

The Effect of Perceived Advantage and Disadvantage on Performance: The Role of External Efficacy

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This experiment examined how perceptions of advantage and disadvantage determine performance in a competitive context. We distinguished between internal and external efficacy, and manipulated external efficacy by inducing perceptions of advantaged or disadvantaged starting positions in a competition, keeping the actual positions equal. The treatment increased the performance of the advantaged party and decreased the performance of the disadvantaged party. In addition, measured external and internal efficacy had qualitatively different effects on performance. The results are explained by the idea that losses loom larger than gains.

INTRODUCTION

This study examined how perceptions of advantage or disadvantage affect efficacy beliefs and performance in competitive situations. We developed hypotheses based on self-efficacy theory (Bandura, 1977) and on prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981). We tested these hypotheses in an experiment in which participants competed under controlled, yet natural, conditions. Pairs of players competed in a board game in which the starting positions were seemingly dissimilar yet substantially identical. Players were led to believe that one position offered better chances of success; that is, positions “looked” different but in fact offered equal chances to win. Thus, the experimental treatment produced unequal efficacy beliefs within each pair, while keeping other things equal. One party, the *advantaged* party, believed that her position was better, while the other one, the *disadvantaged* party, believed that her position was worse.

Although this was an experimental treatment aimed at studying the impact of efficacy beliefs on performance under controlled conditions, it is typical of many competitive settings in which one party perceives the situation—rightly

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or wrongly—as providing an advantage or a disadvantage relative to the other. We contend that the perception of the situation, as distinct from the reality of the situation, has an important impact on the outcome of the competition by affecting the efficacy beliefs of the parties involved.

In order to analyze the effect of perceived position inequality, we adopted a theoretical framework that distinguishes between internal and external efficacy. This approach allows for better understanding of the relationships between efficacy beliefs and performance in competitive situations compared to the one-dimensional view of efficacy (i.e. self-efficacy). In particular, we will demonstrate that the processes relating efficacy to performance are qualitatively different for these two types of efficacy beliefs.

EFFICACY BELIEFS

Internal vs. External Efficacy

Self-efficacy is a deeply entrenched construct that is widely acknowledged as crucial to understanding work motivation. Self-efficacy is an individual's belief in his or her capacity to mobilise the internal resources needed to execute the performances that are required in order to accomplish a task successfully (Bandura, 1997, 1977). The construct refers to individuals' beliefs that they have the internal resources, such as ability, talent, skill, resourcefulness, endurance, and willpower, needed to perform successfully. Many studies have shown that self-efficacy has positive effects on performance (for meta-analyses see Moritz, Feltz, Fahrback, & Mack, 2000; Sadri & Robertson, 1993; Stajkovic & Luthans, 1998).

Bandura is utterly clear: His notion of self-efficacy has a decidedly internal focus. For example, "Perceived self-efficacy refers to *belief in one's capabilities* to organise and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3; italics added). Furthermore, "The item content of self-efficacy scales *must represent beliefs about personal abilities* to produce specific levels of performance and *must not include other characteristics*" (1997, p. 45; italics added). Therefore, we refer to self-efficacy as *internal efficacy* to distinguish it from *external efficacy*.

External efficacy complements self-efficacy's internal focus. Self-efficacy concerns beliefs about resources that reside *within* the individual; the locus of the resources that influence external efficacy is in the environment. External efficacy refers to individuals' beliefs about available outside resources—inanimate or human—that are important for achieving success (Eden, 2001), and their perception that such resources may aid—or hinder—performance. The outside resources could include externalities such as tools, equipment, effective guidance or support, favorable working conditions, a superior starting point, or other facilitators.

One variant of external efficacy, called *means efficacy*, refers to the individual's belief in the usefulness of the tools—or means—that are available for use in achieving successful job performance. It is assumed that when it is high, means efficacy—similar to self-efficacy (or internal efficacy)—raises performance expectations and motivates intensification of effort, culminating in enhanced performance. When means efficacy is low, motivation, effort, and performance are also low. Available preliminary evidence suggests that self-efficacy and means efficacy are distinct constructs that have distinct effects (Agars, 2010; Jones, Agars, & Kottke, 2010) and that changing one does not change the other (Chen, Westman, & Eden, 2009; Eden, Ganzach, Granat-Flomin, & Zigman, 2010).

