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A sweeter win: When others help us outperform them☆

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ABSTRACT

To succeed in today's workplaces, people often need to outperform the persons who helped them succeed. In three studies we assessed how doing so affects well-being, prosocial behavior and social perceptions. In the first two studies participants took part in a competitive version of a virtual ball-toss game, with different financial incentives in each study. Depending on condition participants either obtained the majority of the ball tosses or almost no ball tosses. Importantly, participants either "earned" this outcome as a result of their own performance or were "granted" this outcome as a result of the performance of the other players. Study 3 featured the same conditions and a combination of the incentives. However, participants now observed one of the games and rated the anticipated reaction of a focal player. The results revealed that (1) winning was better than losing, (2) especially when people's win was granted to them and less so when they earned it for themselves, (3) which resulted in higher well-being and prosocial behavior, and also maintained meta-perceptions and other-perceptions of competence and enhanced meta-perceptions and other-perceptions of warmth. These results advance theories on interpersonal competition, social comparison, and in/exclusion.

1. Introduction

Prior research suggests outperforming others is a "bittersweet" experience (Koch & Metcalfe, 2011; Thompson, Valley, & Kramer, 1995). On the one hand, people clearly enjoy prevailing over others (Dohmen, Falk, Fliessbach, Sunde, & Weber, 2011; Klein & Miller, 1998; Matsumoto & Willingham, 2006). Outperforming others makes people feel proud (Exline & Lobel, 2001; Tesser & Collins, 1988) and successful (Thompson et al., 1995), and people are motivated by the possibility of doing so (Blanes, Vidal, & Nossol, 2011; Kuhlen & Tymula, 2012). On the other hand, outperforming others may also impair well-being (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Exline & Lobel, 1999). The reactions of outperformed others can be a source of worry (Exline & Lobel, 1999, 2001) and make outperformers feel less honorable (Thompson et al., 1995), and for some people the prospect of outperforming others can be so threatening that they self-sabotage to avoid successes (Pappo, 1983; Zuckerman, Larrance, Porac, & Blanck, 1980).

Although these findings provide valuable insights, they do not fully detail people's reactions to outperforming others. Prior research has typically focused on situations in which competing individuals' achievements were unaffected by their competitors' behavior. For example, many studies have studied individual achievements such as getting a high grade for an exam (Exline & Lobel, 2001, Study 2; Exline, Single, Lobel, & Geyer, 2004), realizing a high sales performance (Henagan, 2010; Henagan & Bedeian, 2009), or attaining a good score on a lab test performed independently (Zell & Exline, 2010; Zuckerman, Kernis, Guarnera, Murphy, & Rappoport, 1983). Other studies have asked participants to recall incidents in which they outperformed others (Exline & Lobel, 2001, Study 1; Koch & Metcalfe, 2011; Tesser & Collins, 1988) or thought others envied them (Rodriguez Mosquera, Parrott, & Hurtado de Mendoza, 2010). Although these participants may have recalled both situations in which they realized outcomes independent of their competitors and situations in which they did so by relying on their competitors' help, a breakdown of such incidents reported by Rodriguez Mosquera et al. (2010)—including academic achievement, having a good (love) life and having a special talent or trait—suggest that they primarily recalled the former. Thus, prior research has primarily studied the experience of outperforming others *without* relying on them.

However, people often outperform others in situations that require them to rely on those others' helpful behavior. For example, individuals in organizations often need to cooperate with their competitors and vice versa (Milkman, Huang, & Schweitzer, 2012). Although workplaces

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are competitive environments (Kilduff, Elfenbein, & Staw, 2010) in which individuals need to vie for rewards, recognition, or status (Fletcher, Major, & Davis, 2008; Fletcher & Nusbaum, 2010), being successful at work often hinges on effectively cooperating with colleagues (Treadway et al., 2013), even in manifestly competitive areas like sales (Bolander, Satornino, Hughes, & Ferris, 2015; Gonzales, Claro, & Palmatier, 2014). Moreover, the wide-spread use of teams in organizations (Devine, Clayton, Philips, Dunford, & Melner, 1999) not only implies that individuals rely on co-workers in order to realize joint goals, but also that they do so to realize their individual goals. For example, co-workers' feelings towards individuals affect their willingness to work with those individual (Casciaro & Lobo, 2008, 2015) which in turn may affect the individuals' opportunities to be successful. Thus, individuals often need to rely on co-workers to "throw them the ball", and, to be successful, may subsequently need to outperform those same co-workers. Consequently, people often need to outperform others whom they relied on to succeed.

We extended prior research on outperforming others by assessing people's reactions to outperforming others who helped them succeed. We drew on research on both social comparison and self-perception to theorize on how outperforming others may affect outperformers' well-being, their subsequent behavior towards the people they outperformed, and, to illuminate the social-cognitive impact of outperforming others, their social perceptions. We tested the resulting hypotheses in three experimental studies.

1.1. The current research

We ran two experimental lab-studies in which participants took part in a competitive task, followed by a larger-scale online experiment in which participants observed such a task while taking the perspective of a focal participant. In each experiment, we compared (focal) participant's experiences of outperforming others—victory—with (focal) participant's experience of the opposite end of this dimension: being outperformed by others—loss. Moreover, in each experiment we compared victory or loss that resulted from (focal) participant's own behavior—earning—with victory and loss that resulted from their competitors' helpful behavior—granting. To do so, we created competitive versions of two virtual ballgames: *cyberball* (Williams, Cheung, & Choi, 2000) and *claimball* (De Waal-Andrews & Van Beest, 2012).

In keeping with earlier versions of cyberball and claimball, our versions featured a ball being tossed between players who were pictured as schematic figures on the screen. Moreover, participants were led to believe they were (or the focal participant was) playing with two other people, but in reality a computer determined the ball-tosses. However, as cyberball and claimball were originally designed to manipulate inclusion and exclusion, we made a number of key changes to both games in order to use them to manipulate victory and loss. First, the current versions of the games were programmed so that (focal) participants either won by obtaining *more* ball-tosses or lost by obtaining *less* ball-tosses than either of the other players. Second, as being given a prize for winning may increase competitiveness (Garcia, Tor, & Schiff, 2013), we used monetary incentives to motivate (focal) participants to compete. Finally, to remind participants of the competitive nature of the games the scores accumulated by each of the players were displayed throughout the game.

Cyberball is played by clicking another player's figure on the screen to throw this player the ball. Therefore, in our version other players could allegedly "grant" (focal) participants victory or loss by throwing or not throwing sufficient balls. In contrast, in claimball the ball can allegedly be claimed by being the first to click the player holding it. Therefore, in our version (focal) participants could "earn" victory or loss by claiming or not claiming sufficient balls. Thus, using competitive versions of cyberball and claimball allowed us to independently control the game *outcome*—that is whether (focal) participants emerged as winners or losers—and the game *process*—that is whether (focal) participants earned or were granted the outcome.

We varied the incentives used in respectively Study 1, Study 2, and Study 3 to reflect the diverse nature of competitions in organizations in which valued outcomes may be the result of a single, direct competition (e.g., being selected for a desirable job or promotion), the cumulative result of a series of smaller, indirect competitions (e.g., successfully realizing a series of tasks, sales or projects may result in a larger paycheck than colleagues), or a combination of the two. More specifically, in Study 1, participants were told that the player who obtained the most balls would be entered into a prize draw, the ball-tosses accumulated by each player were displayed throughout the game, and a statement was flashed three times at the end of the game indicating who had won. In Study 2, participants were told they would receive a financial reward for each ball that passed through their hands. Moreover, the money accumulated by each player was displayed on the screen, allowing participants to ascertain that they outperformed others or were outperformed. Finally, in Study 3, like in Study 2, players received a financial reward for each ball that passed through their hands and accumulated rewards were displayed during the game. However, like in Study 1, a statement flashed three times at the end of the game to indicate the winner. Moreover, the winners' reward was subsequently doubled.[1]

1.2. Well-being

We expected that winning would lead to higher well-being than losing, but that this effect of outcome would depend on the process leading to the outcome.

Specifically, we reasoned that process would not moderate the effect on well-being of loss. Performing weakly in domains that others value makes people feel less accepted by those others (Leary, Cottrell, & Phillips, 2001, Study 1 and 2). Moreover, if others can choose whom to work with, they may refrain from working with an underperforming individual, leaving this individual not only psychologically but also physically isolated. Similar to other experiences of reduced social value (Mahadevan, Gregg, Sedikides, & De Waal-Andrews, 2016; McDonald, Saltzman, & Leary, 2003), social exclusion (Leary & Baumeister, 2000; Leary, Tambor, Terdal, & Downs, 1995) or ostracism (Hartgerink, Van Beest, Wicherts, & Williams, 2015; Williams, 2009), we reasoned, this isolation should negatively impact people's well-being, irrespective of the process leading to their isolated position.

