Further analysis provided support for our hypothesis that feelings of awe are at least partly responsible for the Streaking Star Effect. Participants indicated that they would feel more awe if the individual were to continue his streak than if the group were to do so,  $b = .82$ ,  $SE = .28$ ,  $t(203) = 2.93$ ,  $p = .004$ . When both condition and the composite awe measure were simultaneously entered into a regression predicting participants’ desire to see the streak continue, condition was no longer a significant predictor,  $b = .22$ ,  $SE = .20$ ,  $t(202) = 1.10$ ,  $p = .27$ , whereas awe significantly predicted desire for the streak continue ( $b = .47$ ,  $SE = .05$ ,  $t(202) = 9.73$ ,  $p < .001$ ). A Preacher and Hayes (2008) bootstrapping procedure (with 10,000 iterations) revealed that the indirect effect of condition through awe was significant, 95% confidence interval (CI) [.117, .380],  $p = .005$ , indicating that awe was a significant mediator of the effect of condition on participants’ desire to see the streak continue (see Figure 1).

In a domain entirely removed from sports and games, participants again preferred to see an individual on a streak of success continue that streak more than a group on an identical streak. Individual success generated greater feelings of awe than group success, which mediated that effect. Unlike awe, general positive emotion did not differ by condition.

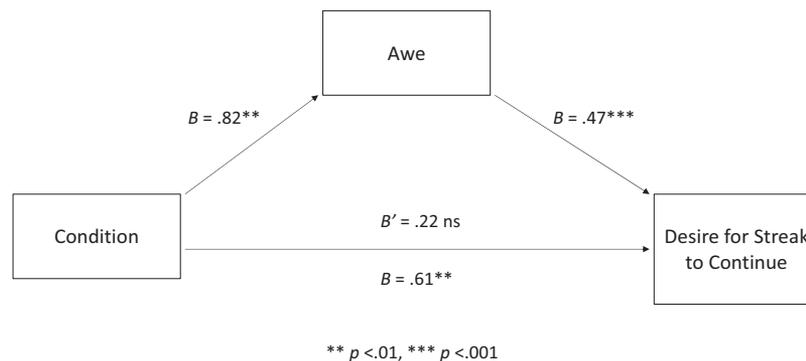


Figure 1. Awe mediates the Streaking Star Effect.

### Study 5: Individual Dominance on the Part of Men and Women Is More Desired and Awe Inspiring Than Team Dominance

We designed Study 5 with two goals in mind. First, we wanted to further examine the impact of the experience of awe in the Streaking Star Effect (i.e., we wanted to conduct a conceptual replication of Study 4). Second, we found in Study 3 that the Streaking Star Effect applies to female competitors as well as male competitors, but wanted to examine whether awe is the main driver of the effect regardless of the competitors' gender. We predicted that we would see no difference in the magnitude of the Streaking Star Effect, nor the impact of the experience of awe, regardless of whether the actors in question were male or female.

#### Method

**Participants.** Four hundred four American participants (201 female, mean age = 34.75) were recruited from Prolific Academic in exchange for modest compensation. This sample allowed us to detect a significant result for an effect size of  $d = .35$  with 80% power.

**Procedure.** Participants read a brief history of the sport of speed skating and were then randomly assigned to read about an individual speed skater from Switzerland or about Switzerland's speed skating team. The individual was described as either a male, Aaron Kramer, or a female, Anna Kramer. The team was described as Switzerland's men's or women's team. Participants were told that the skater or team they read about had won the gold medal at the last three Winter Olympics and planned to compete in the upcoming Winter Olympics. All participants were asked to imagine they were watching the speed skating events at the upcoming Olympics live, and to indicate how much they would be pulling for Kramer/Switzerland to win the gold medal, how much they would like to see Kramer/Switzerland win the gold medal, and how excited they would be to see Kramer/Switzerland win the gold medal, all on a 1 = *not at all* to 9 = *extremely* scale. Next, participants indicated how much awe, wonderment, and amazement they would feel if Kramer/Switzerland were to win the gold medal this year, also on a 1 = *not at all* to 9 = *a great deal* scale.

#### Results

The three questions that measured participants' desire to see the streak continue were highly intercorrelated (Cronbach's  $\alpha = .91$

and were therefore averaged to create a composite measure. The mean values of this composite for each condition are presented in Figure 2. These data were analyzed using a 2 (condition: individual, team)  $\times$  2 (athlete gender: male, female) ANOVA that yielded the predicted main effect of condition,  $F(1, 400) = 41.51, p < .001$ , with participants wanting to see the individual athlete continue his or her run of dominance ( $M = 6.80, SD = 1.98$ ) more than the team continue its streak ( $M = 5.51, SD = 2.01$ ). There was no significant main effect of gender ( $F < 1$ ) or interaction ( $F < 1$ ). Exploring these results further, a planned contrast indicated that participants who read about an individual male on a run of dominance wanted to see that dominance continue ( $M = 6.66, SD = 1.93$ ) more than participants who read about a male team on a run of dominance ( $M = 5.56, SD = 2.04$ ),  $t(399) = 3.94, p < .001, d = .55$ . A parallel contrast revealed that the Streaking Star Effect emerged just as robustly (if not more so) for female actors. Participants who read about an individual female on a run of dominance wanted to see that dominance continue ( $M = 6.92, SD = 2.02$ ) more than participants who read about a female team on a run of dominance ( $M = 5.47, SD = 1.98$ ),  $t(399) = 5.06, p < .001, d = .72$ .

