

Social and Temporal Comparisons in Adjustment to Aging

Cheryl A. Rickabaugh and Carol Tomlinson-Keasey

*Department of Psychology
University of California, Riverside*

In this descriptive study we investigated the relationship of social psychological processes to older adults' self-esteem. A modified semistructured interview format that assessed social and temporal comparisons, self-esteem, and self-rated adjustment to aging was administered to 70 male and female community residents of Southern California. The majority of participants reported downward social comparisons by describing themselves as being relatively advantaged compared with their age peers. Also, participants tended to report downward temporal comparisons that reflected growth or stable temporal comparisons that reflected continuity across time. Results are discussed in light of their implications for Festinger's (1954) social comparison theory, Albert's (1977) temporal comparison theory, and the use of social psychological processes as mechanisms for self-enhancement in healthy aging.

Old age is often characterized as a time of loss and declining abilities. For example, older adults are confronted with a shrinking social network as their friends and spouses die. Retirement, which brings about the loss of a major role, often is accompanied by reduced income and social status. Given this negative view of aging, one would expect that self-esteem would decline with age. However, self-esteem appears to be maintained or increase with age despite age-related physical and cognitive decrements (Bengtson, Reedy, & Gordon, 1985). Two social psychological processes, social and temporal comparisons, may play an important role in self-esteem maintenance in later life (Cooper & Goethals, 1981; Suls & Mullen, 1982).

According to Festinger (1954), social comparison processes allow individuals to satisfy a uniquely human motivation for self-assessment. Upward social comparisons are considered to serve a self-evaluative function and play an important role in accurate self-assessment and evaluating progress toward the attainment of

self-improvement goals (Wood & Taylor, 1991). In contrast with this self-evaluative function, downward social comparisons may serve a self-enhancing function. Downward social comparisons are theorized to enhance subjective well-being, optimism, and life satisfaction (Wills, 1981, 1991) and were reported in studies of people coping with breast cancer (Wood, Taylor, & Lichtman, 1985), chronic illness (Affleck & Tennen, 1991), and physical disability (Schulz & Decker, 1985). The self-enhancing function of downward social comparisons perhaps is most evident in the readiness with which people compare themselves favorably with an imaginary referent, or a manufactured normative standard (Wood, 1989; Wood et al., 1985).

Social psychological research documents the prevalence of self-enhancing cognitive strategies in the general population (Taylor & Brown, 1988). On the one hand, adults may respond to threats to their self-esteem by engaging in social comparison strategies that provide a sense of subjective well-being, self-worth, mastery, and control (Taylor, 1983; Wills, 1981). On the other hand, there is increasing evidence that psychological threat need not be present for people to engage in self-enhancement (Taylor & Brown, 1988; Wood & Taylor, 1991). For example, people tend to rate themselves more favorably than others on positive attributes (Brown, 1986) and abilities (Campbell, 1986). This self-serving bias is attenuated in persons who are low in self-esteem (Brown, 1986). From this perspective, people high in self-esteem selectively seek out, interpret, and recall self-relevant information in a way that confirms and enhances their positive self-views (Brown & Dutton, 1995a; Taylor & Brown, 1988) and avoid the threatening implications of social comparisons (Taylor & Brown, 1988). For example, people with high self-esteem are more likely to report self-enhancing downward *and* upward social comparisons because they appear to focus on the positive aspects of each type of comparison (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990). In contrast, people who are low in self-esteem exhibit a self-protective strategy and engage in social comparison when they are guaranteed a favorable outcome. In situations in which they have performed well and a downward social comparison is ensured, people with low self-esteem have been found to seek out social comparisons. In contrast, they avoid social comparisons when they have failed and risk being humiliated by an upward comparison with a superior other (Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994).

People also may engage in self-evaluation and self-enhancement by use of intrapersonal temporal comparisons involving aspects of the self over time (Albert, 1977). A person's self-esteem can be bolstered by making stable temporal comparisons that reflect continuity of identity, especially under threatening circumstances such as times of personal change. Furthermore, downward temporal comparisons that reflect personal growth or maturity may play an important role in people's coping by increasing optimism and life satisfaction and reducing anxiety (Wills, 1987). Self-enhancing temporal comparisons have been reported by older adults assessing their psychological adjustment to aging (Ryff, 1991); however,

Suls, Marco, and Tobin (1991) found that older adults' temporal comparisons of physical health tended to be upward in nature (i.e., unfavorable), and that avoidance of temporal comparisons was associated with more favorable self-assessments. Suls and Mullen (1982) argued that older adults rely on temporal comparisons and neglect social comparisons when engaging in self-evaluation. This notion is predicated on the assumption that increasing social isolation and age-related sensory and cognitive decrements prevent older adults from making social comparisons with their age peers. Furthermore, Suls (1986) hypothesized that older adults will experience a state of relative deprivation because self-evaluation in old age inevitably will be predicated on upward temporal comparisons that reflect the awareness of physical, cognitive, and social decline.

This study was designed to describe the role of social and temporal comparisons in older adults' self-rated adjustment to aging. This study also investigated the role that self-enhancing social and temporal comparisons play in the maintenance of self-esteem in later life. We made the following predictions:

1. Contrary to the predictions of Suls and Mullen's (1982) model, participants will report relatively more social comparisons than temporal comparisons. There is no evidence that disengagement and social isolation are inevitable concomitants of aging. The stereotype of the lonely, isolated older person is simply a social myth (Shanas, 1979) because most older adults are embedded in a social network of family, friends, and neighbors (Antonucci, 1990). Hence, older adults' social environments provide many potential targets for social comparisons processes.

2. Contrary to Suls's (1986) relative deprivation hypothesis, participants' social and temporal comparison processes will reflect patterns of self-enhancement. This hypothesis is supported by the fact that older adults have been found to rate themselves more favorably than their age peers on a number of psychological dimensions (Luszcz & Fitzgerald, 1986), and many dimensions of their self-assessments have demonstrated patterns of maintenance or stability over time (Ryff, 1991). Hence, downward (i.e., self-enhancing) social comparisons will be more frequently reported than upward (i.e., self-evaluative) social comparisons. Moreover, stable or downward temporal comparisons (i.e., indicating continuity or growth) will be more frequently reported than upward temporal comparisons (i.e., indicating decline).