The potential for raising means efficacy to boost performance is apparent in a number of field-experimental demonstrations of its effects. By raising means efficacy, experimenters have been able to effect improvements in the productive utilisation of computers among social service workers and among students (Eden et al., 2010); to improve knowledge workers' adjustment to new information technology (Chen et al., 2009); and to strengthen military trainees' mastery of their weapons and their motivation to use them (Eden, 2001). These effects of means efficacy were achieved with no concomitant changes in self-efficacy. Further findings show that means efficacy may play a role in individuals' decisions about turnover, career choices, and employment status (Agars, 2000, 2010; Rotstein & Erez, 2010; Schmierer, Jones, Agars, & Kottke, 2009). Moreover, valuable outcomes can be achieved with no increase in investment of time or money. Reaping the benefits of means efficacy requires only awareness of its role in motivating effort and mindful managerial actions to enhance it. The future augers even greater payoff resulting from boosting external efficacy as leadership scholars weave means efficacy into new theories of how leader behavior enhances—or depresses—their followers' beliefs in themselves and in the means at hand, thereby boosting—or hampering—their performance (Hannah, Avolio, Luthans, & Harms, 2008; Walumbwa, Avolio, & Zhu, 2008; Walumbwa, Cropanzano, & Goldman, under review).

Another variant of external efficacy refers to sources that are completely divorced from means, and rather relate to individuals' beliefs that external conditions favor or disfavor them. This variant might be referred to as *circumstantial efficacy*. Examples include home-court advantage and winning the opening coin-toss in sporting competitions. It could also include one's evaluation of a competitor's ability or of the relative ease or difficulty involved in operating in a particular sales territory. Expecting the competition to be tough, the territory to be inimical, and the weather conditions to be those that militate against our kind of operations, our circumstantial efficacy would be low. Expecting favorable conditions, easy competition, and sensing positive omens, our circumstantial efficacy would be high and we would perform better.

To illustrate, consider a job applicant. She might ask herself, “Am I cut out for this kind of job?” This is the self-efficacy question. She might further wonder, “Will they provide me with the tools I need in order to succeed?” This is the means efficacy question. Finally, she might consider who else is applying for the job, how many other candidates there are, how qualified they are, and how many job openings there are. These would all be questions regarding circumstantial efficacy. The latter concerns neither the applicant’s own ability nor the tools that may be available. Rather, these other concerns involve external factors not encompassed by self-efficacy or means efficacy that may affect her expectations for success, motivation to exert effort, and, in the end, lead to success or failure.

For a biblical illustration of the concept of external efficacy, consider Joshua’s battle against the Amorites. It was a difficult battle and Joshua’s fighters were about to win. The sun was going down and the warriors got tired. Feeling that there was not enough time to complete the battle, they slowed down, letting their enemies recuperate. It was at this critical point that Joshua commanded the forces of nature: “Sun, stand thou still upon Gibeon; and thou, Moon, the valley of Aijalon” (Joshua 10:13). Joshua’s command signaled a reversal of conditions on the battlefield. His soldiers avenged themselves upon the Amorites and won the battle. It was not the actual prolonging of the day, many say, which led to the outcome; a belief in a stationary sun and a stationary moon was necessary for this biblical effort to attain victory. This narrative illustrates how beliefs about the effectiveness of external conditions can augment our power. It exemplifies the effect of *external efficacy* on performance.

To recapitulate, in this paper we distinguish between internal efficacy and external efficacy. Internal efficacy refers to individuals’ beliefs that they have the inner resources, such as talents, skills, or willpower, needed to perform a task successfully. External efficacy refers to individuals’ beliefs that relevant outside resources that are instrumental for achieving success are available to them, such as tools, equipment, favorable working conditions, or a superior starting point. A comprehensive view of the role of efficacy in affecting motivation and subsequent performance should encompass both internal and external sources of efficacy, including various variants of the latter. The present paper provides an empirical investigation of the effects on performance of one variant of external efficacy, as distinct from internal efficacy. So far, studies of efficacy beliefs have examined internal efficacy and external efficacy separately. In particular, experimenters manipulated either internal efficacy or external efficacy and examined their effect on performance; however, none has demonstrated their combined effect. Thus, an important question is whether the internal–external distinction is necessary, or whether it is sufficient to talk about one type of efficacy

