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The Frequency of Temporal-Self and Social Comparisons in People's Personal Appraisals

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Although past literature emphasizes the importance of social comparisons, in this study it was predicted that participants would often mention temporal comparisons in their self-descriptions. The first 3 studies revealed that participants report as many or more temporal-past comparisons than social comparisons. It was predicted that people would particularly favor temporal-past comparisons when they are interested in enhancing themselves. Temporal-past comparisons are gratifying, because they tend to indicate improvement over time. Social comparisons may be preferred when people are motivated to evaluate themselves accurately. These predictions were supported when self-evaluation and self-enhancement goals were explicitly manipulated (Study 4) or primed (Study 5).

Self-evaluations differ depending on the standard of comparison. In the present article, we examine the prevalence and psychological significance of two general standards of comparison: social and temporal-self comparisons. Psychologists have investigated social comparison processes in considerable detail since Festinger (1954) proposed that when objective standards are lacking, people often assess their abilities and opinions by comparing themselves with similar others. A little more than two decades after the publication of Festinger's seminal paper, Albert (1977) suggested that people can also fulfill self-evaluation goals by contrasting their current to their past standing; he proposed a theory of temporal comparison that mirrored Festinger's theory. For every hypothesis and corollary in Festinger's theory, Albert presented a parallel hypothesis and corollary for his temporal comparison theory. Festinger's theory has generated a large body of research and been extended to people's evaluations of virtually all aspects of themselves (e.g., health, social life), not just opinions and abilities (Wills, 1981; Wood, 1989, 1996). In contrast, research and theorizing on temporal comparison processes seems sparse.

Perhaps the lack of published research on temporal-self comparisons reflects the relative unimportance of this type of information for people's self-appraisals. Some theorists have suggested that temporal comparison processes are generally secondary to social comparison. Albert (1977) proposed that temporal-self information will only be used in the absence of objective or social information (Corollary II). Suls and Mullen (1982, 1984; Suls, 1986) suggested that social comparison is much more prevalent than temporal comparison throughout most of the lifespan. They proposed that temporal comparisons are more common only during periods of rapid developmental change such as young childhood (age 3 to 5) and old age (over 65), when temporal comparisons are particularly available and informative. Suls and Mullen's theory has been questioned at both ends of the lifespan (e.g., Butler, 1998; Rickabaugh & Tomlinson-Keasey, 1997; Robinson-Whelen & Kiecolt-Glaser, 1997). However, their assertion that social comparison is the dominant source of self-appraisal information from late childhood to middle age has gone relatively unchallenged and untested.

Much of the evidence cited by Suls and Mullen (1982) in support of their assertion that adults (particularly young adults) prefer social to temporal comparison is derived from research on level of aspiration. For example, Hertzman and Festinger (1940) reported that college students' level of aspiration and feelings of success at a task depend more on how they performed relative to other participants than on their outcomes on previous trials. Suls and Mullen also cited a study by Miller (1977): After a leadership training course, young company commanders in the U.S. Army preferred feedback about their relative standing (social comparison) to objective information about how much they had learned (interpreted by Suls & Mullen, 1982, as a temporal comparison). However, this preference for social comparison was only obtained when people liked and valued their social group. In the overall sample, officers were as likely to choose temporal as social information (Miller, 1977). Finally, note that in these and similar studies, competition is either implied or explicit, temporal comparisons involve a very recent past (one's performance during the immediate experiment or training course), and social comparisons are restricted to specific others in the same context. It would seem premature to infer a general preference for social comparison on the basis of such research.

Suls and his colleagues (Suls, 1986; Suls, Marco, & Tobin, 1991) have investigated people's reports of how they assess their

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abilities across the lifespan. For example, Suls (1986) asked college students (age 16–25), government office workers (age 26–50), and seniors in a retirement community (age 65–72) to evaluate themselves on a number of skills (e.g., reading, remembering, making conversation). After reporting their evaluations, respondents indicated which standard they used—social comparisons with older, younger, or similarly aged other people, or temporal comparisons with their recent or more distant past selves. Although the proportion of temporal comparisons increased with age, people reported more social than temporal comparisons at every age.

Other researchers have found that people favor temporal comparisons. Wayment and Taylor (1995) noted that undergraduate students used temporal standards more frequently than either objective or social comparison information when assessing their academic standing and social life. Affleck and Tennen (1991) found that individuals of varying ages spontaneously reported more temporal than social comparisons when describing their experiences coping with medical problems.

On the basis of the research to date, preference for social and temporal-self comparisons appears to vary in different contexts, but the reasons for the fluctuations are difficult to determine. Studies differ in their methodological approaches, in their participant populations, and in the content of the comparison domains. We conclude that past research fails to provide convincing evidence that adults generally evaluate themselves on the basis of social rather than temporal-self comparisons. Next, we discuss why people may often make temporal-self comparisons and what factors influence the relative frequency of temporal and social comparisons.

Comparisons With Past Selves

There are a number of reasons why people might evaluate themselves on the basis of comparisons to their past selves. Temporal-past information is likely to be readily accessible and highly pertinent to current personal appraisals. A basic principle of social comparison theory is that people tend to measure themselves against others who are similar on relevant dimensions (Festinger, 1954; Goethals & Darley, 1977). It may sometimes be difficult, however, to find another person who is as similar on relevant dimensions as a past self. If accessibility, similarity, and relevance are critical factors, then people may find comparisons with past selves to be useful.

Young adults may also make comparisons with past selves because such contrasts are likely to be rewarding. Young adults generally perceive improvement in themselves over time (Ross & Wilson, 2000; Ryff, 1991). This perception of improvement is often valid: Many skills do increase with age and experience. As well, people sometimes exaggerate their personal progress by being too critical of their past performances (Conway & Ross, 1984; Wilson & Ross, in press). Whether the perceived improvement is accurate or illusory, comparisons with inferior past selves may, like downward social comparisons (Wills, 1981), cause individuals to feel good about their present standing on an attribute. Downward temporal comparisons to past selves have the additional benefit of leading people to perceive themselves as improving over time. People tend to prefer an improving trajectory even to a consistently positive path (Aronson & Linder, 1965; Frijda, 1988; Hsee & Abelson, 1991).

Just as downward comparisons—temporal or social—can be enjoyable (Wheeler & Miyake, 1992; Wills, 1981), upward comparisons can be discouraging (Brickman & Janoff-Bulman, 1977; Wheeler & Miyake, 1992). We propose that young adults are less likely to encounter threatening upward temporal comparisons with past selves (perceiving decline in the self over time) than upward social comparisons (a comparison target whose attainments exceed their own). University students typically rate past selves as inferior to their present selves on a host of dimensions (e.g., self-confidence, social skills, driving ability, consideration, self-reliance, academic dedication; Ross & Wilson, 2000). In contrast, university students are equally likely to evaluate their friends and acquaintances as superior or inferior to themselves on such attributes (Wilson & Ross, 1999). Because university students' relevant comparison to others are likely to include their friends and acquaintances, students may encounter a greater proportion of threatening social comparisons than temporal-past comparisons. We suggest, therefore, that young adults may particularly value comparisons to past selves, because these comparisons are generally risk free.[1]

It is not evident that this preference for temporal-past comparison will hold throughout the lifespan. We expect that as people age, they will continue to see improvement on some domains, but perhaps not on others. The pattern of comparisons that elderly individuals find most gratifying may well differ from that of younger individuals. The question of development is beyond the scope of this article, but raises important issues for future research.

Comparisons With Future Selves

As well as comparing their current selves with past selves, individuals can compare with expected future selves. Because future selves are not well specified or known, comparisons with them may be rare. When they do occur, however, future comparisons are likely to be upward as young adults anticipate that they will continue to improve on many attributes (Ross, 1989; Ryff, 1991). This upward comparison poses an interesting question about contrasts to future selves: Are they likely to be gratifying or demoralizing? Although upward social comparisons are typically discouraging, the threat is reduced when people view the target's achievements as personally attainable (Collins, 1996; Lockwood & Kunda, 1997). In such instances, upward comparisons can yield inspiration and self-enhancement rather than disappointment. Expected future selves should be comparable to "attainable" upward social comparisons and should be pleasant to consider rather than threatening.