Crucially, we expected that process would moderate the effect on well-being of victory. Outperforming others makes people feel competent, confident, proud and successful (McAuley, Russel, & Gross, 1983; Tesser & Collins, 1988; Thompson et al., 1995; Weiner, Russel, & Lerman, 1979). Therefore, it may help satisfy a fundamental human need: the need for competence (Sheldon, Elliot, Kim, & Kasser, 2001), irrespective of the process leading to that outcome. Moreover, outperforming others can also be interpersonally abrasive (Curhan, Elfenbein, & Xu, 2006; Exline & Lobel, 1999, 2001; Hyland & Dann, 1988) and thus threaten another fundamental need: the need to belong (Baumeister & Leary, 1995; Sheldon et al., 2001). However, this threat occurs only to the extent that outperformers worry about outperformed persons' feeling threatened by being outperformed (Exline & Lobel, 1999, 2001), which they are less likely to do if the outperformed persons helped them succeed. Consequently, as events are more satisfying if they fulfill a broad range of fundamental needs (Sheldon et al., 2001; Sheldon & Niemiec, 2006), we expected that well-being would be higher following earned victory than following granted victory.

Hypothesis 1. There will be a two-way interaction between outcome and process, such that well-being will not differ across process

[1] The games and data will be made available via DataVerse: https://dataverse.nl.

following loss, but will be higher when victory was granted than when it was earned.

1.3. Prosocial behavior

We also expected that process would also moderate the impact of outcome on prosocial behavior (i.e. behavior intended to benefit others: Batson & Powell, 2003; Kafashan, Sparks, Griskevicius, & Barclay, 2014). As being outperformed in a domain valued by others makes people feel isolated (Leary et al., 2001, Study 1 and Study 2), and social isolation incites negative behavior towards the people who caused the experience (Maner, DeWall, Baumeister, & Schaller, 2007), we reasoned that being outperformed should reduce prosocial behavior irrespective of its inducing process. In contrast, we expected that prosocial behavior would be higher following earned victory than following granted victory. When individuals outperform people whose helpful behavior they relied on to succeed, they may be inclined to reciprocate their helpers' friendliness. Moreover, when individuals outperform people they like (Exline & Lobel, 2001; Exline, Zell, & Lobel, 2013) or feel close to (Thompson et al., 1995), they subsequently treat them more considerately than when they outperform people they don't like or feel close to. Consequently, to the extent that relying on others to outperform them leads outperformers' to like those others more, this should also increase outperformer's prosocial behavior towards them.

Hypothesis 2. There will be a two-way interaction between outcome and process, such that prosocial behavior will not differ across process following loss, but will be higher when victory was granted than when it was earned.

1.4. Social perceptions

Prior research on outperforming others (e.g., Exline & Lobel, 2001; Koch & Metcalfe, 2011; Thompson et al., 1995) focused on two types of social perceptions: how outperformers perceived themselves (i.e. their *self-perceptions*) and how outperformers thought they were perceived by those they outperformed (i.e. *meta-perceptions*). However, a priori perceptions of competitors (e.g. perceiving them as close) affect people's reactions to outperforming them (i.e. exacerbating negative feelings and spurring appeasement behavior; Beach et al., 1998; Tesser, Millar, & Moore, 1988; Exline & Lobel, 2001), and a posteriori perceptions of outperformed others (i.e. *other-perceptions*) may have similar effects. Thus, fully understanding outperformers' reactions to outperforming others may also require assessing its effect on other-perceptions. Moreover, as perceptions of others' warmth and competence each affect social behavior in different ways (Becker & Asbrock, 2012; Cuddy, Fiske, & Glick, 2007), fully understanding the social-cognitive impact of outperforming others may require understanding these perceptions in terms of *both* of the fundamental dimensions of social cognition (Fiske, Cuddy, & Glick, 2007): warmth and competence.

Drawing on research on people's tendency to see themselves in an overly positive light (for reviews see e.g. Alicke & Sedikides, 2009; Chambers & Windschitl, 2004; Pyszczynski & Greenberg, 1987; Sedikides & Gregg, 2008), we reasoned that *self-perceptions* and *meta-perceptions* of warmth and competence should vary across different outperformance conditions in a similar way. More specifically, we expected that self- and meta-perceptions of competence would be more positive following victory than following loss irrespective of the process leading to these outcomes. In contrast, we expected that the effect of outcome on self- and meta-perceptions of warmth would be moderated by process.

First, given the *centrality* of self-related information in outperformers' mind, we reasoned that relying on others should *not* reduce their self-perceptions of their competence (cf., Ross & Sicoly, 1979; Savitsky, Van Boven, Epley, & Wight, 2005). Moreover, as the centrality of self-related information in their mind leads people to feel like they uniquely stand out (Gilovich, Medvec, & Savitsky, 2000; Savitsky, Epley, & Gilovich, 2001; Zuckerman et al., 1983), outperformers should think others attributed their successes to them to the same extent. Thus, outperforming others should boost both people's self-perceptions and meta-perceptions of their competence *irrespective* of the extent to which those others contributed to their success.

Second, given the asymmetry in the *type* of information people have access to about themselves and others, we expected outperformers to overestimate the extent to which others' helpful behaviors implied that these others found them warm. People observe others' behaviors more easily than their own whereas they can access their own internal states more easily than those of others (Pronin, 2008, 2009) and this may lead people to overestimate being the source and target of other people's behavior (Greenwald, 1980; Zuckerman et al., 1983). Consequently, when others' behaviors contribute to their personal success, they may perceive those behaviors as intentionally kind. Moreover, in turn, any negative self-perceptions resulting from outperforming those others (Exline & Lobel, 1999; Thompson et al., 1995) should diminish. Thus, the *more* competitors contribute to their success, the *higher* outperformers' self-perceptions and meta-perceptions of their warmth should be.

Hypothesis 3. There will be a three-way interaction between self-perception type (meta-perception type), outcome and process, such that:

a. Self-perceptions (meta-perceptions) of competence will be higher following victory than following loss (i.e., a main effect of outcome).
b. Self-perceptions (meta-perceptions) of warmth will not differ across process following loss, but will be higher when victory was granted than when it was earned (i.e., a two-way interaction between outcome and process).

So what about individuals' *other-perceptions*? Rather than being affected by self-aggrandizing biases, people's perceptions of others reflect those others' behavior (cf. Pronin, 2008, 2009). First, individuals should perceive others as *more competent* if those others had failed to win by relying on them (i.e., following granted victory) than if they had failed to win as a result of their own behavior (i.e. following earned victory). Moreover, individuals should perceive others as *less competent* if those others had won by relying on them (i.e., following granted loss) than if they had won as a result of their own behavior (i.e., following earned loss). Second, given that helpful behavior makes people seem warmer (DePaulo, Brittingham, & Kaiser, 1983; Schneider, Major, Luhtanen, & Crocker, 1996), especially when their help is seen as intentional (Nemeth, 1970), individuals should perceive others as *warmer* if those others helped them win (i.e., following granted victory) than if they won without others' help (i.e., following earned victory). Moreover, individuals should perceive others as *less warm* if those others had the opportunity to help them win, but refrained from doing so (i.e. following granted loss) than if they failed to win as a result of their own behavior (i.e. following earned loss). Thus, we expected a cross-over interaction to emerge between outcome and process.

Hypothesis 4. There will be a two-way interaction between outcome and process, such that other-perceptions of warmth and competence will be lower when loss was granted than when it was earned, but will be higher when victory was granted than when it was earned.

2. Study 1: winner takes all game

2.1. Participants

Ninety-six university students participated in a 2 (outcome: victory, loss) × 2 (process: earn, grant) between-participant experiment. Seven participants were removed: one participant underwent the

manipulation twice, and six failed to win in the victory condition.[2] This left 89 participants (60.7% female) aged 17 to 33 (M = 21.07, SD = 2.78).

2.2. Procedure

Similar to other studies using cyberball (e.g., Williams et al., 2000) or claimball (e.g., De Waal-Andrews & Van Beest, 2012) participants took part in individual cubicles in the lab. Participants were informed they would play a virtual ball-game with two other participants, allegedly situated in other cubicles. The other players were shown as animated figures in the top left and top right parts of the screen and labeled respectively "Pieter" and "Maartje" (popular names for respectively males and females in The Netherlands), whereas participants were shown as an animated hand at the bottom of the screen and labeled with a name they provided. Participants were encouraged to imagine the game was taking place in reality by visualizing details of the other players and their environment.