beliefs. This question is important because, as stated above, both the definition and the operationalisation of self-efficacy in Bandura's widely accepted approach (e.g. Bandura, 1997) do not make an internal–external distinction but emphasise the former meaning. Showing that the internal and external aspects of the concept have different relationships with performance would support the validity of the distinction between them. Thus, our major goal in the present study was to unambiguously distinguish between the concepts of internal and external efficacy by showing that the two kinds of beliefs have qualitatively different, though generally positive, effects on performance.

External Efficacy and Performance

In the present experiment we investigated a circumstantial aspect of external efficacy by manipulating actors' beliefs about the effectiveness of their starting position in a competition. We predicted that individuals led to believe that circumstances gave them an advantage (i.e. a superior starting point) would actually perform better, whereas individuals led to believe that circumstances disadvantaged them (i.e. they were given an inferior starting point) would perform worse. Such circumstantial concerns involve external factors not encompassed by internal efficacy or means efficacy, but they likewise may affect one's expectations for success, motivation to exert effort, and, in the end, lead to success or failure. We hypothesise that circumstantial efficacy affects motivation and performance in a manner similar to the way self-efficacy and means efficacy have been shown to affect it. Specifically, we hypothesised that: *Raising external efficacy boosts performance* (H1).

PROSPECT THEORY AND ADVANTAGE VERSUS DISADVANTAGE

This experiment afforded us an opportunity to apply a major tenet of prospect theory to motivation theory and to test it. Prospect theory (Kahneman & Tversky, 1979) distinguishes between decisions involving loss and decisions involving gain. Though the theory was originally developed for monetary choices, it was later extended to the study of attention, perception, and attitudes (e.g. Ganzach & Karsahi, 1995; Levin, Gaeth, Schreiber, & Lauriola 2002; Meyerowitz, & Chaiken, 1987). We invoked prospect theory's postulate concerning loss aversion (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981, 1991) which suggests that losses loom larger than gains, that is, that losses are more painful than gains, or that reactions to losses are stronger than reactions to gains.

Framing Effect: The Impact of How Position Difference is Phrased

In this experiment we manipulated external efficacy by informing competitors in a two-person game that one had an advantageous opening position or that one had a disadvantageous opening position, thus leading them to believe that there is a difference (inequality) in their positions. We now turn to focus on how this difference in positions was actually communicated to the two players—exactly how they were informed about it. Position difference can be communicated in an *advantage* frame, by using phrases such as “better than”, “superior to”, “more than”, etc. This same difference can be communicated in a *disadvantage* frame, by using phrases such as “worse than”, “inferior to”, or “less than”, etc. Drawing on prospect theory’s analysis of the difference between perceptions of gains (advantage in our case) and losses (disadvantage), we hypothesised that communicating the position differences in disadvantage terms (“Position A is worse than Position B”) would have a larger effect on performance than communicating the difference in advantage terms (“Position B is better than Position A”). That is, we hypothesised that *the effect of perceived position inequality on the outcome of the competition would be larger in a disadvantage frame than in an advantage frame* (H2).

The Relative Impact of Advantage versus Disadvantage

Going beyond the simple prediction that perceived advantage or disadvantage affects performance, we proceed to ask whose efficacy beliefs are more important in determining the outcome of a competition: those of the advantaged or those of the disadvantaged party. Drawing on prospect theory, we focused on external efficacy beliefs as follows: Even when the parties share the same perception about the difference in their positions, the likely meaning of this difference for the disadvantaged party is that of loss, as implied by the notion of *disadvantage* (hinder, detriment), whereas for the advantaged party such a difference is likely to mean gain (as in benefit or superiority). Based on the idea that loss looms larger than gain we hypothesised that *the external efficacy beliefs of the disadvantaged party would have a larger impact in determining the outcome of the competition than would the external efficacy beliefs of the advantaged party* (H3). The rationale behind H3 is that because losses loom larger than gains, when efficacy beliefs relate to a perception of a likely loss, as in a disadvantageous starting position, they more strongly influence attention and behavior than when they relate to a perception of a likely gain. Furthermore, we also expected that because the external efficacy beliefs of the advantaged party are less consequential, *her internal efficacy beliefs would have a stronger impact in determining the outcome of the competition relative to the internal efficacy beliefs of the disadvantaged* (H4). This hypothesis is consistent with the discounting principle in attribution theory: people tend to