The three questions measuring the degree of awe participants would feel if Kramer/Switzerland were to win at the next Olympics were also highly intercorrelated (Cronbach's  $\alpha = .93$ ) and were therefore averaged to create a composite index. The composite was likewise analyzed using a 2 (condition: individual, team)  $\times$  2 (athlete gender: male, female) ANOVA that yielded a main effect of condition, with participants being more in awe of the prospect of the individual athlete continuing a run of dominance ( $M = 6.53, SD = 2.02$ ) than the prospect of the team continuing its streak ( $M = 5.56, SD = 2.22$ ),  $F(1, 400) = 21.02, p < .001$ . There was no significant main effect of gender,  $F < 1$ , or interaction,  $F(1, 400) = 1.70, p = .19$ . Exploring these results further, a planned contrast revealed that participants were more in awe at the prospect of an individual male athlete continuing his dominance at the next Olympics ( $M = 6.41, SD = 2.06$ ) than a team of male athletes doing so ( $M = 5.72, SD = 2.22$ ),  $t(400) = 2.32, p = .02, d = .32$ . A parallel contrast indicated that participants were also more in awe at the prospect of seeing an individual female athlete continue her run of dominance ( $M = 6.64, SD = 1.98$ ) than a female team doing so ( $M = 5.39, SD = 2.21$ ),  $t(400) = 4.17, p < .001, d = .60$ .

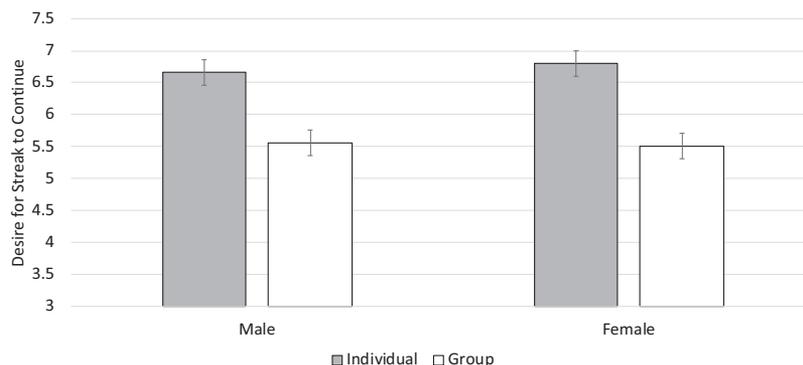


Figure 2. Desire for continuation of male and female dominance.

As in Study 4, anticipated feelings of awe appeared to be responsible for the Streaking Star Effect. We conducted two mediation analyses, one for female and one for male athletes, to examine whether anticipated feelings of awe might differentially drive the Streaking Star Effect for male and female actors. With regard to female athletes, participants indicated they would feel more awe if an individual female were to continue her streak than if the team of female athletes were to do so,  $b = 1.25$ ,  $SE = .30$ ,  $t(198) = 4.22$ ,  $p < .001$ . When both condition and the composite awe measure were entered simultaneously into a regression predicting participants' desire to see the streak continue, condition was a significant predictor ( $b = .64$ ,  $SE = .22$ ,  $t(198) = 2.97$ ,  $p = .003$ ), as was awe ( $b = .65$ ,  $SE = .05$ ,  $t(198) = 13.25$ ,  $p < .001$ ). A Preacher and Hayes (2008) bootstrapping procedure (with 10,000 iterations) revealed that the indirect effect of condition through awe was significant, 95% CI [.431, 1.24],  $p < .001$ , indicating that awe was a significant mediator of the effect of condition on participants' desire to see the streak continue for female athletes.

Anticipated feelings of awe were also responsible for the Streaking Star Effect for male athletes. Participants indicated they would feel more awe if an individual male athlete were to continue his streak than if the group of male athletes were to do so,  $b = .69$ ,  $SE = .30$ ,  $t(198) = 2.97$ ,  $p = .02$ . When both condition and the composite awe measure were simultaneously entered into a regression predicting participants' desire to see the streak continue, condition was a significant predictor ( $b = .71$ ,  $SE = .22$ ,  $t(198) = 3.18$ ,  $p = .002$ ), as was awe ( $b = .57$ ,  $SE = .05$ ,  $t(198) = 11.02$ ,  $p < .001$ ). A Preacher and Hayes (2008) bootstrapping procedure (with 10,000 iterations) revealed that the indirect effect of condition through awe was significant, 95% CI [.061, .750],  $p = .01$ , indicating that awe was a significant mediator of the effect of condition on participants' desire to see the streak continue for male athletes.

This study provides further support for the Streaking Star Effect. Participants again wanted to see an individual continue a streak of dominance more than a group on an identical streak. This was true for both male and female actors. These results were driven by the greater sense of awe that participants expected to feel at the prospect of seeing an individual streak continue than a group streak continue, providing additional evidence for the mechanism we argue is responsible for the Streaking Star Effect. Indeed, awe was an equally strong driver of the Streaking Star Effect for male and female competitors.

### Study 6: Why Individual Dominance Inspires More Awe Than Group Dominance

Thus far, we have presented consistent support for the Streaking Star Effect across five studies and have provided evidence from two studies that the effect is due in large part to the fact that a run of individual success tends to inspire more awe than a run of group success. But why is a run of individual success more awe inspiring? As we noted earlier, continued individual success tends to be attributed to the individual who continues to succeed (Kelley, 1967). The reason for continued group success is harder to pin down. It could be because of the extraordinary efforts of one particular group member, but even if there is such a person, it can be hard to know how decisive his or her efforts really are. It might instead be because of effective leadership, a fortunate confluence of

talents, unusual cohesion on the part of all members, or some combination of all of these factors. The result is that continued individual success is more clearly and precisely attributed to the individual; the causes of continued group success are more ambiguous and more diffuse. The attribution of extraordinary success to the individual performer is what, we contend, inspires awe and, in turn, leads to the desire to see the extraordinary success continue.

## Method

**Participants.** Two hundred two American participants (95 female, one gender fluid, mean age = 35.68) were recruited from Prolific Academic in exchange for modest compensation. This sample allowed us to detect a significant result for an effect size of  $d = .35$  with 80% power.

