Available online at www.sciencedirect.com
ScienceDirect
Organizational Behavior and Human Decision Processes 102 (2007) 95–108
ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES
www.elsevier.com/locate/obhdp

Rankings, standards, and competition: Task vs. scale comparisons ☆

Stephen M. Garcia [a,*], Avishalom Tor [b,*]

[a] University of Michigan, Ann Arbor, MI, USA
[b] University of Haifa, Haifa, Israel

Received 1 August 2005
Available online 8 December 2006

Abstract

Research showing how upward social comparison breeds competitive behavior has so far conflated local comparisons in *task* performance (e.g. a test score) with comparisons on a more general *scale* (i.e. an underlying skill). Using a ranking methodology (Garcia, Tor, & Gonzalez, 2006) to separate task and scale comparisons, Studies 1–2 reveal that an upward comparison on the *scale* (e.g. being surpassed in rank), rather than in the mere *task* (e.g., being outperformed), is necessary to generate competition among rivals proximate to a standard (e.g. ranked #3 vs. 4, near "the top"); rivals far from a standard (e.g. ranked #203 vs. 204), on the other hand, still tend to cooperate. Study 3 illustrates this finding with player trades in Major League Baseball. Study 4 further shows how an implicit *scale* comparison, instead of the commonly assumed explicit *task* comparison, may account for those classical competition findings in the literature. Study 5 then reveals how scale ranking becomes all important in the proximity of a standard, leading rivals to tolerate even an upward *scale* comparison to increase their proximity to the standard. Implications for the increasingly popular "forced ranking" management systems (e.g., at *General Electric*) are also discussed.

Keywords: Decision making; Choice behavior; Social comparison; Competition; Rankings; Behavioral economics

Introduction

Competitive behavior is a common consequence of social comparison processes (Festinger, 1942; Festinger, 1954; Hoffman, Festinger, & Lawrence, 1954; Whittemore, 1924, 1925), and researchers have shown that the relationship between upward comparison and competitive behavior depends on the *relevance* of the dimension on which the comparison occurs and the *commensurability* and *closeness* of the comparison counterparts (e.g., Goethals & Darley, 1977; Tesser, 1988, 1980). An extensive set of studies by Garcia et al. (2006) further reveals that the intensity of competition among rivals also depends on an additional variable—namely, their *proximity to a meaningful standard*. This impact of standards on competitive behavior holds, moreover, even while controlling for relevance, commensurability, and closeness. Using rankings to track rivals' proximity to a standard, Garcia et al. show that competitive behavior increases as decision makers get closer to a standard. Rivals ranked #3 and #4 on the Fortune 500 (near "the top" standard), for example, will tend to behave more competitively and become less willing to maximize joint gains. Rivals not proximate to a standard, such as those ranked #103 and #104, on the other hand, will tend to maximize joint gains even in

☆ We thank Max Bazerman, Ryan Estevez, Thomas Kochan, Joachim Kruger, Skip Lupia, Ilana Ritov, Lance Sandelands, and Kim Weaver for helpful comments. We also thank Lingling Zhang for statistical advice and seminar participants at Brown University, the Hebrew University of Jerusalem, Massachusetts Institute of Technology, and the University of Michigan. Special thanks to Elizabeth Brisson, Bryan Harrison, Mitch Meyle, Alex Radetsky, Shannon Riley, Bryan Spence, and Irina Yudovich for data collection assistance. This research was supported by a Horace Rackham Faculty Research grant to Stephen Garcia and a Senior Research Fellowship at the Olin Center for Law, Economics, and Business at Harvard Law School to Avishalom Tor.
* Corresponding authors.
E-mail addresses: smgarcia@umich.edu (S.M. Garcia) or ator@research.haifa.ac.il (A. Tor).

0749-5978/$ - see front matter © 2006 Elsevier Inc. All rights reserved.
doi:10.1016/j.obhdp.2006.10.004

the face of an upward comparison. This phenomenon generalizes, moreover, to meaningful standards other than the top rank, similarly making rivals at the bottom of the Fortune 500, for instance, more competitive and less willing to maximize joint gains.

Building on these findings, the present analysis advances our theoretical understanding of this social comparison—competition link by introducing a conceptual distinction between an upward comparison in the *task* versus an upward comparison on the *scale*, two levels of comparison that previous social comparison research from Festinger (e.g., Festinger, 1954) onwards has failed to disentangle (Garcia et al., 2006; Goethals & Darley, 1977; Tesser, 1988; Stanne, Johnson, & Johnson, 1999). *Task comparisons* concern relative outcomes or standing in specific tasks, such as the anticipated earnings of one's company versus a partner company in a joint business venture. *Scale comparisons*, on the other hand, such as those concerning companies' standing on annual earnings, occur at a more general level. Task performance and scale standing are related, but imperfectly correlated. For instance, the profits obtained by one's company from a given venture contribute to the company's annual earnings. Nevertheless, one's company may obtain lower profits from a given joint venture with another company and still surpass it in annual earnings. Task performance therefore provides a useful but uncertain proxy for ultimate scale standing, which is often unavailable.

Accordingly, we show that those standards that are capable of determining the intensity of competition may also be sufficiently powerful to redefine this competition altogether. In the proximity of standards, competitors may focus their social comparison concerns on their relative ranking on the *scale* (e.g., annual earnings) rather than on their relative outcomes in the mere *task* (e.g., venture earnings). We hypothesize that in the proximity of standards the more general and significant upward comparisons on the *scale* can trump upward comparisons in the *task*. This hypothesis clearly applies to those numerous situations involving explicit standards and ranking scales that permeate our culture, from the ranking of companies in *Fortune* magazine, through the ranking of academic institutions in *U.S. News & World Report*, to the ranking of employees at firms such as *General Electric* (Grote, 2005).

The significance of this hypothesis for social comparison theory is far broader, however, since it advances an important and hitherto unrecognized distinction between the *task* and *scale* levels of comparison processes. Moreover, the present analysis complements extant research on the psychological consequences of competitive events (McGraw, Mellers, & Tetlock, 2005; Medvec, Madey, & Gilovich, 1995) by shedding light on the antecedents of competitive behavior.

Upward comparison and competitive behavior

An upward social comparison of oneself to another who does better on an important dimension is especially painful (Brickman & Bulman, 1977; Tesser, 1988; Tesser & Smith, 1980) and can trigger competitive behavior. Festinger (1954, p. 126) already noted that "competitive behavior, action to protect one's superiority, and even some kinds of behavior that might be called cooperative, are manifestations in the social process of these pressures" to reduce discrepancies. In a classical experiment (Hoffman et al., 1954), after one of three participants began scoring considerably well on a performance task, the other two began to act in ways that were designed to prevent the higher scorer from gaining additional points. This competitive behavior apparently served to reduce the relative differences in performance between the higher scorer and the lower ones.

Social comparison researchers have identified a number of variables that impact the relationship between comparison and competitive behavior, most notably *relevance*, *commensurability*, and *closeness*. First, according to the *Self-Evaluation Maintenance Model* (Tesser, 1988, 2000), upward comparison can be painful and increase competitive behavior only when the dimension is relevant to the self. Otherwise, an upward comparison will not foster competition. Second, the *related attributes hypothesis* (Goethals, 1986; Goethals & Darley, 1977) posits that competition is greatest when a comparison counterpart is commensurate. For example, amateur tennis players will feel more competitive towards other amateurs than towards professional tennis players. Finally, the *closeness* of a comparison counterpart usually increases competitive feelings. Thus, when the dimension at hand is mutually relevant, competition between friends is typically greater than between strangers (cf., Jones & Rachlin, 2006). For example, Tesser and Smith (1980) paired acquainted or unacquainted individuals in an interactive word identification task and gave them information that made task performance appear either relevant or irrelevant to the valued dimension of verbal skill. The results showed that when performance appeared relevant to verbal skill acquainted participants gave more difficult clues to their partners than did unacquainted participants.