discount a cause when an alternative cause for the relevant effect is available (Kelley, 1972). We extend this logic to suggest that when one type of efficacy belief becomes less (more) important, the other type becomes more (less) important. H4 is also consistent with a limited attention model in which individuals' attention is divided among thoughts (e.g. Engle, 2002; Shiffrin, 1976), leading us to infer that attention is divided between internal and external efficacy.

FADEOUT OF INITIAL EFFICACY BELIEFS

Consider now the two players competing with each other not once, but twice, maintaining the same initially defined "unequal" starting positions in both rounds. Will the effect of the initial efficacy beliefs on performance increase or decrease from the first to the second occasion (round)? Two contradictory hypotheses can be formulated regarding occasion effects. One relates to the cyclical relationships between efficacy and performance and their reciprocal causation (Lindsley, Brass, & Thomas, 1995): Because performance affects self-efficacy, which in turn affects performance, we might expect that the effect of initial efficacies will be accentuated in the second game (e.g. Bandura & Jourden, 1991; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990). However, such a spiral does not exist in a vacuum. The personal experience during the first game might serve as a reality check that weakens the effect of initial efficacies on performance in the second round. Players may realise that their starting positions did not make much of a difference, or that their assessment of their competence was inaccurate. This may result in fading of the initial efficacy levels (e.g. Ackerman, Kanfer, & Goff, 1995; Feltz & Mugno, 1983; Mitchell, Hopper, Daniels, George-Falvy, & James, 1994). Our next two hypotheses were based on this notion of fading. We hypothesised that *the effects of both initial internal efficacy (H5) and initial external efficacy (H6) fade out over time*. Thus, we predicted that the effect of both initial internal efficacy and initial external efficacy on the outcome of the second round would be weaker than their effects on the first round.

METHOD

Design and Sample

In this field experiment, 384 fifth and sixth graders in 12 classes of two schools participated. They were randomly assigned to 192 pairs. In each pair one participant was randomly assigned to an advantaged position (high external efficacy), and the other was assigned to a disadvantaged position (low external efficacy). Performance data—the outcome of the competition

(i.e. whether the advantaged or the disadvantaged won)—were collected at the pair level. In this respect note that the terms performance and outcome are used interchangeably in this study because the outcome of the competition manifests both competitors' joint performance.

An additional experimental manipulation was the manner in which position inequality was communicated to participants. For a random half of the pairs it was framed as "Position A is better off than position B" (advantage frame), and for the other half as "Position B is worse off than position A" (disadvantage frame). This is *advantage–disadvantage framing*. Perceived position inequality is independent of the advantage–disadvantage framing because each frame involves both an advantageous and a disadvantageous position. Perceived position inequality occurs whenever perceptions differ, regardless of whether the difference is framed in terms of gain (better off) or in terms of loss (worse off).

Procedure

The experiment took place in home classrooms, and lasted for two 50-minute sessions. The participants perceived the experimenter to be an expert in mind games, because she had served as a judge in an earlier mind games competition at their schools (see Bandura, 1977, for the importance of source credibility when using verbal communication to augment efficacy beliefs). She introduced herself as a representative of a company that specialised in developing educational mind games. She described "Abalone" and said that it was a game that would be used in the school enrichment program (it indeed was subsequently used), and explained the rules of the game. Abalone is a two-person board game that requires strategic thinking similar to that needed in checkers and chess. She administered a questionnaire for participants to complete which measured internal efficacy. Then they were randomly assigned to pairs, and each participant in each pair was randomly assigned to one of two starting positions.