3. The self-enhancing nature of participants' social and temporal comparison processes will be due to their selective social and temporal comparison choices. If people engage in strategic comparisons to meet their psychological goals (Wood, 1989), two cognitive strategies, that is, choice of comparison target and dimension of comparison, may ensure that self-enhancing comparisons will be made.

First, self-enhancing (i.e., downward) social comparisons will be more frequently made *vis-à-vis* a manufactured normative standard (e.g., "most older people"). This assumption is predicated on the finding that subjective health ratings were more positive when older adults compared themselves with a stereotype of

the frail elderly (Suls, Marco, & Tobin, 1991). Furthermore, people may strive to avoid making downward comparisons that enhance their self-esteem at another's expense (Brickman & Bulman, 1977; Hemphill & Lehman, 1991).

Second, downward social comparisons will be more frequently made on the basis of psychological adjustment than on dimensions such as financial status or physical health. Similarly, self-enhancing (i.e., stable and downward) temporal comparisons will be more frequently made on the basis of psychological adjustment by which the elderly may perceive themselves to be relatively advantaged. This suggestion is supported by Albert's (1977) assertion that people will favor temporal comparisons that reflect continuity of valued aspects of the self. There also is some evidence for selective use of social and temporal comparisons in older adults' self-rated physical health (Suls, Marco, & Tobin, 1991) and psychological development (Heckhausen & Krueger, 1993).

4. The relationship of threat and chronic self-esteem to self-enhancement is less clear. If psychological threat is necessary to elicit self-enhancing social cognitive strategies, then participants experiencing age-related threats to self-esteem (i.e., poor health and reduced social activity) will engage in comparatively more self-enhancing social and temporal comparisons than will nonthreatened participants. Moreover, participants with low self-esteem will engage in comparatively more self-enhancing social and temporal comparisons than will participants with high self-esteem. This prediction follows from the self-enhancement perspective that posits that people respond to threat by seeking out downward social comparisons (Wills, 1991) and downward and stable temporal comparisons (Albert, 1977; Wills, 1991) while avoiding upward comparisons (Wood, 1989; Wood et al., 1994). On the other hand, if high self-esteem serves as a schema that biases the processing of social information and constructs a positive self-view and feelings of self-worth (Brown & Dutton, 1995a, 1995b; Taylor & Brown, 1988), then participants high in self-esteem will engage in comparatively more self-enhancing social and temporal comparisons than will participants low in self-esteem.

METHOD

Participants

Seventy male (28.6%) and female (71.4%) adults aged 65 to 93 years ($M = 72.4$ years) were recruited from two senior center facilities in Southern California. Most participants were White (91.4%) and had been life-long residents or had relocated to the area on retirement.

Approximately 50% of the sample had been employed as professionals (21.0%) or as office personnel (27.0%). Another 25.7% of the sample had been employed as railroad or factory workers, restaurant workers, or had been engaged in a number of crafts over their working years. The mean educational level of this sample was

14.2 years. More than one third (37.7%) of the sample reported having a high school diploma, 14.5% reported having attended at least 2 years of college, and 7.2% had a bachelor's degree.

Procedure

All participants were contacted by the experimenter or the directors of the senior facilities to identify potential volunteers for the study. Announcements were made in monthly newsletters and during regularly scheduled classes and activities. Because these facilities were drop-in centers and it was impossible to calculate a refusal rate, several of the suggestions made by Rosnow and Rosenthal (1976) to minimize the effect of selection bias were followed. Specifically, the study was presented in a nonthreatening manner by emphasizing its nonclinical nature and relevance to the target population. In addition, a normative incentive was introduced by enlisting the support of administrators at each facility, and personal appeals were made during membership meetings.

The majority of the interviews were conducted at the senior facilities from which participants were recruited. In a few instances, however, interviews were conducted in participants' homes. Informed consent and permission for the interviews to be audiotaped were obtained before the interviews commenced. Participants were interviewed individually and were paid a \$5 stipend for their participation.

Interview Protocol

Interview format. The semistructured format of the interview protocol, adapted from Wood et al. (1985) presented participants with a series of interviewer-provided questions with prescribed response options. In addition, a number of open-ended questions designed to elicit free responses were included. Interviews were audiotaped to record the free-response social and temporal comparisons generated by participants during the course of the interview. These spontaneous comparisons provided the source of free-response data.

Activity. A summary measure of activity was obtained by asking participants to describe their typical day (i.e., "In general, how do you spend your day?"). This response was coded by two independent raters on a Likert-type scale ranging from 1 (*very inactive*) to 5 (*very active*). Interrater reliability for this measure was .73.¹

¹Pearson product-moment coefficients were computed between the two ratings on the Likert-type items to obtain reliability coefficients. Interrater agreement for frequency data was computed by calculating the percentage of agreed-on observations (number of agreements divided by total number of observations) for occurrences only. In addition, Cohen's (1960) κ was computed to provide an additional reliability estimate that controlled for chance agreement between raters. See Hartmann (1977) for a discussion of these methods of computing interrater reliability estimates.

Perceived financial status. Participants reported their financial status by rating their retirement income on a Likert-type scale that ranged from 1 (*very inadequate*) to 5 (*very adequate*).

Perceived physical health. Participants rated their physical health on a one-item measure of perceived health status (Shanas et al., 1968) scored from 1 (*verypoor*) to 5 (*very good*). This measure has demonstrated satisfactory convergent validity with objective health indices such as physicians' assessments (Stahl, 1982).

Self-esteem. Participants were administered the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), a 10-item unidimensional measure of global self-esteem.

Spontaneous Social and Temporal Comparisons

The interviewer and two psychology graduate students identified and transcribed responses from the audiotapes of the interviews to construct a pool of spontaneous social and temporal comparisons. This pool then was subjected to content analysis by two graduate psychology students. Identification and coding of spontaneous social and temporal comparisons thus were completed in a two-phase process.