Competition in the proximity of a standard

Recent findings, however, reveal *proximity to a standard* as an additional variable that moderates the degree of competition between rivals (Garcia et al., 2006), independently of the relevance, commensurability, or closeness. For example, participants in one study were asked to imagine being a CEO of a nonprofit organization and choose whether or not to enter a joint venture with another nonprofit. With a joint venture, their

donations would increase 10% and the other nonprofit's 25%. Without a joint venture, donation income for both nonprofits would only increase 5%. Rankings were also used to manipulate proximity to a standard, as participants were told the two nonprofits were ranked either #1 and #2 (i.e., highly ranked) or #101 and #102 (i.e., intermediately ranked) in terms of donation income. This study found highly ranking participants less willing than those of intermediate rank to maximize donation income.

Garcia et al. (2006) also showed that the effect of proximity to a standard was not due to rational concerns about the potential long-term gains associated with being ranked #1, but rather a result of social comparison processes. For instance, in a follow-up study that provided no payoff information, highly ranked participants still reported they would harbor more competitive feelings toward their rival than did their intermediately ranked counterparts. The former also rated more highly the pain of social comparison they would experience if they were surpassed in rank than did the latter, directly implicating the role of this variable in generating competitive behavior.

Additional studies by Garcia et al. (2006) also found that the degree of competition linearly increases as rivals' degree of proximity to a standard increases (e.g., comparing #25 vs. 26, #12 vs. 13, #6 vs. 7, and #3 vs. 4); that competitive feelings and behavior similarly intensify in the proximity of various meaningful standards other than the top rank (e.g., #100 vs. 101 when the top 100 get a bonus, or #500 on the Fortune 500 vs. 501—just off the list); and that it matters little whether one is ranked just above or just below one's rival (e.g., #2 vs. 3 or #3 vs. 2). The results from two additional studies further showed that proximity to a standard has a direct impact on the basic "unidirectional drive upward"—that is, on the importance of doing well. Garcia et al. (2006) therefore reject the notion that people become more competitive in the proximity of a standard because the perceived difference between high ranks, for instance, appears much larger than the difference between intermediate ranks.

Untangling task and scale comparisons

Social comparison in the shadow of standards generates competitive behavior, but comparison processes may lead to competition on two different levels—in the immediate *task* at hand and on the more general *scale* that defines the standard. As mentioned earlier, comparisons in the *task* concern relative outcomes in specific tasks, such as individuals' relative performance on a test or the anticipated earnings of one's company versus another company in a joint business venture. On the other hand, comparisons on the *scale*—that is, on the metric that defines the standard—occur at a more general level. Such comparisons may concern, for instance, individuals' general verbal skill or companies' annual earnings.

Social comparisons frequently involve comparisons both in the task and on the scale, although comparisons on the scale may be neither explicit nor always distinct from comparisons in the task. For instance, classical competition studies—such as Hoffman et al..'s (1954) performance task or the later Tesser and Smith (1980) "verbal skill" task—did not distinguish upward comparisons in the specific task from the upward comparisons on the scale that participants' relative task performance implied. Thus, Tesser and Smith's (1980) participants may have acted competitively in the face of threatening comparisons in the test task they were given, because of the implications for their relative standing on the more general and important underlying verbal skill.

The Garcia et al. (2006) ranking studies described above, on the other hand, make the distinction between the task and scale levels more readily apparent. At one level, participants wishing to maximize profits were faced with a certain upward comparison in the *task*, such as getting paid less than their rival. At another level, however, they were faced with the threat of an upward comparison on the ranking *scale* itself—that is, with the possibility of being surpassed in rank. Nevertheless, the Garcia et al.'s (2006) studies, like social comparison research more generally, still conflated the effects of the task and scale levels. In their studies, an upward comparison in the task always implied a threat of an upward comparison on the scale. For instance, a decision to forego profit maximization to avoid an upward comparison in the task also avoided the risk that the rival would surpass the self on the ranking scale of total earnings.

This pervasive confounding of task and scale comparisons in the literature raises a number of intriguing questions. What would happen, for instance, if an upward comparison in the task were to pose no scale threat? Would social comparison concerns at the level of the task alone suffice to generate competitive behavior at the expense of profit maximization, or would a threat to one's relative standing on the scale itself be necessary to generate such competitive behavior?

If the accepted wisdom on upward comparison is taken to suggest that an upward comparison in the task should suffice to generate competitive behavior (Festinger, 1954; Tesser, 1988; Stanne et al., 1999), we disagree. Specifically, we hypothesize that the dramatically increased competitiveness exhibited by Garcia et al.'s (2006) participants in the proximity of standards may reflect a shift among highly ranked rivals to competition over relative standing on the very ranking *scale* from competition over relative standing in the mere *task* alone. We thus propose that in the proximity of a standard the threat of an upward comparison on the scale,

rather than in the task, becomes the main facilitator of competitive behavior. Farther away from the standard, on the other hand, where the intensity of competition diminishes, neither upward comparisons in the task nor upward comparisons on the scale are sufficiently threatening to incite competition at the expense of profit maximization.

Overview

Using a decision-making methodology, we examined whether competitive behavior occurs following an upward comparison in the *task* that is either coupled or not coupled with an upward comparison on the *scale*. We predicted that rivals in the proximity of a standard (e.g., ranked #2 and #3) would be less willing to accept an upward comparison in the *task* (e.g., less willing to trade disadvantageous inequality for extra profit), only when it coincided with an upward comparison on the *scale*. Rivals who are far from a standard (e.g., #202 and #203), however, would accept an upward comparison in the *task* for extra profit, regardless of whether it coincided with an upward comparison on the *scale*. To ensure that rivals were commensurate (Goethals & Darley, 1977; Wheeler, 1966), paired rivals always occupied two contiguous ranks.

Studies 1 and 2 separated task and scale comparisons and tested our main hypothesis, using the tradeoff between profit and inequality as a measure of competition (e.g., Bazerman, Loewenstein, & White, 1992; Garcia, Tor, Bazerman, & Miller, 2005). Study 3 tested the hypothesis using field data on the willingness to trade players in Major League Baseball. Study 4 extended the task versus scale results of Studies 1–3 empirically to link them to classical social comparison research, suggesting that it is in fact the upward comparison on the scale, rather than in the mere task, that generates competitive behavior. Finally, Study 5 tested the hypothesis that competitors proximate to a standard will even tolerate an upward comparison on the scale, as long as it improves their absolute scale standing by bringing them closer to the standard.

Study 1: Task vs. Scale Comparisons

While competitive behavior is manifested in numerous ways, the present analysis builds on a research stream that uses a decision making methodology to examine competitive behavior through choices between alternative payoff structures (e.g., Axelrod & Dion, 1988; Brickman, 1975; Kelly & Thibaut, 1978; Messick & Sentis, 1979; Messick & Thorngate, 1967; Turner, Brown, & Tajfel, 1979). Specifically, we examine how individuals trade off social comparison concerns of disadvantageous inequality against extra profit (Bazerman et al., 1992; Bazerman, Schroth, Shah, Diekmann, & Tenbrunsel, 1994; Bazerman, White, & Loewenstein, 1995; Blount & Bazerman, 1996; Garcia et al., 2005). In a typical study using this methodology, participants make hypothetical choices between being paid an amount equal to that paid to another individual (e.g., self—$500/other—$500) and a more lucrative but disadvantageously unequal amount (e.g., self—$600/other—$800). Individuals who willingly forgo social comparison concerns for extra profit choose the latter payoff (Bazerman et al., 1992), whereas competitive behavior is manifested in the profit-sacrificing choice of the suboptimal, but equal, payoff option.