The perceived position inequality treatment was delivered next. The experimenter announced that one position had an advantage (or a disadvantage, depending on the framing condition). She showed a board with pre-arranged white and black pieces and explained:

As you can see, in this game the two starting positions are not identical as they are in other mind games. These positions not only look different, they are in fact not equal. The position of the player using black pieces is much better [worse] than the position of the player using white pieces. He or she has a considerable advantage [disadvantage] which he or she can utilise [needs to overcome]. The advantage [disadvantage] results from the difference in the patterns of black and white pieces, which gives an advantage [disadvantage] to the player using black pieces in both offense and in defense.

Black and white were counter-balanced with regard to starting position and advantage–disadvantage.

After delivering the treatment, the experimenter drew the two starting positions on the blackboard, gave one game set to each pair, and asked them to place the pieces on the boards according to the positions drawn on the blackboard. After making sure that all the starting positions were correctly arranged, the experimenter administered a questionnaire which measured external efficacy. Participants completed it, and then played the first round for about half an hour on average. When the round was over, the experimenter recorded the result for each pair in terms of who won the game, the advantaged or the disadvantaged party. She then asked the pairs to arrange the same starting positions one more time. They played the second round and were dismissed. Throughout the whole experiment participants were very involved in the game and excited about their own achievements. Two weeks later we conducted a debriefing session.

Measures

External efficacy was measured with a five-item scale, using Eden et al.'s (2010) instrument. A short introduction stated: “Different starting positions contribute in varying degrees to winning the game. Please indicate the extent to which each of the following statements is true of your starting position.” This opening was followed by the flush, accentuated words, “My starting position:” with five items to be rated on a 5-point Likert scale ranging from disagree (1) to agree (5). Examples are “. . . provides me with a real advantage in the game”, “. . . makes it easier to attack my competitor”. Coefficient α was .86.

Internal efficacy was measured with a six-item scale (Maurer & Andrews, 2000; Maurer & Pierce, 1998). The questions were introduced with this statement: “People have different beliefs about their ability to perform in various areas. Think about your efficacy in mind games. For each of the following items, indicate the extent to which the statement is true for you.” Examples are “I usually win this kind of game”, “I can easily win many mind games”. Items were to be rated on a 5-point Likert scale ranging from disagree (1) to agree (5). Coefficient α was .77.

Performance: The Outcome of the Game. At the end of each round, the experimenter recorded the dichotomous outcome of the game for each pair. The value of this variable was 1 if the expected outcome occurred, that is, if the advantaged competitor won, and 0 if the disadvantaged competitor won.

Analysis

The unit of analysis was the pair, because each participant's performance depended on, and could not be assessed independently of, the performance of her counterpart. Each unit, or observation, had two independent variables associated with the advantaged party (internal and external efficacy of the advantaged party) and two independent variables associated with the disadvantaged party (internal and external efficacy of the disadvantaged party). In addition, each observation had a binary independent variable—advantage vs. disadvantage frame, and a binary dependent variable—whether the advantaged party won or lost. Because the unit of analysis was the pair, the degrees of freedom for hypothesis testing were based on the number of pairs rather than on the number of participants.

RESULTS

Manipulation Check

The mean external efficacy of the advantaged players was far greater than the mean external efficacy of the disadvantaged players [4.14 ($SD = .41$) vs. 2.14 ($SD = .51$), respectively, $t(190) = 36.00, p < .01$], indicating that the treatment had the intended effect on the chief independent variable. On the other hand, the mean levels of internal efficacy among advantaged and disadvantaged players were similar [4.09 ($SD = 0.68$) vs. 3.98 ($SD = 0.60$), respectively, $t(190) = 1.63, ns$], indicating that random assignment produced pre-experimental equivalence in internal efficacy, as intended. Finally, consistent with the idea that internal efficacy and external efficacy are two independent constructs, the correlations between the two were low and non-significant. For the advantaged this correlation was 0.10 and for the disadvantaged it was 0.12.

Treatment Effects

Table 1 presents the effects of the treatment and of frame on performance. The entries are the proportions of games in which the advantaged party won (or the disadvantaged party lost), namely, the proportions of the expected outcomes. Under the null hypothesis, the expected proportion of wins would be .50. The results indicate that across conditions and occasions, the advantaged party won 64 per cent of the matches. Furthermore, in all four cells the proportions were higher than .50, indicating that raising and lowering external efficacy affected performance. In the first game, 68 per cent of the advantaged parties (across both framings) won, and in the second game, 60 per cent. Both proportions differed from 50 per cent, $\chi_{(1)}^2 = 24.10, p < .01$, and $\chi_{(1)}^2 = 6.80, p < .01$, respectively. Thus, H1 was supported.