Each game consisted of 30 ball-tosses. We programmed the games such that participants could obtain 15 ball-tosses in the victory condition and two in the loss condition. Moreover, to make the games more realistic, this predetermined schedule was only followed 85% of the time. More specifically, participants had only an 85% chance of obtaining ball-tosses intended for them, and a 15% chance of obtaining ball-tosses that were *not* intended for them after all. This ensured that at some points in the game the predetermined pattern was interrupted such that the ball was *not* obtained by participants in the victory condition or an additional ball-toss *was* obtained by participants in the loss condition. Moreover, cyberball was programmed to simply throw the correct number of ball-tosses to participants. However, in order to match the cover story, ball-tosses intended for participants in claimball were only thrown to them once they clicked the screen to claim them.[3]

The game had a "winner takes all" incentive structure: "winners" were entered into a prize draw for a 50 Euro prize, whereas "losers" received nothing. To reinforce this incentive, the number of ball-tosses obtained by each player was visible throughout the game and the words "… is/you are the winner" flashed three times at the end of the game.

2.3. Measures

In this study as well as all those following, we discuss the measures in the order in which they were presented. Moreover, in all three studies we report all independent variables, all data exclusions (if any) and all dependent variables. Where not stated differently, all items were rated on 7-point bipolar scales ranging from *not at all* (1) to *very much* (7), reverse scored where appropriate, and averaged across scales to create composite scores.

2.3.1. Well-being

To assess participants' well-being, we used a 20-item scale (Van Beest & Williams, 2006) measuring their satisfaction of four fundamental needs during the game (M = 4.05, SD = 1.50, α = 0.96): *belonging* (e.g., "I felt as one with the other players"), *control* (e.g., "I felt that I was in control of the game"), *self-esteem* (e.g., "Playing the game made me feel insecure", reverse scored), and *meaningful existence* (e.g., "I thought my participation in the game was useful").[4] Moreover, we also included a measure of mood, in order to distinguish between potentially more enduring effects on well-being and more transient effects on participants' affective states (cf. De Waal-Andrews & Van Beest, 2012). Participants rated their experience during the game of nine mood items (M = 4.83, SD = 1.21, α = 0.85), presented in a fixed random order. Eight items were taken from the expanded PANAS (Watson & Clark, 1991): two items each measured respectively *positive affect* ("enthusiastic" and "proud"), *guilt* ("ashamed" and "unhappy with myself"), *hostility* ("irritated" and "angry"), and *sadness* ("sad" and "lonely"). A final item assessed *hurt feelings* ("hurt"), an emotion typically ensuing interpersonal rejection (Smart Richman & Leary, 2009).

2.3.2. Social perceptions

We used three-item measures to assess respectively *self*-perceptions of warmth ("I thought I was well-intentioned/warm/good-natured"; M = 4.85, SD = 1.13, α = 0.72) and competence ("I thought I was competent/capable/skilled"; M = 5.03, SD = 1.19, α = 0.83), *other*-perceptions of warmth ("I thought the other players were well-intentioned/warm/good-natured"; M = 3.58, SD = 1.47, α = 0.84) and competence ("I thought the other players were competent/capable/skilled"; M = 4.28, SD = 1.30, α = 0.87), and *meta*-perceptions of warmth ("The other players thought I was well-intentioned/warm/good-natured"; M = 3.88, SD = 1.33, α = 0.85) and competence ("The other players thought I was competent/capable/skilled"; M = 4.15, SD = 1.56, α = 0.92).

2.3.3. Prosocial behavior

After participants reflected on the game and described their experience in their own words, two dictator games (Forsythe, Horowitz, Savin, & Sefton, 1994) measured prosocial behavior. Participants first divided 10 Euros between themselves and Pieter, and then between themselves and Maartje. They gave each of the other players two, three, four, five or six euros (retaining respectively eight, seven, six, five or four euros). To create a composite score of prosocial behavior we averaged the sums given to the two players, (M = 3.40, SD = 1.23, r (89) = 0.80, $p < .001$).[5]

2.3.4. Manipulation checks

We assessed participants' understanding of the game outcome by asking: "What proportion of ball-tosses did you obtain?" and their understanding of its process by asking: "How was the game played?" (*I needed to click to throw the ball* (1) *or I needed to click to claim the ball* (2)). We also asked "Who won the game?" (*The player who managed to claim the largest number of balls* (1) *or The player whom the other players threw the largest number of balls* (2)), "What did the winner have a chance of getting?" and "Who has a chance of getting the 50 Euro prize?" (*The player with the most points* (1) *or The player with the least points* (2)).

2.4. Results and discussion

Where not stated differently, we used 2 (outcome) × 2 (process) ANOVAs in our analysis, and calculated simple effects to interpret significant interactions. Descriptive statistics for the main variables are reported in Table 1.

2.4.1. Manipulation checks

The manipulations were effective. First, outcome affected the percentage of ball-tosses participants recalled receiving, $F(1,85) = 195.74$, $p < .001$, $\eta^2 = 0.70$, such that participants recalled obtaining a larger

[2] Including these participants did not meaningfully alter the findings.

[3] The ball automatically went to the other player if a participants failed to claim it within 1.5 s. Pre-trials revealed that this provided participants with ample time to click without appearing unrealistically long. Two additional seconds were provided to claim the first two balls as many participants failed to claim these balls in time, ostensibly because they were still learning how to play the game.

[4] As our focus was on general well-being we reported only the results for the composite measure in the text and included analyses of the individual needs in the Supplementary materials.

[5] As the effect of cyberball on fundamental needs has been found to change upon reflection on the game (Hartgerink et al., 2015; Williams, 2009), we re-assessed these needs in Study 1 and Study 2, after letting participants reflect on the game. The results generally replicated those of the initial assessments, and are included in the Supplementary materials.

Table 1
Means (standard deviations) of main variables in Study 1.

Measures	Loss		Victory	
	Earn	Grant	Earn	Grant
Need satisfaction	2.92_{a} (0.72)	2.70_{a} (0.78)	5.22_{b} (0.63)	5.63_{b} (0.66)
Mood	4.17_{a} (1.06)	3.88_{a} (0.96)	5.68_{b} (0.71)	5.80_{b} (0.56)
Prosocial behavior	3.30_{ab} (1.32)	3.04_{a} (1.18)	3.40_{ab} (1.21)	3.93_{b} (1.12)
Self-competence	4.44_{a} (1.35)	4.77_{ab} (1.10)	5.35_{bc} (1.17)	5.62_{c} (0.76)
Self-warmth	4.82_{a} (1.11)	4.65_{a} (1.02)	4.35_{a} (1.22)	5.55_{b} (0.87)
Meta-competence	2.80_{a} (1.10)	3.37_{a} (1.15)	5.22_{b} (1.24)	5.42_{b} (0.84)
Meta-warmth	3.24_{a} (1.00)	3.55_{a} (1.11)	3.88_{a} (1.22)	4.89_{b} (1.41)
Other-competence	4.74_{a} (1.35)	3.79_{b} (1.36)	3.85_{b} (1.05)	4.77_{a} (1.08)
Other-warmth	3.09_{ab} (1.34)	2.75_{a} (1.00)	3.70_{b} (1.33)	4.89_{c} (1.26)

Items were rated on 7-point scales. Note that means with different subscripts within the same row are significantly different at least at the $p < .05$ level.

percentage of the ball-tosses in the victory ($M = 53.33$, $SD = 15.66$) than in the loss condition ($M = 16.53$, $SD = 8.55$), but no effect emerged of process or of the process-outcome interaction (all $ps \geq .150$). Second, the vast majority of participants understood the procedure for playing (94.38%) and winning (88.76%) the game correctly. Specifically, the majority of participants in cyberball correctly stated that they needed to click to *throw* the ball (97.87%) and that the game was won by the person whom *others* threw the largest number of balls (90.48%). In contrast, the majority of participants in claimball stated that they needed to click to *claim* the ball (91.49%) and that the game was won by the person *claiming* the largest number of balls (85.71%). The majority of the participants also correctly recalled that winning the game ensured a chance of winning 50 Euro (60.67%), whereas many others recalled it ensured a chance of winning some amount of money (31.46%). Moreover, all participants (100%) correctly stated that the person with the most rather than the least points had a chance of winning the 50 Euro prize.

2.4.2. Well-being

The analysis of need satisfaction yielded a main effect of outcome, $F(1,85) = 302.71$, $p < .001$, $\eta^2 = 0.78$, not of process ($F < 1$), and the interaction between outcome and process, $F(1,85) = 4.36$, $p = .040$, $\eta^2 = 0.05$. As predicted, need satisfaction did not differ across the two processes following loss, $F(1,85) = 1.12$, $p = .293$, $\eta^2 = 0.01$, but was (marginally) higher when victory was granted than when it was earned, $F(1,85) = 3.51$, $p = .064$, $\eta^2 = 0.04$.