[1] Our assertion that social comparisons can be threatening may seem at odds with the finding that young adults generally see themselves as better than average (Taylor & Brown, 1988). The better-than-average effect is reduced or eliminated, however, when people compare themselves with specific, known others (e.g., Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Taylor & Koivumaki, 1976). Indeed, when specific individuals in one's group are evaluated, they too tend to be rated as better than average (Klar & Giladi, 1997).

Self-Appraisal Goals and Preference for Social and Temporal-Past Comparisons

We have argued that young adults may often use temporal-past comparisons. Previous research suggests, however, that they frequently use social comparisons. When will people prefer either type of information? Individuals may seek different kinds of self-information depending on their goals (e.g., Taylor, Neter, & Wayment, 1995). When motivated to enhance or feel good about themselves, individuals may focus on their actual or imagined strengths and ignore or diminish the importance of their weaknesses (Lewicki, 1984; Tesser & Campbell, 1983). A focus on strengths should be associated with a preference for safe and gratifying comparisons. These comparisons could be either social or temporal. There is certainly evidence that people with enhancement needs choose rewarding (downward) social comparisons (Wills, 1981). However, if temporal-past comparisons are almost always more likely to be gratifying than threatening, then people may prefer temporal comparisons when trying to feel good about themselves.

Conversely, suppose that people are motivated to evaluate themselves accurately. In this circumstance, people may strive to assess both their good and bad qualities, to gather as much diagnostic information about themselves as possible (Trope, 1982). Although they may again use both social and temporal comparisons, they may perceive social comparisons to be particularly informative. In Western cultures, when we ask, for example, how good an athlete a woman is, we generally are questioning how able she is relative to her peers, not how good she is now compared with how she used to be. This reasoning is consistent with Festinger's (1954) original assumption that people socially compare in order to evaluate themselves accurately.

In the current research, we assessed the relative frequency and direction of social and temporal comparisons in people's self-descriptions. In the first three studies, we examined comparisons in different contexts and for a variety of attributes. In the final two studies, we introduced a situational variable, self-description goals, that we expected to affect the relative prevalence of social and temporal-past comparisons. In the fourth study, participants were asked either to adopt the goal of accurate self-evaluation (self-evaluation motive) or the goal of feeling good about themselves (self-enhancement motive), while describing themselves on some personal attributes. In the final study, we primed participants to think in either self-evaluative or self-enhancing terms. We anticipated a higher proportion of temporal-past comparisons when self-enhancement goals were activated than when self-evaluation goals were prompted.

Study 1

Participants first provided a general description of themselves. We coded their narratives for social and temporal-self comparisons and identified the direction of each comparison as upward, downward, or same-level (equal or lateral). We expected that both social comparisons and temporal comparisons with past selves would be quite common. We anticipated that temporal-past comparisons would tend to be downward, whereas social comparisons would be more variable in direction. Next, participants listed the attributes on which they tend to compare socially and temporally and the direction of their comparisons. This trait-listing measure provided a more focused assessment of comparison prevalence. By examining results across the narrative and listing procedures, we sought evidence of convergent validity. Finally, participants rated each of the statements in their narrative self-description as positive, negative, or neutral. We used these ratings to examine participants' own perceptions of the comparisons they made to validate our assumption that downward comparisons are typically positive and upward comparisons are typically negative. We expected that same-level (equal) comparisons would vary in valence and perhaps attract more neutral ratings.

Method

Participants

Twenty-two female and 21 male students at the University of Waterloo participated for partial course credit. Each experimental session included between 1 and 5 students.

Procedure

Participants were first told to write a description of themselves in their own words, using whatever information they felt was useful. Then, they were asked to answer some more specific questions about certain kinds of self-information. Participants were informed that their responses would be anonymous and confidential and that they would not write their names on any of the forms. In the open-ended self-description, participants were given approximately three-quarters of a page to write about themselves. The instructions oriented them to making comparisons, but left the type and frequency of comparison up to them. Participants were also instructed to disregard any suggestions that were not useful to them:

> You may want to describe what you are like socially, academically, and as a friend or family member, and you might want to mention any particular skills and characteristics you have. You could describe yourself in comparison to other people, or compared to what you were like in the past, or what you expect to be like in the future. Feel free to use or disregard any of these suggestions, and please include any other information that is important to know to get a clear picture of what you are like as a person.

Trait listings. After finishing their open-ended self-descriptions, participants were asked to list all of the traits, abilities, or opinions on which they tended to assess themselves by making social comparisons. They made similar listings with respect to temporal-past and temporal-future comparisons. Order of presentation (temporal or social) was counterbalanced. Instructions for social comparisons were as follows (temporal-past given in parentheses):

> We sometimes look for information in our social world (in our past) to evaluate our (current) standing on characteristics, skills or opinions. On some dimensions, we might find it helpful to compare ourselves to other people (what we were like in the past), while on other attributes we do not tend to compare ourselves with other people (our present with our past selves). Think for a moment about the characteristics on which you tend to compare yourself with other people (your present self with your past standing). They may be the same characteristics you have mentioned before, or they may be different ones. List as many traits as you can think of (up to 12) *on which you tend to compare yourself with others (your present self with what you were like in the past).*

Table 1
Categories and Examples for Each Direction of Social, Temporal-Past, and Temporal-Future Comparisons

Comparison standard and direction	Example
Social comparisons	
Upward	Compared to other people, I would say that I'm quite shy.
Downward	I believe that I am more intelligent than most people.
Same-level	I think that my social skills are about average for a person of my age.
Temporal-past comparisons	
Upward	Academics in the past was one of my strong suits but I am not achieving my patterned excellence in university.
Downward	In my younger years, I was timid and shy, but now into university, I find myself more and more outgoing.
Same-level	From childhood to now, I have remained a fairly open-minded person.
Temporal-future comparisons	
Upward	In the future, I feel my self-confidence will only improve.
Downward	I expect that I will become less attractive again in the future.
Same-level	I am very socially inclined . . . and I believe I will continue to be very friendly/sociable in the future.

For each characteristic, skill, or opinion that participants listed on each comparison page they were also asked to indicate whether the comparison target (other people, past or future self) was better, worse, or the same as they are now. These assessments were taken to indicate the direction of the comparison (upward, downward, or same-level, respectively).

Self-description ratings. On the final page of the questionnaire, participants were asked to return to their original open-ended self-description and to rate each of their own statements for whether it indicated something positive, negative, or neutral about themselves (by marking each statement with a +, −, or 0, respectively). Coded comparisons were then matched with participants' statement ratings to assess respondents' personal perceptions of comparison valence.

Coding scheme for open-ended self-descriptions. Open-ended self-descriptions were coded for comparisons with other people and comparisons with past and future selves. *Social comparisons* were defined as any comparison between one's current self and another person or group. *Temporal-past comparisons* were defined as any comparison between one's current self and a self in the past. *Temporal-future comparisons* were characterized as any comparison between one's current self and an expected future self. Comparisons were coded as *upward* if the comparison target (other person, past or future self) was better than current self, as *downward* if the target was worse, and as *same-level* if the comparison target was equal to current self. Examples of comparisons of each type and direction are shown in Table 1. One research assistant coded all the narratives and a second assistant independently coded a random 50% of the narratives. Both coders were blind to the experimental hypotheses. Reliability, as calculated using Cohen's kappa, was high for identification of social comparisons (.81), temporal-past comparisons (.82), and temporal-future comparisons (.94). Interrater agreement, before making Cohen's correction for chance, was above 95% for all comparison types. For identified comparisons, interrater agreement for the coding of comparison direction was 100%.

Coding scheme for trait-listing attributes. We also considered the possibility that participants would favor different comparison standards for different kinds of traits. To investigate this question, we categorized all attributes nominated in the trait-listing questionnaire into general attribute domains. A 12-category coding scheme was developed to characterize the types of attributes listed by participants in the trait-listing section of the study. The category list began with the Big Five personality factors (Goldberg, 1990, 1992): Openness to Experience, Extraversion, Neuroticism, Agreeableness, and Conscientiousness. An examination of the data led to the creation of other categories: Academics (includes abilities and performance), Appearance, Achievements/Goals, Athletics, Religion/Morality/Values/Beliefs, Maturity, and Family/Relationships. One research assistant coded all of the attributes and a second rater coded 50%. Interrater agreement on classifying attributes into categories was 94% for social comparisons, 96% for temporal-past comparisons, and 89% for temporal-future comparisons.