TABLE 1
Proportions of Games with Expected Outcome by Occasion and Frame

	<i>Game 1</i>	<i>Game 2</i>	<i>Marginals</i>
Advantage frame	.63	.55	.59
Disadvantage frame	.73	.65	.69
Marginals	.68	.60	.64

Note: Expected outcomes occurred when an advantaged party won (or a disadvantaged party lost). The number of pairs was 99 in the advantaged frame and 93 in the disadvantaged frame.

TABLE 2
Regression of Performance on Efficacy Beliefs

<i>Efficacy predictor</i>	<i>1st Performance outcome</i>	<i>2nd Performance outcome</i>
Internal efficacy Advantaged party	0.96*** (0.19)	0.23 (0.16)
Internal efficacy Disadvantaged party	-0.46** (0.18)	0.05 (0.15)
External efficacy Advantaged party	0.22 (0.20)	0.27 (0.17)
External efficacy Disadvantaged party	-0.37* (0.19)	-0.64*** (0.18)
Model $\chi_{(4)}^2$	57.71	28.83
Generalised R^2	.33	.19

Note: Coefficients of two logistic regression models with standardised independent variables. Numbers in parentheses are standard errors.

Consistent with H2, the percentage of games in which the advantaged player won was higher in the disadvantage frame than in the advantage frame by 10 per cent (73% > 63%). Consistent with H6, the percentage of games in which the advantaged player won was higher in the first than in the second game (63% > 55%). A 2 (frame) \times 2 (occasion) mixed categorical data model with repeated measures on the second factor revealed a significant effect of frame on performance, $\chi_{(1)}^2 = 3.10$, $p < .04$, one-tailed, a significant effect of occasion, $\chi_{(1)}^2 = 5.10$, $p < .02$, and no significant interaction, $\chi_{(1)}^2 = 0.10$, $p > .90$.

The Effect of Measured Efficacy Beliefs on Performance

Table 2 presents logistic models of the effects of internal and external beliefs of the advantaged and the disadvantaged parties on the outcomes of the first and second games. Note that with regard to the second outcome, this was a

“black box” model, because this analysis did not consider the likely mediation of the outcome of the first game on the outcome of the second game. Because the coding reflected whether the outcome was expected, that is, the outcome variable was coded 1 when the advantaged party won and 0 when the disadvantaged won, the signs of the coefficients in Table 2 indicate whether the effect of efficacy on performance was positive or negative. Thus, for example, a negative sign of the disadvantaged party’s external efficacy on performance indicates that the higher the external efficacy of the disadvantaged party, the greater the probability that he won the game. Independent variables were standardised.

The pattern of results in columns 2 and 3 of Table 2 suggests that, consistent with H3, the external efficacy of the disadvantaged party had a larger effect on performance than that of the advantaged party in both rounds ($0.37 > 0.22$ and $0.64 > 0.27$). Consistent with H4, the opposite was true for internal efficacy ($0.96 > 0.46$ and $0.23 > 0.05$). In addition, the results are also consistent with H5, because the effects of both parties’ internal efficacy on the first outcome were stronger than their effects on the second outcome ($0.96 > 0.23$ and $0.46 > 0.05$). However, they do not support H6; the effects of both parties’ external efficacy on the first outcome were not stronger than their effects on the second outcome ($0.22 < 0.27$ and $0.37 < 0.64$).