The analysis of mood yielded only a main effect emerged of outcome, $F(1,85) = 89.96$, $p < .001$, $\eta^2 = 0.51$, such that mood was more positive after victory ($M = 5.21$, $SD = 0.59$) than after loss ($M = 3.76$, $SD = 0.99$). Neither the main effect of process ($F < 1$) nor the interaction between outcome and process reached significance, $F(1,85) = 1.29$, $p = .259$, $\eta^2 = 0.02$.

2.4.3. Prosocial behavior

The analysis of prosocial behavior yielded only a main effect of outcome, $F(1,85) = 3.77$, $p = .056$, $\eta^2 = 0.04$, such that prosocial behavior was higher after victory ($M = 3.68$, $SD = 1.18$) than after loss ($M = 3.16$, $SD = 1.24$). Neither the main effect of process ($F < 1$) nor the interaction between outcome and process reached significance, $F(1,85) = 2.35$, $p = .129$, $\eta^2 = 0.03$.

2.4.4. Social perceptions

We ran separate 2 (perception type) × 2 (outcome) × 2 (process) mixed ANOVAs with outcome and process as between variables and perception type as within variable to consecutively analyze self-perceptions, meta-perceptions, and other-perceptions of warmth and competence, and a procedure described by Howell and Lacroix (2012) to interpret three-way interactions using Lmatrix and Mmatrix commands in SPSS.

2.4.4.1. Self-perceptions of warmth and competence. The 2 × 2 × 2 analysis of self-perceptions revealed a main effect of outcome, $F(1,85) = 7.27$, $p = .008$, $\eta^2 = 0.08$, a main effect of process, $F(1,85) = 4.28$, $p = .042$, $\eta^2 = 0.05$, a (marginally significant) interaction between outcome and process, $F(1,85) = 2.81$, $p = .098$, $\eta^2 = 0.03$, and an interaction between self-perception type and outcome, $F(1,85) = 7.58$, $p = .007$, $\eta^2 = 0.08$, Crucially, we found the predicted three-way interaction between self-perception type, outcome and process, $F(1,85) = 9.84$, $p = .002$, $\eta^2 = 0.10$. No other effects reached significance (all $ps \geq .317$).

To interpret the three-way interaction we first computed the simple interaction between outcome and process on self-perceptions of competence. This yielded a non-significant interaction, $F > 1$. Subsequently computing main effects revealed that, as predicted, self-perceptions of competence were higher following victory ($M = 5.49$; $SD = 0.97$) than following loss ($M = 4.62$; $SD = 1.22$), $F(1,85) = 13.86$, $p < .001$, $\eta^2 = 0.14$.

We then computed the simple interaction between outcome and process on self-perceptions of warmth. This yielded the predicted two-way interaction between outcome and process, $F(1,85) = 9.14$, $p = .003$, $\eta^2 = 0.10$. Moreover, subsequently computing second-order simple effects revealed an effect of process in the victory condition, $F(1,85) = 13.37$, $p < .001$, $\eta^2 = 0.14$, such that participants felt warmer when they were granted victory than when they earned victory for themselves, but no effect of process in the loss condition, $F < 1$. Thus, as predicted, granted victory made people feel both equally competent and warmer than earned victory.

2.4.4.2. Meta-perceptions of warmth and competence. The 2 × 2 × 2 analysis of meta-perceptions revealed a main effect of outcome, $F(1,85) = 60.33$, $p < .001$, $\eta^2 = 0.42$, a main effect of process, $F(1,85) = 7.05$, $p = .009$, $\eta^2 = 0.08$, an interaction between meta-perception type and outcome, $F(1,85) = 12.05$, $p = .001$, $\eta^2 = 0.12$, and the predicted three-way interaction between meta-perception type, outcome and process, $F(1,85) = 3.81$, $p = .054$, $\eta^2 = 0.04$. No other effects reached significance (all $ps \geq .212$).

Like for self-perceptions, the simple interaction between outcome and process was not significant for meta-perceptions of competence, $F > 1$. Moreover, again, computing main effects revealed that meta-perceptions of competence were higher following victory ($M = 5.33$; $SD = 1.05$) than following loss ($M = 3.11$; $SD = 1.15$), $F(1,85) = 92.53$, $p < .001$, $\eta^2 = 0.52$.

Computing the simple interaction between outcome and process on meta-perceptions of warmth did not yield the predicted two-way interaction between outcome and process, $F(1,85) = 1.94$, $p = .167$, $\eta^2 = 0.02$. However, subsequently computing first-order simple effects revealed that meta-perceptions of warmth were both higher in the victory than in the loss condition, $F(1,85) = 15.40$, $p < .001$, $\eta^2 = 0.15$, and higher in the grant than in the earn condition, $F(1,85) = 6.74$, $p = .011$, $\eta^2 = 0.07$. Thus, in line with our predictions we found that relative to earned victory, granted victory made people think that others perceived them as warmer. However, we also found that relative to earned loss, granted loss made people think that others perceived them as warmer.

2.4.4.3. Other-perceptions of warmth and competence. The 2 × 2 × 2 analysis of other-perceptions revealed a main effect of outcome, F

Table 2
Means (standard deviations) of main variables in Study 2.

Measures	Loss		Victory	
	Earn	Grant	Earn	Grant
Need satisfaction	3.08_{a}	2.80_{a}	5.01_{b}	5.49_{c}
	(0.82)	(0.82)	(0.64)	(0.64)
Mood	3.96_{a}	3.86_{a}	5.61_{b}	5.74_{b}
	(1.11)	(0.95)	(0.72)	(0.67)
Prosocial behavior	3.62_{ab}	3.67_{ab}	3.31_{a}	4.03_{b}
	(1.37)	(1.30)	(0.86)	(1.12)
Self-competence	4.43_{a}	4.44_{a}	5.10_{b}	5.17_{b}
	(1.17)	(1.08)	(1.22)	(0.75)
Self-warmth	4.62_{a}	4.79_{a}	5.01_{a}	4.99_{a}
	(0.99)	(0.72)	(0.97)	(0.96)
Meta-competence	3.69_{a}	3.28_{a}	5.33_{b}	5.15_{b}
	(1.26)	(1.06)	(0.99)	(0.73)
Meta-warmth	3.94_{ab}	3.48_{b}	4.10_{a}	4.98_{c}
	(0.90)	(1.29)	(1.23)	(1.02)
Other-competence	4.95_{a}	3.76_{b}	3.87_{b}	4.52_{a}
	(1.01)	(1.11)	(1.36)	(0.93)
Other-warmth	3.53_{a}	2.60_{b}	3.83_{a}	5.05_{c}
	(1.09)	(0.96)	(0.99)	(0.86)

Items were rated on 7-point scales. Note that means with different subscripts within the same row are significantly different at least at the $p < .05$ level.

(1,85) = 8.85, $p = .004$, $\eta^2 = 0.09$, an interaction between other-perception type and outcome, $F(1,85) = 21.93$, $p < .001$, $\eta^2 = 0.21$, and the predicted interaction between outcome and process, $F(1,85) = 14.50$, $p < .001$, $\eta^2 = 0.15$. No other effects reached significance (all $ps \geq .121$).

Computing first-order simple effects to interpret the interaction between outcome and process revealed that, as predicted, other-perceptions of warmth and competence were lower when loss was granted than when it was earned, $F(1,85) = 4.65$, $p = .034$, $\eta^2 = 0.05$, but higher when victory was granted than when it was earned, $F(1,85) = 10.26$, $p = .002$, $\eta^2 = 0.11$.

3. Study 2: reward per ball game

Study 1 provided initial support that granted victory boosts well-being (as assessed in terms of need-satisfaction, but not mood) and social perceptions more than earned victory. The results revealed the predicted two-way interactions for need satisfaction and other-perceptions. Moreover, as predicted granted victory maintained self-perceptions of competence, and increased self-perceptions of warmth relative to earned victory. An important goal of Study 2 was to test whether these results would replicate under a different incentive scheme. Moreover, as the effects on mood, prosocial behavior, and meta-perceptions did not reach significance, we also sought to re-assess these effects under a different incentive scheme.

3.1. Participants

Hundred and seventeen university students participated in a 2 (outcome: victory, loss) × 2 (process: earn, grant) between-subject experiment. Two participants failed to claim more balls than other players in the victory condition in claimball and were removed.[6] This left 115 participants (42.6% female) aged 17 to 33 ($M = 20.10$, $SD = 2.62$).

3.2. Procedure

Participants were told they would receive a fixed sum of money (0.20 Euro) for each ball that passed through their hands and the money accumulated by each player was displayed next to their figure on the screen during the game. Moreover, participants were reminded of these amounts at the end of the game, prior to answering the questions. Other than this, the procedure was identical to that used in Study 1.