Construction of data pool. A *social comparison* was defined as an interpersonal comparison made by the participant between himself or herself and another person's (or group's) adjustment to aging. A typical response that would be included in this category is the following: "Some people have hibernated to a degree, and then they don't have ways to overcome it." A *temporal comparison* was defined as an intrapersonal comparison made by the participant between himself or herself at two points in time. A typical response that would be included in this category is the following: "I don't have the same kind of relationships, friendships now that I had when I was 40 because of the types of activities I was involved in." Only those verbatim responses that were identified by two of the three coders were retained for the final data set.² Responses were grouped neither by participant nor by type of comparison (e.g., social or temporal); the data sheets contained a list of verbatim responses (in random order) preceded by item numbers.

²This procedure was suggested by J. V. Wood (personal communication, January 28, 1987) in lieu of computing interrater agreement at this stage of the content analysis.

The final data pool consisted of 245 responses. These responses were then content analyzed by the second coding team. These two coders identified 158 social comparisons and 87 temporal comparisons (64.5% and 35.5% of the data, respectively). Interrater agreement was 97%; Cohen's (1960) κ (which controls for chance agreement) was .93.

Social comparisons. The quotations identified as social comparisons were subjected to three steps of content analysis. Step One was designed to identify the comparison *target* the participants had described. Step Two and Step Three were designed to identify the *dimension* and the *direction* of comparison, respectively.

Step One distinguished social comparisons made with an actual person within the participant's environment from comparisons made with a *manufactured normative standard*. A social comparison was determined to have been made with a *specific other* if the target was explicitly identified (e.g., "The people that I'm around have the same attitude toward growing old that I do"). On the other hand, participants frequently referred to a more generalized other. Hence, a social comparison was judged to have been made with a manufactured normative standard if the participant referred to "some" or "most" people (e.g., "Some people are doers . . . other people are just the opposite"). Interrater agreement for this step was 92%; Cohen's κ was .84.

After the comparison target had been identified, the dimension of comparison was assessed in Step Two. Three categories represented this step in the content analysis. A social comparison was judged to have been made in the domain of *psychological adjustment* when participants compared themselves solely on the basis of psychological adjustment to aging without mentioning any mitigating physical or situational factors (e.g., "There are two kinds that come into the Center . . . you've got the kinds that are extroverts . . . and the other kinds who are sponges"). Many participants compared themselves with others on the basis of their physical condition or adjustment to physical changes (i.e., a *physical* comparison). An example of this category is the following quotation: "I wish I could be like they are . . . and she has trouble with her legs." A third dimension of social comparison (i.e., a *situational* comparison) cited life circumstances that hinder or facilitate adjustment that were unrelated to physical condition (e.g., "The married ones . . . it helps to have children, you know, it keeps you young"). Notice that social comparisons made on the basis of psychological adjustment were fairly global in nature. If the participant specifically identified factors that affected aging, the quotation was categorized according to these mitigating factors, either physical or situational. Interrater agreement for this step was 92%; Cohen's κ was .84.

Step Three involved an analysis of the direction of social comparison. An *upward* social comparison was considered to have been made if the participant indicated that others adjusted comparatively well to aging (e.g., "And some of them

are so awe-inspiring. I think ‘well, shoot, why didn’t I think of that?’ But I can’t do the things they do”). In contrast, a *downward* social comparison was considered to have been made when the participant indicated that others adjusted comparatively poorly to aging (e.g., “And they expect people to wait on them, they expect because they reached so old it’s about time somebody takes care of me. Well, I’m not like that”). Interrater agreement for this step was 96%; Cohen’s κ was .92.

Temporal comparisons. Once a quotation was coded as a temporal comparison, two additional steps of analysis were undertaken. Step One was designed to assess the *dimension* under comparison. Step Two was designed to describe the *direction* of the comparison; that is, whether the participant saw himself or herself as the same or different.

Three dimensions of comparison tended to describe the data. A temporal comparison was considered to be made in the dimension of *psychological adjustment* when the participant assessed his or her life between two points of time without mentioning any mitigating factors relevant to one’s adjustment to aging (e.g., “I don’t feel mine [horizons] are diminishing now that I’m 80”).

Other temporal comparisons were more specific in the way participants perceived themselves to be changing or remaining the same. A temporal comparison was coded on the dimension of *physical condition* when the participant commented on his or her adjustment to the physical aspects of aging (e.g., “I used to be very athletically inclined, and as one gets older you can’t do the physical as a result”). Furthermore, participants frequently commented on ways in which their life situation had changed. It is important to note that these comparisons included no mention of the participant’s physical condition. A representative example of a *situational* temporal comparison is the following: “I get railroad retirement. Now, if I had to pay rent and live on my own it wouldn’t be adequate. But the circumstances under which I live, I can do anything I want.” Interrater agreement for this step was 93%; Cohen’s κ was .86.

Last, the direction of each temporal comparison was assessed. A *downward* temporal comparison was identified when the participant indicated that he or she had been adjusting well to aging, realized personal growth, or maturation (e.g., “I don’t make the mistakes I made when I was 40, even when I was 60”). A temporal comparison reflecting perceived *stability* across the lifespan was identified when the participant stressed the continuity of important aspects of himself or herself or indicated that he or she felt that there had been little or no change (e.g., “I really don’t think about getting old. I don’t really think of myself as old as I am. I’m the same person inside”). Last, an *upward* temporal comparison was coded when quotations indicated that the participant reported perceived decline over the years or difficulty in adjusting to age-related change (e.g., “When I was 40, I was hooking rugs . . . but I can’t do that now . . . it’s too hard”). Interrater agreement for this step was 93%; Cohen’s κ was .83.

RESULTS

Sample Characteristics

The analysis of the demographic variables indicated that the sample was a community-based one and that participants tended to be healthy and enjoyed a certain amount of financial security. Most participants enjoyed at least moderately good health, and were active ($M = 4.45$, $SD = .77$, and $M = 3.74$, $SD = .76$ on 5-point scales, respectively). Most participants described their health to be either *very good* (61.4%) or *good* (24.3%) and were categorized as either *very active* (14.3%) or *active* (50.0%). In addition, participants considered their financial status to be comfortable. The majority of the participants rated their retirement income as *very adequate* (37.1%) or *adequate* (45.7%; $M = 4.11$, $SD = .93$). These demographic characteristics are important factors in adjustment to old age, and it must be emphasized that this sample was an advantaged one in these respects.