**Procedure.** The procedure for Study 6 was identical to that of Study 5 with two exceptions. First, participants only read about male skaters in this study. Second, after participants indicated the amount of awe they would feel if the run of dominance were to continue, they completed an attribution measure. Participants were first asked to write a short paragraph explaining the success of either Aaron Kramer or the Swiss Speed Skating Team. They were then asked to summarize (in a couple of words) each of the causal factors they identified in their written explanation, listing the most significant factor first, followed by the next most significant factor, and so on. Next, they indicated how significant they thought each factor they had listed was in the success of Kramer/The Swiss Team by assigning a percentage score to each factor, such that higher percentages indicated that that factor played a larger role in the success of Kramer/The Swiss Team. The percentage scores assigned to the different factors were required to add up to 100%. Participants then indicated whether each factor represented a dispositional or situational reason for success, on a scale from 1 = *this factor describes a reason for success that is due entirely to personal characteristics* to 9 = *this factor describes a reason for success that is due entirely to circumstances*.

## Results

The three questions that measured participants' desire to see the streak continue were highly correlated (Cronbach's  $\alpha = .92$ ) and so we averaged them to create a composite measure. A  $t$  test on this composite indicated that participants wanted to see Aaron Kramer continue his streak ( $M = 6.85$ ,  $SD = 1.95$ ) more than they wanted to see the team from Switzerland continue its streak ( $M = 5.84$ ,  $SD = 2.01$ ),  $t(199.83) = 3.63$ ,  $p < .001$ ,  $d = .51$ . The three questions that measured participants' awe over the prospect of seeing the streak continue were highly correlated (Cronbach's  $\alpha = .90$ ) and so we averaged them to create a composite measure. A  $t$  test on this composite indicated that participants would be more in awe of Aaron Kramer continuing his streak ( $M = 6.75$ ,  $SD = 1.90$ ) than of the Swiss team continuing its streak ( $M = 5.77$ ,  $SD = 2.00$ ),  $t(199.44) = 3.55$ ,  $p < .001$ ,  $d = .50$ .

Next, we assessed the extent to which participants were inclined toward dispositional or situational attributions for the success of the individual or group. To do so, we took each of the attribution ratings that a given participant assigned to the factors he or she had listed for Kramer's/the Swiss team's success and weighted that rating by the significance score that that participant assigned to

each factor. For example, one participant said that “determination” was responsible for 60% of Aaron Kramer’s success and “natural ability” was responsible for the remaining 40%, and assigned an attribution rating of “2” and “1,” respectively. This yielded a dispositional/situational impact score of 1.6 ( $2 \times .6 + 1 \times .4$ ; with higher numbers corresponding to greater attribution to circumstances). This procedure yielded an overall attribution index for each participant that was weighted by the significance he or she assigned to each factor. An analysis of these attributional impact indices across conditions indicated that participants were more inclined to make dispositional attributions for the success of Aaron Kramer ( $M = 3.35$ ,  $SD = 2.04$ ) than for the success of the Swiss Team ( $M = 5.11$ ,  $SD = 2.15$ ),  $t(199.36) = -5.98$ ,  $p < .001$ ,  $d = .84$ .

To investigate the relationship between the awe participants felt at the prospect of the streak continuing and the attributions they made for the success of the individual or group, we fitted the data to a structural equation model using the Levaan R package. See Figure 3 for a summary of the results. As we observed in Studies 4 and 5, awe was a significant mediator of the Streaking Star Effect. The indirect effect from condition to awe to the desire for the streak to continue was significant ( $b = .36$ ,  $SE = .18$ ,  $z = 2.03$ ,  $p = .04$ ). The indirect effect from condition to attribution to the desire for the streak to continue was not significant ( $z < 1$ ). However, the indirect effect from attribution to awe to the desire for the streak to continue was significant ( $b = .227$ ,  $SE = .05$ ,  $z = 2.82$ ,  $p = .005$ ). This result suggests that the greater dispositional attributions people make to explain a period of dominance by an individual as compared to a group increases the awe they expect to feel at the prospect of seeing that dominance continue, which in turn leads to a greater desire to see that individual dominance continue.

These results provide clear support for our thesis. Runs of individual success call attention to the *individual* and thereby prompt dispositional attributions (Robinson & McArthur, 1982; Smith & Miller, 1979; Taylor & Fiske, 1975). An individual run of successful performance is therefore awe-inspiring because the accomplishment is not diluted: the attributional “credit” is assigned entirely to the individual. It is harder, in contrast, to discern what might be the cause of group success: How much of the success is because of one group member versus another; how much is because of good leadership; how much is because of group “chemistry”; and so on. This diminished causal clarity reduces the experience of awe, and hence how much one wants to see a period of group dominance continue.

## Studies 7a and 7b: Not Simply an Identifiable Victor Effect

We have presented evidence that people want streaks of exceptional performance by individuals to continue more than equivalent streaks by groups. But is a long period of exceptional performance necessary for people to want to see an individual win more than a group? The studies presented thus far are unable to rule out the possibility that the Streaking Star Effect is simply an artifact of a more general desire to want to see individuals win more than groups—a preference we might call the Identifiable Victor Effect. We conducted Study 7a to determine whether the Streaking Star Effect is separate and distinct from such an Identifiable Victor Effect. Our expectation was that the mechanisms that we have identified as being responsible for the Streaking Star Effect would only be activated by a streak of success or a prolonged period of exceptional performance. Therefore, we predicted that the Streaking Star Effect would emerge as a distinct phenomenon. Study 7b was a conceptual replication designed to test the robustness of the findings from Study 7a.

## Method

**Participants.** Two hundred two American participants were recruited on MTurk for Study 7a. Five participants were excluded for failing to complete all aspects of the study, leaving a final sample of 197 (99 female, mean age = 34.86). Two hundred twenty-five participants were recruited on MTurk for Study 7b. Eight participants were excluded for failing to complete every aspect of the study, leaving a final sample of 217 (117 female, mean age = 35.08). These samples allowed us to detect a significant result for an effect size of  $d = .34$  (Study 7a) and  $d = .36$  (Study 7b) with 80% power.