3.3. Measures

Where not stated differently we used the same measures as in Study 1 and maintained the order in which these measures were assessed. However, to address potential order effects, we randomized the order of specific questions within the overall measures.[7]

Like in Study 1 we assessed need satisfaction ($M = 4.10$, $SD = 1.39$, $\alpha = 0.95$), mood ($M = 4.79$, $SD = 1.25$, $\alpha = 0.86$), and self-perceptions, other-perceptions, and meta-perceptions of warmth (resp. $M = 4.85$, $SD = 0.92$, $\alpha = 0.41$; $M = 3.77$, $SD = 1.32$, $\alpha = 0.70$; and $M = 4.14$, $SD = 1.23$, $\alpha = 0.79$) and competence (resp. $M = 4.78$, $SD = 1.11$, $\alpha = 0.80$; $M = 4.29$, $SD = 1.19$, $\alpha = 0.79$; and $M = 4.35$, $SD = 1.35$, $\alpha = 0.90$) immediately following the manipulation, and we assessed prosocial behavior ($M = 3.67$, $SD = 1.20$, $r(115) = 0.80$, $p < .001$) after participants reflected on the game. However, this time we assessed participants' understanding of the game outcome by asking: "What percentage of the balls passed through your hands?" and "How many of the 30 ball-tosses passed through your hands?"; their understanding of the game process by asking: "How was the game played?" (*I needed to click to throw the ball* (1) *or I needed to click to claim the ball* (2)) and "Who earned the most money in the game?" (*The person who was able to claim the most balls* (1) *or The person whom other people threw the most balls* (2)); and their understanding of the consequences of the game by asking respectively: "How much did Maartje (Pieter, you) earn?".[8]

3.4. Results and discussion

We used the same analysis strategy as in Study 1 and listed the descriptive statistics for all the main variables in Table 2.

[6] Including these participants did not meaningfully alter the findings.

[7] We randomized the order of the five scales measuring fundamental needs and mood, the order in which warmth and competence were measured as part of the assessments of social perceptions, and the order in which participants completed the prosocial behavior measure for respectively "Maartje" and "Pieter".

[8] A final check, "What was a ball worth?", was removed because of a programming error.

3.4.1. Manipulation checks

The manipulation of game outcome was successful: participants recalled obtaining a larger *percentage* of ball-tosses in the victory (M = 52.79, SD = 13.63) than in the loss conditions (M = 17.62, SD = 7.62), $F(1,111) = 298.55$, $p < .001$, $\eta^2 = 0.73$. They also recalled obtaining a larger *number* of balls in the victory (M = 15.28, SD = 3.53) than in the loss conditions (M = 5.93, SD = 4.18), $F(1,111) = 167.16$, $p < .001$, $\eta^2 = 0.60$. No other effects were significant (all $ps \geq .139$).

The manipulation of game process was also successful: in cyberball, 100% of participants stated that they needed to click to *throw* the ball to other players, and 88.33% of participants stated that the person winning the most money in the game was the one who was *thrown* the most balls by *other players*. In contrast, in claimball 98.18% of participants stated they needed to click to *claim* the ball from other players, and 92.73% of participants stated that the person winning the most money in the game was the one who was *claimed* the most balls *themselves*.

Finally, participants correctly understood the consequences of the games. They recalled earning a larger sum of money in the victory (M = 2.12, SD = 1.07) than in the loss conditions (M = 0.92, SD = 0.59), $F(1,109) = 52.21$, $p < .001$, $\eta^2 = 0.76$. They also recalled both Pieter, $F(1,110) = 31.90$, $p < .001$, $\eta^2 = 0.23$, and Maartje, $F(1,110) = 18.66$, $p < .001$, $\eta^2 = 0.14$, earning less in the victory (resp. M = 1.37, SD = 0.74 and M = 1.23, SD = 0.65) than in the loss conditions (resp. M = 2.26, SD = 0.87 and M = 2.04, SD = 1.05).

3.4.2. Well-being

The analysis of need satisfaction yielded a main effect of outcome, $F(1,111) = 280.34$, $p < .001$, $\eta^2 = 0.72$, not of process ($F < 1$), and the interaction between outcome and process, $F(1,111) = 7.39$, $p = .008$, $\eta^2 = 0.06$. As predicted (and replicating the findings of Study 1), need satisfaction did not differ across the two processes following loss, $F(1,111) = 2.05$, $p = .155$, $\eta^2 = 0.02$, but was higher when victory was granted than when it was earned, $F(1,111) = 5.79$, $p = .018$, $\eta^2 = 0.05$.

Like in Study 1, the analysis of mood yielded only a main effect of outcome, $F(1,111) = 114.84$, $p < .001$, $\eta^2 = 0.51$, such that mood was more positive after victory (M = 5.68, SD = 0.69) than after loss (M = 3.91, SD = 1.02). Neither the main effect of process ($F < 1$) nor the interaction between outcome and process reached significance ($F < 1$).

3.4.3. Prosocial behavior

The analysis of prosocial behavior yielded a marginally significant effect of process, $F(1,111) = 3.06$, $p = .083$, $\eta^2 = 0.03$, such that prosocial behavior was higher in the grant (M = 3.86, SD = 1.21) than in the earn condition (M = 3.47, SD = 1.16). Neither the effect of outcome ($F < 1$) nor the interaction between outcome and process reached significance, $F(1,111) = 2.30$, $p = .132$, $\eta^2 = 0.02$. Note, however, (see Table 2) that specific contrast analyses did reveal that people were more prosocial following granted victory condition than following earned victory.

3.4.4. Social perceptions

3.4.4.1. Self-perceptions of warmth and competence. The 2 × 2 × 2 analysis of self-perceptions revealed only a main effect of outcome, $F(1,111) = 12.18$, $p = .001$, $\eta^2 = 0.10$, such that participants felt better about themselves following victory (M_{warm} = 5.00, SD_{warm} = 0.96; M_{comp} = 5.14, SD_{comp} = 0.98) than following loss (M_{warm} = 4.71, SD_{warm} = 0.86; M_{comp} = 4.43, SD_{comp} = 1.12). All other effects, including the predicted three-way interaction between self-perception type, outcome and process failed to reach significance (all $ps \geq .192$).

3.4.4.2. Meta-perceptions of warmth and competence. The 2 × 2 × 2 analysis of meta-perceptions revealed a main effect of outcome, $F(1,111) = 63.84$, $p < .001$, $\eta^2 = 0.37$, and interactions between meta-perception type and outcome, $F(1,111) = 11.06$, $p = .001$, $\eta^2 = 0.09$, between meta-perception type and process, $F(1,111) = 4.19$, $p = .043$, $\eta^2 = 0.04$, and between outcome and process, $F(1,111) = 6.43$, $p = .013$, $\eta^2 = 0.06$. Crucially, the predicted three-way interaction between meta-perception type, outcome and process emerged, $F(1,111) = 5.72$, $p = .018$, $\eta^2 = 0.05$. No other effects reached significance (all $ps \geq .832$).

To interpret the three-way interaction we first computed the simple interaction between outcome and process on meta-perceptions of competence. This yielded a non-significant interaction, $F > 1$. Subsequently computing main effects revealed that, as predicted, meta-perceptions of competence were higher following victory (M = 5.23; SD = 0.85) than following loss (M = 3.48; SD = 1.17), $F(1,111) = 84.50$, $p < .001$, $\eta^2 = 0.43$.

Computing the simple interaction between outcome and process on meta-perceptions of warmth yielded the predicted two-way interaction between outcome and process, $F(1,111) = 10.25$, $p = .002$, $\eta^2 = 0.09$. Moreover, subsequently computing second-order simple effects revealed no effect of process in the loss condition, $F(1,111) = 2.46$, $p = .120$, $\eta^2 = 0.02$, but a main effect of process in the victory condition, $F(1,111) = 8.71$, $p = .004$, $\eta^2 = 0.07$, such that meta-perceptions were higher when participants were granted victory than when they earned victory for themselves. Thus, overall, granted victory made people think that others perceived them as both equally competent and warmer than earned victory.

3.4.4.3. Other-perceptions of warmth and competence. The 2 × 2 × 2 analysis of other-perception revealed a main effect of outcome, $F(1,111) = 12.57$, $p = .001$, $\eta^2 = 0.10$, an interaction between other-perception type and outcome, $F(1,111) = 43.68$, $p < .001$, $\eta^2 = 0.28$, a (marginally significant) interaction between other-perception type and process, $F(1,111) = 3.63$, $p = .059$, $\eta^2 = 0.03$, and the predicted interaction between outcome and process, $F(1,111) = 38.21$, $p < .001$, $\eta^2 = 0.26$. No other effects reached significance (all $ps \geq .637$).

Computing first-order simple effects to interpret the interaction between outcome and process revealed that, as predicted, other-perceptions of warmth and competence were lower when loss was granted than when it was earned, $F(1,111) = 22.42$, $p < .001$, $\eta^2 = 0.17$, but higher when victory was granted than when it was earned, $F(1,111) = 16.09$, $p < .001$, $\eta^2 = 0.13$.