The free-response data are presented following the procedure described by Wood et al. (1985). First, the frequencies of social and temporal comparisons reported by participants are presented. Then, chi-square analyses will be presented to compare the frequencies of comparison categories. Instead of comparing frequencies of comparisons tabulated across the sample, the relative number of participants who made comparatively more of each type of comparison was the level of analysis. Wood et al. (1985) argued that this procedure provided a more meaningful and conservative analysis of the data than did analyses of individual responses.³

Free-Response Data: Relative Frequency of Social and Temporal Comparisons

Participants readily described their adjustment to aging in relation to other elderly adults or within the context of their life histories. The majority of participants (90.0%, $n = 63$) made at least one social or temporal comparison that was included in the free-response data pool. The number of free responses coded per participant ranged from 0 to 18 ($M = 3.49$, $SD = 3.22$). Roughly 50% of the sample made one (17.1%, $n = 12$) or two (22.9%, $n = 16$) or three (12.9% $n = 9$) spontaneous social or temporal comparisons. As indicated in Table 1, the majority of the sample (81.4%, $n = 57$) made at least one social comparison ($M = 2.21$, $SD = 2.13$). In contrast, 58.6% of the sample ($n = 41$) made at least one temporal comparison ($M = 1.27$, $SD = 1.70$). Contrary to Suls and Mullen's (1982) model, of the 63

³The sample sizes for each chi-square may vary from the number of participants reporting each category of spontaneous social and temporal comparison due to the exclusion of participants who reported an equal number of responses in each category under analysis.

TABLE 1
Frequency of Participants Reporting Spontaneous Social and Temporal Comparisons

<i>Frequency of Comparisons</i>	<i>Social Comparisons</i>		<i>Temporal Comparisons</i>	
	<i>Frequency of Participants</i>	<i>% of Participants</i>	<i>Frequency of Participants</i>	<i>% of Participants</i>
0	13	18.6	29	41.4
1	20	28.6	16	22.9
2	16	22.9	15	21.4
3	5	7.1	4	5.7
4	6	8.6	5	7.1
5	3	4.3	0	0
6	4	5.7	0	0
7	1	1.4	0	0
8	1	1.4	0	0
10	1	1.4	0	0
11	0	0	1	1.4
Total	70	100.0	70	100.0

TABLE 2
Spontaneous Social Comparisons: Targets Chosen for Comparison

<i>Frequency of Comparisons</i>	<i>Specific Other</i>		<i>Manufactured Normative Standard</i>	
	<i>Frequency of Participants</i>	<i>% of Participants</i>	<i>Frequency of Participants</i>	<i>% of Participants</i>
0	21	30.0	39	55.7
1	21	30.0	19	27.1
2	15	21.4	7	10.0
3	4	5.7	3	4.3
4	5	7.1	1	1.4
5	3	4.3	0	0
6	1	1.4	1	1.4
Total	70	100.0	70	100.0

participants who made at least one spontaneous social or temporal comparison, the overwhelming majority reported more social comparisons (79.4%, $n = 50$) than temporal comparisons (20.6%, $n = 13$). The chi-square test of these frequencies was significant, $\chi^2(1, N = 63) = 20.57, p < .001$.

An inspection of Table 2 indicates that social comparisons were made more frequently with people known to the participant than with a manufactured normative standard. Only 14.0% ($n = 8$) of the participants compared themselves solely with a manufactured normative standard; in contrast 45.6% ($n = 26$) of those making

social comparisons compared themselves solely with known others. The number of participants reporting more social comparisons with a known target ($n = 34$, 59.6%) was contrasted with the number of participants reporting more social comparisons with a manufactured normative standard ($n = 13$, 22.8%). The difference between these two frequencies was significant, $\chi^2(1, N = 47) = 8.51, p < .01$.

Participants readily compared themselves with other older adults. It is likely, though, that both social and temporal comparisons serve different functions or provide different information to older adults. Therefore, the patterns of social and temporal comparisons observed in this sample will be described more fully.

The Relative Deprivation Hypothesis

Frequency of self-enhancing social comparisons. The analysis of the free-response data indicated that 71.4% of the sample ($n = 50$) reported downward social comparisons. Fifty percent of the sample made one ($n = 21$, 30.0%) or two ($n = 14$, 20.0%) downward social comparisons. In contrast, the majority of the sample ($n = 44$, 62.9%) made no upward comparisons (see Table 3). When the proportion of participants who made more downward social comparisons (68.4%, $n = 39$) was compared with the proportion of participants reporting more upward comparisons (19.3%, $n = 11$), the self-enhancing pattern of these social comparisons was clearly evident. The chi-square test was significant, $\chi^2(1, N = 50) = 14.58, p < .01$.

Frequency of self-enhancing temporal comparisons. As indicated in Table 4, participants' spontaneous temporal comparisons were more likely to have indicated personal growth or decline rather than stability. Participants tended to

TABLE 3
Frequency of Participants Reporting Spontaneous Social Comparisons by
Direction of Comparison

<i>Frequency of Comparisons</i>	<i>Upward</i>		<i>Downward</i>	
	<i>Frequency of Participants</i>	<i>% of Participants</i>	<i>Frequency of Participants</i>	<i>% of Participants</i>
0	44	62.9	20	28.6
1	13	18.6	21	30.0
2	8	11.4	14	20.0
3	2	2.9	6	8.6
4	2	2.9	6	8.6
5	1	1.4	1	1.4
6	0	0	2	2.9
Total	70	100.0	70	100.0

TABLE 4
 Frequency of Participants Reporting Spontaneous Temporal Comparisons by
 Direction of Comparison

Frequency of Comparisons	<i>Upward</i>		<i>Stable</i>		<i>Downward</i>	
	<i>Participants</i>		<i>Participants</i>		<i>Participants</i>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
0	46	65.7	51	72.9	50	71.4
1	19	27.1	17	24.3	10	14.3
2	2	2.9	2	2.9	6	8.6
3	2	2.9	0	0	3	4.3
4	1	1.4	0	0	0	0
5	0	0	0	0	1	1.4
Total	70	100.0	70	100.0	70	100.0

report upward and downward comparisons with almost equal frequency; there was, however, more variability in the number of downward temporal comparisons reported. To test Albert's (1977) and Wills's (1991) prediction that downward or stable (i.e., self-enhancing) temporal comparisons would be preferred to upward temporal comparisons, the number of participants reporting more downward or stable comparisons than upward temporal comparisons ($n = 22$, 75.9%) was compared with the number of participants reporting relatively more upward temporal comparisons ($n = 7$, 24.1%). The chi-square test comparing these frequencies was significant, $\chi^2(1, N = 29) = 6.76, p < .01$. Thus, the self-enhancement motive is clearly reflected in the pattern of temporal comparisons reported in this sample.