Results

Preliminary analyses revealed no significant effects for gender on any measure in any of the studies. This factor is omitted from all of the reported analyses.

Comparison Standard

Identical analyses were conducted for students' self-descriptions and trait listings. In their open-ended descriptions, participants made an average of 4.12 comparisons, ranging from 0 to 11. In their trait listings, participants made an average of 19.70 comparisons, ranging from 4 to 36. We examined the relative frequency of comparison standards by submitting each data set to a repeated measures analysis of variance (ANOVA) with comparison standard (social, temporal-past, temporal-future) as the repeated factor. Means for both data sets appear in Table 2. A main effect of comparison standard was evident for students' open-ended descriptions, $F(2, 84) = 17.32$, $p < .001$, and for trait listings, $F(2, 84) = 9.52$, $p < .001$.

We anticipated that respondents would make social and temporal-past comparisons fairly often, but did not venture spe-

Table 2
Study 1: Use of Different Comparison Standards

	Comparison standard		
Data set	Temporal-past	Temporal-future	Social
Open ended	2.40	0.74	0.98
Trait listing	7.49	6.07	6.73

Note. Values represent the mean number of comparisons of each type per participant.

Table 3
Study 1: Direction of Comparisons for Each Comparison Standard

	Comparison standard								
	Temporal-past			Temporal-future			Social		
Data set	Upward	Downward	Same-level	Upward	Downward	Same-level	Upward	Downward	Same-level
Open ended	0.19	0.51	1.70	0.65	0.02	0.07	0.35	0.33	0.30
Trait listing	2.27	3.46	1.39	4.56	0.24	0.78	2.20	2.00	1.63

Note. Values represent the mean number of comparisons of each type per participant.

cific predictions regarding their relative prevalence. In this and subsequent studies, we limit our post hoc comparisons to instances in which the omnibus F for that main effect is significant. Fisher's protected t provides acceptable control over familywise error in families with up to three groups (Cohen, 1996; Howell, 1992). In the open-ended descriptions, participants reported significantly more temporal-past comparisons than social comparisons, $t(42) = 4.16$, $p < .001$, or future comparisons, $t(42) = 5.12$, $p < .001$. The difference in the frequency of social and future comparisons was not significant, $t(42) < 1.0$. In the trait listings data, participants listed more attributes for which they made temporal-past comparisons than for which they made social or future comparisons, $t(42) = 2.33$, $p < .03$, and $t(42) = 4.28$, $p < .001$, respectively. They also listed more social comparisons than temporal-future comparisons, $t(42) = 2.08$, $p < .04$.

Comparison Direction

We expected that people would be more likely to report inferior rather than superior past selves, but that their social comparisons would be less self-enhancing. A 3 (comparison standard: social, temporal-past, temporal-future) × 3 (direction: upward, downward, same-level) repeated measures ANOVA for each data set (see Table 3 for means) revealed significant main effects for comparison standard and direction ($Fs > 8.83$, $ps < .001$) that were qualified by significant Comparison Standard × Direction interactions for students' open-ended descriptions, $F(4, 168) = 23.10$, $p < .001$, and for trait listings, $F(4, 168) = 29.88$, $p < .001$. Simple effects analyses indicated significant Direction effects for temporal-past comparisons for students' open-ended descriptions, $F(2, 84) = 26.93$, $p < .001$, and for trait listings, $F(2, 84) = 9.48$, $p < .001$.

As predicted, participants made significantly more downward than upward temporal-past comparisons ($ts > 2.1$, $ps < .05$) in both data sets. The frequency of same-level temporal-past comparisons was more variable. In the open-ended data set, respondents made more same-level than downward temporal-past comparisons, $t(42) = 6.6$, $p < .001$. For trait listings, respondents reported significantly more downward than same-level temporal-past comparisons, $t(42) = 4.6$, $p < .001$.

Temporal-future comparisons revealed significant direction effects for open-ended descriptions, $F(2, 84) = 14.05$, $p < .001$, and for trait listings, $F(2, 84) = 94.59$, $p < .001$. Upward comparisons were more frequent than downward ($ts > 2.98$, $ps < .004$) or same-level comparisons ($ts > 3.5$, $ps < .001$).

Finally, social comparisons did not exhibit direction effects. The frequency of upward, downward, and same-level comparisons did not differ significantly ($Fs < 1$).[2]

Valence of Statements in Narrative Self-Descriptions

Participants rated whether the statements in their narrative self-descriptions reflected something positive, negative, or neutral about themselves. We examined the statements coded as comparisons and found that participants' valence ratings were generally consistent with our predictions. For temporal-past comparisons, participants coded 100% of the upward comparisons as negative and 95% of the downward comparisons as positive. About 50% of the same-level temporal-past comparisons were positive, whereas 25% were negative, and the remaining 25% neutral. For social comparisons, participants rated 63% of the upward comparisons as negative and the remainder of the upward comparisons as neutral. Seventy-one percent of downward social comparisons were positive, 22% were neutral, and only 7% were negative. Participants rated 54% of the same-level social comparisons as neutral, and 23% each as positive and negative. Finally, almost all of the future comparisons were upward; 79% of those upward comparisons were positive, 7% were negative, and 14% were neutral.

Trait-Listing Categories

The traits that participants listed in each of the comparison types were coded into categories that included the Big Five personality characteristics and other domains. The frequency with which participants nominated attributes of each category for each comparison type was examined. Means are reported in Table 4. Paired t tests revealed that participants were significantly more likely to report temporal-past comparisons than either social or temporal-future comparisons for two categories: Extraversion ($ts > 2.5$, $ps < .016$) and Maturity ($ts > 2.2$, $ps < .032$). Participants also listed more temporal-past than temporal-future comparisons for

[2] We reanalyzed the data using Friedman's nonparametric test for related samples (Howell, 1992) to ensure that the effects for the open-ended descriptions were not produced by a small number of participants. Friedman's test reduces the data to rankings, which controls for the within-subject variation in number of comparisons provided. Participants who provide larger numbers of comparisons are thus weighted the same as participants who provide smaller numbers of comparisons. The nonparametric analyses completely replicated the findings reported here.

Table 4
Study 1: Categorization of Trait-Listing Attributes by Comparison Standard

Category	Comparison standard		
	Temporal-past	Temporal-future	Social
Openness to Experience	0.53	0.19	0.37
Extraversion	1.19	0.77	0.77
Neuroticism	0.74	0.81	0.49
Agreeableness	1.00	0.67	1.21
Conscientiousness	0.47	0.30	0.60
Academics	0.30	0.28	0.40
Appearance	0.07	0.07	0.16
Achievements/Goals	0.23	0.53	0.30
Athletics	0.37	0.30	0.35
Religion/Values	0.12	0.07	0.12
Maturity	0.28	0.14	0.07
Family/Relationships	0.00	0.05	0.00

Note. Values represent the mean number of comparisons of each type per participant.

Openness to Experience and Agreeableness ($ts > 2.4$, $ps < .021$), whereas Achievements/Goals were associated more with temporal-future comparisons ($ts > 2.1$, $ps < .04$) than with any other type. Social comparisons outnumbered temporal-past comparisons in only the Appearance category, $t(42) = 2.08$, $p < .044$, and were more commonly listed than temporal-future comparisons for Neuroticism, Agreeableness, and Conscientiousness ($ts > 2.3$, $ps < .025$).

Discussion

Using two different methodologies in the first study, we found that respondents were more likely to compare with their past selves than with other people. In addition, whereas temporal-past self-comparisons were more likely to be gratifying or at least "safe" (downward or same-level), social comparisons were as likely to include potentially threatening upward comparisons. The experimental instructions for both the open-ended descriptions and trait listings oriented participants toward making temporal or social comparisons but did not specify how many of each they were to report. We expected that the instructions would boost the overall frequency with which people made comparisons but not alter the relative frequency of social and temporal comparisons. Conceivably, however, the comparison instructions had a differential impact on the frequency of comparison types. Perhaps respondents would naturally report social comparisons, but only make temporal comparisons when they are reminded of them. The reverse could also be true. In Study 2 we again obtained students' narrative self-descriptions but eliminated any reference to social or temporal comparisons. We expected that participants would make both types of comparisons, but that comparisons would be less frequent overall than in Study 1 with its orienting instructions.

