

Running head: COMPETITION

The Psychology of Competition: A Social Comparison Perspective

Stephen M. Garcia¹, Avishalom Tor², and Tyrone M. Schiff¹

¹University of Michigan
²University of Notre Dame

Abstract

We propose a new framework that distinguishes among *individual* and *situational factors* in the social comparison process that produces competitive behavior. The familiar individual factors naturally vary among similarly situated people, including the *relevance* of the performance dimension, the *commensurability* of rivals, and their relationship *closeness* to the individual. Researchers have long established that as relevance, commensurability, and closeness increase, so do social comparison concerns and competitive behavior. The more recently identified situational factors, on the other hand, are features of the social environment that affect similarly situated individuals, including *proximity to a standard*, *social category lines*, and the *number of competitors*. When rivals are proximate to a standard, members of different versus the same social category group, or among a few versus many competitors, social comparison concerns and competitive behavior intensify. The situational account not only uncovers an important set of hitherto unnoticed variables that shape social comparison, but also offers new insights regarding the role of social comparison in organizations and other policy-relevant settings and charts fruitful directions for future social comparison research.

The Psychology of Competition: A Social Comparison Perspective

People commonly seek to achieve a superior position vis-à-vis others in contexts ranging from daily social situations to organizational settings and market transactions (De Botton, 2004; Festinger, 1954; Frank, 1985; Podolny, 2005; Porter, 1979). The struggle for competitive advantage is pervasive, permeating not only explicitly competitive settings but also common social interactions, such as among friends at a social gathering, students in the classroom, or employees at work. Yet while past psychological research valued the study of competition (Deutsch, 1949; Gardner, 1939; Hastorf & Cantril, 1954; Triplett, 1898; Vaughn & Diserens, 1938; Whittemore, 1924, 1925), psychological scholarship paid relatively little attention to this important social dynamic in recent decades. Instead, the study of competition has been relinquished to other disciplines – most notably economics and business, but also sociology and political science (e.g., Arrow & Hahn, 1971; Axelrod, 1984, 1997; Podolny, 2005; Porter, 1979; Spence, 1973). This state of affairs is perplexing, if not wholly surprising, since Festinger's (1954) original linking of the social comparison process to competitive behavior admittedly was followed by an extensive literature that primarily studied, not competition per se, but rather the self-evaluation process – that is, how people evaluate their present state relative to others (e.g., Tesser, 1988; Beach & Tesser, 2000). This paper therefore aims to synthesize both early and more recent developments in social comparison theory into a coherent analytical account of the psychology of competition.

In doing so, we draw not only on research that directly examined competition, but also on numerous studies in social comparison and related fields that have significant implications for the analysis of competitive behavior. Moreover, although our framework emphasizes the role of

social comparison in facilitating competitive behavior, we believe that competition – like other complex behavioral phenomena – is multiply determined. This review thus introduces an account that highlights the role of individual-based versus situational variables in the social comparison process, offers a framework for better understanding important drivers of competitive behavior, discusses fruitful avenues for future research, and applies social comparison-based competition to organizational and policy settings.

Social Comparison and Competitive Behavior

According to social comparison theory, competitive behavior is one manifestation of the social comparison process (Festinger, 1954). Individuals ("Actors") who observe or even anticipate being outperformed by another person ("Target") increase their competitive behavior in an attempt to minimize or preempt such discrepancy in performance (Festinger, 1954, p. 126). Social comparison researchers thus have studied extensively how actual upward social comparison leads to competitive behavior (Hoffman, Festinger, & Lawrence, 1954; Seta, 1982; Tesser, 1988). Moreover, both Festinger's early work and more recent findings reveal that not only an actual upward comparison, but even the mere threat of such a comparison may suffice to generate competitive behavior (Festinger, 1954; Garcia & Tor, 2007). Studies also show that where one's ultimate standing is uncertain and the threat of an upward comparison therefore inherent – such as in an ongoing competition – Actors tend to behave competitively not only towards a rival who is outperforming them but even towards one just underperforming them. While the former creates an actual upward comparison, the latter Target threatens a potential upward comparison even while presently offering an actual downward comparison (Garcia, Tor, & Gonzalez, 2006). Our framework therefore examines interactions that raise *social comparison concerns* either because of an actual or due to the threat of upward social comparison.

An Individual-Based versus a Situational Account

Historically, the literature focused on three variables that facilitate social comparison concerns (Goethals & Darley, 1977; Festinger, 1954; Suls & Wheeler, 2000; Tesser, 1988). The first refers to the observation that social comparison concerns intensify as *relevance* of a performance dimension— such as tennis, income, or academic performance – to an Actor increases (Hoffman, Festinger, & Lawrence, 1954; Tesser, 1988). Second is the degree of the Actor's *commensurability* with the Target (Goethals & Darley, 1977; Kilduff, Elfelbein, & Staw, 2010), meaning that rivals similar in ability will exhibit greater social comparison concerns than those less similar. Last is the degree of *relationship closeness* of the Actor to the Target (Tesser, 1988; Tesser & Smith, 1980; Pleban & Tesser, 1981), where social comparison concerns are stronger when the Target is interpersonally close (e.g., a friend or sibling).

Importantly, one common feature of the three factors of relevance, commensurability, and closeness is their highly individualized nature. The applicability of these variables tends to vary significantly even among similarly situated Actors, since they all reflect personal or idiosyncratic aspects of the self. For instance, the relevance of a potential social comparison – say, regarding performance on a math test or a tennis match – can differ greatly among similarly situated Actors. Such Actors are also likely to hold divergent perceptions of both the commensurability of a potential Target or its relationship closeness.

However, notwithstanding the clear importance of those *individual factors*, which traditionally dominated social comparison research, more recent findings have begun revealing the contribution to social comparison processes of a new set of *situational factors*. Unlike their individual counterparts, situational variables reflect common features of the social environment, consequently tending to exert a more universal effect on similarly situated Actors.