**Procedure.** In all of the studies reported thus far, we manipulated whether it was an individual or a group that was said to be on a streak of dominant performance. In these two studies, that individual/group manipulation was crossed with whether or not such a streak was mentioned. This allowed us to examine whether participants are more interested in the continuation of an individual streak than a group streak (i.e., our main finding in all previous studies) or whether they are simply more interested in seeing an individual succeed than a group succeed, even when neither is on a streak.

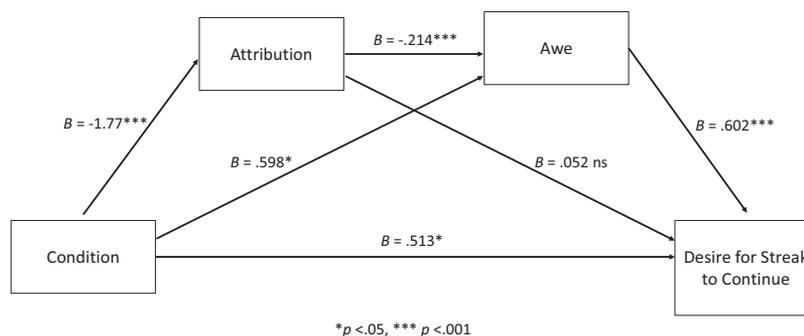


Figure 3. Relationship between attribution, awe, and desire for the streak to continue.

In all other respects, the procedure for Study 7a was the same as that for Study 6 except we did not measure the attributions that participants made for the success of the competitors. In Study 7b, participants read a brief history of the sport of badminton and were then randomly assigned to either the individual or team condition. In the *individual* condition, participants read about a badminton player from Denmark, Thomas Layborn, who was said to have won a gold medal in the sport at the last three Olympics and was planning to compete in the next Olympics. In the *team* condition, participants read about a badminton team from Denmark that was said to have won a gold medal in the sport at the last three Olympics and was planning to compete in the next Olympics. All participants were then asked to imagine that they were watching the badminton event live at the next Olympics.

After reading the stimulus materials (about speed skating in Study 7a and badminton in Study 7b), all participants were asked the same three questions from the earlier studies that assessed their desire to see the streak continue. Participants in Study 7a (like those in Study 6) were also asked how much awe they would feel if the streak were to continue using the same scale used in that study.

## Results

**Study 7a.** The three questions that measured participants' desire to see the streak continue were highly intercorrelated (Cronbach's  $\alpha = .81$ ) and, therefore, averaged to create a composite measure. The composite was analyzed using a 2 (condition: individual, team)  $\times$  2 (prior performance: streak, no information) ANOVA, which yielded a main effect of condition,  $F(1, 193) = 17.03, p < .001$ , a marginally significant main effect of prior performance,  $F(1, 193) = 2.99, p = .09$ , and a marginally significant interaction,  $F(1, 193) = 2.81, p = .10$ . Exploring these results further (see Figure 4), when we examined the responses of participants in the streak conditions only, a planned contrast revealed that, as in our previous studies, participants who read about an individual on a streak wanted to see the streak continue ( $M = 6.82, SD = 1.82$ ) more than participants who read about a team on a streak ( $M = 5.18, SD = 2.14$ ),  $t(193) = 4.07, p < .001, d = .83$ . A parallel contrast on the data from the *no information* conditions

yielded a marginally significant Identifiable Victor Effect: Participants who read about an individual who was not known to be on a streak wanted to see that individual win ( $M = 5.85, SD = 2.09$ ) marginally more than those who read about a group that was not known to be on a streak ( $M = 5.16, SD = 1.95$ ),  $t(193) = 1.69, p = .09, d = .35$ . Testifying to the existence of the Streaking Star Effect, further analysis revealed that those participants who read about an individual on a streak wanted to see that individual win at the next Olympics ( $M = 6.82, SD = 1.82$ ) significantly more than the individual who was not known to be on a streak ( $M = 5.85, SD = 2.09$ ),  $t(193) = 2.40, p = .02, d = .31$ . Being on a streak matters.

The three questions measuring the degree of awe participants would feel if Kramer/Switzerland were to win at the next Olympics were also highly intercorrelated (Cronbach's  $\alpha = .98$ ) and, therefore, averaged to create a composite index. The composite was likewise analyzed using a 2 (condition: individual, team)  $\times$  2 (prior performance: streak, no information) ANOVA that yielded a significant main effect of condition,  $F(1, 193) = 11.46, p < .001$ , but no significant main effect of prior performance,  $F(1, 193) = 1.20, p = .27$ , or interaction,  $F < 1$ . A planned contrast on the data from the streak conditions revealed that participants were more in awe at the prospect of seeing an individual continue a winning streak at the next Olympics ( $M = 6.35, SD = 2.26$ ) than a team doing so ( $M = 4.89, SD = 2.54$ ),  $t(193) = 3.16, p = .002, d = .61$ . However, participants felt only marginally more awe at the prospect of an individual who was not on a streak winning the gold medal at the next Olympics ( $M = 5.75, SD = 2.23$ ) than a group that was not on a streak winning ( $M = 5.01, SD = 2.15$ ),  $t(193) = 1.60, p = .11, d = .34$ .