Another issue arising from the first study concerns the prevalence of temporal-past comparisons. We argued that this comparison standard was likely to be more common than a review of past literature might suggest. Although we found a predominance of temporal-past comparisons in Study 1, we do not propose that they will always be favored. General claims about relative frequency are bound to be precarious, because prevalence may shift with different operationalizations and contexts (e.g., Affleck & Tennen, 1991; Suls, 1986; Suls, Marco, & Tobin, 1991; Wayment & Taylor, 1995). Perhaps the relatively unconstrained instructions for the self-descriptive narrative in Study 1 (describe yourself as a person) yielded an intrapersonal rather than interpersonal perspective on the self. Comparison preference may also depend on the attributes being described. Evidence from the trait listings in Study 1 suggests that some types of personal attributes may be more commonly appraised using social standards (e.g., appearance), whereas others may be assessed using temporal comparisons (e.g., maturity).

Study 2

In Study 2, we selected three commonly mentioned attributes from the trait-listing section of Study 1. We asked participants to describe themselves on these attributes, rather than "as a person" in general. The attributes, *friendliness, self-confidence,* and *intelligence,* were taken from the broader categories of Agreeableness, Neuroticism, and Academics. Items were chosen from categories that did not differ in the frequency of listed social and temporal-past comparisons.[3] Arguably, this procedure allows "equal opportunity" for reliance on social and temporal-past comparisons. As in Study 1, we expected both social and temporal comparisons—though perhaps fewer of them. We had no definite predictions regarding the relative prevalence of social and temporal-past comparisons, but we suspected that our choice of attributes might lead participants to mention them with roughly equal frequency.

Method

Participants

Sixteen female and 15 male students at the University of Waterloo were approached in a student lounge or food court area and invited to participate in a short study for a payment of $2. Participants completed the questionnaire individually.

Procedure

Participants were instructed to "describe specifically what you are like on the following characteristics, using your own words. Please include whatever information that you think is important to give a clear picture of what you are like on each attribute." Respondents were provided with 12 lines on which to describe each of the three attributes: friendliness, self-confidence, and intelligence. They were assured that their responses would be anonymous and confidential.

A rater coded participants' responses for comparisons using the same guidelines as in Study 1. A second independent rater coded a random 60% of the questionnaires to determine reliability. Both raters were blind to the experimental hypotheses. Reliability, as calculated using Cohen's kappa, was high for identification of social comparisons (.89), and temporal-past comparisons (.90), and acceptable for temporal-future comparisons (.74). The lower kappa for future comparisons reflects, in part, their infrequency

[3] The individual attributes (friendliness, self-confidence, and intelligence) were also examined for differences in social and temporal-past comparison listings. Although the frequency of their mention was low, they were listed as frequently in the social comparison sections as they were in the temporal-past comparison sections.

in the data set. Interrater agreement before correcting for chance was above 97% for all types. Coding of comparison direction revealed interrater agreement of nearly 97% for the identified comparisons.

Results

On average, participants reported far fewer comparisons than in the previous study. The 31 participants reported a total of 54 comparisons (range 0–6), of which 42.5% were social, 50% were temporal-past, and 7.5% were temporal-future. Because of the lower frequency of comparisons in this sample, we examined the relative prevalence of comparison standards overall by aggregating comparisons from all three attributes and conducting Friedman's nonparametric test for related samples.[4] This procedure ranks each participant's production of comparisons. For example, a participant who made four temporal-past comparisons, two social comparisons, and one temporal-future comparison would receive the highest rank (3) for temporal-past, and the lowest rank (1) for temporal-future. The Friedman test examines whether participants' rankings of the three types of comparisons are random or whether they systematically rank one standard of comparison more highly than another. A higher ranking denotes a greater frequency of a comparison standard. A significant effect of comparison standard (social, temporal-past, temporal-future) was found, $\chi^2(2, N = 31) = 13.95$, $p < .001$, indicating that social and temporal-past comparisons were ranked more highly (M ranks = 2.26 and 2.16, respectively) than were temporal-future comparisons (M rank = 1.58). The mean ranking of social and temporal-past comparisons did not differ, $\chi^2(1, N = 31) < 1$.

Next, we assessed the direction (upward, downward, same-level) of comparisons by conducting a separate Friedman's test for each comparison standard. No direction effects were obtained for social comparisons, $\chi^2(2, N = 31) = 3.14$, $p < .21$ or temporal-past comparisons, $\chi^2(2, N = 31) = .15$, *ns*. A significant effect of direction for temporal-future comparisons, $\chi^2(2, N = 31) = 8.0$, $p < .02$, indicated that upward comparisons were most common.

Finally, we examined the frequency of comparisons that participants reported for each trait (friendliness, self-confidence, intelligence). Friedman's test revealed a trait effect, $\chi^2(2, N = 31) = 6.44$, $p < .04$, indicating that comparisons were more frequent for intelligence than for friendliness, $\chi^2(1, N = 31) = 9.94$, $p < .002$, or self-confidence, $\chi^2(1, N = 31) = 4.26$, $p < .04$ (M ranks = 2.35, 1.73, 1.92, respectively). Comparison standard (social, temporal-past, and temporal-future) was then examined for each trait separately. The comparison standard effect was not significant for friendliness, $\chi^2(2, N = 31) = 3.0$, *ns*. A significant comparison standard effect for self-confidence, $\chi^2(2, N = 31) = 8.97$, $p < .011$, indicated that temporal-past comparisons were marginally more common than were social comparisons, $\chi^2(1, N = 31) = 2.78$, $p < .096$, (M ranks = 2.21 and 1.95, respectively), and significantly more common than temporal-future comparisons (M rank = 1.84), $\chi^2(1, N = 31) = 8.00$, $p < .005$. A significant comparison standard effect for intelligence, $\chi^2(2, N = 31) = 18.35$, $p < .001$, indicated that social comparisons (M rank = 2.39) were more common than temporal-past or temporal-future comparisons (M ranks = 1.97 and 1.65, respectively), χ^2s > 6.23, ps $< .013$.

Discussion

Participants reported comparisons even though the possibility of doing so was not mentioned in the experimental instructions. Compared to Study 1, however, in which the instructions referred to comparisons, the frequency of comparison was quite low. Although we selected attributes that had in Study 1 been nominated for social and temporal-past comparisons on an equally frequent basis in the trait listings, we found evidence that different comparison types were preferred for different traits. This finding indicates the importance of determining the attributes, contexts, and conditions for which social or temporal comparisons may be preferred, as opposed to asserting the general predominance of one standard or the other. The trait listing procedure in Study 1 presumably led participants to think extensively about temporal and social comparisons and to report multiple examples of the requested comparison types. In contrast, the simple "describe yourself" instructions in Study 2 may have only prompted the most salient comparisons.

When evaluating their self-confidence, participants in Study 2 were somewhat more likely to use temporal-past rather than social comparisons. When describing their intelligence, however, respondents were more likely to indicate how they felt superior, inferior, or equal to other people. Even when respondents made temporal-past comparisons for intelligence, they were often combined with social comparisons (e.g., "Even though I was at the top of my class in high school, I'm at the bottom of the pile here!"). This preference for social comparison when assessing intelligence probably reflects, at least in part, the emphasis placed on competition and relative standing in an academic setting. It may also indicate that temporal-past comparisons can be threatening in this particular domain. Unlike nearly all nonacademic attributes, students tend to perceive a drop in their academic performance from high school to university (which may be an important determinant of whether they "feel" intelligent). A survey of introductory psychology students revealed that nearly 90% obtained higher grades in high school than they were currently receiving (Wilson & Ross, 1999). In Study 2, 67% of temporal-past comparisons for intelligence were upward. We expected that comparisons with superior past performance would be particularly salient in the first years that students were at a university. In later years, high school would likely become a less relevant comparison target. To examine this prediction, we determined the frequency of upward temporal comparisons for first-, second-, third-, and fourth-year students in Study 2. All of the students who made an upward temporal comparison for intelligence were either in their first or second year.

Study 3

In Study 3, we sought to generalize our findings beyond a university sample. Selecting 20 popular magazines available at a local newsstand, we identified and coded all biographical or autobiographical articles (74 articles). Periodicals included magazines targeted at particular audiences (e.g., *Ladies' Home Journal, Gentlemen's Quarterly, Ebony*) and magazines covering "enter-

[4] Analyses of mean frequencies yielded identical results to those reported here.