4. Study 3: observed competition

Study 2 provided additional support that granted victory boosts well-being (as assessed by need-satisfaction, but not in terms of mood) and social perceptions more than earned victory. Like in Study 1, the results revealed the predicted two-way interactions for need satisfaction and other-perceptions. Moreover, this time granted victory maintained meta-perceptions of competence, and increased meta-perceptions of warmth relative to earned victory. However, this time the predicted three-way interaction between self-perception-type, outcome and process failed to emerge. Finally, we found some support for the idea that people are more prosocial after a granted victory than after an earned victory.

Post-hoc calculations suggested that the power to assess the predicted effects in Study 1 and Study 2 did not always reach the recommended threshold of 80% (Cohen, 1992).[9] To adequately assess the complete set of hypotheses we ran an additional, preregistered study.[10]

[9] Power with which significant effects were predicted ranged from 0.56 (process × outcome interaction on well-being, Study 1) to 1.00 (process × outcome interaction on other-perceptions, Study 2).

[10] Pre-registration: http://aspredicted.org/blind.php?x=33a7hr.

Table 3
Means (standard deviations) of main variables in Study 3.

Measures	Loss		Victory	
	Earn	Grant	Earn	Grant
Need satisfaction	2.86_a (1.02)	2.39_b (0.86)	5.53_c (0.89)	5.82_d (0.75)
Mood	3.14_a (1.09)	2.88_b (0.89)	5.91_c (1.01)	6.24_d (0.73)
Prosocial behavior	2.20_a (1.27)	1.79_b (1.23)	2.26_a (1.21)	2.97_c (1.16)
Self-competence	4.01_a (1.42)	4.75_b (1.51)	6.04_c (0.82)	6.03_c (0.88)
Self-warmth	5.05_a (1.00)	5.16_a (1.15)	5.26_a (0.99)	5.68_b (1.02)
Meta-competence	3.10_a (1.29)	2.95_a (1.24)	5.79_b (0.97)	5.76_b (0.93)
Meta-warmth	4.05_a (1.19)	3.56_b (1.22)	4.57_c (1.33)	5.35_d (1.08)
Other-competence	5.14_{ac} (1.40)	4.09_b (1.62)	4.93_a (1.24)	5.33_c (1.23)
Other-warmth	3.04_a (1.37)	2.28_b (1.35)	5.06_c (1.15)	5.58_d (1.05)

Items were rated on 7-point scales. Note that means with different subscripts within the same row are significantly different at least at the $p < .05$ level.

A power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) revealed a sample size of 388 would suffice to reliably assess even small effects. To achieve the required sample size, we ran the study online.

4.1. Participants

405 participants (38.8% female) aged 18 to 70 ($M = 34.31$, $SD = 9.95$) completed a 2 (outcome: victory, loss) × 2 (process: earn, grant) between-subject online experiment via Amazon M-Turk. Participants received a payment of $2.50 for completing the study.

4.2. Procedure

Due to ethical concerns about subjecting participants to victory or loss manipulations in an online study we asked participants to observe a game of cyberball or claimball rather than partake in the game themselves. More specifically, participants viewed one of four videos matching the experimental conditions and depicting the game as it unfolded and were asked to take the perspective of a focal player (labeled "your player") while observing the game.[11] We combined the incentives used in the earlier two studies such that participants both received incremental payments for each ball that passed through their hands and received a prize if they won the game: the winners' earnings in the game were doubled.

Like in the previous studies, participants rated need satisfaction ($M = 4.12$, $SD = 1.77$, $\alpha = 0.98$), mood ($M = 4.51$, $SD = 1.80$, $\alpha = 0.97$), self-perceptions ($M_{warmth} = 5.28$, $SD_{warmth} = 1.06$, $\alpha_{warmth} = 0.88$; $M_{competence} = 5.19$, $SD_{competence} = 1.48$, $\alpha_{competence} = 0.94$), meta-perceptions ($M_{warmth} = 4.37$, $SD_{warmth} = 1.37$, $\alpha_{warmth} = 0.94$; $M_{competence} = 4.38$, $SD_{competence} = 1.77$, $\alpha_{competence} = 0.97$), and other-perceptions ($M_{warmth} = 3.97$, $SD_{warmth} = 1.84$, $\alpha_{warmth} = 0.97$; $M_{competence} = 4.87$, $SD_{competence} = 1.46$, $\alpha_{competence} = 0.94$) of warmth and competence immediately after the game, and prosocial behavior ($M = 2.30$, $SD = 1.28$, $r = 0.93$, $p < .001$) following a reflection task. Moreover like in Study 2, we randomized the order of specific questions within the overall measures. However, we rephrased the statements in the measures such that they reflected the perspective of the focal players rather than participants' own perspective. For example, participants were asked to rate the extent to which "my player felt in control of the game" as opposed to the extent to which "I felt in control during the game". Likewise, they were told "your player is now asked to divide 10 Euro with Peter (Mary)" as opposed to "you are now asked to divide 10 Euro with Pieter (Maartje)" and asked to rate "which option you think your player would chose" rather than "the option of your choice". Except for these changes the procedure and measures were identical to those used in Study 1 and Study 2.

4.3. Results

We used the same analysis strategy as in Study 1 and Study 2 and listed the descriptive statistics for all the main variables in Table 3.

4.3.1. Manipulation checks

The manipulation of game outcome was successful: a higher proportion of participants recalled their player winning the game in the victory condition (94.0%) than in the loss condition (3.9%), $F(1,392) = 1645.36$, $p < .001$, $\eta^2 = 0.81$. Moreover, participants recalled obtaining a larger *percentage of ball-tosses* in the victory ($M = 56.58$, $SD = 18.40$) than in the loss conditions ($M = 17.19$, $SD = 10.36$), $F(1,392) = 717.41$, $p < .001$, $\eta^2 = 0.65$. The also recalled obtaining a slightly larger percentage of ball-tosses in the earn ($M = 39.17$, $SD = 25.89$) than in the grant conditions ($M = 33.55$, $SD = 23.06$), $F(1,392) = 13.70$, $p < .001$, $\eta^2 = 0.03$. However, the interaction between outcome and process was not significant ($F < 1$). Finally, participants also recalled earning a larger *sum of money* in the victory ($M = 4.76$, $SD = 1.46$) than in the loss conditions ($M = 1.22$, $SD = 1.01$), $F(1,392) = 788.19$, $p < .001$, $\eta^2 = 0.67$. They also recalled Mary, $F(1,392) = 97.20$, $p < .001$, $\eta^2 = 0.20$, but not Peter, $F < 1$, earning less in the victory (resp. $M = 2.21$, $SD = 2.94$ and $M = 3.13$, $SD = 12.69$) than in the loss conditions (resp. $M = 4.84$, $SD = 2.36$ and $M = 3.00$, $SD = 3.55$). No other effects on Mary's and Peter's score reached significance (all $Fs < 1$).[12]

The manipulation of game process was also successful: in cyberball, the majority of participants correctly stated that they needed to click to *throw* the ball to other players (99.5%). In contrast, the majority of participants in claimball correctly stated that they needed to click to *claim* the ball from other players (91.2%). Finally, participants correctly understood the consequences of the game: they recalled that each ball was worth $0.20 (99.5%), that winning the game would lead to the winner's money being doubled and others being kept equal (96.8%), and that the person with the most money was the winner (99.8%).

4.3.2. Well-being

The analysis of need-satisfaction revealed a main effect of outcome, $F(1,401) = 1193.90$, $p < .001$, $\eta^2 = 0.75$, not of process ($F < 1$), and the interaction between outcome and process, $F(1,401) = 18.45$, $p < .001$, $\eta^2 = 0.04$. Consistent with Study 1 and Study 2, need satisfaction was higher following granted victory than following earned victory, $F(1,401) = 5.38$, $p = .021$, $\eta^2 = 0.01$. However, different than in Study 1 and 2, process now also moderated loss: need satisfaction was lower following granted than following earned loss, $F(1,401) = 14.19$, $p < .001$, $\eta^2 = 0.03$.

The analysis of mood revealed a main effect of outcome, $F(1,401) = 1061.97$, $p < .001$, $\eta^2 = 0.73$, not of process ($F < 1$) and an interaction between outcome and process, $F(1,401) = 10.06$, $p = .002$, $\eta^2 = 0.02$. Mirroring the results for need satisfaction, mood was higher following granted victory than following earned victory, $F(1,401)$

[11] The clips are available online. Loss grant game: https://vimeo.com/224946576; victory grant game: https://vimeo.com/224947794; loss earn game: https://vimeo.com/224945196; victory earn game: https://vimeo.com/224947687. For a discussion of research using related manipulations in research on ostracism see Wesselmann, Williams, & Hales, 2013.