Replicating the results of Studies 4–6, we found that awe mediated the observed difference in participants' desire to see a victory on the part of an individual versus a team continue their streak of success. Participants indicated they would feel more awe if the individual was to continue his streak than if the group was to continue their streak,  $b = 1.46, SE = .48, t(97) = 3.03, p = .003$ . When both condition (individual vs. group) and the composite measure of awe were simultaneously entered into a regression predicting desire to see the streak continue, condition remained a

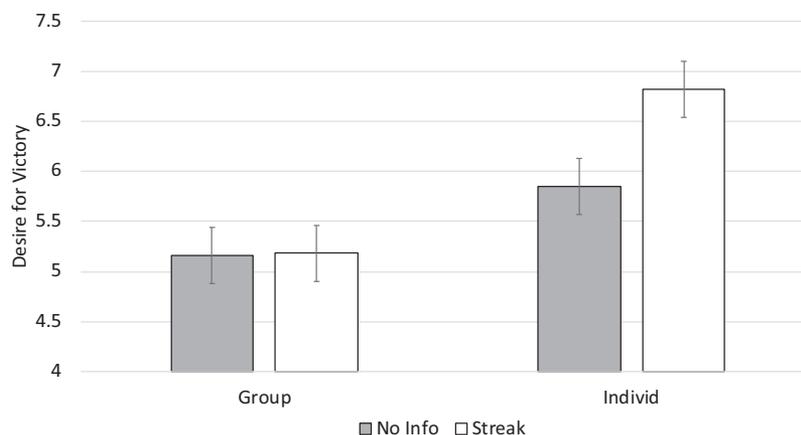


Figure 4. Streaking Star Effect vs. Identifiable Victor Effect in Study 7a.

significant predictor ( $b = .69, SE = .26, t(96) = 2.67, p = .01$ ) and awe was also significantly related to the desire to see the streak continue ( $b = .65, SE = .05, t(96) = 12.35, p < .001$ ). A Preacher and Hayes (2008) bootstrapping procedure (with 10,000 iterations) revealed that the indirect effect through awe was significant, 95% CI [.329, 1.60],  $p = .002$ , indicating that, for those who read about a streak, awe was a significant mediator of the effect of the individual/team manipulation on people's desire to see the streak continue.

**Study 7b.** The three questions assessing participants' desire to see the streak continue were highly intercorrelated (Cronbach's  $\alpha = .94$ ) and were therefore averaged to create a composite measure. The composite was then analyzed using a 2 (condition: individual, team)  $\times$  2 (prior performance: streak, no information) ANOVA, which yielded a significant main effect of condition,  $F(1, 214) = 7.27, p = .008$ , no significant main effect of prior performance,  $F(1, 214) = 2.34, p = .12$ , and a marginally significant interaction,  $F(1, 214) = 3.59, p = .059$ . Further analysis revealed that the Streaking Star Effect again emerged for those who were told that the player(s) was(were) on a streak, but not for those who were not told that the player(s) was(were) riding a streak (see Figure 5). A planned contrast indicated that participants wanted the individual on a streak to win ( $M = 6.43, SD = 2.03$ ) more so than they did the team on a streak ( $M = 5.05, SD = 2.62$ ),  $t(214) = 3.27, p = .001, d = .59$ . However, unlike in Study 7a, we found no evidence for an Identifiable Victor Effect: the relevant planned contrast on the data from participants who were not told anything about a streak indicated they did not want the individual to win the contest ( $M = 5.38, SD = 2.05$ ) any more than they wanted the team to win ( $M = 5.13, SD = 2.01$ ),  $t < 1$ . As in Study 7a, participants wanted to see the individual on a streak win ( $M = 6.43, SD = 2.03$ ) significantly more than the individual about whose prior performance they had no information ( $M = 5.38, SD = 2.05$ ),  $t(214) = 2.44, p = .02, d = .51$ .

**Meta-Analysis.** Readers' confidence in the reliability of the predicted interaction might (and should) be diminished by the fact that it was only marginally significant in both Studies 7a and 7b. To provide a more telling estimate of the reliability of this result

we therefore performed a meta-analysis of the interaction effect across both studies using Stouffer's method. This yielded an overall significant interaction between condition (individual, team) and prior performance (streak, no information),  $z = 2.04, p < .05$ . It appears that people want to see individuals on a streak continue their run of exceptional performance significantly more than any general interest in seeing individuals succeed more than groups.

## Discussion

Taken together, Studies 7a and 7b provide evidence that the Streaking Star Effect is not simply an extension of the Identifiable Victim Effect, or an Identifiable Victor Effect. Replicating earlier studies, participants in Study 7a wanted to see an individual on a streak win more than a group on a streak, a difference that was mediated by awe. These same participants wanted to see an individual who was not known to be on a streak win marginally more than a group that was not known to be on a streak, showing weak evidence for an Identifiable Victor Effect. However, they also wanted to see the individual on a streak win significantly more than the individual not known to be on a streak, suggesting that the Streaking Star Effect is something beyond an Identifiable Victor Effect. Additionally, the indirect effect of awe on participants' desire to see a victory for the individual not known to be on a streak versus the group not known to be on a streak was not significant.

Study 7b bolstered the results of Study 7a. Participants in Study 7b also wanted the individual on a streak to win more than the group on a streak. However, participants in that study provided no evidence that they wanted to see a victory on the part of an individual more than a team when neither was known to be on a streak. Thus, unlike in Study 7a, we found no evidence for an Identifiable Victor Effect. In sum, these results indicate that the Streaking Star Effect is unlikely to be an artifact of identifiability, and is instead a distinct phenomenon resulting from its own set of psychological processes.

There are other features of these studies that serve to further differentiate the Streaking Star Effect from previous work on

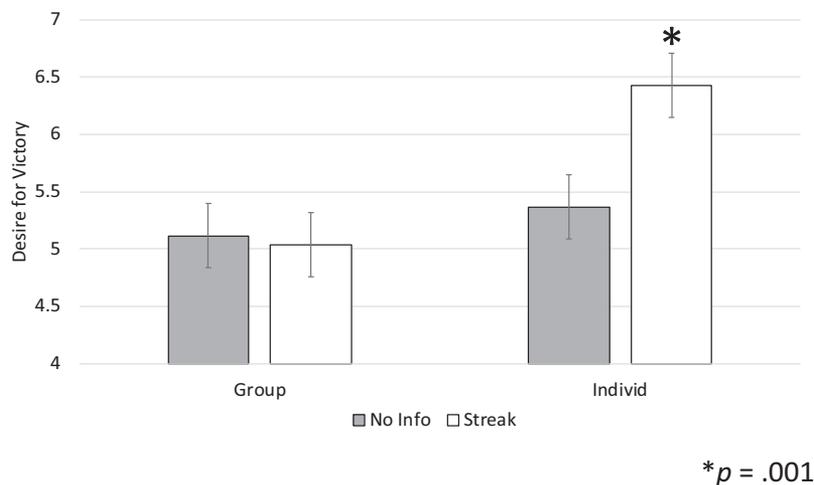


Figure 5. Streaking Star Effect vs. Identifiable Victor Effect in Study 7b.