Study 1 disentangles the task and scale levels of comparison, by manipulating the presence of an upward comparison on the *scale* while holding fixed the upward comparison in the *task*. Study 1 thus tested the prediction that commensurate rivals who are proximate to "the top" standard (e.g., ranked #2 and #3) will maximize profits less often than rivals ranked farther away from this standard (e.g., #202 and #203), but only when the upward comparison in the task coincided with an upward comparison on the scale. We also predicted that when the comparison in the task does not coincide with the comparison on the scale, rivals will behave more cooperatively and maximize profits, regardless of proximity. In the present study, the task concerned the percentage increase in earnings, while the scale referred to one's overall tournament ranking.

Participants

A total of 88 undergraduates from the University of Michigan participated in a survey. A total of 20 were recruited at the library. An additional 68 were recruited by e-mail from a larger pool of 200 e-mail addresses which were randomly selected from the student directory. The response rate was approximately 32 percent.

Procedure

In a mixed-factorial design, participants were assigned to either a *scale comparison condition* or a *no scale comparison condition*. In a survey entitled "Poker Strategy," participants in the *scale comparison condition* read, "Imagine that you are playing in a one-day poker tournament with 500 players. Before the final round, you are deciding whether or not to practice with one of your rivals." Participants then saw two options: "Strategy A: if you decide not to practice, your tournament earnings will increase by 5% and your rival's by 5%—OR—Strategy B: if you practice with your rival, your tournament earnings will increase by 10% and your rival's by 25%. However, your rival *will* surpass you in the rankings." At this point, participants responded to two randomly ordered questions that varied the rank

(a within-subject factor): "If before the final round your rank is #1 [#101] in tournament earnings and your rival's is #2 [#102], which strategy would you pursue?" Participants in the *no scale comparison condition* read an identical scenario, except that Strategy B stated that their relative standing on the scale was not in jeopardy.

Results and discussion

We collapsed the data across administration sites because it made no difference whether the participants were recruited in person or online (VENUE × SCALE × RANK: $\chi^2(1) = 0.2$, $p = .89$). To test our prediction that competitive behavior would increase with the rivals' proximity to "the top" standard when the rivals' relative standing on the scale was threatened but not when the rivals' relative standing was not in jeopardy or when the rivals were far from the "the top," we conducted a binary logistic regression with the following contrast weights (Rosenthal & Rosnow, 1991): 3 (*scale comparison—high ranking condition*), −1 (*scale comparison—intermediate ranking condition*), −1 (*no scale comparison—high ranking condition*), and −1 (*no scale comparison—intermediate ranking condition*). Indeed, the logistic regression was significant (*B*-value = −.58, *Wald* = 34.1, $p < .001$) and consistent with the prediction. When faced with an upward comparison on the scale, only 25 percent of the participants maximized joint gains when they and their rivals were ranked #1 and #2, compared to 79 percent when they and their rivals were ranked #101 and #102. A follow-up planned comparison on this latter pattern was significant ($\chi^2(1) = 28.2$, $p < .001$). However, in the absence of a scale threat, participants uniformly behaved more cooperatively, with 74 percent maximizing joint gains when ranked #1 and #2 and 77 percent when ranked #101 and #102. A follow-up planned comparison showed no significant difference ($p > .79$). See Fig. 1. These findings suggest that an upward comparison on the scale, rather than in the task alone, is a necessary precondition for competitive behavior in the proximity of a standard. When a standard is not proximate, however, its influence diminishes altogether and rivals are more willing to cooperate to maximize joint gains even in the face of an upward comparison on the scale. While Study 1 illustrates the central hypothesis in a hypothetical game of poker, Study 2 attempts to demonstrate the effect in a more worldly business context.

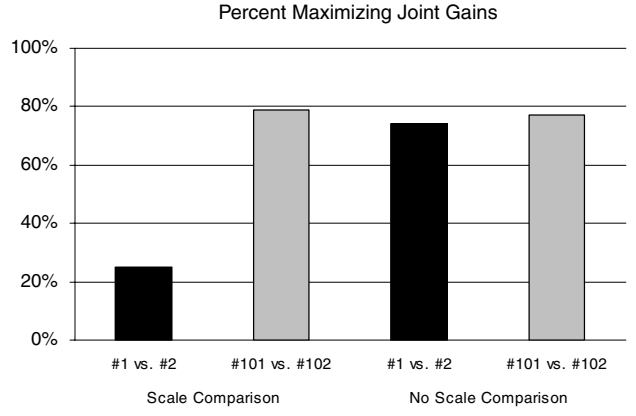

Fig. 1. Study 1: Percent maximizing joint gains by scale threat and rankings.

Study 2: Threat of a Scale Comparison

While Study 1 tested our basic hypothesis regarding the role of scale comparisons with the common top-of-the-scale standard, Study 2 generalizes these findings in two respects. First, it shows standards elsewhere on the scale to exert an effect similar to that obtained near the top. Second, it reveals that the *threat*—that is, a possibility—of an upward comparison on the scale suffices to generate competitive behavior in the proximity of a standard; a certain upward comparison on the scale is not necessary. Study 2 manipulated the threat of an upward comparison on the scale in the business context of the Fortune 500. When relative scale standing is in jeopardy, we hypothesized, rivals proximate to a standard—whether highly ranked (e.g., #2 vs. #3) or near another valued standard (e.g., #500 on Fortune 500 vs. #501—just off the list), will behave more competitively on the task than rivals not proximate to a standard. However, when relative scale standing is not threatened, individuals will tend to tolerate upward comparisons in the task and behave more cooperatively across scale locations.

Participants

A total of 42 undergraduates from the University of Michigan participated in an online study. The response rate was approximately 28 percent from a pool of 150 randomly selected e-mail addresses.

Procedure

In a mixed-factorial design, participants in the between-subjects factor were assigned to either a *scale threat* or a *no scale threat condition*. In a survey entitled "Business Strategy," participants in the *scale threat condition* read, "Imagine that you are the CEO of a company on the Fortune 500—an honor that has brought your company recognition—and you are thinking about a possible joint venture with a rival company. Profits will depend on whether or not you enter the joint venture: Strategy A: without a joint venture, your company's profits will increase by 5% and the rival's profits will increase by 5%—OR—Strategy B: with a joint venture,

your company's profits will increase by 10% and the rival's profits will increase by 25% (and this WILL threaten your rank relative to your rival)." At this point, participants responded to three randomly ordered questions varying the within-subjects factor of rank: "If your company is RANKED #2 [#231] [#500] on the Fortune 500 and the rival company is RANKED #3 [#232] [#501, making it off the list], which option would you choose?" Participants then chose "Strategy A" or "B." Participants in the *no scale threat condition* read the identical scenario, except that Strategy B was revised to say "(and this WILL NOT in any way threaten your rank relative to your rival)."