Three situational variables that have already been identified by the literature are *proximity to a standard* (Garcia & Tor, 2007; Garcia, Tor, & Gonzalez, 2006; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007), *social category lines* (Garcia, Tor, Bazerman, & Miller, 2005; Hogg, 2000; Turner, Brown, & Tajfel, Brown, & Tajfel, 1979), and the *number of competitors* (Garcia & Tor, 2009; Tor & Garcia, 2010). Social comparison concerns and competitive behavior increase, first, in the proximity of a standard – such as the #1 ranking or another qualitative performance threshold – and, second, when Actors compare themselves to Targets across social categories (e.g., Americans vs. the French) as opposed to intra-category Targets (e.g., Americans vs. other Americans). Third, as the number of competitors increases, social comparison concerns and competitive behavior decrease.

Importantly, researchers further found that situational factors can influence the social comparison process and facilitate competitive behavior even when controlling for the individual factors of relevance, commensurability, and closeness. In other words, contrary to the conventional wisdom of social comparison research – which focused almost solely on those individual variables (e.g., Festinger, 1954; Tesser, 1988; Goethals & Darley, 1977) – the effects of factors such as relevance, commensurability, and closeness may diminish in the presence of situational variables.

Figure 1 illustrates how individual and situational factors both amplify social comparison concerns and, in turn, competitive behavior (e.g., Festinger, 1954; Garcia & Tor, 2009; Hoffman, Festinger, & Lawrence, 1954; Seta, 1982; Tesser, 1988). Importantly, the model also illustrates how situational factors can supersede individual factors; Actors can experience a situation-driven increase or decrease in social comparison concerns, their idiosyncratic individual factors notwithstanding. The following sections review the evidence on both individual and situational

factors in greater depth to clarify their respective roles in facilitating competitive behavior through the social comparison process, before discussing the theoretical implications of our account for social comparison research and its practical lessons for organizations and public policy more generally.

Individual Factors of Competitive Behavior

Three familiar individual variables that impact the drive for competitive advantage are the *relevance* of the performance dimension, the *commensurability* of the Target, and the Actor's *relationship closeness* to the Target.

Dimension Relevance

Whether chief executive officers are seeking to maximize profits, socialites the number of party invitations, or junior faculty the number of publications, people compete on dimensions that are relevant or important to the self. In an early demonstration of the link between dimension relevance and competitive behavior, Hoffman, Festinger, and Lawrence (1954) manipulated dimension relevance by giving participants the impression that an initial verbal test they were taking either was or was not highly relevant to their intelligence. Participants were then asked to engage in several rounds of a bargaining task in which they tried to maximize their points, which were supposedly another index of intelligence that would be added to their intelligence score. After the first round, a confederate always surpassed the two bargaining participants by a large margin. Results showed participants who believed the initial verbal task was relevant to their intelligence – a self-relevant dimension for comparison – behaved significantly more competitively toward the confederate in the bargaining task than those participants who believed the initial task irrelevant to their intelligence.

Tesser and Smith (1988) also found people behave more competitively on dimensions that are self-relevant. Participants were paired with a friend to play a game similar to “Password,” in which clues are given to help people guess the correct word. Half of the participants were led to believe this activity was either a proxy for verbal skill and leadership (self-relevant dimensions) or completely unrelated to these dimensions. In line with the earlier findings, the former participants were less likely to provide helpful clues to their friends than were the latter. A similar pattern emerges, moreover, from research on hostile evaluations of others; Salovey and Rodin (1984) showed participants provided more hostile evaluations of rivals when these rivals outperformed them on self-relevant dimensions.

Notably, these various studies described here also demonstrate that the relevance of specific tasks depends on their perceived relationship to an a priori relevant dimension. One's relative performance on a test, for example, will only be relevant for social comparison purposes insofar as that test implicates a self-relevant dimension, as intelligence is for most college students (DeSteno & Salovey, 1996; Salovey & Rodin, 1988; Bers & Rodin, 1984). Hence, as the contingencies of self-worth model suggests (Crocker & Knight, 2005), dimension relevance will often vary among similarly-situated persons.

Commensurability

Another individual variable that contributes to competitive behavior is the degree to which rivals are similar to or commensurate with one another; as commensurability increases, so do social comparison concerns and thus competitive behavior. Commensurability can be defined in at least two distinct ways: Festinger (1954, p. 120) described commensurability in terms of ability or performance on the compared dimension. Yet commensurability can also be defined as similarity of personal characteristics or attributes. For example, Goethals and Darley (1977)

showed people tend to compare themselves to others who are most similar to them along a number of different attributes, even when these attributes are not necessarily relevant to the specific comparison context (e.g., Miller, Turnbull, & McFarland, 1988; Wheeler, Koestner, & Driver, 1982; Zanna, Goethals, & Hill, 1975). In one study (Miller et al., 1988) participants completed a “social perceptiveness test” and then an unrelated perceptual-style task on “dot-estimation” and “object-sizing.” After receiving meaningless feedback about being an “overestimator” or a “reducer,” participants were led to believe one of their perceptual style was either distinctive (occurring rarely in the population) or non-distinctive (occurring frequently). Results showed participants preferred to compare their social perceptiveness test score with that of another participant with a similar, distinctive perceptual style, even though they were told that perceptual style had no bearing on performance on the social perceptiveness test.

More importantly, the inclination to compare to similar others – whether in terms of performance or characteristics – also begets competitive behavior toward them. To illustrate, Dakin and Arrowood (1981) found competitive tendencies increased with the degree of performance similarity in competitive situations. Research on “horizontal hostility” (White & Langer, 1999; White, Schmitt, & Langer, 2006) has also showed how the concern for comparative advantage increases among similar minority groups, who strive to see their own group as superior to another, similar group. The general pattern is that, among similar minority groups, the one that is further removed from the mainstream harbors greater hostility to its less extreme minority counterparts. Examples include vegans’ greater hostility attitudes toward vegetarians (White, Schmitt, & Langer, 2006) or punks’ more hostile attitudes toward gothics (White, Schmitt, & Langer, 2006). However, similarity of attributes increases not only hostility but actual competitive behavior as well. Kilduff, Elfelbein, and Staw (2010), for example, found

in a dataset on NCAA basketball teams that a greater commensurability of teams – measured by their degree of geographic proximity and the similarity of their performance histories and academic quality – led to more intense experiences of rivalry and competitive behavior among their players.