identifiability. The Identifiable Victim Effect has been shown to be reduced significantly when the group being evaluated is more entitative (Smith et al., 2013). That is, when the victims in question are described as being members of a family or members of a team, people do not show the same preference to help individuals more than groups. Note that the groups our participants were asked about are highly entitative. Olympic teams, regional football teams, and police departments are all highly entitative groups that would likely reduce the preference people show toward individuals over groups. We find robust evidence of people preferring to see individuals succeed over groups in our studies even when the groups in question are highly entitative.

### Study 8: A Company Run by a Successful Individual Is Thought to Deserve Greater Market-Share Than a Company Run by a Successful Group

Although most of the evidence we have presented in support of the Streaking Star Effect has come from the world of sports, we believe that it exists far beyond the track, the arena, the court, or the rink. Indeed, we have already shown how it affects people's judgments about successful police detectives versus police departments. However, the effect may be especially consequential in the business world, where some companies are seen as having succeeded because of a singular, visionary CEO, such as Steve Jobs and Apple, Warren Buffet and Berkshire Hathaway, Bill Gates and Microsoft, and Jeff Bezos and Amazon. The success of other companies—such as IBM, Exxon-Mobil, or Samsung—is seen as the product of the insights and talents of a group of executives and employees. Regardless of whether the success of such companies as Apple or Berkshire Hathaway really can be attributed mainly to the efforts of their CEOs, the public's *perception* that it can may lead to more favorable impressions of these companies, even leading people to feel awestruck by the companies' success. As a result, we might expect people to consider a company whose success is driven largely by a single individual as more deserving of continued success than a company whose success is credited to a group of executives and employees.

One way that people may favor a company with a successful CEO is through a greater tolerance for the company to grow at the expense of its competitors. Some markets are dominated by one or two companies; in others, market share is more evenly distributed among a larger set of competitors. The evidence presented thus far for the Streaking Star Effect leads us to predict that a highly successful company whose success is thought to be driven by its CEO may be seen as deserving greater market share than a company whose success is thought to be driven by a group of executives. We tested this possibility by describing to participants a Fortune 500 company whose success was widely attributed to its CEO or to a group of executives and asked them to indicate what percentage of the market they thought it would be fair for the company to control.

### Method

**Participants.** One hundred ninety-nine American participants (99 female, mean age = 32.50) were recruited from Prolific Academic in exchange for modest compensation. This sample allowed us to detect a significant result for an effect size of  $d = .36$  with 80% power.

**Procedure.** Participants read about the (real) electronic components manufacturer AVnet, one of the 350 largest companies in America. In the *CEO condition*, participants were told that the CEO of AVnet, Robert Eisen, had guided the company for the last couple of decades, making a series of shrewd and successful decisions that led to AVnet's great success. In the *group condition*, participants were told that a group of executives had guided the company for the last couple of decades, making the same series of shrewd decisions. All participants were then asked to indicate the percentage of the electronic components market they thought AVnet should have using a sliding scale from 0–100%. Participants then provided their age, gender, and political orientation on a scale from 1 = *liberal* to 9 = *conservative*.

### Results

As predicted, participants who were told that AVnet's success could be attributed to its CEO thought that it was appropriate for the company to command a greater share of the market ( $M = 49.05$ ,  $SD = 21.81$ ) than participants who were told that the company's success was because of a group of executives ( $M = 41.27$ ,  $SD = 25.57$ ),  $t(196.02) = 2.26$ ,  $p = .02$ ,  $d = .33$ . This difference remained significant when participants' responses were analyzed in a linear model that controlled for political orientation,  $b = 7.98$ ,  $t(196) = 2.38$ ,  $p = .019$ . Although political conservatives thought that AVnet should have a greater market share in general,  $b = 2.80$ ,  $t(196)$ ,  $p = .008$ , political orientation did not interact with experimental condition,  $t < 1$ .

### General Discussion

Although past research has examined the existence of streaks of success and failure in a great many domains, researchers have not examined the conditions that influence whether or not observers want a given streak to continue. The present work was designed to fill that gap. In nine studies, participants consistently displayed a greater desire to see an individual continue a streak of success than a group riding an identical streak. Individual streaks tend to be seen as more clearly attributable to the talents and efforts of the individuals involved, which inspires feelings of awe that people presumably enjoy and would like to continue.

All of the studies we report here except for Study 8 have examined this Streaking Star Effect in the context of uninterrupted streaks, but we suspect that the same psychology applies to periods of dominance that do not qualify as pure streaks. The results of Study 8 support that suspicion. Note that the mechanism we have identified as responsible for the Streaking Star Effect is likely to be engaged even when there are gaps in an individual's stretch of dominance. A sustained period of dominance may still generate more clear attributions when an individual (rather than a group) is dominating, even if the dominance is not perfectly continuous. Individual dominance, then, is more likely to inspire feelings of awe than group dominance whether perfectly continuous or not.