Are Older Adults' Self-Enhancing Social and Temporal Comparisons Reflected in Selective Choice of Comparison Targets and Dimensions of Comparison?

To test the prediction that selective use of social and temporal comparison processes would ensure that a self-enhancing comparison could be made, three analyses were conducted. The first analysis investigated whether downward social comparisons were more frequently made vis-à-vis a manufactured normative standard. Although the majority of the participants (65.9%, $n = 27$) reported more downward comparisons with a manufactured normative standard than with a known target (34.1%, $n = 14$), the chi-square test of this prediction failed to reach significance, $\chi^2(1, N = 41) = 3.51$. Thus, participants did not hesitate to compare themselves favorably with others known to them.

Because participants generally enjoyed good health and were physically active, it is possible that they had few targets available for engaging in upward social comparisons. If this were the case, then it is possible that the selective use of a manufactured normative standard might be employed in the construction of motivating upward social comparisons. To test this possibility, the proportion of participants who reported more upward social comparisons with a known target (95.5%, $n = 21$) was compared to the proportion who reported more upward social comparisons with a manufactured normative standard (4.5%, $n = 1$). Clearly, most participants reporting upward social comparisons did so by referring to other people known to them, $\chi^2(1, N = 22) = 16.41, p < .001$.

The results of the second analysis investigating whether downward social comparisons were more frequently made on the basis of psychological adjustment rather than on physical or situational dimensions supported our prediction. The majority of participants made more downward social comparisons that focused on others' psychological adjustment (51.0%, $n = 25$). Fewer participants made more comparisons that mentioned physical (28.6%, $n = 14$) and situational (20.4%, $n = 10$) factors that affect one's adjustment to aging. The chi-square test of these frequencies was significant, $\chi^2(2, N = 49) = 7.56, p < .05$. Hence, downward social comparisons based on psychological adjustment were comparatively more frequent than were downward social comparisons on the basis of physical health and situational factors.

The results of the third analysis revealed that fewer participants reported more stable or downward temporal comparisons of their physical health (17.6%, $n = 6$), but this frequency was not significantly different from the number who made more stable or downward temporal comparisons that focused on their psychological adjustment to aging (47.1%, $n = 16$) or situational factors related to aging (35.3%, $n = 12$), $\chi^2(2, N = 34) = 4.63, ns$. Hence, self-enhancing temporal comparisons were made with relatively equal frequency across categories.

In summary, although participants clearly demonstrated a preference for self-enhancing social and temporal comparisons, this self-enhancement effect appeared to be the result of the selective choice of the direction of comparisons (i.e., downward social comparisons and downward or stable temporal comparisons) or dimension of social comparison rather than selective choice of comparison target (i.e., manufactured normative standard) or dimension of temporal comparison.

Social and Temporal Comparisons as Predictors of Self-Esteem

From one perspective, people respond to psychological threat by strategic use of social and temporal comparison processes. In this study, threat was operationalized as impaired physical health and reduced social activity. Pearson product-moment coefficients were computed using participants' scores on the health and

activity indices from the interview protocol and the frequency of spontaneous self-enhancing social and temporal comparisons culled from the free-response data to test the relationship between threats to self-esteem and self-enhancing comparison processes.

Self-enhancing social and temporal comparisons in response to age-related threat. If poor physical health and reduced social activity were distressing to participants, then physical health and activity scores should be negatively correlated with the number of self-enhancing free-response social and temporal comparisons. Physical health scores were virtually unrelated to the number of downward social comparisons obtained from the free-response data ($r = -.09$, *ns*). Furthermore, the correlation between physical health scores and the number of downward and stable temporal comparison also was nonsignificant ($r = .15$). Thus, physical health appeared to bear a negligible relation to self-enhancing social and temporal comparisons.

Although activity scores were virtually unrelated to the number of self-enhancing temporal comparisons ($r = -.02$, *ns*), activity scores were found to be moderately correlated with the number of downward social comparisons obtained from the free-response data. Participants who exhibited higher levels of physical activity made comparatively more self-enhancing social comparisons than did participants who were less active ($r = .34$, $p = .004$).

Self-enhancing social and temporal comparisons in response to low self-esteem. If older people engage in selective social and temporal comparisons to boost their self-esteem, then self-esteem (RSES) scores should be negatively correlated with the number of self-enhancing social and temporal comparisons reported. On the other hand, if high self-esteem and a positive self-view serve as a schema that guides social information processing, then RSES scores should be positively correlated with the number of self-enhancing social and temporal comparisons. Moderate, positive correlations were obtained between RSES scores and the number of spontaneous downward social comparisons ($r = .29$, $p = .02$), and between RSES scores and spontaneous downward and stable temporal comparisons ($r = .28$, $p = .02$). Thus, participants with higher self-esteem reported more self-enhancing social and temporal comparisons than did participants with low self-esteem.

Avoidance of upward social and temporal comparisons in response to age-related threat. Rather than engaging in self-enhancing social and temporal comparisons, older adults may protect their self-worth by avoiding upward social and temporal comparisons. From this perspective, one's self-esteem is enhanced by actively avoiding comparisons whereby one will appear to be relatively disadvantaged to others, or the awareness of age-related decline is inevitable. This alternative explanation was tested by two analyses.

If older adults respond to the threats of physical decline and reduced activity by avoiding upward social and temporal comparisons, then health and activity scores should be positively correlated with the number of spontaneous upward social and temporal comparisons. Participants' health scores were not significantly correlated with the number of spontaneous upward social comparisons, $r = .03$, *ns*. In contrast, physical health scores were moderately correlated with the frequency of spontaneous upward temporal comparisons, but not in the expected direction, $r = -.35$, $p = .003$. Thus, declining health status was moderately correlated with the reported frequency of upward temporal comparisons. Participants' activity scores were found to be unrelated to the reported frequency of upward social and temporal comparisons, $r = .03$, and $r = .08$, *ns*, respectively. Physical health and activity bear little relationship to older adults' self-enhancement by way of avoiding upward social comparisons. Moreover, as they become more frail, participants increasingly report upward temporal comparisons.