Relationship Closeness

Intuition suggests people would be more likely to promote friends over strangers, yet research shows this is not necessarily true, because relationship closeness amplifies social comparison concerns and thus competitive behavior on self-relevant dimensions (Tesser & Campbell, 1982; Tesser, 1988). Zuckerman and Jost (2001) similarly found people feel more threatened by the success of their friends than by that of strangers. Interestingly, this propensity to be competitive with our friends partly shapes friendship patterns: While we choose friends who are similar to us in overall performance, these friends also tend to be somewhat inferior to us in those domains we find particularly self-relevant (Tesser, Campbell, & Smith, 1984).

Because relationship closeness can amplify social comparison concerns, we are more likely to behave competitively on relevant dimensions towards acquaintances than towards strangers. Tesser and Smith (1980) found, for instance, that participants provided fewer helpful clues to friends than to strangers on competitive tasks that were self-relevant (Tesser & Smith, 1980; Tesser, 1988). In the naturally occurring setting, during a triathlon race, moreover, Locke (2007) found contestants who maintained a personalized comparison – in part defined as “a close or emotional relationship with the target” (p. 213, Lock, 2007) – had faster finishing times than those who made more abstract, generalized comparisons.

Taken together, therefore, the literature shows relevance, commensurability, and closeness – individual factors that vary from person to person – can all facilitate social comparison concerns and, consequently, competitive behavior.

Situational Factors of Competitive Behavior

The mostly recent identification of situational factors of social comparison, including *proximity to a standard*, *social category lines*, and *number of competitors* (e.g., Garcia, Tor, Bazerman, & Miller, 2005; Garcia, Song, & Tesser, 2010; Garcia, Tor, & Gonzalez, 2006; Garcia & Tor, 2009; Hogg, 2000; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007) sheds new light on social comparison research. Beyond uncovering additional facilitators of social comparison, the focus on situational factors – which comprise more stable features of the competitive landscape and thus tend to exert a more uniform impact on similarly situated Actors – helps address the long standing criticism that social comparison “theory lacks the predictive power necessary for it to play the central role it perhaps deserves” (p. 500, Taylor, Moghaddam, & Bellerose; see also Arrowood, 1978). To wit, the identified effects of situational factors make it easier to predict circumstances that facilitate social comparison concerns and thus competitive behavior, beyond the idiosyncratic effects of those long-familiar, individual factors.

Proximity to a Standard

Recent research found social comparison concerns and competitive behavior intensify near a *standard*, such as the #1 ranking or another meaningful, qualitative threshold, such as being in the last place or proximate to some cutoff point on a scale (e.g., Garcia, Tor, & Gonzalez, 2006; Poortvliet et al., 2007). Using ranking information to vary rivals’ distance from a standard, studies have shown rivals’ *proximity to a standard* can facilitate social comparison concerns and competitive behavior. For instance, in an analysis of player trades in Major League

Baseball, Garcia and Tor (2007) found that highly ranked teams were less willing to trade with each other “high threat players” (whose baseball statistics were outstanding) than were intermediately ranked teams, suggesting competitive behavior was stronger between highly ranked teams than intermediately ranked teams. Moreover, even in a setting where the future rewards of high rankings do not exist (e.g., a hypothetical one-day poker tournament), participants still indicated that they would behave more competitive when they and their rivals were highly ranked versus intermediately ranked (Garcia, Tor, and Gonzalez; 2006; Garcia & Tor, 2007). Follow-up studies additionally found that competitive behavior also increases in the proximity other qualitative standards (e.g., when one is ranked #500 and the rival ranked #501 – just off the F500 list) and that this proximity effect is driven by an increase in social comparison concerns.(Garcia et al., 2006).

The nature of competition near qualitative standards and thresholds, however, may partly depend on whether one is concerned with mastery or performance goals (Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2009). For example, participants were asked to complete twelve items of the winter survival exercise (Johnson & Johnson, 2000), told there was an ideal ordering, and informed that their ordering of the items will be compared with that of other participants. They were then given false feedback about their ranking – 4th, 51st, or 96th position of the top 100 (high, intermediate, or low own rank). Thereafter they were told they would have an opportunity to exchange task-related information with another participant who scored the 5th, 52nd, or 97th position on the top-100, respectively. Results showed participants with performance goals (e.g., instructions to perform better than the other participant) had fewer intentions to cooperate in the information exchange when they and their counterpart were highly ranked or ranked near the bottom than when they were intermediately ranked. However,

participants with mastery goals (e.g., instructions to perform better in the second round than in the first) indicated a greater willingness to cooperate the further they were from the #1 position (most willing to cooperate in the bottom ranking condition). Interesting too, not even mastery goals were sufficient to ameliorate competitive behavior near the #1 position.

Social-Category Lines

While earlier we discussed how individual-level commensurability increases social comparison concerns and competitive behavior, group-level comparisons within and across *social-category lines* generate the opposite pattern. Namely, social comparison concerns are greater between groups from different social categories than between those belonging to the same social category. Social category lines, therefore, is a pervasive situational factor that focuses attention on one's and others' collective identity, increasing social comparison concerns vis-à-vis the out-group while diminishing them with respect to the in-group. Situational cues make salient a particular social category through the process of self-categorization (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). For example, a psychologist from New York City arriving in Hong Kong might self-categorize as an "American" (vs. non-American) but when arriving in Los Angeles as a "New Yorker" (vs. non-New Yorker). Moreover, although many of social category memberships are concealable (Frable, Blackstone, & Scherbaum, 1990) or individual – insofar as individuals can choose the groups to which they belong – the social comparison factor of *social-category lines* is clearly situational in the present sense insofar as the salience of specific categories often is both driven by environmental cues and impacts those various self-categorizing members of a given group.