Results and discussion

To test our prediction, we conducted a binary logistic regression with the following contrast weights (Rosenthal & Rosnow, 1991): 2 (*scale threat—high ranking condition*), −1 (*scale threat—intermediate ranking condition*), 2 (*scale threat—bottom ranking condition*), −1 (*no scale threat—high ranking condition*), −1 (*no scale threat—intermediate ranking condition*), and −1 (*no scale threat—bottom ranking condition*). The pattern was significant (*B*-value = −.67, *Wald* = 22.5, $p < .001$) and consistent with our prediction. In the *scale threat condition*, the predicted U-shaped pattern emerged: only 35 percent in the *high rankings condition* and only 13 percent in the *bottom rankings condition* maximized profit, compared to 70 percent in the *intermediate rankings condition*. Planned comparisons also revealed that the high rankings ($\chi^2(1) = 5.58$, $p < .05$) and bottom rankings ($\chi^2(1) = 15.2$, $p < .001$) were both significantly different from the intermediate rankings condition. However, when the threat of upward comparison on the scale was removed in the *no scale threat condition*, participants tended maximize joint gains across all ranking levels: a total of 68 percent in the *high rankings*, 79 percent in the *intermediate rankings*, and 63 percent in the *bottom rankings condition* maximized profit. These ranking levels were not significantly different from each other (all p's $> .28$), and planned comparisons showed further that the *high rankings* in the *scale* and *no scale threat conditions* were significantly different from each other ($\chi^2(1) = 4.7$, $p < .05$), as were the *bottom rankings* in these two conditions ($\chi^2(1) = 11.4$, $p < .01$). See Fig. 2.

The results of Study 2 therefore suggest that proximity to any meaningful standard can generate competitive behavior, and that a mere threat—rather than a certainty—of an upward comparison on the scale suffices to trigger competitive behavior when rivals are proximate to a standard. At the same time, rivals distant from a standard behave more cooperatively in the face of upward comparison on either task or scale. Moreover, these findings are not explained by demand characteristics in the design of Study 2 (i.e., the emphasis on "WILL"/"WILL NOT"), since we observe systematic differences *across* the ranking conditions.

Importantly, one might perceive the results of Study 2 to have been driven by participants' fairness-oriented concerns for equality (e.g., De Dreu & Boles, 1998; Mclean Parks et al., 1996; Pillutla & Murnighan, 2003), when faced with the choice between an equal payoff versus a disadvantageously unequal one. However, this perception is misguided for a number of reasons. First, the trade off measure used in Studies 1–2 was previously validated by Garcia et al. (2006), who carefully linked the tradeoff of profit and disadvantageous inequality with competition through multiple measures, such as ratings of the pain of social comparison and ratings of competitive feelings. Second and related, similar

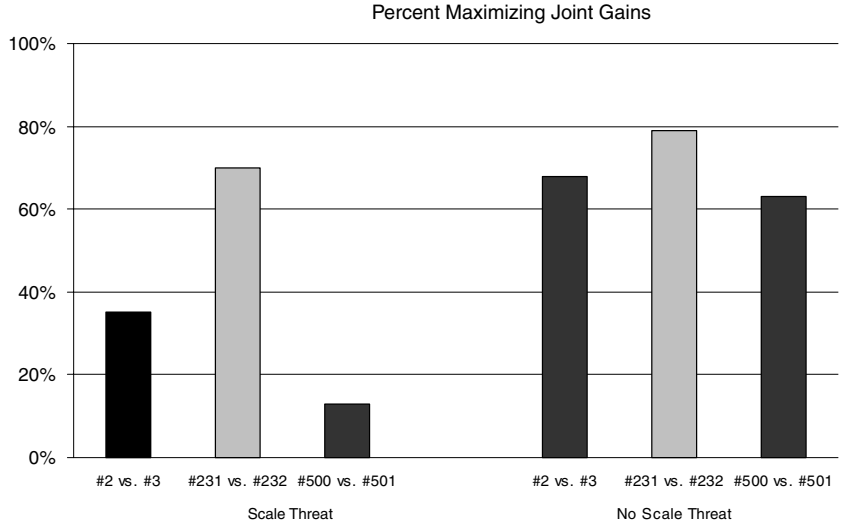

Fig. 2. Study 2: Percent maximizing joint gains by scale threat and rankings.

tradeoffs were correlated with ratings of the pain of social comparison in individual judgments of competitive situations between groups as well (Garcia et al., 2005). Third, it would be difficult to argue that equality norms become especially salient under the scale threat conditions of Study 2. In this study, *threat* was the between-subjects factor, while *rank* constituted the within-subjects factor. The results we observe, however, reveal differential responses across the three levels of rank in the presence of scale threat, a pattern that a non-competitive concern with equality norms would hardly predict.

Nevertheless, Study 3 harnesses a real-world measure of competition—namely, the willingness to trade with competitors—to establish further the robustness of our experimental findings. This study also provides the additional benefit of extending our individual-level findings to the organizational decision making of baseball teams.

Study 3: Competition in the (baseball) field

The preceding studies show that people become more competitive in the proximity of a standard, but only when there is the threat of upward comparison on the scale, rather than in the task alone. Study 3 tests this hypothesis using real world data from Major League Baseball. Baseball teams trade players annually, and the more outstanding players among these clearly pose a greater threat to the trading team's ultimate scale standing ("Scale Threat Players") than their other traded peers. We predicted that highly ranked teams will be less likely to trade *high scale threat* players with commensurate rivals—that is, with other highly ranked teams—compared to teams that are not highly ranked, which were expected to be less concerned with scale threat. We therefore expected to observe an inverse correlation between the rank of the old team (when higher ranks are assigned lower numerical values) and the absolute distance to the new team. In other words, the higher the rank of the old team, the greater the absolute distance in rank between the old and the new team was expected to be. For instance, a #1 ranked team will be more likely to trade away a "star" *high scale threat* player to another team that is ranked #20 than to a team ranked #2. On the other hand, we also predicted that this inverse correlation between old team rank and absolute distance to the new team will disappear for those *low scale threat* players, which even highly ranked teams should be willing to trade with each other.

Method

Data. We collected data on the placement of traded players from November 10, 2005 through February 28, 2006. This interval—the 2005 post-season through 2006 pre-season—spans the timeframe where 2005 season player performance statistics are most relevant (e.g., after the 2005 season statistics have been compiled and just before the tracking of new 2006 performance statistics began). The available data from ESPN.com and MLB4U.com included the name of the player's old team, name of the new team, transaction date, 2005 season earned-run average (if traded player was a pitcher), 2005 season batting average (if traded player was not a pitcher), trading context (post-season/early pre-season), and age. However, salary data for many of these traded players was undisclosed. We were also able to obtain the *ESPN Power Ranking* ("PWR") for the 30 teams in Major League Baseball for the 2005 season (from ESPN.com's Major League Baseball RPI Rankings; see ESPN, 2006), to determine the rank of the player's old and new team. Only those 76 traded players with at least one year of experience (and thus with 2005 performance statistics) were included in the analysis.

Scale threat. We used either the 2005 season earned-run average (ERA) or batting average as a proxy for *scale threat*, based on the assumption that players who performed extraordinarily well are those who pose such a threat. Players with substantially weaker performance were assumed to have minimal, if any, individual impact on team standing and therefore to pose *no scale threat*. We standardized the batting average (higher values mean better performance) and standardized as well as inversely coded the ERA (lower values mean better performance) to create a single *performance* index. To establish the presence or absence of scale threat as manipulated in our experimental paradigm, players who were in the top 33% in *performance* were designated *high scale threat*, whereas those in the bottom 33% in *performance* were considered *low scale threat*.

Distance to new team. To calculate the distance in rank from the old team to the new one for each traded player, we calculated the absolute value of the difference in rank between the old and new teams.