Table 5
Study 3: Direction of Comparisons for Each Comparison Standard

	Comparison standard								
	Temporal-past			Temporal-future			Social		
Data set	Upward	Downward	Same-level	Upward	Downward	Same-level	Upward	Downward	Same-level
Magazines	0.08	1.00	0.69	0.18	0.01	0.17	0.00	0.15	0.07

Note. Values represent the mean number of comparisons of each type per participant.

tainment" topics (e.g., *Rolling Stone, People, Us*). Approximately 70% of the articles focused on celebrities (actors, musicians, sports figures); the remainder involved lesser-known figures, including people in certain occupations (e.g., interior decorators) or individuals who had undergone specific experiences (e.g., breast reduction surgery). In the first two studies, students' anonymity was emphasized. In magazine interviews, one may reasonably assume that interviewees are fully aware of the public nature of their self-descriptions and most likely are interested in making a favorable impression on their large audience. We expected that self-presentational pressures would yield a predominance of temporal comparisons over social comparisons in this study. It is socially inappropriate to derive pleasure from another person's inferiority or misfortunes (Brickman & Janoff-Bulman, 1977; Wills, 1981). These self-presentational disadvantages of flattering social comparisons are less likely to exist for flattering temporal comparisons. It is presumably quite all right to trash one's former selves and claim improvement (Ross & Wilson, 2000).

Method

Raters coded quotations directly attributed to the target individual. For example, in one article pop singer Madonna was quoted 20 times. In those quotations, she made seven comparisons. The author of the article also reported comparisons involving Madonna. These comparisons were not coded, because they were not self-descriptive statements. Comparisons were identified and coded using the same guidelines as in Study 1. A second independent rater coded a random 25% of the articles to determine reliability. Both raters were blind to the experimental hypotheses. Reliability (calculated using Cohen's kappa) was high for identification of social comparisons (.96), temporal-past comparisons (.88), and temporal-future comparisons (.92). Interrater agreement before correcting for chance was above 96% for all types. Coding of direction revealed interrater agreement of nearly 99% for the identified comparisons.

Results

Interviewees were quoted an average of 18 times per article (range = 1–48) and they reported an average of 2.7 comparisons (range = 0–12). As the means in Table 5 indicate, interviewees most commonly reported temporal-past comparisons with inferior past selves. A Comparison Standard × Direction repeated measures ANOVA was conducted on the mean number of comparisons of each standard per article. A significant main effect for comparison standard, $F(2, 146) = 56.75$, $p < .001$, revealed that the interviewees were more likely to report temporal-past ($M = 1.78$) than temporal-future ($M = 0.22$) or social comparisons ($M = 0.35$). Temporal-past comparisons were more common than the other two ($ts > 7.9$, $ps < .001$) which did not differ significantly in frequency from each other, $t(73) = 1.28$. The ANOVA also revealed a significant main effect for direction (upward, downward, or same-level) that was qualified by a significant Comparison Standard × Direction interaction, $F(2, 146) = 23.26$, $p < .001$. Simple direction effects were significant for all three comparison standards, $Fs > 4.65$, $ps < .011$. Interviewees reported more downward than upward temporal-past comparisons, $t(73) = 7.30$, $p < .001$, and marginally more downward than same-level temporal-past comparisons, $t(73) = 1.76$, $p < .08$. Similarly, interviewees reported more downward than upward social comparisons, $t(73) = 3.24$, $p < .002$. They made significantly fewer downward social comparisons than downward temporal-past comparisons, $t(73) = 6.16$, $p < .001$.

Analyses of temporal-future comparisons indicated that the frequency of upward temporal-future comparisons was significantly greater than the frequency of downward future comparisons, $t(73) = 2.98$, $p < .004$. The frequency of upward and same-level future comparisons did not differ, $t(73) < 1$.[5]

Discussion

Studies 1 and 2 demonstrated that students report both social and temporal comparisons when describing themselves on an anonymous and confidential questionnaire. In Study 3, we examined very public self-descriptions. Again, both temporal and social comparisons occurred, indicating that our earlier findings are not limited to university samples. In the magazine study, downward temporal-past comparisons were most common, perhaps because they are more socially acceptable than downward social comparisons. It may be more appropriate for Madonna to reflect on how her songwriting has improved over time than to highlight how her musical talent is superior to Cyndi Lauper's. A concern with self-presentation may also explain the relative lack of upward social comparisons in the magazine study—interviewees may choose not to advertise their inferiority.

Could the results in the first two studies also be influenced by impression management concerns? In these studies, we emphasized the anonymity and confidentiality of participants' responses. The success of our efforts to minimize self-presentational concerns is perhaps demonstrated by the findings that upward social comparisons were as common as downward or same-level social comparisons. Unlike in the magazine study, participants did not

[5] In this and all subsequent studies, the major findings are identical if the data are analyzed using Friedman's nonparametric test for related samples.

seem averse to acknowledging their inadequacies, and a self-presentation interpretation of the findings seems implausible. When people's self-descriptions are made public, however, self-presentation goals may influence comparison preference and direction.

Study 4

Although we reasoned that interviewees in the magazine study were motivated to provide self-enhancing descriptions of themselves, we have not yet systematically examined whether people may favor different comparisons to satisfy different goals. In Study 4, we directly tested the hypothesis that the relative frequency of temporal and social comparisons would vary, depending on whether participants were providing self-descriptions with the goal of enhancing or accurately evaluating themselves. We minimized public self-presentation concerns by emphasizing privacy and anonymity in both conditions. Therefore, unlike in the magazine study, enhancement goals were private. We chose this approach to avoid confounding the impact of self-enhancement versus accuracy goals with concerns specific to public self-presentation.

We expected social and temporal comparisons in both goal conditions but anticipated relatively more reporting of social comparison in the self-evaluation condition and relatively more mentions of temporal-past comparison in the self-enhancement condition. In addition, we predicted that participants would be likely to report more downward social and temporal-past comparisons in the enhancement condition than in the evaluation condition. Because of evidence that people tend to compare with similar or slightly superior others when they evaluate their abilities (Festinger, 1954; Gruder, 1977), we anticipated more upward or same-level social comparisons in the evaluation condition. Upward temporal-past comparisons should be rare even in the evaluation condition, because young adults are unlikely to have many domains in which they perceive themselves as declining with age. Although we also coded temporal-future comparisons, we did not have any specific predictions regarding their prevalence in the two conditions.

Rather than asking participants to describe themselves in general, as we did in Study 1, we asked participants to describe themselves on two attributes: social skills and self-confidence. We were concerned that if participants were unconstrained in their self-descriptions, they would focus on different topics and attributes in the evaluation and enhancement conditions. For example, people might tend to evaluate their academic attributes (smart, successful, hardworking) and enhance their relationship attributes (friendly, sociable, kind). Differences in the frequency of social and temporal comparisons would then be difficult to interpret, because the discrepancy could be due to the goal or to the attributes described. By focusing participants on specific attributes, we can be more confident that any differences in the prevalence of comparison standards are due to their goal.

We chose to study the attributes of social skills and self-confidence because both were mentioned frequently in the trait listings in Study 1. University students care about their standing on these traits. In Study 4, we examined whether students' standard of comparison for these traits shifts as a function of their goals.

Method

Participants

Sixty-two University of Waterloo students (35 women and 27 men) participated in this study for partial credit in their introductory psychology class.

Procedure

Participants completed the questionnaire in sessions with between one and five participants. The first page of instructions included an explanation of the benefits of either accurate self-evaluation or self-enhancement, and instructed participants to adopt the prescribed goal when providing their self-descriptions. The instructions for the accurate self-evaluation condition (with self-enhancement in parentheses) follows:

> Depending on our goals and situations, we may describe ourselves in different ways. Sometimes we want to evaluate ourselves as accurately as possible (describe ourselves in a way that makes us feel particularly good about ourselves). We select the information that we feel is most useful and relevant for making a precise assessment of ourselves. (We select the information that makes us feel best and describe ourselves in the most positive light.) The ability to sometimes describe ourselves in this evaluative (positive) way may be important for correctly understanding our abilities and guiding our approach to many tasks (may be important for maintaining a positive self-image and good mental health).