Last, if older adults with low self-esteem actively avoid engaging in threatening upward comparisons, then RSES scores should be positively correlated with the number of spontaneous upward social and temporal comparisons reported by participants. This prediction was only partially supported by the data analysis. RSES scores were found to be moderately correlated with the number of free-response upward social comparisons, $r = .25$, $p = .02$. The correlation computed between RSES scores and the frequency of upward temporal comparisons was negligible, $r = .01$, *ns*. Hence, participants with more positive self-esteem reported more upward social, but not temporal, comparisons.

A stepwise multiple regression analysis was conducted using physical health and activity scores and the three comparison variables found to be significantly correlated with self-esteem (i.e., downward social comparisons, upward social comparisons, downward/stable temporal comparisons) as predictors of self-esteem. The first step of the regression entered downward social comparisons as the single predictor variable, $R^2 = .08$, $F = 5.94$, $p = .02$. The second step of the regression analysis entered health as the second predictor variable, but the change in the regression model was not statistically significant, $\Delta R^2 = .05$, $F = 3.57$, $p = .06$. Furthermore, no other variables met the criterion for entry into the model, $p < .15$. Thus, downward social comparisons appeared to be a better predictor of self-esteem than did self-enhancing temporal comparisons, upward social comparisons, or physical health.

DISCUSSION

The implications of this study's results are presented in four sections. First, some methodological issues are discussed. Then, the findings relevant to the relative deprivation hypothesis are discussed, followed by a discussion of the study's results in light of the self-enhancement hypotheses. In the concluding section we

discuss the prevalence of the self-enhancement motive in the absence of threats to self-esteem.

Methodological Considerations

Three methodological issues should be considered when interpreting the results of this study. First, the participants who participated in this study were healthy, active older adults who were well integrated into the community and enjoyed a certain amount of financial security. Thus, it should be clear that the results from this study should not be generalized to an institutionalized or clinical population. For example, institutionalized older adults face many more challenges to their psychological adjustment, and they would likely have fewer personal resources from which to draw on than would healthy older adults.

In this study we relied heavily on senior citizen centers for participant recruitment. As such, these participants may have had more access to upward social comparisons than did older people who are house- or block-bound or institutionalized. Because 59.7% of the sample in the Suls et al. (1991) study resided in nursing homes, this is an important factor to consider when comparing the results of these studies. In this study, the overwhelming majority of the upward social comparisons referred to a target known by the respondent. The comparatively greater use of a known-other referent standard in upward, versus downward, social comparisons may be due to participants' interactions with healthy, active role models in these facilities. On the other hand, activity scores were found to be positively correlated with the frequency of downward, but not upward, social comparisons. Thus, it is possible that participation in senior center facilities may have provided more opportunities for social comparison that are reflected in the greater number of downward social comparisons reported by active participants.⁴ On the other hand, this study does describe the social cognitive processes characteristic of resilient elders who are healthy and active and who are adjusting well to aging.

Last, characteristics of the interview protocol may have influenced participants' responses. First, the interview focused on participants' self-reported adjustment to aging. This focus on adjustment may have contributed to the finding that free-response downward social comparisons were more frequently made on the basis of psychological adjustment. On the other hand, this result was not mirrored in the analysis for temporal comparisons. Thus, although it is impossible to rule out this

⁴One question included in the demographic section of the interview assessed the frequency of participation in senior center activities ("How many times a week do you come here?"). Although this variable was included in the interview to help describe the characteristics of the sample and was not used in any of the analyses, correlations were computed to test whether participation was related to the frequency of social comparisons. Correlations between participation and upward social comparisons, $r = -.05$, *ns*, and downward social comparisons, $r = -.08$, *ns*, were found to be negligible.

source of bias, it is less likely to have selectively influenced social, but not temporal, comparisons. Second, the semistructured interview format was chosen to make use of free-response data that would be more descriptive of actual comparison processes than would be forced-choice measures. Yet, the fact remains that participants may have made comparisons that they did not discuss in the interview. On the one hand, Weinstein (1982, 1983) showed that people can rate their comparative health risks with facility. It is possible that social comparisons may not be consciously considered when such comparative ratings are made. On the other hand, it is possible that participants made many social and temporal comparisons every day that they did not discuss during these interviews (see Wood, 1996, for a discussion of this issue).

With these caveats in mind, it should be mentioned that, to the best of our knowledge, this study is the first investigation of naturally occurring social and temporal comparisons in healthy older adults as well as the first attempt to content analyze temporal comparisons. Moreover, free-response measures have painted a rich picture of social cognitive processes in other descriptive studies of social comparisons (Wood et al., 1985; Wood & Taylor, 1991).

Suls and Mullen's Developmental Model of Social and Temporal Comparison Processes: Does Old Age Engender a State of Relative Deprivation?

Consideration of Suls and Mullen's (1982) model of comparison processes introduces the concept that social and temporal comparisons serve complementary functions in self-evaluation across the lifespan. Suls (1986) suggested that older adults encounter a state of relative deprivation and "the individual will begin to live in the past" (Suls & Mullen, 1982, p. 102). Whereas this situation may be experienced by institutionalized adults or the frail elderly, the social and temporal comparisons of resilient older adults suggest that this situation is not an inevitable consequence of healthy aging.

Older participants clearly evidenced self-enhancing social and temporal comparison processes. Participants spontaneously reported social and temporal comparisons relevant to their perceived adjustment to aging, and the majority of these comparisons were positive (i.e., self-enhancing) in nature. Hence, the outcome of these spontaneous comparison processes seem to indicate that these older adults saw themselves as relatively advantaged to other older adults and that their intrapersonal comparisons across time painted a picture of growth, maturity, and continuity. Rather than being at the mercy of their social environment and age-related losses, older adults appear to construct positive self-views through selective social and temporal comparisons across comparison domains. These findings support the hypothesized self-enhancing function of downward social (Wills, 1981) and temporal (Albert, 1977; Wills, 1991) comparison processes. Furthermore, the

positive outcome of these social and temporal comparisons support Wood's (1989) portrayal of the individual assuming an active role in the comparison process.