Results and discussion

We correlated the *rank of the old team* and *distance to new team* among the *high scale threat* and *low scale threat* players respectively, to test the hypothesis that highly ranked teams will be less likely to trade with other highly ranked teams under scale threat. Hence, the more highly ranked the team, the greater the predicted distance high scale threat players will travel to their new teams. The results indeed showed a significant inverse correlation between *rank of the old team* and *distance to new team* for this group of players ($r = -.46$, $p < .05$, $n = 21$), controlling for transaction date, measure of ability (ERA/batting average), trading context

(post-season/early pre-season), and age. This result reveals that highly ranked teams are less likely to trade those players who pose a threat to their standing on the ranking scale with other highly ranked teams. To test the prediction that this competitive trading behavior disappears under conditions of low scale threat, we conducted the same analysis among *low scale threat* players. There was no significant correlation between the *rank of the old team* and *distance* ($r = .13$, $p = .53$, $n = 23$), when controlling for the aforementioned variables.

While these results are consistent with the prediction, our measure for scale threat is inevitably imperfect. First, we operationalized the top and bottom 33% of players as high and low scale threat, respectively. The choice of any given percentage threshold for "high" and "low" threat is necessarily arbitrary, but was meant to dichotomize the trading context in which scale threat was present or absent, consistent with our experimental manipulations. Second, because better proxies were unavailable, we combined two sets of statistics, which were the most relevant for pitchers and batters respectively. Nevertheless, we readily acknowledge that there are different perspectives among baseball professionals and observers regarding whether the batting average, runners batted in (RBI), slugging percentage, or some combination of these variables best measures a batter's potential. Most importantly, we are not privy to the methods for evaluating "scale threat" that baseball managers and teams rely on, methods that may well involve a weighted formula that takes into account multiple seasons of play and any number of additional variables. It is precisely these subjective methods, however, that determine the trading preferences of managers and teams that contribute to the trading patterns we observe in the data. Finally, we were unable to control for traded players' salary figures, since this information is often publicly unavailable, and the commensurability of the rivals, since this data was based on actual trades. Despite these obvious limitations, however, we believe the results of Study 3 corroborate the proposition that, in the presence of scale threat, highly ranked teams become more competitive and thus less willing to trade high impact players with each other compared to intermediately ranked teams. At the same time, commensurate rivals are more willing to trade with each other low scale threat players, regardless of rank. Diehard baseball fans, of course, would not be surprised by our results: many Red Sox fans still lament the trading of Babe Ruth to the Yankees soon after the team's 5th World Series title in 1918.

Study 4: Implicit Scale Threat

While Studies 1 and 2 showed that upward scale comparison in the proximity of a standard leads to competitive behavior, Study 3 illustrated these dynamics in the real-world setting of Major League Baseball. We next integrate these findings with classical competition research. As mentioned earlier, many important studies on competition (e.g., Hoffman et al., 1954; Tesser & Smith, 1980) conflated the task and scale levels of comparison. Study 4 therefore recreated a classical competition condition in which paired rivals were made commensurate without explicitly providing ranking information, using a within-subjects design. We first examined whether participants would choose profit maximization in the face of a typical upward comparison that conflates the task and scale levels of comparison. Thereafter, participants were presented with additional information about their high ranking, faced with an upward comparison on the scale, and asked to choose a strategy. Finally, participants were asked to choose whether to maximize profits in the face of an upward comparison in the task alone, without the threat of a comparison on the scale.

This within-subjects design enabled us directly to test whether the increased intensity of competition is similar when task and scale are conflated compared to when upward comparison on the scale is explicitly present for rivals proximate to a standard. We also predicted this increased competition would be significantly greater than the competition observed when the upward comparison on the scale is removed and only an upward comparison in the task remains.

Participants

A total of 36 undergraduates from Michigan State University volunteered to participate in a survey conducted at the library.

Procedure

In a within-subjects design, all participants responded to a three-page survey about a modified version of the "Poker Tournament" scenario. The *classical competition condition* appeared on page 1 and underscored the commensurability of the rivals without mentioning rank: "Imagine that you are playing in a one-day poker tournament with 500 players. Before the final round, you are deciding whether or not to practice with your arch-rival. Your and your arch-rival's earnings are approximately equal just before this final round. Strategy A: if you decide not to practice, your tournament earnings will increase by 5% and your rival's by 5%—OR—Strategy B: if you practice with your rival, your tournament earnings will increase by 10% and your rival's by 25%." Participants then selected "Strategy A" or "Strategy B."

On page 2, the *scale comparison—high ranking condition* read, "Now suppose that, before the final round, you are told that you are ranked #3 in tournament

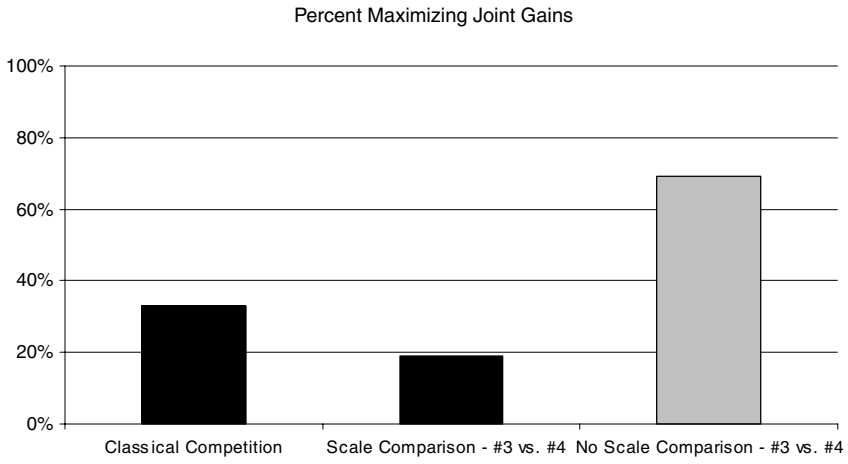

Fig. 3. Study 4: Percent maximizing joint gains by condition.

earnings, and your arch-rival is ranked #4...'' Strategy A also added, ''Your ranks will remain the same'' and Strategy B added, ''However, your rival will surpass you in the rankings.'' On page 3, the *no scale comparison—high ranking condition* read, ''Now suppose that, before the final round, you are told that you are ranked #3 in tournament earnings, and your arch-rival is ranked #4 but Strategy B will not affect your rank.'' Strategy B added the modification, ''However, your rival will NOT surpass you in the rankings.''

Results and discussion

To test our prediction, we conducted a binary logistic regression with the following contrast weights (Rosenthal & Rosnow, 1991): 1 (*classical competition condition*), 1 (*scale comparison—high ranking condition*), and −2 (*no scale comparison—high ranking condition*). The pattern of results was significant ($B\text{-value} = -.62$, $Wald = 16.9$, $p < .001$) and consistent with the prediction. Only 33 percent in the *classic competition* and only 19 percent in the *scale comparison—high ranking conditions* maximized profit, compared to 69 percent in the *no scale comparison—high ranking condition*. Follow-up planned comparisons further revealed that participants' responses in both the *classical competition* and *scale comparison—high ranking conditions*, which were not significantly different from each other ($p > .18$), were significantly more competitive than those in the *no scale comparison—high ranking condition* ($\chi^2(1) = 9.4$, $p < .01$ and $\chi^2(1) = 18.2$, $p < .001$, respectively). See Fig. 3.