Self-categorization is fundamentally linked to the social comparison process (Hogg, 2000; Tajfel, 1972; Turner, 1975), as the self-categorization process necessarily requires social

comparison (Hogg, 2000). Foundational research in this area (Tajfel, Billig, Brundy, & Flament, 1971; Turner et al., 1979) thus focused on payoffs across social-category lines and implicated social comparison concerns as predictors of competitive behavior. Examining mixed motives in intergroup settings (Tajfel, et al., 1971; Turner et al., 1979), for instance, researchers found the maximization of the difference in group payoffs – rather than of either the joint profits of groups overall or one’s in-group profit – characterized these intergroup settings, even when the maximization of such differences entailed both personal and group sacrifice (Tajfel, et al., 1971; Turner et al., 1979). More generally, although intergroup transactions do not always lead to competitive behavior (e.g., Brewer, 1999; Halevy, Bornstein, & Sagiv, 2008), social comparison concerns, which are strongly manifested across social-category lines, do tend to facilitate competitive behavior in these settings.

The earlier research in this area is somewhat limited, however, by its exclusive focus on allocations across social-category lines, without controlling for the baseline competitiveness of allocations within a social category. To this end, in an across-social-category-lines condition (Americans versus French), a sample of American students were asked to imagine they worked for American Airlines and then questioned whether they would enter a lucrative joint venture with Air France (Garcia, Tor, Bazerman, & Miller, 2005). The joint venture would benefit both airlines, but its financial benefits would be greater for Air France than for American Airlines. A rejection of the venture, on the other hand, would mean no benefits for either airline. Control condition participants faced an identical choice, except the partner carrier was another American carrier – Delta Airlines. Results found a significantly greater proportion of participants in across-social-category-lines condition rejected the profit maximizing joint venture compared to their control condition counterparts. Moreover, participants who rejected the joint venture in the

across-social-category-lines condition also expressed greater concern regarding the social comparison involved in obtaining lower profits than the partner airline. Similar results were also obtained in another study that employed a quality-maximization, rather than a profit-maximization measure (Garcia, Tor, Bazerman, & Miller, 2005). Here, participants across social-category lines were more likely than the control to choose an inferior hotel accommodation for both groups over a better accommodation for the in-group combined with a superior one for the out-group.

Number of Competitors

Much like the factors of proximity to a standard and social-category lines, research has shown the *number of competitors* (N) an important situational factor of social comparison. Specifically, studies found the intensity of competitive behavior increases as N decreases, where the latter decrease was accompanied by an increase in expected payoffs. For example, Ku, Maholtra, & Murnighan (2005) found auction bidders have a greater tendency to exceed their bidding limits when vying against a few, versus many, bidders for one object. In another study of the game show “Weakest link,” Pillutla and Ronson (2005) similarly found contestants behaved more competitively toward other contestants as the number of players decreased in subsequent rounds. And finally, research on tournaments (Ehrenberg & Bognanno, 1990) found the same pattern in tournaments where the decrease in N was consistently confounded with expected payoffs.

More recently, however, research on the *N-Effect* (Garcia & Tor, 2009; Tor & Garcia, 2010) found that social comparison concerns intensify and the motivation to compete increases as the number of competitors decreases, even when controlling for overall expected payoffs. To illustrate the *N-Effect*, Garcia and Tor (2009) examined SAT data at the state level for all 50 US

states and tested the prediction that the lower the average number of test-takers per venue in a state, the higher that state's average SAT score. Based on a panel dataset they computed a "test-taking density" variable for each state, estimating the average number of test-takers at any given test-taking venue by dividing the total number of test-takers per state by the total number of test-taking opportunities in that state. As predicted, controlling for various demographic factors, a significant inverse relationship between test-taking density and state-level average SAT scores emerged. Garcia and Tor (2009) replicated this pattern of results using individual-level scores from a more homogenous group of elite college students on the Cognitive Reflection Test (CRT, Frederick, 2005). The results of the CRT, which is highly correlated with both the SAT and IQ, showed the fewer the number of students taking the test in a particular session, the higher the average CRT scores for that session.

To examine the *N*-Effect in a controlled setting, undergraduates were recruited to complete a short, easy quiz with an added incentive of winning \$5 if they finished among the top 20% in terms of speed without compromising accuracy (Garcia & Tor, 2009). Half of the participants believed they were competing in an aggregated pool of 10 competitors, whereas the other half believed they were in a pool of 100 competitors. As predicted, participants in the 10-competitors condition finished the easy quiz significantly faster than participants in the 100-competitors condition, without a significant difference in accuracy, indicating that competitive motivation is greater when Actors believe they are facing few rather than many competitors. This experiment held constant the percentage of winners (20%) across both size conditions, so the key finding is that performance was better when one is competing for one of 2 winning spots (out of 10) than when competing for one of 20 winning spots (out of 100).

One reason for the effect of N on the motivation to compete is that social comparison concerns become less important as the number of competitors increases. Indeed, several follow-up experiments (Garcia & Tor, 2009; Tor & Garcia, 2010) implicated social comparison as a mechanism that significantly contributes to the N -Effect. Not only do people report harboring fewer social comparison concerns as N increases, but this circumstance also decreases their interest in pursuing social comparison information. Moreover, one follow-up study revealed individual differences in the N -Effect based on social comparison orientation (SCO, Gibbons & Buunk, 1999); individuals who are chronically high in social comparison tendencies exhibited the effect, whereas those who are chronically low in social comparison tendencies did not. Therefore, notwithstanding the potential contribution of additional mechanisms (See Murkherjee & Hogarth, 2010; Tor & Garcia, 2010), social comparison concerns significantly drive the N -Effect.