Participants were then asked to describe themselves in a way that provides "the most accurate assessment of yourself" or in a way that "makes you feel particularly good about yourself." They were told to report only truthful information, but to selectively present whatever kinds of information best accomplished their goal. As in Study 1, participants were reminded of the three comparison standards (social, temporal-past, and temporal-future) and told that they may or may not want to use those types of information in their self-description. We included this reminder to prompt a considerable number of comparisons of each type. In the absence of this instruction, participants may not have provided enough comparisons for us to assess the impact of the experimental manipulation on the relative frequency of temporal and social comparisons. In Study 2, we discussed the possibility that such a reminder might differentially prompt one or the other standard of comparison. This possibility is not a concern in the present study, however. We are interested in the impact of the experimental manipulation on comparison preference, rather than assessments of general prevalence.

Participants first described their social skills and then their self-confidence. Participants' self-descriptions were evaluated using the same coding scheme as in Studies 1 and 2 by a rater who was blind to the experimental hypotheses. A second, independent rater coded a random 50% of the self-descriptions. Reliability (Cohen's kappa) was high for identification of social comparisons (.94), temporal-past comparisons (.91), and temporal-future comparisons (.88). Agreement was above 96% for all categories before correcting for chance. Agreement for the coding of comparison direction was 97% for the identified comparisons.

After providing their self-descriptions, participants were asked to respond to further questions, disregarding their self-description goal. They were asked to rate their actual level of social skill and of self-confidence on an 11-point scale ranging from 0 (*not at all*) to 10 (*extremely*). They were also given a version of the Positive and Negative Affect Schedule (PANAS) Mood scale (Watson, Clark, & Tellegen, 1988) with 15 positive and 15 negative emotions. They indicated the extent to which they felt each of the emotions right now on 5-point scales ranging from 1 (*not at all*) to 5 (*extremely*). We expected that those who had described themselves in a

Table 6
Study 4: Direction of Comparisons for Each Comparison Standard by Type of Motivation

	Comparison standard								
	Temporal-past			Temporal-future			Social		
Type of motivation	Upward	Downward	Same-level	Upward	Downward	Same-level	Upward	Downward	Same-level
Enhance	0.03	1.50	0.13	0.32	0.00	0.00	0.06	0.90	0.03
Evaluate	0.06	0.64	0.00	0.19	0.03	0.00	0.81	0.39	0.16

Note. Values represent the mean number of comparisons of each type per participant.

self-enhancing manner might feel better about their actual level of social skill and self-confidence, and might experience a boost in mood.

Results

Respondents made an average of 2.6 comparisons (range = 0–12). Because we found no significant differences in the pattern of results for descriptions of social skills and self-confidence, we aggregated the coded comparisons for the two attributes. To assess our prediction that participants would favor different comparison types in the evaluation and enhancement condition, we calculated a difference score for each participant by subtracting the number of social comparisons he or she made from the number of temporal-past comparisons.[6] Thus, participants with a positive score would be favoring temporal-past comparisons, and those with a negative score would be preferring social comparisons. An independent samples t test, $t(60) = 2.14$, $p < .02$, revealed that temporal-past comparisons were relatively more common in the self-enhancement condition ($M = .65$), and social comparisons were relatively more prevalent in the self-evaluation condition ($M = -.65$).[7]

Forty-five percent of all comparisons were temporal-past and 45% were social. Of all comparisons in the self-enhancement condition, 55% were temporal-past and 34% were social. In the self-evaluation condition, 31% of the comparisons were temporal-past and 59% were social.

The remaining 10% of all comparisons were temporal-future. The mean number of future comparisons in the self-enhancement condition ($M = .32$) did not differ from the number of comparisons in the self-evaluation condition ($M = .23$), $t(60) < 1$.

Comparison Directions in Each Goal Condition

We predicted that downward comparisons would be more common in the enhancement condition than in the evaluation condition. In a 3 (comparison standard: social, temporal-past, temporal-future) × 3 (direction: upward, downward, same-level) × 2 (goal: self-enhance, self-evaluate) mixed ANOVA, the only nonsignificant main effect was of goal, $F(1, 60) = .87$, *ns*. All other main effects and two-way interactions were significant (Fs ranged from 3.19 to 23.7). These effects were qualified by a significant Comparison Standard × Direction × Goal interaction, $F(4, 240) = 3.73$, $p < .006$. To investigate this interaction, we conducted a 2 (goal) × 3 (direction) mixed ANOVA for each comparison standard. Means can be found in Table 6.

Social comparisons. Analyses revealed a significant main effect of direction, $F(2, 120) = 7.28$, $p < .001$, qualified by a significant Direction × Goal interaction, $F(2, 120) = 9.41$, $p < .001$. As predicted, participants reported more upward comparisons when they were motivated to assess themselves accurately rather than self-enhance, $t(60) = 3.62$, $p < .001$, and more downward comparisons when they strove to self-enhance rather than evaluate themselves accurately, $t(60) = 2.52$, $p < .02$. The frequency of same-level comparisons was low and did not differ significantly across goal conditions, $t(60) < 1.0$.

Temporal-past comparisons. Analyses revealed significant main effects of goal, $F(1, 60) = 4.49$, $p < .038$, and direction, $F(2, 120) = 22.37$, $p < .001$, qualified by a significant Goal × Direction interaction, $F(2, 120) = 3.55$, $p < .032$. The interaction indicated that downward comparisons with past selves were more frequent in the self-enhancement condition than in the self-evaluation condition, $t(60) = 3.41$, $p < .001$. Upward and same-level comparisons did not differ significantly. As predicted, participants were more inclined to make downward temporal comparisons when they wanted to feel good about themselves. Participants did not compare with superior past selves even when they wanted to self-evaluate—perhaps because they did not perceive superior past selves to exist on the target dimensions.

Temporal-future comparisons. Analyses revealed only a main effect of direction, $F(2, 120) = 10.24$, $p < .001$. Participants reported significantly more upward comparisons than any other kind (ts > 3.08, ps < .003). Regardless of condition, participants focused on how they will be even better in the future than they are in the present.

Manipulation Checks

We expected that participants in the self-enhancement group might feel better about their actual level of social skill and self-confidence immediately after having described themselves favorably. We entered both attributes into a 2 (attribute: social skill vs. self-confidence) × 2 (goal: self-enhance vs. self-evaluate) mixed

[6] Because our predictions specifically focused on participants' preference for different comparison standards when motivated by different goals, we used the method of meaningful differences (Rosenthal & Rosnow, 1984), rather than computing the interaction and testing simple effects. Results using this method are statistically identical to a Comparison Standard × Goal Condition interaction. Main effects of comparison standard and goal condition were not significant. This logic also applies in Study 5.

[7] For predicted effects, one-tailed significance levels are reported. This applies to Studies 4 and 5 where specific directional predictions were made.

ANOVA. Overall self-ratings on each of the two traits did not differ, indicated by the nonsignificant main effect of attribute, $F(1, 60) = .52$, *ns*. The goal main effect was significant, $F(1, 60) = 4.53$, $p < .037$. Participants rated their actual levels of the two attributes more favorably in the self-enhancement condition ($M = 7.23$ vs. 6.44).

Second, we anticipated that participants would be in a better mood after writing an enhancing rather than evaluative self-description. Two mood scores were calculated: a "negative mood" score, which averaged ratings of all negative emotions on the PANAS, and a "positive mood" score, which averaged ratings of the positive emotions. Internal consistency (Cronbach's alpha) was .91 for negative mood and .87 for positive mood. Participants in the self-evaluation condition ($M = 1.91$) reported a more negative mood than those in the self-enhancement condition ($M = 1.37$), $t(60) = 3.43$, $p < .001$. Ratings of positive mood did not differ significantly across the two conditions, $t(60) = 1.30$, $p < .19$, (M's = 2.83 and 3.03, respectively).

Discussion

The findings are highly consistent with the experimental hypotheses. Although evaluation and enhancement goals yielded both social and temporal-past comparisons, the relative frequency of the two types of comparison varied across the goal states. Evaluation goals encouraged social comparisons and enhancement goals evoked temporal-past comparisons. In addition, social comparisons were primarily downward in the self-enhancement condition and upward in the self-evaluation condition. This effect of appraisal goal on the direction of comparison is consistent with past research and theory (Festinger, 1954; Wills, 1981). Although enhancement goals also increased the number of downward temporal-past comparisons, such comparisons to inferior past selves predominated even with evaluation goals. At least with the attributes of social skills and self-confidence, university students seem disinclined to make upward temporal-past comparisons, regardless of their goal.