These results suggest that the implicit threat of upward *scale* comparison, rather than the mere upward *task* comparison, may have been the main driver of competition in the classic studies on competition (e.g., Hoffman et al., 1954; Tesser & Smith, 1980), where task and scale were confounded. We also note that the within-subjects findings here are unlikely to reflect an order effect or priming effect, since all participants were first exposed to the *classical competition condition*. The pattern exhibited in subsequent conditions, moreover, resembled the mixed-factorial and field results of Studies 1 – 3, suggesting that an early exposure to the classical competition condition did not significantly impact participants' preferences. Finally, for the reason decision making researchers often find within-subjects designs compelling (cf. Camerer, 1995), Study 4 reveals how the very participants who behaved competitively in the *classical competition* and *scale comparison—high ranking conditions*, became more cooperative when the threat of upward comparison on the scale was removed. It therefore appears that the implicit possibility that participants' scale locations are proximate to a standard and that these relative locations are under threat as a result of an upward comparison in the task is an important driver of the results in the *classical competition condition*.

Study 5: Social Comparison vs. Self-Evaluation

The preceding analysis showed that upward comparison in the task alone is insufficient to generate competitive behavior at the expense of profit maximization; individuals must also be threatened by a potential upward comparison on the scale in the proximity of a standard. However, since studies 1-4 make the impact of standards on social comparison abundantly clear, Study 5 sought further to examine the power of standards to shape competitive behavior via comparison processes. While the ''unidirectional drive upward'' is a basic motivation of social comparison processes, its underlying purpose serves to quench the *fundamental* motivation of social comparison theory: the need for self-evaluation (*Hypothesis 1*, Festinger, 1954). Because standards themselves define the criterions by which people evaluate themselves and embody the implied goal of

the upward drive, we hypothesized that standards capable of exerting such a powerful effect on the "unidirectional drive upward" of social comparison may also become important targets for comparison in themselves. If this is the case, those most competitive rivals, who are proximate to a standard, might accept even a painful upward comparison on the *scale* to increase their *absolute* proximity to the standard—the criterion by which self-evaluations are made. For instance, decision makers ranked #4 may be willing to cooperate with #5, even if the latter were consequently to surpass them and achieve a #2 rank, to increase their absolute proximity to the standard and become #3. Study 5 therefore tests the prediction that rivals who are proximate to the standard will trade disadvantageous inequality for extra profit and tolerate even an upward comparison on the scale if they simultaneously improve their absolute standing on that scale.

Participants

A total of 54 undergraduates from the University of Michigan participated in an online study. The response rate was approximately 30 percent.

Procedure

In a between-subjects design, based on the poker scenario, participants read one of two conditions in which they and their rivals were proximate to a standard. The *high ranking control condition* stated: "Before the final round, you are ranked #5 in tournament earnings, and you are deciding whether or not to practice with one of your rivals who is ranked #6. Strategy A: if you decide not to practice, your tournament earnings will increase by 5% and your rival's by 5% Your ranks will remain the same. Strategy B: if you practice with your rival, your tournament earnings will increase by 10% and your rival's by 25%. However, your rival will surpass you in the rankings. Which strategy would you pursue?" The *closer-to-standard condition* was identical, except Strategy B was qualified: "... although your rival will surpass you in the rankings, your overall rank will also increase to #3 and your rival's to #2."

Results and discussion

The pattern of results was consistent with the prediction and significant ($\chi^2 = 9.72$, $p < .01$). Only 35 percent of the participants in the *high ranking control condition* faced the alternative of an upward comparison on the scale in order to maximize joint gains. However, 78 percent of the participants in the *closer-to-standard condition* maximized joint gains, accepting the upward comparison on the scale (as well as in the task), to increase their proximity to the standard. Study 5 thus suggests that even a painful upward comparison on the scale may be tolerable if it simultaneously brings one *absolutely* closer to the standard. While the "unidirectional drive upward" is an important motivation in competition, it serves the fundamental need for self-evaluation (*Hypothesis 1*, Festinger, 1954). Accordingly, the power of standards–criterions on which self-evaluations are based—to shape competition in their proximity is far reaching: apparently, in the proximity of standards, absolute scale standing becomes such an important means for self-evaluation that rivals may willingly accept a painful upward comparison on the *scale* in order to improve their absolute standing. Indeed, this circumstance captures well what Festinger (1954) said long ago, "when an objective, nonsocial basis for evaluation of one's ability or opinion is readily available, persons will not evaluate their opinions or abilities by comparison with others" (*Corollary IIB*). Thus, when a standard is at hand, the comparison of oneself to the standard trumps any comparison of oneself to a reference person.

General discussion

Classical competition studies in the social comparison literature (e.g., Hoffman et al., 1954; Tesser & Smith, 1980) have generally conflated comparisons in specific tasks (e.g. performance on a test) and comparisons on the underlying scales (e.g. actual verbal skill). It may be, therefore, that participants in these classical studies behaved competitively to avoid painful social comparison concerns on the underlying scale instead of in the specific task, as the literature commonly assumed. These participants may well have treated the information they received on relative task performance as indicative of their implicit scale standing—the main focus of their comparison concerns—since the two levels are typically correlated. After all, task performance often contributes directly to scale standing. This would be the relationship, for instance, between the outcomes of a given match and the overall ranking of professional tennis players, or between the profitability of a specific business transaction and the annual profits of a business. In other cases, the task may simply provide a proxy for the underlying scale standing that is unobservable or otherwise unknown. The task vs. scale distinction thus calls for a reinterpretation of the role of social comparison processes in classical competition findings.

Whereas the relevance of the dimension, commensurability, and closeness are established levers of competition in social comparison theory (Festinger, 1954; Goethals & Darley, 1977; Tesser, 1988), recent research adds *proximity to a standard* as a significant moderator of competitive behavior Garcia et al. (2006). Building on these findings, the present studies manipulated

upward comparisons on the scale, controlling for the tradeoff between profitability and an upward comparison in the task. Studies 1–2 revealed that, in the proximity of a standard, upward comparisons on the scale, not merely in the task, are the main facilitators of competition. Indeed, even rivals proximate to a standard—who tend to behave most competitively—tended to prefer profitable but disadvantageous inequality once the threat of an upward comparison on the scale was removed. On the other hand, rivals distant from the standard, who exhibit diminished social comparison concerns, tended to maximize profit regardless of an upward comparison either in the task or on the scale. Study 3 illustrated these dynamics with real-world data on the patterns of player trading by teams in Major League Baseball. Study 4 used a within-subjects design further to confirm that an implicit upward comparison on the scale, rather than the mere comparison in the task, is the important driver of competitive behavior in classical competition studies (e.g., Hoffman et al., 1954; Tesser & Smith, 1980). Finally, Study 5 revealed that even those most competitive rivals who are proximate to a standard may be willing to tolerate a painful upward comparison on the scale to get closer to the standard—the pinnacle of self-evaluation.

The present set of studies thus advances our understanding of social comparison by, first, clarifying the important and hitherto unrecognized distinction between comparisons in a specific task and on a more general scale; second, by showing that it is the painful, actual or potential, comparison on the scale (rather than the mere task comparison as previously assumed by the literature) that is the main social comparison facilitator of competitive behavior; and, finally, that the power of standards not only to intensify competition, but also to redirect the focus towards comparisons on the scale is even more dramatic than it may initially appear to be. The centrality of a proximate standard as a means of self-evaluation is so great that individuals will even tolerate a painful upward comparison on the scale to increase their absolute proximity to the standard. This latter finding is somewhat ironic, showing how standards may even channel that inherently *relative* social comparison away from specific human referents towards one's *absolute* standing vis a vis the all-important standard as the ultimate means for self-evaluation in competitive settings.

Limitations

The present studies harnessed a decision-making methodology in which decision makers were only asked to respond to hypothetical scenarios. We believe these results valid, however, sharing Kahneman's (2000) view of the benefits inherent in this simple methodology: "choice... is the fruit fly of decision theory. It is a very simple case, which contains many essential elements of much larger problems. As with the fruit fly, we... hope that the principles that govern the simple case will extend in recognizable form to complex situations" (p. xi, Kahneman, 2000).