Old Age and the Social Construction of Subjective Well-Being

Although participants appear to actively construct self-enhancing comparisons, our predictions about the cognitive strategies by which they assure themselves of self-enhancing social and temporal comparisons are not clearly supported by the data. First, there is no evidence that downward social comparisons are more likely to be made by reference to a manufactured normative standard (Wood, 1989; Wood et al., 1985). One explanation for this finding is the fact that the sample, as a whole, enjoyed moderately good health and was fairly active. Thus, the sample may have had an unusually wide range of comparatively worse-off targets from which to make their self-enhancing social comparisons. Furthermore, participants were not restricted to an interviewer-provided range of comparison choices and were therefore free to choose among comparison dimensions. It is possible that with a sufficient range of comparison dimensions by which one feels that one is relatively advantaged, it is not necessary to cognitively fabricate a worse-off other.

Moreover, two of Wood's (1989) contentions about the prevalence of the self-enhancement motive are supported by our findings. First, the prevalence of self-enhancing social and temporal comparisons reported by this sample support her assertion that "the capacity to alternate between social and temporal comparisons is likely to introduce still more flexibility in comparison processes" (p. 243). Indeed, older adults may be particularly motivated to engage in self-enhancing social and temporal comparisons to construct a stable, consistent sense of self and positive self-worth in late adulthood (Cooper & Goethals, 1981; George, 1990). From this perspective, reminiscence and the facilitative life review (Butler, 1963) may provide opportunities for engaging in such self-enhancing comparisons (see also Marshall, 1980).

Last, Wood's (1989) suggestion that self-enhancing social comparisons are likely to be a normal cognitive strategy that mimics the self-serving tendencies seen in the general population (Wood & Taylor, 1991) is supported by our findings. These participants were healthy, active older adults who generally perceived themselves to be adjusting well to the changes they had experienced since midlife and who demonstrated comparatively superior adjustment to the vicissitudes of aging than their friends, neighbors, and most other older adults. These findings lend further support to the view that self-enhancement strategies do seem to reflect a protective social cognitive bias that buffers people from the effects of negative feedback and contributes to positive mental health (Brown & Dutton, 1995b; Taylor & Brown, 1988).

The Relationship of Threat to Self-Esteem and Self-Enhancing Social and Temporal Comparisons

These data do not support the notion that older adults who experienced age-related threat and low self-esteem would engage in more self-enhancing social and temporal comparisons. A number of theoretical issues may explain why these results failed to support this prediction.

First, the effect of age-related threat appeared to be inconsistent and contrary to our predictions. For example, activity scores were found to be moderately correlated with the frequency of downward social comparisons. Hence, participants who enjoyed superior mobility and reported a higher level of physical activity reported more self-enhancing comparisons with relatively disadvantaged others. It is possible that active older adults will more frequently encounter less fortunate others who are having trouble managing their lives and that downward social comparisons inevitably will result.

The negative correlation between physical health and the frequency of upward temporal comparisons also runs counter to this prediction. As they became more frail, participants appeared to increasingly report upward temporal comparisons. It is likely, though, that awareness of one's deteriorating physical condition may be difficult to deny or distort and, hence, less amenable to self-enhancing cognitive strategies. On the other hand, participants' willingness to report such comparisons might have reflected a concern about their declining health and its threatening implications for their self-esteem (Hemphill & Lehman, 1991). In the face of declining health, then, temporal comparisons may inevitably be upward in nature and avoiding such comparisons or selecting another dimension for comparison can ameliorate the negative effects of such threat (Suls, Marco, & Tobin, 1991). Participants in this study were not restricted to evaluating their physical condition, however, and could proffer other self-enhancing comparisons that afforded compensation for these negative upward temporal comparisons.

Last, the relationship between self-esteem and self-enhancing comparisons deserves comment. Older adults with more positive self-esteem appear to make more self-enhancing temporal comparisons while simultaneously engaging in more frequent upward social comparisons. These results may be explained by considering two complementary processes, self-enhancement and problem-solving. A review of the social comparison literature argues that cancer patients prefer to engage in self-enhancing social comparisons while seeking out upward contacts (Taylor & Lobel, 1989). In other words, patients have been found to prefer to evaluate themselves by use of downward social comparisons, which ameliorates their threatened self-esteem. Their interaction preferences, however, are for patients who are doing comparatively better (i.e., upward social comparisons). Taylor and Lobel (1989) suggested that upward contacts provide role models for successful coping and serve as a source of motivation and hope. The implications of this analysis in

terms of this study are that the frequency of self-enhancing temporal comparisons is associated with more positive self-esteem. Older adults' self-esteem also may be bolstered by interacting with their peers who are coping well with the demands of aging. Moreover, because these tendencies have been observed in a community sample (Buunk et al., 1990), it is likely that these cognitive strategies are not limited to people who are negotiating psychological or physical threat, but are evidenced by mentally healthy people as well.

Taken together, these findings lend support to Wood's (1989) and Wood and Taylor's (1991) contention that the self-enhancing motive may not be not restricted to populations that experience psychological threat or evidence low self-esteem. That is, self-enhancing social and temporal comparisons may be normal social cognitive processes associated with good self-esteem and positive mental health (Taylor & Brown, 1991). Hence, it follows that normal, healthy aging would be accompanied by the continued use of self-enhancing social and temporal comparisons by which adults actively construct and maintain a positive self-concept, subjective well-being, and a sense of self-worth over the years.

ACKNOWLEDGMENTS

Cheryl A. Rickabaugh is now at the Department of Psychology, University of Redlands; Carol Tomlinson-Keasey is now at the Office of the President, University of California.

This research was based on a doctoral dissertation submitted by Cheryl A. Rickabaugh to the University of California, Riverside, and also was supported by a grant from the University of California Chancellor's Patent Fund.

We thank Jill Borchert, Thomas Gross, Laura Kamptner, and Sandi Richey for their assistance and helpful comments on this manuscript. We also would like to thank Lorie Ruby for her careful coding, transcription, and faithful attention to detail on various aspects of this project.