[12] These differences arose because Mary always won in the loss condition, whereas Peter lost in all 4 conditions.

= 6.05, p = .014, η^2 = 0.02, and mood was lower following granted than following earned loss, $F(1,401) = 4.09$, p = .044, η^2 = 0.01.

4.3.3. Prosocial behavior

The analysis of prosocial behavior revealed a main effect of outcome, $F(1,401) = 26.07$, $p < .001$, $\eta^2 = 0.06$, not of process, $F(1,401) = 1.63$, $p = .202$, $\eta^2 < 0.01$, and the interaction between outcome and process, $F(1,401) = 21.60$, $p < .001$, $\eta^2 = 0.05$. As predicted, prosocial behavior was higher following granted victory than following earned victory, $F(1,401) = 17.25$, $p < .001$, $\eta^2 = 0.04$. Mirroring the results for need satisfaction and mood, prosocial behavior was lower following granted loss than following earned loss, $F(1,401) = 5.78$, $p = .017$, $\eta^2 = 0.01$.

4.3.4. Social perceptions

4.3.4.1. Self-perceptions of warmth and competence. The 2 × 2 × 2 analysis of self-perceptions revealed main effects of outcome, $F(1,401) = 91.21$, $p < .001$, $\eta^2 = 0.19$, and process, $F(1,401) = 10.29$, $p = .001$, $\eta^2 = 0.03$, an interaction between self-perceptions and outcome, $F(1,401) = 71.65$, $p < .001$, $\eta^2 = 0.15$, and the predicted three-way interaction between self-perception type, outcome and process, $F(1,401) = 18.74$, $p < .001$, $\eta^2 = 0.05$. No other effects reached significance (all $ps \geq .499$).

To interpret the three-way interaction we first computed the simple interaction between outcome and process on self-perceptions of competence. This yielded a significant interaction, $F(1,401) = 9.71$, $p = .002$, $\eta^2 = 0.24$. Subsequently computing second-order simple effects revealed that, in line with the predictions, self-perceptions of competence were higher following victory than following loss in both the earn condition, $F(1,401) = 146.79$, $p < .001$, $\eta^2 = 0.27$, and in the grant condition, $F(1,401) = 57.54$, $p < .001$, $\eta^2 = 0.13$. Moreover, a main effect of process emerged in the loss condition, $F(1,401) = 19.47$, $p < .001$, $\eta^2 = 0.05$, such that self-perceptions of competence were higher following granted loss than following earned loss, but no main effect of process in the victory condition, $F < 1$.

Computing the simple interaction between outcome and process on self-perceptions of warmth yielded a non-significant interaction, $F(1,401) = 2.30$, $p = .130$, $\eta^2 < 0.01$. Subsequently computing simple effects revealed that self-perceptions of warmth were higher following victory ($M = 5.47$, $SD = 1.02$) than following loss ($M = 5.11$, $SD = 1.07$), $F(1,401) = 12.31$, $p = .001$, $\eta^2 = 0.03$, and were higher in the grant ($M = 5.41$, $SD = 1.12$) than the earn condition ($M = 5.16$, $SD = 1.00$), $F(1,401) = 6.28$, $p = .013$, $\eta^2 = 0.02$. Thus, the three-way interaction did not reflect the predicted pattern, and like in Study 1 and Study 2, no support was found for our hypotheses on self-perceptions.

4.3.4.2. Meta-perceptions of warmth and competence. The 2 × 2 × 2 analysis of meta-perceptions revealed a main effect outcome, $F(1,401) = 343.09$, $p < .001$, $\eta^2 = 0.46$, and interactions between meta-perception type and outcome, $F(1,401) = 77.50$, $p < .001$, $\eta^2 = 0.16$, between outcome and process, $F(1,401) = 14.87$, $p < .001$, $\eta^2 = 0.04$, and, marginally, between meta-perception type and process, $F(1,401) = 3.62$, $p = .058$, $\eta^2 = 0.01$. Crucially, the predicted three-way interaction between meta-perception type, outcome and process emerged, $F(1,401) = 28.43$, $p < .001$, $\eta^2 = 0.07$. No other effects reached significance (all $ps \geq .654$).

To interpret the three-way interaction we first computed the simple interaction between outcome and process on meta-perceptions of competence. This yielded a non-significant interaction, $F > 1$. Subsequently computing simple effects revealed that, as predicted, meta-perceptions of competence were higher following victory ($M = 5.77$; $SD = 0.94$) than following loss ($M = 3.02$; $SD = 1.26$), $F(1,401) = 610.16$, $p < .001$, $\eta^2 = 0.60$, but did not differ in the earn ($M = 4.42$; $SD = 1.77$) and the grant condition ($M = 4.33$; $SD = 1.78$), $F < 1$.

Computing the simple interaction between outcome and process on meta-perceptions of warmth yielded the predicted two-way interaction between outcome and process, $F(1,401) = 28.13$, $p < .001$, $\eta^2 = 0.07$. Moreover, subsequently computing second-order simple effects revealed a significant effect of process in the loss condition, $F(1,401) = 8.54$, $p = .004$, $\eta^2 = 0.02$, such that meta-perceptions of warmth were higher in the earn condition than in the grant condition. Moreover, as predicted, it revealed a main effect of process in the victory condition, $F(1,401) = 20.84$, $p < .001$, $\eta^2 = 0.05$, such that meta-perceptions of warmth were higher in the grant than in the earn condition. Thus, overall, participants thought that granted victory would make their focal player think that others perceived them as both equally competent and warmer than earned victory.

4.3.4.3. Other-perceptions of warmth and competence. The 2 × 2 × 2 analysis of other-perceptions revealed main effects of outcome, $F(1,401) = 167.43$, $p < .001$, $\eta^2 = 0.30$, and process, $F(1,401) = 4.22$, $p = .041$, $\eta^2 = 0.01$, but not of other-perception type, $F < 1$. Moreover, significant interactions emerged between other-perception type and outcome, $F(1,401) = 160.20$, $p < .001$, $\eta^2 = 0.29$, and between outcome and process, $F(1,401) = 36.57$, $p < .001$, $\eta^2 = 0.08$, and marginally significant interactions between other-perception type and process, $F(1,401) = 3.47$, $p = .063$, $\eta^2 = 0.01$ and between other-perception type, outcome and process, $F(1,401) = 3.14$, $p = .077$, $\eta^2 = 0.01$.

Computing first-order simple effects to interpret the interaction between outcome and process revealed that, as predicted, other-perceptions of warmth and competence were lower when loss was granted than when it was earned, $F(1,401) = 33.41$, $p < .001$, $\eta^2 = 0.08$, but higher when victory was granted than when it was earned, $F(1,401) = 7.83$, $p = .005$, $\eta^2 = 0.02$.

5. General discussion

As being successful requires individuals to cooperate with their competitors and vice versa (Milkman et al., 2012), getting ahead often requires people to outperform the individuals they relied on to succeed. Across three experiments, we assessed people's experience of outperforming others whom they either did (granted victory) or did not rely on to succeed (earned victory). We found that people who were granted victory by outperformed others experienced higher need satisfaction and behaved more prosocially to outperformed others than people who earned victory for themselves. We also found that, relative to earned victory, relying on others to grant them victory made people think outperformed others felt they were warmer and equally competent. Moreover, we found that, relative to earned victory, relying on others to grant them victory made people feel outperformed others were both warmer and more competent. Thus, in line with our hypotheses we found that a granted victory was “sweeter” than an earned victory on three counts: it improved outperformers' well-being, it improved outperformers' social perceptions, and it increased outperformers' prosocial behavior towards the people they outperformed.

5.1. Implications for the STTUC framework

Perceiving the Self as the Target of a Threatening Upward Comparison (i.e., STTUC; Exline & Lobel, 1999, 2001) is an important driver of the deleterious consequences of outperformance. Although we did not explicitly test whether people felt they were STTUC, our results suggest these feelings may have played a pivotal role in our results: when outperformers were *less* likely to think that outperformed others felt threatened (i.e., when it resulted from the behavior of outperformed others), outperforming others was sweeter than when outperformers were *more* likely to think that outperformed others felt threatened (i.e., when it resulted from outperformers own behavior). Moreover, across the three studies the effects were stronger when competition was more direct and explicit, and consequently loss was likely to be more

threatening (i.e. in Study 1 and Study 3). Thus our results are generally in line with the STTUC framework.