Nevertheless, we corroborate our controlled experimental findings with data on the real-world trading behavior of competing teams in Major League Baseball. Of course, such real world analyses are not without their own caveats. For instance, self-selection may lead naturally competitive decision makers disproportionately to occupy highly ranked positions in natural environments, such as in the domain of sport teams. A selection confound is less likely to account for the present results, however, since highly ranked baseball teams were only less likely to trade high impact players, but not low impact players, with their commensurable rivals. Our field data, moreover, do not stand alone but were only meant to corroborate the results of our decision-making studies, where a similar behavioral pattern was observed under conditions of random assignment.

Competitive behavior: social comparison or rational choice?

The competitive effects observed in our studies raise intriguing questions regarding the rationality of comparison-based competitive behavior. While any willingness to forego profit maximization may appear irrational in the short term, a preference for protecting relative scale location may sometimes be beneficial in the long term. For instance, maintaining a rank within the Fortune 500 (as in Study 2) or an especially high rank in Major League Baseball (as in Study 3) may generate indirect and direct material benefits. The maintenance of a high ranking in a one-day poker tournament (Studies 1, 4, and 5), on the other hand, seems devoid of such benefits that may justify a costly choice to avoid an upward scale comparison as potentially rational. In all of the present studies, moreover, highly ranked competitors never had to sacrifice their potentially profitable absolute scale standing; instead, they only faced a choice between maximizing profits and preventing a rival from obtaining a higher rank. In such circumstances, even the arguable benefits of trading certain short term benefits for the speculative future fruits of a higher rank do not exist. We therefore argue that participants' preferences in the present studies implicate social comparison process, as opposed to a rational choice strategy, as the underlying mechanism of the observed competitive behavior. This conclusion is further supported by the similar behavioral pattern obtained in the classical competition condition in Study 4 that, like traditional social comparison studies more generally, does not include explicit ranking information. In conclusion, therefore, competitive behavior that results from social comparison

processes may be either rational or irrational, depending on the circumstances. Such processes are important motivators of competitive efforts in social settings, but their operation does not depend on their rationality.

Implications for social comparison processes

The competitive dynamics of upward comparisons in the task versus those on the scale may well extend to other phenomena that are facilitated by social comparison processes, including self-esteem (e.g., Collins, 1996; Smith & Insko, 1987), envy (e.g., Salovey & Rodin, 1986), satisfaction (e.g., Frank, 1985; Schwartz et al., 2002), and even the search for social comparison information (e.g., Pyszczynski, Greenberg, & LaPrelle, 1985; Roney & Sorrentino, 1995; Swallow & Kuiper, 1992). For instance, the present analysis suggests that the propensity of individuals who are insecure about their scale standing to search for social comparison information may be influenced by their proximity to a standard. In the presence of a standard, such individuals may increase their pursuit of social comparison information about their referents. Farther away from a standard, however, where the importance of social comparison diminishes, they may reduce their efforts to pursue social comparison information.

The dramatic moderating effects of standards on social comparison and competitive behavior we find in the present studies also indicate some potential limitations of foundational social comparison models such as the Self-Evaluations Maintenance (SEM) Model (Beach & Tesser, 2000; Tesser, 1988). To wit, the present analysis holds constant the relevance of the dimension (e.g., profit), commensurability of the rivals (e.g., contiguous ranks), and closeness (e.g., "rivals"), yet finds rivals far more competitive when under scale threat in the proximity of a standard than when they are not. One may therefore speculate that the impact of SEM dynamics is largely limited to a certain distance, explicit or implicit, from a standard. The contextual power of standards—namely, the intense competition among rivals who are proximate to them and the high degree of cooperation of those distant from them—appear to constrain the potential behavioral variance that could be attributed to those individual differences associated with the SEM model. For instance, the number of attributes you share (e.g., Goethals & Darley, 1977) or your closeness (e.g., Tesser, 1988) to the referent may have quite a limited effect on competitive behavior in the proximity of a standard. However, certain attributes or characteristics of the competitors may well impact the willingness to trade inequality for extra profit because of established cultural norms (e.g., Henrich, 2000).

Methodologically, the present studies, along with Garcia et al. (2006), introduce a new paradigm for investigating social comparison processes. Whereas the *rank-order paradigm* (Wheeler, 1966) revolutionized social comparison research by helping researchers understand the selection of referents (see Suls & Wheeler, 2000), the present *ranking paradigm* may similarly make a useful general tool. The *ranking paradigm* provides quantifiable coordinates of the social comparison landscape, allowing researchers systematically to vary an individual's distance from standards (e.g., #3 or #103) and referents (e.g., #50 vs. #51 or #45 vs. #55) alike. Rivals, therefore, must no longer be, categorically, either relevant or irrelevant. Instead, one can use the *ranking paradigm* to manipulate degrees of relevance. Similarly, the paradigm would allow decision making researchers who study power or status to calibrate degrees of relative power of one individual over another and, simultaneously, degree of absolute power with respect to being the most or least powerful.

Implications for organizational decision making

Harvard Business School Press recently published a book entitled "Forced Ranking: Making Performance Management Work" (Grote, 2005) which champions the use of rankings to scale employee performance relative to that of their peers instead of using predetermined goals. Such a system is in fact in use at *General Electric*. GE employs a forced ranking model that contains standards such as: (a) exceeding the top 20 percent (e.g., leading to financial rewards); (b) being in the bottom 10 percent (e.g., leading to termination); and, of course, (c) the ubiquitous top-of-the-ranking standard. Grote (2005) in fact asserts that, "By implementing a forced ranking procedure, organizations guarantee that managers will differentiate talent" (see HBS Working Knowledge Newsletter, 2006).

The present studies reveal, however, that forced ranking may negatively affect employees' willingness to maximize joint gains that will benefit the organization. We found that in the proximity of standards individuals care less about performing better in the task and shift their focus to performing relatively better on the scale. Employees faced with forced ranking may therefore become more competitive with each other in the proximity of the various standards promulgated by GE, for example, especially given their continuous exposure to scale threat and the obvious importance of the comparison dimension. The natural selection process that disproportionately leads more competitive people to higher ranks could also exacerbate the competitive behavior exhibited in the proximity of standards. Ironically, this process may diminish the tendency to maximize those joint gains that are highly valuable for the organization. Thus, while highly ranked employees may be more competitive and productive through simple self-selection, the championing of forced rankings fails to anticipate how competitive forces may ultimately inhibit the

profit-maximizing exchange or pooling of information and resources among those "star" employees.

At the same time, our findings also suggest that forced ranking will not always diminish the likelihood of maximizing joint gains within the organization. First, those employees not proximate to any standard will be less competitive. Second, highly ranked employees whose rankings are not threatened would be more willing to exchange and pool resources and information. Third, when highly ranked employees can team together to improve their absolute standing on the ranking scale, they may be less concerned about relative scale location. Altogether, however, our analysis reveals a significant and overlooked weakness of the new and increasingly popular management system of forced ranking.

References

Axelrod, R., & Dion, D. (1988). The further evolution of cooperation. *Science, 242*, 1385–1390.

Bazerman, M. H., Loewenstein, G. F., & White, S. B. (1992). Reversals of preference in allocation decisions: judging an alternative versus choosing among alternatives. Special Issue: process and outcome: Perspectives on the distribution of rewards in organizations. *Administrative Science Quarterly, 37*, 220–240.