REFERENCES

- Affleck, G., & Tennen, H. (1991). Social comparison and coping with major medical problems. In J. Suls and T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 369-393). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Albert, S. (1977). Temporal comparison theory. *Psychological Review*, *84*, 485-503.
- Antonucci, T. C. (1990). Social supports and social relationships. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (3rd ed., pp. 205-226). San Diego, CA: Academic.
- Bengtson, V. L., Reedy, M. N., & Gordon, C. (1985). Aging and self-conceptions: Personality processes and social contexts. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (2nd ed., pp. 544-593). New York: Van Nostrand Reinhold.

- Brickman, P., & Bulman, R. J. (1977). Pleasure and pain in social comparison. In J. M. Suls & R. L. Miller (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 149–185). Washington, DC: Hemisphere.
- Brown, J. D. (1986). Evaluations of self and others: Self-enhancement biases in social judgments. *Social Cognition*, 4, 353–376.
- Brown, J. D., & Dutton, K. A. (1995a). Truth and consequences: The costs and benefits of accurate self-knowledge. *Personality and Social Psychology Bulletin*, 21, 1288–1296.
- Brown, J. D., & Dutton, K. A. (1995b). The thrill of victory, the complexity of defeat: Self-esteem and people's emotional reactions to success and failure. *Journal of Personality and Social Psychology*, 68, 712–722.
- Butler, R. N. (1963). Recall in retrospection. *Journal of the American Geriatrics Society*, 11, 523–529.
- Buunk, B. P., Collins, R. L., Taylor, S. E., VanYperen, N. W., Dakof, G. (1990). The affective consequences of social comparison: Either direction has its ups and downs. *Journal of Personality and Social Psychology*, 59, 1238–1249.
- Campbell, J. D. (1986). Similarity and uniqueness: The effects of attribute type, relevance, and individual differences in self-esteem and depression. *Journal of Personality and Social Psychology*, 50, 281–294.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37–46.
- Cooper, J., & Goethals, G. R. (1981). The self-concept and old age. In S. B. Kiesler, J. N. Morgan, & V. K. Oppenheimer (Eds.) *Aging: Social change* (pp. 431–452). New York: Academic.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140.
- George, L. K. (1990). Social structure, social processes, and social-psychological states. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (3rd ed., pp. 186–204). San Diego, CA: Academic.
- Hartmann, D. P. (1977). Considerations in the choices of interobserver reliability estimates. *Journal of Applied Behavior Analysis*, 10, 103–116.
- Heckhausen, J., & Krueger, G. (1993). Developmental expectations for the self and most other people: Age grading in three functions of social comparison. *Developmental Psychology*, 29, 539–548.
- Hemphill, K. J., & Lehman, D. R. (1991). Social comparisons and their affective consequences: The importance of comparison dimension and individual differences variables. *Journal of Social and Clinical Psychology*, 10, 372–394.
- Luszcz, M. A., & Fitzgerald, K. M. (1986). Understanding cohort differences in cross-generational, self, and peer perceptions. *Journal of Gerontology*, 41, 234–240.
- Marshall, V. W. (1980). *Last chapters: A sociology of aging and dying*. Monterey, CA: Brooks/Cole.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosnow, R. L., & Rosenthal, R. (1976). The volunteer subject revisited. *Australian Journal of Psychology*, 28, 97–108.
- Ryff, C. D. (1991). Possible selves in adulthood and old age: A tale of shifting horizons. *Psychology and Aging*, 6, 286–295.
- Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social support, perceived control, and self-blame. *Journal of Personality and Social Psychology*, 48, 1162–1172.
- Shanas, E. (1979). Social myth as hypothesis: The case of the family relations of old people. *Gerontologist*, 19, 3–9.
- Shanas, E., Townsend, P., Wedderburn, D., Friis, H., Milhoj, P., & Stehouwer, J. (1968). *Old people in three industrial societies*. New York: Atherton.
- Stahl, S. M. (1992). Health. In D. J. Mangen & W. A. Peterson (Eds.), *Research instruments in social gerontology: Health, program evaluation, and demography: Vol. 3* (pp. 85–116). Minneapolis: University of Minnesota Press.

- Suls, J. (1986). Comparison processes in relative deprivation: A life-span analysis. In J. M. Olson, C. P. Herman, & M. P. Zanna (Eds.), *Relative deprivation and social comparison* (pp. 95-116). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Suls, J., Marco, C. A., & Tobin, S. (1991). The role of temporal comparison, social comparison, and direct appraisal in the elderly's self-evaluations of health. *Journal of Applied Social Psychology, 21*, 1125-1144.
- Suls, J., & Mullen, B. (1982). From the cradle to the grave: Comparison and self-evaluation across the life-span. In J. Suls (Ed.), *Psychological perspectives on the self: Vol. 1* (pp. 97-125). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38*, 1161-1173.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193-210.
- Taylor, S. E., & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contacts. *Psychological Review, 96*, 569-575.
- Weinstein, N. D. (1982). Unrealistic optimism about susceptibility to health problems. *Journal of Behavioral Medicine, 5*, 441-460.
- Weinstein, N. D. (1983). Unrealistic optimism about illness susceptibility. *Health Psychology, 2*, 11-20.
- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin, 90*, 245-271.
- Wills, T. A. (1987). Downward comparison as a coping mechanism. In C. R. Snyder, & C. Ford (Eds.), *Coping with negative life events: Clinical and social-psychological perspectives* (pp. 243-268). New York: Plenum.
- Wills, T. A. (1991). Similarity and self-esteem in downward comparison. In J. Suls & T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 51-78). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 106*, 231-248.
- Wood, J. V. (1996). What is social comparison and how should we study it? *Personality and Social Psychology Bulletin, 22*, 520-537.
- Wood, J. V., Giordano-Beech, M., Taylor, K. L., Michela, J. L., & Gaus, V. (1994). Strategies of social comparison among people with low self-esteem: Self-protection and self-enhancement. *Journal of Personality and Social Psychology, 67*, 713-731.
- Wood, J. V., & Taylor, K. L. (1991). Serving self-relevant goals through social comparison. In J. Suls & T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 23-49). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Wood, J. V., Taylor, S. E., & Lichtman, R. R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personality and Social Psychology, 49*, 1169-1183.

Copyright of Basic & Applied Social Psychology is the property of Lawrence Erlbaum Associates and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.