Indeed, it is possible that the Streaking Star Effect may even be enhanced when an individual suffers a break in their streak of dominance. People believe that it is much more difficult to restart a streak than to keep one going (Markman & Guenther, 2007), and successful athletes, like nearly all heroes in fiction, tend to elicit more affection and experience an increase in popularity when they

face challenges (Howe & Parker, 2012). Tennis legend Roger Federer has commented on this element of his storied career. After dominating tennis for many years, he suffered a couple of injuries and went 4 years without winning a major tournament. This appears to have increased fans' desire to see him win, as Federer noted to a reporter: "People saw me struggling a little bit more, and they thought of me as being more human. Since then my popularity has really gone up . . ." (Otway, 2018). More generally, the disruption of a streak may increase people's desire to have a dominant individual restore the feelings of awe they once enjoyed. People may enjoy a team's return to glory as well, but because team success tends to inspire less awe than individual success, we suspect that the desire to witness that return tends to be less pronounced. However, that is something that will have to be clarified by further research.

Although we have explored at great length a condition that dictates whether people prefer a run of dominance to continue, we have not examined people's thoughts and feelings about streaks of failure. Do people want individual losing streaks to *dis*-continue more than they want group losing streaks to end? To find out, we asked 200 participants on MTurk to imagine that an individual Calcio player or a Calcio team had failed to qualify for the playoffs for six consecutive years. We then asked the respondents how much they would like to see the losing streak come to an end. On the one hand, it may be awe inspiring to see a team on a run of futility finally break through with a critical victory. As an example, for over 100 years, the Chicago Cubs had suffered the longest championship drought of any professional baseball team. However, in 2016, they made it to the World Series and defeated the Cleveland Indians. The national reaction leading up to the World Series indicated that fans everywhere were pulling for the Cubs to end their run of futility. Although anecdotes like this suggest that people may have a strong desire to see groups end streaks of futility, research indicates that people have a soft spot for long-suffering individuals as well (Small, 2015). As a result, we did not expect a difference in participants' desire to see the losing streak end, whether it was an individual or a group that was reeling. And that is just what we found ( $t < 1$ ).

Although we have demonstrated that the Streaking Star Effect results from the attributions people make for individual versus group success and the resultant greater feelings of awe that that individual success tends to inspire, there may be other processes at work that strengthen the effect. One possibility that has suggested itself as we have conducted these studies is that people may be less inclined to think about (and, therefore, feel sympathy for) those individuals who continually lose out to an individual competitor than those teams that lose, time and time again, to a rival. That is, there may be a more reflexive link between team competitors than individual competitors. Thinking about the New England Patriots, for example, may automatically call to mind the Buffalo Bills, New York Jets, or the Los Angeles Rams—teams (and their fans) who have had to suffer through watching too many New England Super Bowl victory parades. Although there are memorable individual rivalries such as Ali-Fraser, Nicklaus-Palmer, or Federer-Nadal, they are not as long-lasting as group rivalries—indeed they *cannot* be as long lasting given the brevity of an individual competitor's career. As a result, a victory by one individual may be less likely to trigger thoughts about the other.

In support of this idea, when we surveyed 100 sports fans and asked them to name the biggest sports rivalries they could recall, the overwhelming majority (88%) of those mentioned were team rivalries (e.g., Yankees-Red Sox, Ohio State-Michigan, Duke-North Carolina, and Lakers-Celtics). Dominant teams are, therefore, more tightly linked to their rivals than dominant individuals. To be sure, more needs to be done to examine the meaning and implications of this apparent differential linkage between individual and team rivals—including whether and how much it contributes to the Streaking Star Effect.<sup>7</sup>

Beyond the role played by the attributions people tend to make for individual versus group success and the resultant feelings of awe that are inspired by individual dominance, there are likely to be a number of moderators of the Streaking Star Effect. In each of our studies, we obtained evidence supporting the Streaking Star Effect among Western participants. One may wonder whether this effect holds among non-WEIRD participants. In particular, would this effect hold among participants from interdependent cultures that prioritize teamwork and the subordination of the individual's aspirations to those of the group (Markus & Kitayama, 1991; Nisbett, 2003)? There is reason to believe that it would not: People in interdependent cultures may be awestruck at the delicate teamwork that gives rise to extended periods of group dominance, weakening or reversing the effects we obtained in our studies. In addition, people in interdependent cultures tend to make greater situational attributions for the behavior of individuals, which can lessen the amount of awe elicited by individual dominance (Morris & Peng, 1994). In our previous studies, participants attributed significant runs of dominance more to the personal qualities of the individual than to advantageous circumstances, a result that could be moderated by having an interdependent mindset.

To probe this potential boundary condition, we ran two tests of the Streaking Star Effect with Chinese participants (in China). Using the same procedure from Study 1 ( $n = 200$ ), we found that participants wanted to see the individual streak continue ( $M = 7.03$ ,  $SD = 1.76$ ) more than the group streak ( $M = 6.71$ ,  $SD = 1.96$ ), although the difference did not reach significance,  $t(195) = 1.22$ ,  $p = .22$ ,  $d = .17$ . In a second study ( $n = 184$ ), using the same procedure from Study 7b, we found that participants wanted to see the individual streak continue ( $M = 5.78$ ,  $SD = 1.91$ ) more than the group streak ( $M = 5.12$ ,  $SD = 2.19$ ), this time to a statistically significant degree,  $t(178) = 2.19$ ,  $p = .03$ ,  $d = .32$ . A meta-analysis of the results of these two studies using Stouffer's method yielded a marginally significant result,  $z = 1.84$ ,  $p = .07$ .

Judging solely from the results of these two studies with Chinese participants, there is reason to believe that the Streaking Star Effect may not be limited to WEIRD individuals. At the same time, this evidence suggests that the strength of the effect varies by culture. A meta-analysis of our results indicates that the effect was larger among the WEIRD participants in Studies 1–8 ( $d = .52$ , 95% CI [.431, .618]) than it was in the two studies we conducted in China ( $d = .23$ , 95% CI [.032, .433]). Thus, although we obtained evidence for the Streaking Star Effect in both WEIRD and non-WEIRD cultures, the effect appeared to be weaker in the

<sup>7</sup> The survey results just cited, for example, might simply reflect the fact that team sports are more popular than individual sports and so respondents had an easier time thinking of team rivalries than individual rivalries.

latter and more research is clearly needed to examine the reliability of that difference and to explore further the exact nature of the Streaking Star Effect in non-WEIRD cultures.