To test H4, H5, and H6, we performed a repeated measures analysis by regressing our two measures of performance on both parties’ internal and external efficacy beliefs (see Edwards, 1972, p. 124, for the use of such an analysis with dichotomous dependent variables). The results revealed significant main effects for the advantaged party’s internal efficacy [$F(1, 185) = 19.20, p < .0001$] and the disadvantaged party’s external efficacy [$F(1, 185) = 12.21, p < .001$], but not for the disadvantaged party’s internal efficacy [$F(1, 185) = 1.93, ns$]—or the advantaged party’s external efficacy [$F(1, 185) = 2.82, ns$]. These results support H3 and H4. In support of H5, the analysis also detected significant interactions of both parties’ internal efficacy with occasion [$F(1, 185) = 13.5, p < .001$, and $F(1, 185) = 6.72, p < .01$, respectively]. H6 was not supported because the interactions of both parties’ external efficacy with occasion were not significant [$F(1, 185) = 0.12, ns$, and $F(1, 185) = 3.36, ns$, respectively].

DISCUSSION

Our experimental findings demonstrated the effect of external efficacy on performance in a competitive situation, confirmed its distinctiveness from internal efficacy, and demonstrated the effects of perceived advantage and disadvantage on achievement. In this experiment we tested the extent to which beliefs about internal and external resources determine performance.

The results indicated that inducing external efficacy influenced performance (H1), that it influenced performance more when framed in terms of a disadvantage (H2), and that it particularly influenced the disadvantaged party (H3). We also found that the effect of the disadvantaged party's internal efficacy was relatively weak (H4), which implies that low external efficacy induced by perceived disadvantage is not only detrimental to performance, but it is also difficult to overcome by high internal efficacy. This latter finding was only partially experimental, because it involved an interaction between a measured variable (internal efficacy) and an experimental treatment (induced external efficacy). Thus, one direction for future research is to manipulate external efficacy and internal efficacy orthogonally. Our results suggest that internal efficacy will have a weaker effect on performance when external efficacy is low.

With regard to the performance of an individual actor we may wonder which kind of efficacy belief has a stronger effect on the actor's own performance, internal or external efficacy. This question should be addressed in terms of an interaction, because efficacy beliefs—particularly external efficacy—are inherently context-dependent. The question is problematic even in a specific context (e.g. a particular board game) because the effect of external efficacy is a direct consequence of the strength of the experimental treatment, for example, on how the difference in starting positions is conveyed to participants. Nonetheless, meaningful comparisons between the impacts of internal and external efficacy can be based on the patterns of differences involving these two types of efficacy such as their effects on the party (advantaged or disadvantaged), or the way they depend on occasion. Further research with orthogonal manipulation of both internal efficacy and external efficacy can shed light on this issue by applying similar treatments to both beliefs in a 2-by-2 design.

The present experiment supports the validity of the notion of external efficacy and its distinctiveness from internal efficacy. More research is needed to enhance the construct validity of external efficacy, so that it encompasses other relevant resources external to the self in a given task. When task performance involves other people, or when task performance (winning or losing) depends on other people, as in the present experiment, a critical aspect of external efficacy is the appraisal of the resources that the other party brings to the situation. In a competitive context, particularly in a zero-sum game, external efficacy depends predominantly on one's appraisal of the other's competence; competing against a strong player is essentially different from competing against a weak player. To broaden the construct of external efficacy, we recommend measuring or manipulating perceptions of the counterpart's competence in future research.

On the other hand, perceptions of advantage or disadvantage are important not only in situations that involve other people. To increase the gener-

alisability of our findings to other types of situation we need to test effects of initial advantage and disadvantage on solo performance that does not depend on others and that does not take place in a competitive context. The unit of analysis in this kind of study will be the individual rather than the pair, which will simplify the interpretation of results. One efficient way to study this would be to make external efficacy a within-participant factor, having participants perform in two objectively similar but perceptually different situations. Furthermore, generalisability would be enhanced by studying the effects of relative advantage not only on novel performance as in the present experiment, but also on routine performance, because different mechanisms operate in novel versus routine tasks regarding formation and change of efficacy beliefs (Gist & Mitchell, 1992).

Self-efficacy is a central concept in the behavioral science literature. Though its original definition encompassed the individual's capacity to mobilise resources of all kinds, the prevalent usage overemphasises inner predispositions and underemphasises beliefs about environmental facilitation or hindrances. The present experiment provides evidence for the importance of distinguishing between internal and external resources, and stresses the role of the latter under conditions of perceived inequality. Because inequality in external resources is ubiquitous, this research is relevant in demonstrating the complex consequences of perceived, as distinct from actual, inequality on individuals' achievement.

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