Our work also extends previous research on the STTUC framework. First, contrasting the earning task and the granting task allowed us to highlight a potentially important moderator of the experience of outperforming others: whether or not people rely on others in order to outperform them. Moreover, our findings suggest that this moderator manifestly affects people's experience of and reaction to outperforming others. Second, our research further illuminates the social-cognitive effects of outperforming others. Our results revealed that outperforming others not only affects people's self-perceptions and meta-perceptions of their warmth and competence, but also their perceptions of the warmth and competence of their competitors. Moreover, as people's perceptions of their competitors affect their emotional and behavioral reactions to outperforming them (e.g., Beach et al., 1998; Exline & Lobel, 2001; Tesser et al., 1988), these effects may also have further implications for people's reaction to outperforming others.

5.2. Inclusion, exclusion and ostracism

To compare earned and granted victory in our studies, we created adapted versions of respectively *claimball* (De Waal-Andrews & Van Beest, 2012) and *cyberball* (Williams et al., 2000), two virtual games that were originally designed to study inclusion and ostracism. This implies that our results may also be relevant for that research area. First, research on inclusion and ostracism typically finds that people react quite differently to the two ends of this continuum: incremental changes in the level of inclusion are associated with incremental increases in well-being, in line with Williams' (2009) temporal need-threat model, incremental changes in the level of exclusion (Chernyak & Zayas, 2010; Van Beest, Carter-Sowell, Van Dijk, & Williams, 2012) or the positive or negative intent associated with exclusion (De Waal-Andrews & Van Beest, 2012; Van Beest & Williams, 2006) typically have little effect on people's well-being when this is measured immediately following the exclusion experience (for exceptions see: Rudert & Greifeneder, 2016; Van Beest, Williams, & Van Dijk, 2011; Williams et al., 2000), but that the effects of such cross-cutting variables becomes stronger between the first and the last measure of a study (Hartgerink et al., 2015), when people ostensibly have had time to reflect on what has happened rather than reacting in a reflexive manner (Williams, 2009). Mirroring this prior research, our results revealed that to people who lost a game of ball toss it mattered relatively little whether this loss was earned or granted, whereas to people who won a game of ball toss it mattered more whether this victory was earned or granted. Moreover, this pattern emerged particularly when participants actively took part in the game (Study 1 and Study 2) and less when they observed a focal player taking part (Study 3). When people observed a focal player, the reason why the focal player lost moderated their reaction to losing, presumably because taking the perspective of another individual puts people in a more reflexive state of mind.

Second, our results suggest that the effects of outperforming and being outperformed do not depend on the extent to which people are "singled out" (cf. Van Beest & Williams, 2006). First, across the three studies participants who won and lost were both singled out in terms of the number balls they received: they either received markedly more balls than the other two players, or they received markedly less balls than the other two players. In contrast, while participants in Study 2 simply obtained more or less ball-tosses than other players, in Study 1 and Study 3 participants who won the game were explicitly singled out: there was only one winner, but the two other players always lost *together*. Yet, being singled out in these different ways across the Studies did not noticeably affect people's experience of outperforming others or of being outperformed. Rather, the pattern of findings was in line with prior research and theorizing on social comparison, self-perception, and inclusion and exclusion.

Third, and most strikingly, despite emphasizing the *individual* performance-goal associated with the task and the *personal* (monetary) benefits associated with this performance, people's reaction to its outcome centered on its effect on their *relationship* with their interaction partners. More specifically, not only did outperforming and being outperformed affect *interpersonal* perceptions (and not by intrapersonal perceptions), they also affected perceptions related to warmth (and not perceptions related to competence).

5.3. Limitations and further research

Although we generally found a similar pattern of results across the three studies, there were also some noticeable differences. For example, the predicted interaction between outcome, process and *meta*-perceptions of warmth and competence emerged in all studies. In contrast, the predicted interaction between outcome, process and *self*-perceptions of warmth and competence only emerged in Study 1. Also, our analyses of prosocial behavior provided the clearest evidence in Study 3, and less clear evidence in Study 2 and 1. Moreover, although in general our results were moderated by process following victory condition in all studies, and not following loss, our results were also moderated by process following loss in Study 3. Finally, our two assessment of well-being (need-satisfaction and mood) only converged in Study 3. These differences underscore that using different measures for social perceptions, using different incentives to motivate participants, and varying whether participants are the focal player (Study 1, study 3) or take the perspective of a focal player (study 3) can all provide important insights into people's experience of outperforming others.

To carefully manipulate the extent to which outperformers were helped by those they outperformed, we ran our studies in a highly controlled setting. Important consequences of this choice are that participants competed on a relatively simple task that required limited effort or skill, and that they did so in a one-shot competition with strangers. Although we believe our experimental design allowed us to conduct relatively conservative tests of our hypotheses, some contextual factors in real-life settings could further qualify our results, and future research may explore them.

First, when tasks require more effort and skill, people may place more value on completing them successfully. As people tend to self-aggrandize more in valued domains (Brown, 2012), real-life competitions can therefore *motivate* people more strongly to engage in the types of self-aggrandizing cognitions that could play a role in our findings. Moreover, when tasks are more complex, the antecedents of earned or granted victory may also be less transparent than in our experimental ballgames. As ambiguity around the nature of their success provides people with room to self-aggrandize (cf. Dunning, Meyerowitz, & Holzberg, 1989), we expect people may therefore also find it *easier* to self-aggrandize in real-life competitions than they did in our experiments. Thus, both the complexity of real-life competitive tasks, and the higher level of effort and skill they require may increase the strength of the effects we found in our experiments.

Second, our experimental ballgames were explicitly competitive. Moreover, participants in our experiments also lacked prior knowledge about their competitors and expected no future interactions with them. This may have allowed them to compete with less reservation than people do in real-life competitions where future interaction is possible. Consequently, participants' behavior may have been more exclusively motivated by winning the competition than it would be in a real-life competitive situation with the possibility of future interaction, and they may have expected their competitors' behavior to be as well. However, despite having little reason to believe that others acted out of any other than instrumental reasons, our results suggested that participants thought others were being friendly when they threw them the ball in cyberball and consequently perceived them as warm. Moreover, despite having little reason to think others believed they acted out of any other than instrumental reasons, our results suggest participants also assumed

others perceived them as warm when they threw those others the ball in cyberball. Consequently, if helpful behaviors can be more readily perceived as acts of kindness in real-life competitions, we think the effect of such behaviors on meta-perceptions and other-perceptions of warmth will only be stronger.

Third, the explicitly competitive nature of our experimental ballgames may have justified "claiming" the ball from competitors. This may be reflective of workplaces that are also explicitly competitive. However, we acknowledge that workplaces differ and that the social norms in some workplaces may oppose behavior that is clearly at the expense of others. Moreover, such workplaces may be especially likely to be found in collectivistic cultures and cultures in which people are socially mindful, as in such cultures people are especially sensitive to the effect of their behavior on others (Savani, Wadhwa, Uchida, Ding, & Naidu, 2015; Van Doesum, Van Lange, & Van Lange, 2013).[13] Thus, earning victory may violate social norms in some real-life competitions, and doing so could undermine outperformers well-being, leading to *larger* differences between the effects of earned and granted victory. On the other hand, our experimental ballgames—in which each ball could go to only one player—may have also highlighted the fact that players' interests were in direct opposition. In many real-life competitions, where the opposition between one's own success and that of others is often less obvious, there may be *smaller* differences between the effects of earned and granted victory on well-being. Future research may address the effects of such different aspects of the task, social norms and culture on people's reactions to earned versus granted wins.

Fourth, in real-life settings people may be more aware about others having information and opinions about them, and given they have an ongoing relationship with those others, they may also worry about their opinions more. For example, the widespread use of groups and teams in organizations (Devine et al., 1999) may promote sharing information and opinions about others, and encourage ongoing relationships. Moreover, as others perceptions influence self-views more readily in ongoing relationships (Tice, 1992; Yeung & Martin, 2003) meta-perceptions may be more likely to transfer to self-perceptions in real-life competitions. As a result, the predicted effects on self-perceptions that failed to emerge in the current studies might emerge after all in real-life competitions and we feel this is an interesting possibility to explore in future research.[14]

5.4. Conclusion

As people move up in organizations, and thus assumedly face multiple "wins", they are increasingly faced with a more conflict (Greer, Caruso, & Jehn, 2011), which can be both interpersonally abrasive and psychologically taxing (Dijkstra, Van Dierendonck, Evers, & De Drue, 2005; Frone, 2000). Our results suggest that moving up with the help of others may not only provide people with a psychological buffer to face such situations, but also stimulates them to treat their peers prosocially, which may help limit the level of conflict. Although workplaces requiring people to both cooperate and compete may seem like an uncomfortable situation, our research suggests that the dynamics of outperformance in such a context make it personally and interpersonally rewarding.

Appendix A. Supplementary analyses

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesp.2017.10.004.

[13] We would like to thank an anonymous reviewer for this suggestion.

[14] We would like to thank an anonymous reviewer for this suggestion.

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