Other research findings also suggest that social comparison concerns decrease with N . For example, personalized comparisons – that is, comparisons to a specific individual – lead to greater increases in the motivation to compete than generalized comparisons – comparisons to people generally (Buckingham & Alicke, 2002; Klein, 2003; Locke, 2007). In one study, for instance, Klein (2003) found people behaved more competitively and were less willing to provide helpful hints on a feedback task when their performance compared with a “single other” versus the “average other.” Related, Locke (2007) found that athletes who maintained personalized comparisons during the triathlon exhibited faster completion times than did those who expressed generalized comparisons. The *local dominance effect* (Zell & Alicke, 2010) likewise describes how social comparison information that is local is likely to carry more weight than social comparison information that is global; this is akin to the greater weight carried by

personalized, compared to generalized, comparisons. Thus, the local dominance effect provides another mechanism explaining the stronger social comparison concerns one finds in smaller than in large-N settings.

Avenues for Future Research

By distinguishing between individual and situational factors in the motivation to compete, our framework not only reinterprets a significant portion of extant social comparison and related literatures, but also highlights promising new directions for social comparison research that we now explore.

Interaction Within Individual and Situational Factors

An important set of questions concerns the interaction within the variables in each of the respective categories of individual and situational variables. One first indication of the possible interaction among different individual variables comes from the self-evaluation maintenance model (SEM, Tesser, 1988), which focused on the “hydraulic” nature of relevance and closeness. Suppose you enjoy playing chess, so that your performance on chess becomes a relevant dimension. Suppose further that you and a close friend begin to play chess together, but your friend consistently outperforms you. At this point, the SEM model predicts two possible outcomes: (1) playing chess will become less relevant to you or (2) you will become less close to your friend (Tesser, 1988). If neither outcome occurs, your chess games with your friend will remain highly competitive. This hydraulic analysis also applies to commensurability, suggesting that being consistently outperformed by a commensurable counterpart will likely lead you either to perceive the task at hand as being less relevant or to reassess the commensurability of your counterpart, either of which potential outcomes results in your becoming less competitive. Of course, while such interactions within individual factors may operate dynamically to ease

competitive pressures over time, they are unlikely to impact ongoing competitions. Therefore, in the latter circumstance on which the present analysis focuses, individual factors typically are expected to remain relatively fixed.

At the same time, a hydraulic interaction seems less plausible for situational variables, which comprise observable features of the social comparison landscape. However, psychological processes like cognitive accessibility or salience (Bargh, 1996; Andersen, Moskowitz, Blair, & Nosak, 2007) may better describe the likely interaction of situational factors. Thus, the specifics of a given social comparison situation might determine the relative salience – and consequently the impact – of the different variables. For example, if an Actor is tied with 2 rivals at rank #4, vying for the #3 rank, there will likely be fierce competition, as three rivals are also proximity to a standard. However, if an Actor ranked #14 is tied with 2 other rivals at this rank, the competition for the #13 rank, will probably be less fierce, as the three rivals are not proximity to a standard. Thus, despite the otherwise competitive small N in both cases (N=3), proximity of the standard is more salient than N in this context. Similarly, whereas two groups from different social categories typically exhibit competitive behavior when the social category line is salient, increasing the number of groups from two to twenty from different social categories is likely to decrease the salience of any given social category line, resulting less competitive behavior. More generally, therefore, the salience of environmental cues (Ross & Nisbett, 1991) will likely shape the interaction between those contextual, situational variables.

Interaction Between Individual and Situational Factors

Beyond highlighting the potential interactions within the two categories, our framework naturally leads one to consider whether individual and situational factors also interact with each

other. Should we expect one set of factors to dominate the other? This question is reminiscent of the familiar tension between the person and the situation (Ross & Nisbett, 1991). As our review in fact revealed, there is evidence that situational factors can supersede individual variables when the former are strongly manifested, such as when rivals compete near a standard, rival groups are across social category lines, or rivals are among a few competitors. In all of these situations, we observed that participants who were randomly assigned to experimental conditions – and therefore without any systematic influence of individual factors – exhibited high levels of competitive behavior. On the other hand, we speculate individual variables will have their greatest effect on competitive behavior where the situational factors' impact is small (e.g., far away from a standard, within a social category, or among many competitors). In this sense, those individual factors of relevance, commensurability, and closeness may matter less for average performance when situational factors form a highly competitive landscape, yet still exert important influence on competitive behavior in other settings.

A related question is whether factors that enhance competitive behavior combine in an additive or a diminishing-returns pattern (Hodges, 1973). For example, would the coexistence of the three situational factors – of competing with a few competitors, near a standard, and across social-category lines – triple the level of competitive behavior or just increase it with diminishing returns? We speculate the latter outcome is more likely. As much experimental research observes, the level of competitive behavior is already quite high for any given situational factor, suggesting a likely ceiling effect and diminishing returns to coexisting situational variables.

The same pattern is likely to apply to individual factors as well, with the presence of additional variables increasing competition but at a diminishing rate. Yet in this respect the individual variables may combine together more effectively than the situational factors do,

particularly over time, since Actors are more likely to become desensitized to the latter variables. To wit, social comparison research on the hedonic treadmill (Brickman & Campbell, 1971) shows that over time people adapt to situational factors that impact the social comparison processes; perhaps the same is less likely to hold for individual variables. Thus, a situational factor – say, the small number of competitors – that ordinarily facilitates competitive behavior may have a diminished impact over time because of adaptation. On the other hand, some individual variables – such as relevance or closeness – are not only unlikely to generate desensitization but may even be reinforced when repeatedly faced by Actors.

Finally, the relationship between individual and situational factors also suggests that the two sets of variables may converge in certain situations. For example, an otherwise individual factor can appear situational when it is the focus of a competition. To illustrate, in professional boxing, where contenders are matched along dimensions such as weight and general ability, commensurably seems like a situational factor but is only the result of selecting on an individual characteristic. Similarly, a situational factor can resemble an individual one. To illustrate, a college class size of 500 may appear small for an Actor who transferred from a large public university but very large for another who transferred from a small liberal arts college. On a related note, participants in within-subjects experiment did vow to compete more fiercely in a competition with 2,000 competitors than in one with 20,000 competitors (Tor & Garcia, 2010), even though both N's are large. Thus, there may be subjective difference in the construal of the situation (Ross & Nisbett, 1991), notwithstanding Actors' generally more competitive behavior in smaller N-settings.

Research Questions Exposed by the Situational Account

The proposed account also makes transparent some areas of missing knowledge in the study of social comparison processes in competitive behavior. For one, notwithstanding Festinger's (1954) general description of the forces that generate social comparison, precisely what are the mechanisms through which situational variables facilitate social comparison? Why do social comparison concerns increase with a fewer number of competitors or across social-category lines?

One may speculate that evolutionary reasons partly may explain why specific factors facilitate social comparison concerns. For example, relevance, commensurability, and closeness could designate evolutionary pathways to survival: competing for relevant sustenance, competing most fiercely with comparable competitors (devouring lesser competitors, fleeing from greater ones), and engaging sibling rivalry to reap the benefits of obtaining the largest share of parental resources (pushing a weaker sibling out of the nest). A similar biological account might explain the situational factors: those at the top of the hierarchy compete to control most of the resources (herein proximity to a standard), we learn to compete with against out-group versus in-group members, and we may feel more vulnerable amongst a few versus many others. Thus, while Festinger (1954) proposed social comparison processes as a psychological mechanism underlying competitive behavior long ago, the present framework calls attention to the mechanisms that have selected these particular factors to impact social comparison processes.

While our account explains when social comparison concerns increase during a competitive event, it only considers individuals who are already in a competitive setting. However, researchers concerned with endogenous factors will be quick to point out that people often self-select into competitive environments, in social, organizational, and market situations alike. Thus, it would be interesting to study how individual differences in competitiveness

influence the competitive environments people choose to enter. For instance, if competitive personalities are more likely to choose to enter a smaller – and thus more intense – competition than a larger one, experimental demonstrations of the *N*-Effect probably understate its occurrence in real life. The opposite would hold, however, if competitive personalities were more likely to choose larger competitions. All in all, therefore, our account both organizes our understanding of social comparison-based competitive behavior and provides a foundation for exploring new research vistas in social comparison and competitive behavior.

Implications for Policy and Practice

The present overview focuses on the role of social comparison in facilitating competitive behavior. While our examination of *individual* and *situational factors* of social comparison incorporates both well-established and recent advances in social comparison theory, the more universal and recognizable nature of situational factors makes for particularly interesting implications across a variety of domains, of which we now provide a few illustrations.

Proximity to A Standard

In business and educational settings, individuals often are ranked according to their performance. Some practitioners even advocate the ranking of employees as a means for boosting worker productivity (Grote, 2005). The inherent problem with such practices, however, is that social comparison concerns and competitive behavior increase in the *proximity to a standard* such as the #1 ranking or other meaningful thresholds. Thus, individuals who are highly ranked could become less likely to collaborate with each other in mutually beneficial ways, instead become more likely to engage in cutthroat competitive tactics to obtain or maintain a competitive advantage. There are, however, circumstances under which rankings might generate positive effects. For example, a forced-ranking system may increase competitive

motivation to perform well, without impeding larger organizational goals, when individuals work autonomously in the organization, such as sales' agents with non-overlapping jurisdictions.

Social-Category Lines

For the business, law, and policy worlds, the impact of *social category lines* on social comparison and competitive behavior reveals that it becomes more difficult to maximize joint gains between groups from different social categories than between groups from the same social category membership. “Win-win” deals are therefore harder to achieve across social category lines, especially where the Pareto efficient outcome requires one group to earn slightly less than the other. It is difficult to have winners and losers across social-category lines, even when randomly determined by the flip of a coin (Garcia & Miller, 2007).

On the other hand, social-category lines are not necessarily “bad” from a motivational perspective. In competitive sports, for example, when you divide a group into two different social-category sub-groups, such as teams, each side becomes more motivated to compete and perform well on the task at hand. Students and employees alike can be motivated to best the other team in activities that truly improve the learning or productivity of the participants in these ad-hoc groups.

Number of Competitors

The fact that having more competitors decreases social comparison concerns and thus competitive motivation offers a new argument in the class-size debate (e.g., Mishel, & Rothstein, 2002). As N increases, students' motivation to compete and exert academic effort is likely to decrease. Thus, in classrooms and test-taking environments with few students, individuals' motivation and academic and test-taking performance should increase. Similarly, workers who are focused on individual-based performance tasks such as commission-based sales agents would

exhibit better sales performance if their offices were located in smaller branches across the country – which are likely better to motivate them to perform well – than in one big warehouse.

Related, with respect to the debate about pegging teacher performance pay to the performance of their students on various state and local exams, the *N*-Effect suggests that teachers with larger class sizes are likely to have lower classroom performance scores on average than teachers with smaller class sizes, and thus teachers with smaller class sizes might receive higher salary raises because of an artifact of class size.

The *N*-Effect also offers other policy implications. One issue pertains to fair testing practices on important exams such as the SAT. While testing service providers do their best to ensure an optimal testing environment, the *N*-Effect suggests that one important factor that has been overlooked is the number of test-takers showing up to take a standardized exam. As the number of test-takers reporting to any given test-taking venue increases, test-takers might feel less motivated to do well on the exam.

Conclusion

In sum, our new account of social comparison and competitive behavior distinguishes between *individual* and *situational factors* of social comparison that impact competitive behavior. While the study of competition is a prominent topic in many other social sciences, the psychological literature generally and social comparison research in particular have paid only limited attention to this important topic in recent decades. We hope the present review will join other programs of psychological research in helping remedy this situation and contribute to the development of a unique psychological perspective in the interdisciplinary study of competition.

References

- Andersen, S. M., Moskowitz, G. B., Blair, I. V., & Nosek, B. A. (2007). Automatic thought. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social Psychology: Handbook of Basic Principles*. New York: Guilford Press.
- Arrow, K.J., & Hahn F. (1971). *General competitive analysis*. San Francisco: Holden-Day.
- Arrowood, A.J. (1978). Social comparison theory: Retrieved from neglect. *Contemporary Psychology, 23*, 490-491.
- Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books
- Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 169-183). New York: Guilford.
- Beach, S.R.H., & Tesser, A. (2000). Self-evaluation maintenance and evolution: Some speculative notes. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research*. Kluwer Academic / Plenum Publishers, New York, N
- Bers, S. A., & Rodin, J. (1984). Social-comparison jealousy: A developmental and motivational study. *Journal of Personality and Social Psychology, 47*, 766-77.
- Brewer, M.B. (1999). The psychology of prejudice: Ingroup love or outgroup hate? *Journal of Social Issues, 55*, 429-444.
- Buckingham, J. T., & Alicke, M. D. (2002) The influence of individual versus aggregate social comparison and the presence of others on self-evaluations. *Journal of Personality and Social Psychology, 83*, 1117-1130.
- Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In

- M. H. Appley (Ed.), *Adaptation-level theory: A symposium* (pp. 287–302). New York: Academic Press.
- Chen, P., Myers, C. G., Kopelman, S., & Garcia, S. M. (2011). The hierarchical face: Higher rankings lead to less cooperative looks. *Journal of Applied Psychology*. Advance online publication. doi:10.1037/a0026308
- Dakin, S., & Arrowood, A.J. (1981). The Social Comparison of Ability. *Human Relations*, 34, 89-109.
- De Botton, A. (2005). *Status anxiety*. London: Penguin Books.
- DeSteno, D.A., & Salovey, P. (1996). Jealousy and the characteristics of one's rival: A self-evaluation maintenance perspective, *Personality and Social Psychology Bulletin*, 22, 920-932.
- Deutsch, M. (1949). A theory of cooperation and competition. *Human Relations*, 2, 129-152.
- Festinger, L. (1954) A theory of social comparison processes. *Human Relations*, 7, 117-140.
- Ehrenberg, R.G., & Bognanno, M.L. (1990). Do tournament have incentive effects? *The Journal of Political Economy*, 98, 1307-1324.
- Frable, D.E.S., Blackstone, T, & Scherbaum, C. (1990). Marginal and Mindful: Deviants in Social Interactions. *Journal of Personality and Social Psychology*, 59, 140-149.
- Frank, R.H. (1985) *Choosing the right pond: Human behavior and the quest for status*. Oxford, England: Oxford University Press.
- Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, 19, 25-42.
- Garcia, S.M., Bazerman, M.H., Kopelman, S., Tor, A., & Miller, D.T. (2010). The price of

- equality: Suboptimal resource allocations across social categories. [Special Issue on Integrative Perspectives on Behavioral Ethics] *Business Ethics Quarterly*, 20, 75-88.
- Garcia, S.M., & Miller, D. (2007). Social categories and group preference disputes: The aversion to winner-take-all solutions. *Group Processes and Intergroup Relations*, 10, 581-593.
- Garcia, S.M., Song, H., & Tesser, A. (2010). Tainted recommendations: The social comparison bias. *Organizational Behavior and Human Decision Processes*, 113, 97-101.
- Garcia, S.M., & Tor, A. (2007). Rankings, standards, and competition: Task vs. scale comparisons. *Organizational Behavior and Human Decision Processes*, 102, 95-108.
- Garcia, S.M., & Tor, A. (2009). The N-Effect: More competitors, less competition. *Psychological Science*, 20, 871-877.
- Garcia, S.M., Tor, A., & Gonzalez, R.D. (2006). Ranks and rivals: A theory of competition. *Personality and Social Psychology Bulletin*, 32, 970-982.
- 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.
- Gardner, J.W. (1939). Level of aspiration in response to a prearranged sequence of scores. *Journal of Experimental Psychology*, 25, 601-621.
- Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, 76, 129-142.
- Goethals, G., & Darley, J. (1977). Social comparison theory: An attributional approach. In J. Suls & R. L. Miller (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 259-278). Washington, DC: Hemisphere.

- Grote, D. (2005). *Forced ranking: Making performance management work*. Boston, MA: Harvard Business School Pres.
- Halevy, N., Bornstein, G., & Sagiv, L. (2008). "In-group love" and "out-group hate" as motives for individual participation in intergroup conflict: A new game paradigm. *Psychological Science, 19*, 405-411.
- Hastorf, A., & Cantril, H. (1954). They saw a game. *Journal of Abnormal and Social Psychology, 49*, 129-134.
- Hodges, B.H. (1973). Adding and averages models for information integration. *Psychological Review, 80*, 80-84,
- Hoffman, P., Festinger, L., & Lawrence, D. (1954). Tendencies toward group comparability in competitive bargaining. *Human Relations, 7*, 141-159.
- Hogg, M. A. (2000). Social identity and social comparison. In J. Suls, & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 401–421). New York: Kluwer Academic/Plenum Publishers.
- Johnson, D. W., & Johnson, F. P. (2000). *Joining together: Group theory and group skills* (7th ed.). Boston: Allyn & Bacon.
- Kilduff, G. J., Elfenbein, H. A., & Staw, B. M. 2009. The psychology of rivalry: A relationally-dependent analysis of competition. *Academy of Management Journal, 53*, 943–969.
- Klein, W. M. P. (2003). Effects of objective feedback and "single other" or "average other" social comparison feedback on performance judgments and helping behavior. *Personality and Social Psychology Bulletin, 29*, 418-429.
- Ku G; Malhotra D; Murnighan J K (2005). Towards a competitive arousal model of decision-making: a study of auction fever in live and internet auctions. *Organizational Behavior*

- and Human Decision Processes*, 96, 89-103.
- Locke, K.D. (2007). Personalized and generalized comparisons: Causes and consequences of variations in the focus of social comparisons. *Personality and Social Psychology Bulletin*, 33, 213-225.
- Malhotra, D. (2010) The desire to win: The effects of competitive arousal on motivation and behavior. *Organizational Behavior and Human Decision Processes*, 111, 139-146.
- May, M.A., & Doob, L.W. 1937. Co-operation and Competition. *Social Science Research Council Bulletin*, 125
- Miller, D.T., Turnbull, W., & McFarland, C. (1988). Particularistic and universalistic evaluation in the social comparison process. *Journal of Personality and Social Psychology*, 55, 908-917.
- Mishel, L., & Rothstein, R. (2002). *The class size debate*. Washington, DC: Economic Policy Institute.
- Mukherjee, K., & Hogarth, R.M. (2010). The N-effect: Possible effects of differential probabilities of success. *Psychological Science*, 21, 745–747
- Pillutla, M.M., & Ronson, S. (2005). Do we prefer coworkers who are better or worse than us? Evidence from the ‘Weakest Link’ game. Paper presented at the meeting of the Academy of Management, Honolulu, Hawaii.
- Podolny, J.M. (2005). *Status signals: a sociological study of market competition*. Princeton, NJ: Princeton University Press.
- Poortvliet, P. M., Janssen, O., Van Yperen, N. W., & Van de Vliert, E. (2009). Low ranks make the difference: How achievement goals and ranking information affect cooperation intentions. *Journal of Experimental Social Psychology*, 45, 1144-1147.

- Porter, M.E. (1979). How competitive forces shape strategy. *Harvard Business Review*, March/April, 91-101.
- Ross, L., & Nisbett, R. E. (1991). *The person and the situation: Perspectives of social psychology*. New York: McGraw-Hill.
- Salovey, P., & Rodin, J. (1984). Some antecedents and consequences of social-comparison jealousy. *Journal of Personality and Social Psychology*, 47, 780-792.
- Salovey, P., & Rodin, J. (1988). Coping with envy and jealousy. *Journal of Social and Clinical Psychology*, 7, 15-33.
- Seta, J.J. (1982). The impact of comparison processes on coactors' task performance. *Journal of Personality and Social Psychology*, 42, 281-291.
- Spence, A. M. (1973). Job Market Signaling. *Quarterly Journal of Economics*, 87, 355-374.
- Suls, J., & Wheeler, L. (2000). *Handbook of social comparison*. New York: Kluwer Academic/Plenum Publishers.
- Tajfel, H. (1972). La categorization sociale. In S. Moscovici (Ed.), *Introduction a la psychologie sociale*, 1, pp. 272-302. Paris: Larousse.
- Tajfel, H., Billig, M.G., Bundy, R.P., & Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology*, 1, 149-177.
- Taylor, D.M., Moghaddam, F.M., & Bellerose, J. (1989). Social comparison in an intergroup context. *Journal of Social Psychology*, 129, 499-515.
- Tesser, A. (1988). Toward a self-evaluation maintenance framework of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181-227). New York: Academic.
- 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.
- Tesser, A. & Campbell, J. (1982). Self-evaluation maintenance and the perception of friends and strangers. *Journal of Personality*, 50, 261-279.
- Tesser, A., Campbell, J., & Smith, M. (1984). Friendship choice and performance: Self evaluation maintenance in children. *Journal of Personality and Social Psychology*, 46, 561-574.
- Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *American Journal of Psychology*, 9, 507-533.
- Tor, A., & Garcia, S.M. (2010). The N-Effect: Beyond probability judgments. *Psychological Science*, 21, 748-749.
- Turner, J.C. (1975). Social identity and social comparison: Some prospects for intergroup behavior. *European Journal of Social Psychology*, 5, 5-34.
- Turner, J. C., Brown, R. J., & Tajfel, H. (1979). Social comparison and group interest in ingroup favoritism. *European Journal of Social Psychology*, 9, 187-204.
- Turner, J., Hogg, M., Oakes, P., Reicher, D., & Wetherell, M. (1987). Rediscovering the social group: A self-categorization theory. Oxford: Blackwell.
- Vaughn, J., & Diserens, C.M. (1938). The experimental psychology of competition. *Journal of Experimental Education*, 7, 76-97.
- Wheeler, L. (1966). Motivation as a determinant of upward comparison. *Journal of Experimental Social Psychology*, Supplement 1, 27-31.
- Wheeler, L., Koestner, R., & Driver, R.E. (1982). Related attributes in the choice of comparison

- others: It's there, but it isn't all there is. *Journal of Experimental Social Psychology*, 18, 489–500.
- White, J.B., & Langer, E. (1999). Horizontal hostility; Relations between similar minority groups. *Journal of Social Issues*, 55, 537-599.
- White, J.B., Schmitt, M.T., & Langer, E.J. (2006). Horizontal hostility: Multiple minority groups and differentiation from the mainstream. *Group Processes and Intergroup Relations*, 9, 339-358.
- Whittemore, C. (1924). The influence of competition on performance: an experimental study. *Journal of Abnormal and Social Psychology*, 19, 236-253.
- Whittemore, I.C. (1925). The competitive consciousness. *Journal of Abnormal and Social Psychology*, 20, 17-33
- Zanna, M., Goethals, G., & Hill, J., (1975). Evaluating a sex related ability: Social comparison with similar others and standard setters. *Journal of Experimental Social Psychology*, 11, 86–93.
- Zell, E., & Alicke, M.D., (2010). The Local Dominance Effect in Self-Evaluation: Evidence and Explanations. *Personality and Social Psychological Review*, 14, 368-384.
- Zuckerman, E.W., & Jost, J.T. (2001). What makes you think you're so popular?: Self-evaluation maintenance and the subjective side of the “friendship paradox”. *Social Psychology Quarterly*, 64, 207-223.

FIGURE 1

