Comparison Style, Physical Self-Perceptions, and Fitness Among Older Women

Tamar Semerjian and Dawn Stephens

This study examined the relationships between older women’s comparison styles, physical self-perceptions, and functional fitness. Participants were community-dwelling women (*N* = 102, age 65–99) living in the mid-Atlantic region of the United States. Individuals were categorized as relying primarily on social comparisons, temporal comparisons, or a combination of both styles. Also of interest was whether individuals evaluated themselves positively or negatively when making comparisons. Participants who evaluated themselves positively as compared with others were found to have higher levels of physical self-perception. Analyses revealed that women who relied primarily on temporal comparisons had higher self-perceptions of their functional ability than those who relied on a combination of comparison styles. An avoidance of both temporal and social comparisons was also related to higher levels of physical self-perception.

**Key Words**: aging, exercise, physical activity

Aging is often associated with declines in health, particularly with reductions in muscle strength and endurance, which can have a profound impact on individuals’ ability to perform activities of daily living. Small gains in health, or even a reduction in the rate of decline in functional capacity, can make a tremendous difference in older adults’ quality of life by preserving their ability to execute activities of daily living (McAuley et al., 2006). To date there has been little investigation into mechanisms by which older adults evaluate their physical abilities. *Self-perception* is a term that was operationalized by Fox and Corbin (1989) and is used in the same way as self-esteem. Self-perception has been defined as multidimensional and hierarchical. It is multidimensional in that it is theorized that there are different domains that contribute to self-perception, and each of these domains contributes uniquely to overall self-perception. Typically there are four domains identified: academic, social, physical, and emotional. For the physical domain there are four subdomains: body attractiveness, physical strength, sport competence, and physical conditioning (Fox & Corbin). The construct of self-perception is deemed

Semerjian is with the School of Kinesiology and Nutritional Science, California State University, Los Angeles, Los Angeles, CA 90032. Stephens is with the Dept. of Health and Sport Studies, University of Iowa, Iowa City, IA 52242.
hierarchical because changes in self-perception at lower levels (domains, sub-domains, etc.) are expected to affect self-perceptions at higher levels, although at lower levels changes will be more apparent. Thus, general self-perceptions are considered stable, but self-perceptions at the subdomain level are more dynamic, and this is where change over time is most likely to occur (Marsh, 1994). Research has moved in the direction of examining more specific facets of self-perception in conjunction with general self-perception.

Previous research has suggested that individuals’ perceptions of their ability predict their future participation in physical activity (McAuley, Lox, & Duncan, 1993; Mobily et al., 1993; Whaley, 2004). Older adults who have high physical self-perceptions are more likely to exercise than those with lower physical self-perceptions (Sonstroem, Speliotis, & