

Self-Evaluative Effects of Temporal and Social Comparison

By: Ethan Zell and Mark D. Alicke

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Abstract:

Social and temporal comparisons are two fundamental information sources for evaluating one's characteristics and abilities. The current study demonstrates that when social comparison (where people's performance stood in the overall distribution) and temporal comparison (whether performance improved or deteriorated over time) information are both provided, each independently influences actors' self-evaluations of task performance and ability. In contrast, yoked observer participants paid virtually no attention to temporal comparison information, preferring to evaluate actors based solely on their status relative to others. Furthermore, when the feedback actors received suggested that they were getting worse, their self-evaluation ratings were approximately equal to that of the observers who had access to the same information. However, when their fortunes improved over time, actors used this temporal information as a basis for evaluating themselves more favorably than observers. We argue that both egocentrism and self-enhancement account for the differences between actors' and observers' performance evaluations.

Article:

INTRODUCTION

Self-knowledge is served by many tributaries including feedback from behavior, other people, and structured tasks. Of these, behavioral feedback is arguably the most pervasive data source for assessing one's characteristics, states, and status. Behavioral feedback has both temporal and social components. The temporal component refers to whether behavioral outcomes are improving or declining over time. Someone who is trying to lose weight, for example, may succeed and notice a reduction in body fat, or fail and witness an increase. Concurrently, the social component of behavioral feedback informs dieters of where they stand relative to others. Someone who loses weight might remain considerably heavier than his or her peers, and someone who gains weight might be relatively svelte in a rotund group. The former aspect of behavioral feedback is called temporal comparison (Albert, 1977), whereas the latter is a form of social comparison (Festinger, 1954). The question we address in the present study concerns how people evaluate themselves when they have both of these information sources at their disposal, that is, when they know that they have progressed or regressed over time, and when they are superior or inferior to others.

Social comparison represents a fundamental research tradition in social psychology, extending back to what some consider to be the first empirical study in the field, namely, Triplett's (1898) comparisons of bicycle riders' racing times when riding alone or in a group. Social comparison entails thinking about other people in relation to the self for the purpose of establishing, maintaining, refining, or embellishing the self-concept. Many studies have shown that comparisons with others who are superior or inferior on the judgment dimension influence how people think and feel about themselves, although the consequences of comparing to worse-off or better-off others are complex (for reviews, see Blanton, 2001, Collins, 1996 and Mussweiler, 2003).

Compared to the hundreds of studies that fly under the social comparison banner, research on temporal comparison is sparse. Furthermore, most of these studies have focused on the consequences of thinking about past events or conjecturing about future ones rather than on behavioral or performance feedback. Studies on this topic have shown, for example, that thinking about negative past-selves is deflating (Beike & Niedenthal, 1998; Tomkins, 1987) except when people believe that they have changed for the better (Higgins et al., 1986 and Markman and McMullen, 2003).

Only a few studies have examined the interplay between temporal and social comparison information, and none has addressed the consequences of experimentally-manipulated temporal and social feedback. Some studies have examined relative preferences for obtaining social and temporal comparison information following task performance (Levine and Greene, 1984 and Ruble and Flett, 1988). Another line of research—on subjective well-being—suggests that social comparison is a better predictor of happiness than temporal comparison (Emmons and Diener, 1985 and Fox and Kahneman, 1992). Developmental research finds that people of all ages report engaging in more social than temporal comparisons (Suls, 1986). Finally, studies have shown that people are more likely to describe themselves using flattering temporal-past comparisons than social comparisons (Wilson & Ross, 2000).

It seems fair to say, therefore, that we know very little about how people use social and temporal comparison when both data sources are available for self-evaluation. Furthermore, what we do know is confined to retrospective reports that are limited by the possibilities of inaccurate recall or by participants lacking awareness of the comparisons they routinely engage in (Mussweiler et al., 2004 and Stapel and Blanton, 2004).

In the present study, we take a first step toward filling this gap in the social comparison literature. Specifically, we address how people evaluate their performance and ability on a social sensitivity test when both social and temporal comparison information are available. Part of the answer to this question seems obvious: People who improve and are better than others should exhibit the most favorable self-evaluations, whereas those who get worse and fare poorly relative to others should evaluate themselves the most negatively. The independent effects of social comparison information also seem straightforward and can be derived from previous research (Buckingham and Alicke, 2002 and Klein, 1997): People should evaluate themselves more favorably when they are better as opposed to worse than average.

The lack of prior research makes predictions about temporal comparison information more difficult. In a purely logical sense, temporal comparison information would seem to have negligible value for self-evaluation in that temporal improvement or deterioration matters little if one's position in the distribution remains constant. Most developmental skills, for example, improve from childhood to adulthood, but a person who is getting smarter while everyone else is getting smarter at the same rate has not improved on the trait dimension of "intelligence."

However, a large and growing literature on egocentrism (for a review, see Dunning, 2000) suggests that people are likely to be especially sensitive to temporal comparison information. People pay more attention to their own behaviors, outcomes and the performance criteria upon which they are based than they do to others' actions and outcomes, think about them more, and weight them more heavily in making judgments (i.e., Kruger, 1999). To test this egocentrism assumption, we included observer participants in the current study who did not take the social sensitivity test themselves, but who had access to the actor's increasing or decreasing performance as well to social comparison information regarding the actor's performance relative to others. The primary response measures were actors' and observers' ratings of the actors' overall performance and ability on the social sensitivity test. Egocentrism predicts, and we expected, that actors' ratings of their performance and ability would reflect the influence of temporal comparison information regardless of the level of social comparison information (that is, actors would rate themselves more favorably when they had improved than when they had declined regardless of whether they were below average, average, or better than average), whereas observers' ratings would be based solely on social comparison level.

We also assessed whether actors' performance and ability judgments showed evidence of self-enhancement. Whereas egocentrism predicts a disproportionate focus on one's temporal outcomes, self-enhancement refers to the particular direction of participants' attributions. A purely egocentric account assumes that actors' disproportionate focus on their temporal outcomes would lead them to evaluate themselves less favorably than observers when their outcomes were declining and more favorably when they were improving. If self-enhancement motives were also operating, however, actors would not focus on their declining performance any more than observers because this would produce even more negative self-evaluations. Actors would, on the other hand, capitalize on their improving outcomes as a means to evaluate themselves more favorably. This reasoning translates into an interaction such that actors will evaluate themselves more favorably than observers when their outcomes are improving, but no worse than observers when their outcomes are deteriorating.

METHODS

Participants and design

Three-hundred and ten Ohio University introductory psychology students (196 female, 114 male) participated in exchange for course credit. Participants were randomly assigned to the cells of a 2 (Temporal Comparison: getting better, getting worse) by 3 (Social Comparison: above average, average, below average) between-subjects factorial design. A third between-subjects factor manipulated whether participants received feedback about and evaluated themselves (i.e., actors) or another student (i.e., observers).

Materials and procedure (actors)

Actor participants were recruited for what they believed was a study of social sensitivity skills. The experimenter explained that a group of psychologists had developed a test to measure people's ability to make accurate judgments about the feelings and characteristics of others. The ability to make these judgments was said to measure people's social sensitivity. It was stated that socially sensitive people are generally well liked by the people around them and successful in people-oriented careers. The experimenter said that psychologists were interested in evaluating the degree of social sensitivity college students possessed and that the participants were part of a large group of over 200 students at their university that was scheduled to take the test. Students were also told that according to recent research, social sensitivity sometimes changes during the college years. Therefore, students were told that they would complete five different versions of the social sensitivity test, one every other week for 10 weeks, to chart how socially sensitive they were and whether their social sensitivity changed over time.

A bogus social sensitivity test, similar to that used in past research (e.g., Alicke and Largo, 1995, Doherty and Schlenker, 1991 and Ungar, 1980) was administered to participants every other week for 10 weeks. Each of the five tests contained a total of 50 items divided into four sections. The social sensitivity tests were posted on the course website 48 h before they were to be collected. Participants were required to download and print the tests and turn them in to the experimenter at the beginning of class on the day they were due. Two to three days after each test was received, participants were sent individualized feedback e-mails detailing how well they performed on the current test, and reminding them of their scores on the previous tests. The feedback levels are displayed in Appendix A. Temporal comparison was manipulated by informing participants that the number of items they correctly identified on each of the 50-item social sensitivity tests either gradually improved or declined over time. Social comparison was manipulated by informing participants that their test performances were either consistently better than the average, average, or worse than the average score based on nearly 1500 previous participants.

Once all the participants received the fifth and final feedback e-mail, a questionnaire containing the dependent measures was posted on the course website. This self-evaluation questionnaire asked participants to assess their test performance ("How well do you think you performed on the Social Sensitivity Tests?") and perceived social sensitivity ("In general, how would you rate your Social Sensitivity?") on 11-point scales (0 = *very poorly/bad*, 10 = *very well/good*). The questionnaire also included manipulation checks which asked participants to recall whether the number of questions they correctly answered on the social sensitivity tests improved or declined over time and whether their test scores were above average, average, or below average compared to the other students involved in the study. All questionnaires were collected by the experimenter at the beginning of class 2 days after they were posted on the course website. After the questionnaires were collected, the experimenter carefully debriefed the students to ensure them that the feedback they received was bogus and was unrelated to their actual level of social sensitivity. During debriefing, no participant expressed being unduly affected by the feedback they received and all participants felt that the use of negative feedback in some conditions was justified given the scientific importance of the research.

Materials and procedure (observers)

Observer participants were given a questionnaire that started with the following instructions:

“In this study, you will be asked to evaluate the performance of an Introductory Psychology student on Social Sensitivity tests. The identity of this student will remain completely confidential. Social Sensitivity is the degree to which people are able to make accurate judgments about the thoughts and feelings of others. Recent research has found that Social Sensitivity can change dramatically during the college years. Therefore, we recently asked Introductory Psychology students to complete a Social Sensitivity test every other week for 10 weeks. Upon completing each test, students were e-mailed feedback about their performance. At the end of the term, one student received the following e-mail indicating how well he/she performed on each of the five Social Sensitivity Tests.”

Then, observer participants were provided a printed version of one of the eight feedback emails sent to the actors following the fifth and final social sensitivity test. The name of the corresponding student was removed for confidentiality purposes. After taking a few moments to review the scores, observers rated actor participants on the same scales on which the actors rated themselves.

Results

Data from 12 participants were excluded from the analyses because these students failed one or more of the manipulation checks. There was no effect of gender in any of the analyses for this study, $F < 1$; thus, we collapsed across this variable. Evaluations of performance and ability were aggregated to create one index of target-evaluation, $r(298) = .64, p < .001$.

A 2 (Temporal Comparison) X 3 (Social Comparison) X 2 (Actor, Observer) ANOVA was conducted on target-evaluation ratings. Descriptive statistics are presented in Table 1. The ANOVA revealed a significant main effect of temporal comparison, $F(1, 286) = 6.56, p < .05, \eta^2 = .02$. Participants evaluated the target more favorably when the target's performance was getting better ($M = 5.77$) as opposed to getting worse ($M = 5.40$). Additionally, a significant main effect of social comparison emerged, $F(2, 286) = 24.82, p < .001, \eta^2 = .15$. Targets were evaluated more positively when they consistently performed above average ($M = 6.12$) than when they were average ($M = 5.75$) or below average ($M = 4.87$). A third main effect emerged such that actors ($M = 5.74$) evaluated themselves somewhat more favorably than observers ($M = 5.44$), $F(1, 286) = 3.81, p = .05, \eta^2 = .01$.

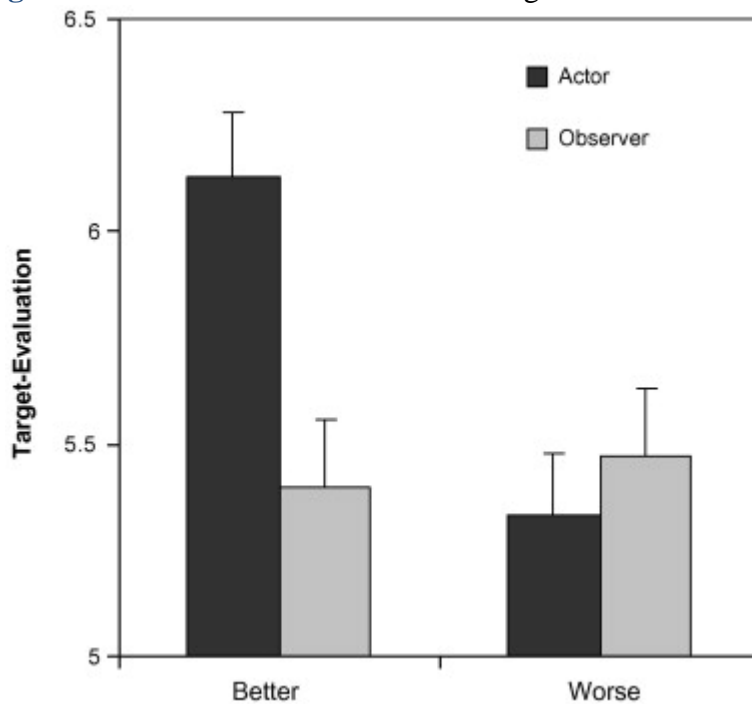
These main effects were qualified by a significant Temporal Comparison X Actor/Observer interaction, $F(1, 286) = 8.50, p < .005, \eta^2 = .03$ (see Fig. 1). To explore the nature of this interaction, we conducted separate independent samples t tests. For the actors, temporal comparison exerted a significant self-evaluative impact such that participants evaluated themselves more favorably when they were getting better ($M = 6.13$) than getting worse ($M = 5.33$), $t(147) = 3.78, p < .001, d = 0.62$. Conversely, temporal comparison did not have a significant impact on target-evaluations made by observers, $t < .30$. Observers rated targets similarly regardless of whether they were getting better ($M = 5.40$) or worse ($M = 5.47$). Furthermore, target evaluations and self-evaluations did not diverge in the getting worse

conditions, $t < .60$. However, in the getting better conditions, actors evaluated themselves significantly more favorably than observers, $t(152) = 3.55, p = .001, d = 0.58$.

Table 1: Target-evaluations following temporal and social comparison

Social comparison	Temporal comparison			
	Actors		Observers	
	Worse	Better	Worse	Better
Below average				
<i>M</i>	4.65	5.46	4.57	4.76
<i>SD</i>	1.20	1.27	1.26	1.30
<i>N</i>	23	25	23	25
Average				
<i>M</i>	5.56	6.37	5.72	5.35
<i>SD</i>	1.13	1.02	1.67	1.18
<i>N</i>	25	27	25	27
Above average				
<i>M</i>	5.73	6.54	6.08	6.10
<i>SD</i>	1.54	1.16	1.32	1.15
<i>N</i>	24	25	24	25

Figure 1: Actors' and observers' mean target-evaluations as a function of temporal comparison.



The Actor/Observer X Social Comparison interaction was nonsignificant ($F < 1$). Similarly, the Temporal Comparison X Social Comparison X Actor/Observer three-way interaction was nonsignificant ($F < 1$).

GENERAL DISCUSSION

Social and temporal comparison information are two of the most fundamental information sources upon which the self-concept is constructed. These comparison types can be likened to the consensus and distinctiveness dimensions in classic attribution theory (Kelley,

1967 and Kelley, 1973), the only difference being that social comparison theory addresses self-evaluation, whereas attribution theory typically examines social evaluation. Whereas consensus compares an actor's behavior or outcomes to those that others experience, distinctiveness places the actor's present behavior or outcomes in the context of his or her previous ones. Social and temporal comparisons provide identical information, which suggests that theorists working in different research areas believe that these information categories are the basic building blocks of self and social perception.

The current study demonstrates that when social and temporal comparison are both provided, each independently influences students' evaluations of their task-related performance and skill, in this case, a task that purported to measure social sensitivity. Historically, social comparison information has been manipulated by exposing participants to the performance outcomes of one or more other people. However, information about one's position in larger distributions is also an important form of social comparison (Buckingham and Alicke, 2002 and Klein, 1997), and the current study confirms that participants use this information to evaluate their performance and skill.

The findings for temporal comparison are more novel. This is the first study we are aware of to assess the self-evaluative consequences of manipulated temporal and social comparison information. The findings showed that temporal comparison information influenced self-evaluations at each level of social comparison. Thus, regardless of whether participants believed that they were below average, average, or above average, the fact that they were improving or regressing influenced their perceptions of their overall performance and social sensitivity skill. Because the response measures asked participants to rate their performance on the tests as a whole, as well as their overall social sensitivity ability, one could argue that temporal information was normatively insignificant and should have been ignored. We have argued that the tendency to focus egocentrically on one's own behaviors and outcomes accounts for this effect. An alternative explanation involves the way participants construe performance and skill: Perhaps they incorporate getting better or getting worse in their definition of what it means to perform well and possess ability.

Comparisons with observers suggest that construals of performance and skill are not the whole explanation. In contrast to actors, observers paid virtually no attention to temporal comparison information, preferring to evaluate actors based solely on their status relative to others. Unless observers for some reason interpreted the response measures differently from actors, this difference suggests that actors' evaluations do not seem simply to reflect the way they construe performance and skill. Rather, actors' self-evaluations appear to be consistent with an egocentric explanation which assumes that they focus disproportionately on their own outcomes and experiences, even when more diagnostic data are available upon which to base their judgments.

The plot thickens when considering the differences between actors' and observers' evaluations in the improving and declining temporal conditions. When the feedback actors received over the five sessions suggested that they were getting consistently worse at the social sensitivity task, their ratings of their performance and ability were approximately equal to that of the observers who had access to the same information about declining performance. In this case, actors did not focus unduly on their declining outcomes, but, like observers, relied primarily on social

comparison information regarding their performance relative to others (below average, average, or above average) for self-assessment. However, when their fortunes improved over the five sessions, actors used this temporal information as a basis for evaluating themselves more favorably than observers. Thus, in addition to being egocentric in their overall focus on temporal outcomes, actors exhibited evidence of egoism in capitalizing on improved performance to elevate their self-evaluations.

An alternative explanation for our actor–observer differences is that temporal comparison influenced evaluations made by actors, but not observers, because actors received temporal information over the course of ten weeks, whereas observers received it all at one time. However, observers’ and actors’ evaluations were very similar at all levels of social and temporal comparison information, varying only in the conditions in which actors learned that their performance was improving. Thus, observers generally seemed to use temporal information in the same way as actors, except when the information could be used to the actors’ advantage. Furthermore, even if observers’ use of temporal information was somewhat depressed across the board, the more important part of the interaction pattern, showing that actors used temporal information when it indicated improvement but not when it indicated decline, still obtains.

Another possible explanation for these actor–observer differences in the use of temporal information is that actors spent time in-between testing sessions gathering evidence for or against the social sensitivity test feedback they received. Because people are more likely to receive positive than negative social feedback (Shrauger & Schoeneman, 1979), actors might have received more support for positive than negative temporal comparison information during the 10-week time period. One might expect, however, that if participants were using positive daily experiences to discount negative temporal information, they would have also used positive daily experience to discount negative social comparison information, and yet this did not occur.

Furthermore, it seems somewhat doubtful that participants spent a great deal of time discussing their performance on a fairly arcane test with their friends. Careful consideration of the feedback levels would have revealed to participants that the temporal information was essentially meaningless in that participants were improving or declining at the same rate as everyone else. Thus, if actors were using the extra time to analyze more thoroughly the feedback they received, one would expect minimal temporal comparison effects rather than the significant temporal comparison effects that actors actually displayed.

An important avenue for future research will be to see whether the self-evaluative effects of temporal comparison vary as a function of the judgment domain. People have implicit theories about the degree to which particular traits and abilities are fixed versus changeable (Chiu, Hong, & Dweck, 1997). The impact of temporal improvement or decline may be weaker for domains that are considered fixed rather than changeable. Similarly, trait controllability may be an important moderator of temporal comparison effects. If people feel that they are personally responsible for changes in their traits or abilities over time, then these temporal trends may impact self-assessments. Yet if temporal changes are perceived as due to chance, or environmental circumstances outside of one’s personal control, then these changes are unlikely to yield self-evaluative effects.

While temporal comparison feedback impacted the self-evaluations of participants in our college student sample, it is possible that older adults are less likely to be influenced by temporal comparisons. Despite declining health, older adults continue to show high levels of subjective well-being (Diener & Diener, 1996). One possible explanation for this phenomenon is that older adults focus more on social comparisons with other people the same age as them than temporal comparisons with better-off past selves.

In the current study, we focused on the relative impact of temporal and social comparison information on self-evaluations. In future research, it would be useful to study other possible outcomes of social and temporal comparison information such as mood, performance level and persistence, and predictions of future performance and ability.

Finally, we held social comparison level constant in this study while varying temporal comparison. Thus, regardless of whether participants were getting better, staying the same, or getting worse, their position relative to others (above average, average, below average) remained constant. Temporal improvement (or decline) may have a greater self-evaluative impact when it is coupled with gains (or losses) in social status. A natural extension for future research, therefore, is to vary both comparison aspects simultaneously, although this will require a fairly large experimental design. Nevertheless, it will be interesting to learn, for example, whether temporal information remains influential when it works in contrast to social comparison; that is, when people’s performance steadily increases but their social standing continually declines, or when their performance steadily declines but their social standing actually increases.

Appendix A: Social and temporal comparison feedback levels

	Test 1	Test 2	Test 3	Test 4	Test 5
<i>Better, Above Average</i>					
Target’s scores	24	28	30	33	38
Average scores	18	23	25	27	32
<i>Better, Average</i>					
Target’s scores	24	28	30	33	38
Average scores	24	27	31	35	38
<i>Better, Below Average</i>					
Target’s scores	24	28	30	33	38
Average scores	30	33	35	39	44
<i>Worse, Above Average</i>					
Target’s scores	38	33	30	28	24
Average scores	32	27	25	23	18
<i>Worse, Average</i>					
Target’s scores	38	33	30	28	24
Average scores	38	35	31	27	24
<i>Worse, Below Average</i>					
Target’s scores	38	33	30	28	24
Average scores	44	39	35	33	30

Note. Scores were out of 50 total questions.

REFERENCES

Albert, S. (1977). Temporal comparison theory. *Psychological Review*, 84, 485–503.

Alicke, M. D., & Largo, E. (1995). The role of the self in the false consensus effect. *Journal of Experimental Social Psychology*, 31, 28–47.

Beike, D. R., & Niedenthal, P. M. (1998). The process of temporal self-comparison in self-evaluation and life satisfaction. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for*

- meaning: A handbook of psychological research and clinical applications* (pp. 71–89). Mahwah, NJ: Lawrence Erlbaum.
- Blanton, H. (2001). Evaluating the self in the context of another: The three-selves model of social comparison assimilation and contrast. In G. Moskowitz (Ed.), *Cognitive social psychology: The Princeton Symposium on the legacy and future of social cognition* (pp. 75–87). Mahwah, NJ: Erlbaum.
- 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.
- Chiu, C., Hong, Y., & Dweck, C. S. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, *73*, 19–30.
- Collins, R. L. (1996). For better or worse: the impact of upward social comparison on self-evaluations. *Psychological Bulletin*, *119*, 51–69.
- Diener, E., & Diener, C. (1996). Most people are happy. *Psychological Science*, *7*, 181–185.
- Doherty, K., & Schlenker, B. R. (1991). Self-consciousness and strategic self-presentation. *Journal of Personality*, *59*, 1–18.
- Dunning, D. (2000). Social judgment as implicit social comparison. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison* (pp. 353–378). New York: Plenum.
- Emmons, R. A., & Diener, E. (1985). Personality correlates of subjective well-being. *Personality and Social Psychology Bulletin*, *11*, 89–97.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.
- Fox, C. R., & Kahneman, D. (1992). Correlations, causes and heuristics in surveys of life satisfaction. *Social Indicators Research*, *27*, 221–234.
- Higgins, E. T., Strauman, T., & Klein, R. (1986). Standards and the process of self-evaluation: Multiple affects from multiple stages. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 23–63). New York: Guilford.
- Kelley, H. H. (1967). Attribution in social psychology. *Nebraska Symposium on Motivation*, *15*, 192–238.
- Kelley, H. H. (1973). The process of causal attribution. *American Psychologist*, *28*, 107–128.

- Klein, W. M. (1997). Objective standards are not enough: Affective, self-evaluative, and behavioral responses to social comparison information. *Journal of Personality and Social Psychology*, *72*, 763–774.
- Kruger, J. (1999). Lake Wobegon be gone! The “below-average effect” and the egocentric nature of comparative ability judgments. *Journal of Personality and Social Psychology*, *77*, 221–232.
- Levine, J. M., & Greene, S. M. (1984). Acquisition of relative performance information: The roles of intrapersonal and interpersonal comparisons. *Personality and Social Psychology Bulletin*, *10*, 385–393.
- Markman, K. D., & McMullen, M. N. (2003). A reflection and evaluation model of comparative thinking. *Personality and Social Psychology Review*, *7*, 244–267.
- Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review*, *110*, 472–489.
- Mussweiler, T., Ruter, K., & Epstude, K. (2004). The man who wasn't there: Subliminal social comparison standards influence self-evaluation. *Journal of Experimental Social Psychology*, *40*, 689–696.
- Ruble, D. N., & Flett, G. L. (1988). Conflicting goals in self-evaluative information seeking: Developmental and ability level analyses. *Child Development*, *59*, 97–106.
- Strauger, J. S., & Schoeneman, T. J. (1979). Symbolic interactionist view of self-concept: Through the looking glass darkly. *Psychological Bulletin*, *86*, 549–573.
- Stapel, D. A., & Blanton, H. (2004). From seeing to being: Subliminal social comparisons affect implicit and explicit self-evaluations. *Journal of Personality and Social Psychology*, *87*, 468–481.
- Suls, J. (1986). Social processes in relative deprivation: A life-span analysis. In J. M. Olson, C. P. Herman, & M. P. Zanna (Eds.), *Relative deprivation and social comparison: The Ontario Symposium* (Vol. 4, pp. 95–116). Hillsdale, NJ: Erlbaum.
- Tomkins, S. S. (1987). Script theory. In J. Aranoff, A. I. Rabin, & R. A. Zucker (Eds.), *The emergence of personality* (pp. 147–216). New York: Springer.
- Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *American journal of Psychology*, *9*, 507–533.
- Ungar, S. (1980). The effects of the certainty of self-perceptions on self-presentation behaviors: A test of the strength of self-enhancement motives. *Social Psychology Quarterly*, *43*, 165–172.

Wilson, A. E., & Ross, M. R. (2000). The frequency of temporal-self and social comparisons in people's personal appraisals. *Journal of Personality and Social Psychology*, 78, 928–942.