In Study 4, the goals were explicitly imposed on the participants. Conceivably, rather than (or in addition to) adopting the prescribed goal, participants responded to experimental demands by trying to describe what they would do if they were to adopt that goal. Although potentially interesting, such reasoning about hypothetical goals may not reflect how individuals would describe themselves if they actually assumed the goal. In Study 5, we sought to replicate Study 4 with a procedure that would rule out potential demand alternatives.

Study 5

The final study was designed to conceptually replicate Study 4, using priming to provide a subtle manipulation of goal activation. Researchers have demonstrated that a variety of goals can be activated by priming tasks (e.g., impression formation, memorization, achievement, affiliation, accuracy; Bargh, 1997; Chartrand & Bargh, 1996). Goals have been primed by assigning participants a scrambled-sentence task with goal-related words (Chartrand & Bargh, 1996), a word-search task (Bargh & Barndollar, 1996), or a goal-imagination task (Chen, Schecter, & Chaiken, 1996). In the present study, we used words related to accuracy and evaluation to prime a self-evaluation goal and words related to positivity and praise to prime a self-enhancement goal. We avoided a priming task that might cause participants to think about particular individuals, either themselves (if they thought about self or read "I" sentences) or others (if they thought or read about "she/he/you"). Conceivably, using sentences that referred to self would prime temporal comparisons and sentences that referred to others would prime social comparisons. To eliminate this problem, we used words rather than sentences and made certain that the words did not have direct self or other referents. We asked participants to categorize the words, a subset of which was related to one of the two self-description goals. Participants then proceeded to a second, ostensibly unrelated study, in which they described themselves on a number of attributes.

Method

Participants

Forty-one University of Waterloo students (20 women and 21 men) participated in this study for partial credit in their introductory psychology class. Each experimental session included between 1 and 5 participants. The data from 3 participants were excluded from the analyses because they indicated during debriefing that they suspected that the two studies were related.

Procedure

Participants were told that they would be completing two independent studies during the same session. The first involved answering a questionnaire that would provide preliminary data for a new Word Associations Test. Their task was to read a list of 36 words and categorize them according to their meaning. They were told that all of the words could fall into one of three broad categories, but the categories were not named. For all participants, one word category involved food and cooking (e.g., roast, recipe). The other two categories were goal related. In the evaluation condition, one category involved words related to accuracy (e.g., factual, unbiased, precise, honest) and the other category included evaluation words (e.g., scrutinize, verify, assess, evaluate). In the enhancement condition, one category of words was related to positivity (e.g., flawless, worthy, positive, satisfied) and the other to praise (e.g., flatter, boast, approve, admire). In total, there were 22 goal-related words in each list. None of the words was explicitly oriented to self or others (for example, the word "evaluate" was included, but not "self-evaluate").

After categorizing the words, participants began the "main study." Instructions were similar to those in Study 4. Participants were asked to describe themselves on four attributes: social skills, independence/self-reliance, self-confidence, and open-mindedness. These attributes were all mentioned quite often in the trait-listing component of Study 1 and are all considered personally important by most undergraduates (Wilson & Ross, 1999). They were provided with a sheet of paper with 16 lines on which to describe themselves on each attribute. As in past studies, the three comparison standards were given as examples of the kinds of information that participants might find useful, but they were told that they could use or disregard any of the suggestions. Open-ended self-descriptions were coded for comparison standard and direction, using the same coding scheme as in previous studies. Cohen's Kappa was .95 for social comparisons, .85 for temporal-past comparisons, and .93 for temporal-future comparisons. Before correcting for chance, interrater agreement was above 97% for all types. For identified comparisons, agreement about direction was 97%.

Immediately after finishing the open-ended self-descriptions, participants indicated their mood by completing a shortened version of the

Table 7
Study 5: Direction of Comparisons for Each Comparison Standard by Type of Motivation

	Comparison standard								
	Temporal-past			Temporal-future			Social		
Type of motivation	Upward	Downward	Same-level	Upward	Downward	Same-level	Upward	Downward	Same-level
Enhance	.05	1.4	.56	.67	.00	.06	.22	.72	.39
Evaluate	.10	.60	.30	.25	.00	.25	.50	.65	.40

Note. Values represent the mean number of comparisons of each type per participant.

PANAS, with 6 positive and 6 negative emotion words. They were asked to indicate on a 7-point scale (1 = *not at all*, 7 = *extremely*) the extent to which they felt each emotion right now. Finally, participants were asked to report their self-description goals when they completed the questionnaire. They indicated on a 10-point scale (1 = *definitely did not have this goal*, 10 = *definitely had this goal*) the extent to which they wanted to accurately evaluate themselves and the extent to which they wanted to feel good about themselves.

Results

Participants on average made 3.6 comparisons (range = 0–13). We predicted that participants who activated self-enhancement goals would favor temporal-past comparisons, whereas those who activated self-evaluation goals would prefer social comparisons. We aggregated the coded comparisons for the four attributes, because identical patterns of response were obtained on each attribute. We then calculated a difference score for each participant by subtracting the number of social comparisons he or she mentioned from the number of temporal-past self-comparisons. As predicted, temporal-past comparisons were relatively more common when participants were primed with enhancement words rather than evaluative words (M = .72 vs. −.55), $t(36) = 1.88$, $p < .035$.

Forty-one percent of all comparisons were social and 42% were temporal-past. Of all comparisons in the self-enhancement condition, 50% of the comparisons were temporal-past and 32% were social. In the self-evaluation condition, 51% of the comparisons were social and 33% were temporal-past.

The remaining 17% of all comparisons were temporal-future. The mean number of future comparisons in the self-enhancement condition (M = .72) did not differ significantly from that in the self-evaluation condition (M = .50), $t(36) < 1$.

Comparison Directions in Each Goal Condition

We conducted a 3 (comparison standard: social, temporal-past, temporal-future) × 3 (direction: upward, downward, same-level) × 2 (goal: self-enhance, self-evaluate) mixed ANOVA to examine the impact of goal on the direction of comparisons of each type. Significant main effects of comparison standard and direction (Fs > 5.7, ps < .005) and a Comparison Standard × Direction interaction, $F(4, 144) = 8.90$, $p < .001$, were qualified by a marginal Comparison Standard × Direction × Goal interaction, $F(4, 144) = 2.30$, $p < .06$. To investigate the impact of goal on each comparison type, we then conducted a 2 (goal) × 3 (direction) mixed ANOVA for each comparison standard. Means are reported in Table 7.

Social comparisons. For social comparisons, neither the main effect of direction, $F(2, 72) = 2.31$, $p < .11$, nor the Direction × Goal interaction, $F(2, 72) = .61$, were significant. A planned comparison revealed that, as expected, participants reported more downward than upward social comparisons when primed with enhancement words, $t(17) = 2.30$, $p < .035$. Participants reported similar numbers of upward and downward social comparisons when primed with evaluation words, $t(19) < 1.0$.

Temporal-past comparisons. Analyses of temporal-past comparisons revealed significant main effects of goal, $F(1, 36) = 4.47$, $p < .041$, and direction, $F(2, 72) = 14.70$, $p < .001$, that were qualified by a significant Goal × Direction interaction, $F(2, 72) = 3.30$, $p < .043$. As predicted, participants made more downward temporal-past comparisons in the self-enhancement condition than in the self-evaluation condition, $t(36) = 3.39$, $p < .001$. Upward and same-level comparisons did not differ significantly.

Temporal-future comparisons. Analyses of temporal-future comparisons revealed a main effect of direction, $F(2, 72) = 7.11$, $p < .002$, qualified by a Direction × Goal interaction, $F(2, 72) = 3.18$, $p < .047$. In the enhancement condition, participants made significantly more upward temporal-future comparisons than any other kind (ts > 2.37, ps < .03). In the evaluation condition, participants made more upward than downward future comparisons, $t(19) = 2.52$, $p < .02$, but equivalent numbers of upward and same-level comparisons, $t(19) < 1$. Therefore, in the evaluation condition participants were as likely to focus on how they would remain the same as how they would improve; in contrast, participants in the enhancement condition dwelled on how they would improve in the future.

Manipulation Checks

Participants completed mood scales after writing their self-descriptions. Two mood scores were calculated—a negative mood score, which averaged ratings of all six negative emotions, and a positive mood score, which averaged ratings of the six positive emotions. Cronbach's alpha for negative mood was .80 and for positive mood was .65. Analyses revealed no differences for positive or negative moods between the two conditions, $t(36) = .36$, and $t(36) = 1.23$, respectively.