Bazerman, M. H., Schroth, H. A., Shah, P. P., Diekmann, K. A., & Tenbrunsel, A. (1994). The inconsistent role of comparison others and procedural justice in reactions to hypothetical job descriptions: implications for job acceptance decisions. *Organizational Behavior & Human Decision Processes, 60*, 326–352.

Bazerman, M. H., White, S. B., & Loewenstein, G. F. (1995). Perceptions of fairness in interpersonal and individual choice situations. *Current Directions in Psychological Science, 4*, 39–43.

Beach, S. R., & Tesser, A. (2000). Self-evaluation maintenance and evolution: some speculative notes. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research*. New York: Kluwer Academic Press.

Blount, S., & Bazerman, M. H. (1996). Inconsistencies in valuing comparative payoffs: implications for bargaining and trade. *Journal of Economic Behavior and Organizations, 891*, 1–14.

Brickman, P. (1975). Adaptation level determinants of satisfaction with equal and unequal outcome distributions in skill and chance situations. *Journal of Personality and Social Psychology, 32*, 191–198.

Brickman, P., & Bulman, R. J. (1977). Pleasure and pain in social comparison. In J. M. Suls & R. L. Miller (Eds.), *Social comparison processes: Theoretical and empirical perspectives*. Washington, DC: Hemisphere.

Camerer, C. (1995). Individual decision making. In J. H. Kagel & A. E. Roth (Eds.), *The handbook of experimental economics*. Princeton, NJ: Princeton University Press.

Collins, R. L. (1996). For better or worse: the impact of upward social comparison on self-evaluations. *Psychological Bulletin, 119*, 51–69.

De Dreu, C. K. W., & Boles, T. L. (1998). Share and share alike or winner take all?: the influence of social value orientation upon choice and recall of negotiation heuristics. *Organizational Behavior and Human Decision Processes, 76*, 253–276.

ESPN.com Major League Baseball RPI Rankings (n.d.) Retrieved March, 22, 2006, from <http://sports.espn.go.com/mlb/stats/rpi/>.

Festinger, L. (1942). Wish, expectations, and group standards as factors influencing level of aspiration. *Journal of Abnormal and Social Psychology, 37*, 184–200.

Festinger, L. (1954). A theory of social comparison. *Human Relations, 7*, 117–140.

Frank, R. H. (1985). *Choosing the right pond: Human behavior and the quest for status*. New York: Oxford University Press.

Garcia, S. M., Tor, A., Bazerman, M. H., & Miller, D. T. (2005). Profit maximization versus disadvantageous inequality: the impact of self-categorization. *Journal of Behavioral Decision Making, 18*, 187–198.

Garcia, S. M., Tor, A., & Gonzalez, R. D. (2006). Ranks and rivals: a theory of competition. *Personality and Social Psychology Bulletin, 32*, 970–982.

Goethals, G. R. (1986). Social comparison theory: psychology from the lost and found. *Personality and Social Psychology Bulletin, 12*, 261–278.

Goethals, G. R., & Darley, J. (1977). Social comparison theory: an attributional approach. In J. Suls & R. L. Miller (Eds.), *Social comparison process: Theoretical and empirical perspectives*. Washington, DC: Hemisphere.

Grote, D. (2005). *Forced ranking: Making performance management work*. Boston, MA: Harvard Business School Press.

Harvard Business School Working Knowledge Newsletter (n.d.). Retrieved April 22, 2006, from <http://hbswk.hbs.edu/item.jhtml?id=5091&t=organizations/>.

Henrich, J. (2000). Does culture matter in economic behavior? Ultimatum game bargaining among the Machiguenga of the Peruvian Amazon. *The American Economic Review, 90*, 973–979.

Hoffman, P. J., Festinger, L., & Lawrence, D. H. (1954). Tendencies toward group comparability in competitive bargaining. *Human Relations, 7*, 141–159.

Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science, 17*, 283–286.

Kahneman, D. (2000). Preface. In D. Kahneman & A. Tversky (Eds.), *Choices, values, and frames*. Cambridge, UK: Cambridge University Press.

Kelly, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. New York, NY: Wiley and Sons.

McGraw, P., Mellers, B. A., & Tetlock, P. E. (2005). Expectations and emotions of Olympic athletes. *Journal of Experimental Social Psychology, 41*, 438–446.

Mclean Parks, J., Boles, T. L., Conlon, D. E., DeSouza, E., Gatewood, W., Gibson, K., et al. (1996). Distributing adventitious outcomes: social norms, egocentric martyrs, and the effect of future relationships. *Organizational Behavior and Human Decision Processes, 67*, 181–200.

Medvec, V. H., Madey, S. F., & Gilovich, T. (1995). When less is more: counterfactual thinking and satisfaction among Olympic medalists. *Journal of Personality and Social Psychology, 69*, 603–610.

Messick, D. M., & Sentis, K. P. (1979). Fairness and preference. *Journal of Experimental Social Psychology, 15*, 418–434.

Messick, D. M., & Thorngate, W. B. (1967). Relative gain maximization in experimental games. *Journal of Experimental Social Psychology, 3*, 85–101.

Pillutla, M. M., & Murnighan, J. K. (2003). Fairness in bargaining. *Social Justice Research, 16*, 241–262.

Pyszczynski, T., Greenberg, J., & LaPrelle, J. (1985). Social comparison after success and failure: biased search for information consistent with a self-serving conclusion. *Journal of Experimental Social Psychology, 21*, 195–211.

Roney, C. J. R., & Sorrentino, R. M. (1995). Uncertainty orientation, the self, and others: individual differences in values and social comparison. *Canadian Journal of Behavioural Science, 27*, 157–170.

Rosenthal, R., & Rosnow, R. (1991). *Essentials of behavioral research: Methods and data analysis*. New York: McGraw-Hill.

Salovey, P., & Rodin, J. (1986). The differentiation of social-comparison jealousy and romantic jealousy. *Journal of Personality and Social Psychology, 50*, 1100–1112.

Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: happiness is a matter of choice. *Journal of Personality and Social Psychology, 83*, 1178–1197.

Smith, R. H., & Insko, C. A. (1987). Social comparison choice during ability evaluation: the effects of comparison publicity, performance feedback, and self-esteem. *Personality and Social Psychology Bulletin, 13*, 111–122.

Stanne, M. B., Johnson, D. W., & Johnson, R. T. (1999). Does competition enhance or inhibit motor performance: a meta-analysis. *Psychological Bulletin, 125*, 133–154.

Suls, J., & Wheeler, L. (2000). A selective history of classic and neo-social comparison theory. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research*. New York: Kluwer Academic Press.

Swallow, S. R., & Kuiper, N. A. (1992). Mild depression and frequency of social comparison behavior. *Journal of Social and Clinical Psychology, 11*, 167–180.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), Advances in experimental social psychology, 21, 193-355.

Tesser, A., & Smith, J. (1980). Some effects of task relevance and friendship on helping: you don't always help the one you like. *Journal of Experimental Social Psychology, 16*, 582–590.

Turner, J. C., Brown, R. J., & Tajfel, H. (1979). Social comparison and group interest in ingroup favouritism. *European Journal of Social Psychology, 9*, 187–204.

Wheeler, L. (1966). Motivation as a determinant of upward comparison. *Journal of Experimental Social Psychology, 1*(Suppl.), 27–31.

Whittemore, I. C. (1924). The influence of competition on performance: an experimental study. *Journal of Abnormal Psychology and Social Psychology, 19*, 236–254.

Whittemore, I. C. (1925). The competitive consciousness. *Journal of Abnormal and Social Psychology, 20*, 17–33.