Another variable that may moderate the strength of the Streaking Star Effect is whether the domain of evaluation is subjective or objective. In each of our studies, success was determined by an objective measure such as who ran the fastest, who answered the most trivia questions, or who solved the highest percentage of homicide cases. Individual success in these areas is likely to inspire considerable awe because it is clear that the individual who dominates is stretching the perceived limits of human performance in the domain in question. In contrast, when success is subjectively determined, it may not be taken as equally strong evidence that a limit is being breached—or even that the dominant individual in question is truly the best.

Consider music sales, for example, a domain in which we suspect the Streaking Star Effect is unlikely to emerge. Both individual artists and musical groups often dominate the charts for weeks on end, and our results might lead one to expect music fans to pull for individual artists to continue streaks of popularity more than musical groups on identical runs of success. However, musical preferences are subjective, and many situational factors influence the public's momentary preference for a given artist such as good marketing or an attractive image. The title of "Best Artist" is one that defies objective definition, making it difficult to conclude that a top-selling artist is truly better than all the others. Although successful musicians, whether individuals or groups, may indeed inspire feelings of awe, it is not clear, given the subjectivity of the domain, that individual musical artists will inspire more awe than musical groups experiencing similar chart-topping success.

Another potential moderator of the Streaking Star Effect is whether a group's success is thought to be driven by an awe-inspiring individual. Many successful teams have entered the record books on the strength of a singular talent. The Chicago Bulls, for example, dominated the NBA in the 1990s and many basketball fans desperately wanted their success to continue. However, it would be hard to imagine that Bulls team being very successful without the contributions of Michael Jordan, who was performing at a level rarely (if ever) seen in the history of basketball. Much of the interest in the Bulls was because of a desire to see what Jordan might accomplish next. An individual who is able to lift a team to unprecedented heights may inspire just as much awe as someone who achieves similar success in an individual domain. Consequently, people may want to see a team or group continue a streak just as much as an individual when that team's success is thought to be driven largely by an individual player.

People may be especially interested in seeing a team continue a run of extraordinary performance if *everyone* on the team is the type of superstar that inspires awe. This seemed to be the case with the "dream team" that dominated the competition on its way to the gold medal at the 1992 Barcelona Olympics. By winning their six games by an average of 51 points, one might think that fans would come to root against them out of a sense of fair play. That fans did not turn against them is likely because of the fact that almost the entire roster was made up of awe-inspiring individual players such as Michael Jordan, Charles Barkley, Larry Bird, Karl Malone, John Stockton, Patrick Ewing, David Robinson, and Scottie Pippen—and fans enjoyed being awestruck.

## Broader Implications of the Streaking Star Effect

Given how reliable the Streaking Star Effect appears to be, and how easy it has been to uncover evidence of it, we suspect that it should have ramifications beyond people's rooting interests. The results of Study 8, for example, suggest that, at the very least, it has important marketing or public relations implications. That study suggests that companies would be wise to present themselves, if they can, as being driven by a singular, successful CEO rather than a group of executives.

A much broader and more important implication of the Streaking Star Effect is how it may influence people's reactions to economic inequality. Substantial gains in wealth have been achieved by those in the top income brackets in the last several decades, leading to a massive increase in inequality (Piketty & Saez, 2014) that is associated with a wide range of negative outcomes (Levine, Frank, & Dijk, 2010; Oishi & Kesebir, 2015; Wilkinson & Pickett, 2006). More relevant to our research, other work has shown that the manner in which inequality is framed can impact how people view it and whether they support policies designed to combat it (Chow & Galak, 2012; Eibach & Purdie-Vaughns, 2011; Knowles, Lowery, Chow, & Unzueta, 2014). Although uber-wealthy individuals are sometimes seen as decadent and their riches unjustified (as reflected in such films as *Generation Wealth*, *The Queen of Versailles*, and *The Wolf of Wall Street*), the results presented here suggest that framing inequality as it applies to individuals rather than, say, social classes may limit people's interest in reining in inequality in society.

In one study that supports this possibility, we provided participants with statistics testifying to the pronounced wealth inequality in the world today. We presented one group of participants with Oxfam's statistics that the 26 richest people in the world now own the same amount of wealth as the 3.5 billion poorest people (or approximately 135 million of the poorest for each of the 26 richest individuals). We presented another group of participants with Oxfam's report that the world's richest individual now owns the same amount of wealth as the 500 million poorest people. We then asked participants how fair current levels of inequality are and how much the people (person) at the top deserved their (his) success. Participants thought the described level of inequality was more fair when the inequality was framed as an individual at the top rather than a group, and they also thought that the individual at the top deserved his wealth more than the group at the top (Walker, Tepper, & Gilovich, 2020). Framing inequality in terms of disparities between groups rather than individuals appears to reduce people's tolerance of inequality.

## Conclusion

Although there are many ways that people think of groups the same as they think of individuals (Hamilton & Sherman, 1996), there are many ways that people think of the two differently. We have explored one such difference in the research presented here. People appear to be more moved by individual success than group success and are therefore more interested in seeing individual success continue. To be sure, there are times when people are inspired by periods of group dominance—Apple fans love to see its stock price surge even if they do not own any shares themselves, cinephiles love that *Citizen Kane* is named the best film of all-time year after year, and foodies love that Osteria Francescana is so frequently named the best restaurant in the world. However, we generally find extreme runs of success by individuals to be more captivating—we revel more in Bill Gates's success

than Microsoft's, Warren Buffett's more than that of "the investor class," even the sustained success of famous leaders like Alexander, Napoléon, or Cyrus II more than the countries they lead. This affinity for individuals on runs of success appears to be so strong that it not only influences our allegiances, but what we think and how we feel about the rich and the poor, and the powerful and powerless.

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