Finally, participants were asked to indicate the extent to which they adopted the goals of accuracy and enhancement while writing

their self-descriptions. These questions were accidentally omitted from the questionnaires of the first 12 participants; thus, analyses were conducted on only a subset ($n = 26$) of the entire sample. A Reported Goal (accurate assessment vs. feeling good) × Goal Condition (evaluate vs. enhance) mixed ANOVA revealed a main effect for reported goal, $F(1, 24) = 20.43, p < .001$, indicating that the goal of accuracy ($M = 8.08$) was endorsed more often overall than was the goal of enhancement ($M = 6.15$). This effect was qualified by a Reported Goal × Goal Condition interaction, $F(1, 24) = 6.14, p < .02$. Although the evaluation goal was endorsed equally in the two conditions ($M = 8.07$ and 8.08), participants primed with enhancement words were more likely to endorse the enhancement goal than were those primed with evaluation words ($M = 7.25$ vs. 5.21), $t(24) = 3.53, p < .01$.

Discussion

The major finding in Study 4 is replicated in Study 5. Temporal comparisons were relatively more prevalent when an enhancement goal was activated, and social comparisons were more common when an evaluation goal was activated. The finding that participants reported more downward temporal-past and downward social comparisons when primed with enhancement rather than evaluation is also consistent with Study 4. On the other hand, the evidence in Study 4 that evaluation concerns produced upward social comparisons was not replicated, although the means were in the same direction. Also, goal prime did not affect participants' mood in the final study, whereas negative mood was affected by goal condition in Study 4. Clearly the effects in Study 5 were somewhat weaker than those in Study 4. This attenuation could be due to a number of different factors, including a more subtle manipulation, a lower N, and in the case of the PANAS, a shorter and less reliable measure.

General Discussion

In previous research, psychologists have focused much more extensively on social comparisons than on temporal comparisons. Our studies suggest that this differential research attention does not reflect a general comparison preference evidenced in people's self-descriptions. In the first three studies, respondents included both temporal-past and social comparisons in their self-descriptions. The relative frequency of each type of comparison varied with the attribute being evaluated as well as the context in which appraisals were made. Although we did not manipulate or measure respondents' self-description goals in these studies, the mix of comparison standards and directions suggests that individuals may have pursued multiple goals. Taylor, Neter, and Wayment (1995) emphasized the importance of recognizing contexts in which multiple motives may be activated, and noted that self-evaluation processes may simultaneously satisfy more than one goal. In Studies 1 and 2, participants may have been interested in both accuracy and self-enhancement, and in Study 3, impression management might have been an additional concern.

In the final two studies, we examined circumstances that might lead people to prefer one or the other type of comparison when their self-descriptions are confidential and anonymous. We proposed that young adults would be particularly likely to engage in temporal-past comparisons when they want to feel good about themselves and in social comparisons when they want to accurately assess their standing on various attributes. In Studies 4 and 5, we manipulated participants' comparison goals. As predicted, participants reported more temporal-past comparisons in their self-descriptions when self-enhancement goals were salient and more social comparisons when self-evaluation goals were salient.

Although young adults can self-enhance using either downward social or temporal-past comparisons, they may often prefer temporal comparisons for this purpose. The past is ephemeral: If people choose to see themselves as improving, there is often little in the way of objective evidence to prove them wrong, even if their perception is illusory. Moreover, the perception of improvement need not be erroneous. Young adults may improve with age on many traits. In contrast, it would be hard for most young adults to deny that some relevant other people earn more money than they do, achieve higher grades, are better athletes, are taller, more attractive, and so forth. Thus, although social comparisons can be enhancing when people search for the right ones, young adults can readily select flattering temporal comparisons that do not pose the same potential threats as social comparisons. Also, there may be disadvantages to otherwise flattering downward social comparisons. Individuals may feel guilty taking pleasure in another's hardship (Brickman & Janoff-Bulman, 1977; Wills, 1981) or even worry that another's mishaps foreshadow their own futures (Major, Testa, & Bylsma, 1991).

What happens when people don't perceive themselves improving over time on a particular attribute? It may be that in such circumstances individuals would focus on downward social comparisons or other enhancing information when motivated to feel good about themselves. Indeed, preference for social and temporal-past comparisons may, in some contexts, operate hydraulically when self-enhancement goals are activated. For example, in a magazine interview, 83-year-old actor Kirk Douglas compared his current, humanitarian pursuits with his past focus on career, "I was selfish . . . . I was acting, producing, directing, never thinking of other things . . . . Now, I'm beginning to get the message [that helping others is more important]" (Teitelbaum, 1997, p. 43). Although this temporal-past comparison was presumably gratifying, comparing his current and past health may not have been as pleasant. When describing his speech difficulties caused by a recent stroke, Douglas switched to social comparison, "So what if I have a speech impediment? Moses had one, and he did all right" (Teitelbaum, 1997, p. 43). More generally, young or old people who perceive unequivocal decline in certain areas (e.g., Ryff, 1991) might selectively choose enhancing social comparisons and eschew temporal comparisons that highlight deterioration.

A strength of the current research is its utilization of content analysis, which is a relatively rare procedure in the study of comparison processes (see Affleck & Tennen, 1991; Wood, Taylor, & Lichtman, 1985, for exceptions). This approach allows us to identify the standards of comparisons that emerge from people's self-descriptions. Closed-ended and forced-choice tasks are indispensable for developing a clearer picture of comparison process, but participants' responses are typically constrained by the options provided to them on such tasks (Wood, 1996). Content analyses of open-ended responses provide information about the comparison processes in which people spontaneously engage. For example, Wood, Taylor, and Lichtman's (1985) open-ended interviews with

breast cancer patients highlighted the use of fabricated comparison standards. These imagined norms allowed individuals to make downward comparisons with "typical" breast cancer patients while avoiding the disadvantages (e.g., social disapproval) of comparing themselves with specific worse-off others. A closed-ended measure may not have provided participants with the opportunity to fabricate comparison others.

The use of content analysis in the current studies also enabled a preliminary examination of people's descriptions of temporal-future comparisons. As expected, we found such comparisons to be less common than temporal-past or social comparisons and predominantly upward. The valence ratings in Study 1 revealed that unlike most upward social comparisons, participants perceived these upward temporal-future comparisons to be favorable rather than disparaging contrasts. Improvement is advantageous, even if some of it has yet to occur. Finally, participants' preference for future comparisons did not vary with the goal manipulations in Studies 4 and 5. Conceivably, future comparisons would increase in frequency when people are primarily motivated by the goal of self-improvement (Taylor, Neter, & Wayment, 1995).

A relatively simple picture of social comparison has been presented in this article that is based on the most common effects of comparisons of each direction. We recognize that the social comparison literature as a whole is considerably more rich and complex than our current discussion suggests. This literature should inform and add depth to future analyses of temporal comparisons. Many of the moderating variables identified in the social comparison literature (e.g., Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Collins, 1996; Lockwood & Kunda, 1997; Major, Testa, & Bylsma, 1991) have conceptual counterparts in the domain of temporal comparison (e.g., Ross & Wilson, 1999, 2000). A consideration of the social comparison literature might lead researchers to probe situations in which downward temporal-past comparisons would threaten instead of enhance the self and in which upward temporal-past comparisons would inspire instead of threaten the self. In addition, recent research has focused on individual differences in the tendency to socially compare (Gibbons & Buunk, 1999). Similar differences in the propensity to engage in temporal comparisons are likely. These variations may be associated with individual differences in goal states. Perhaps individuals who tend to be chronically motivated to self-enhance or self-evaluate (Brown & Gallagher, 1992; Krosnick & Sedikides, 1990) would also differ in their comparison preferences. There is a need, as well, to explore the effects of other types of goal states (e.g., self-improvement, self-verification, seeking a common bond) on people's use of different types of comparison processes in their self-descriptions (Hegelson & Mickelson, 1995; Taylor, Neter, & Wayment, 1995).

Our major objective in the present research was to demonstrate that temporal comparisons do not warrant the kind of benign neglect to which they have been subjected. We don't claim that temporal comparisons are more important than social comparisons. We do maintain that temporal comparisons are sufficiently prevalent and psychologically significant to justify serious research attention.

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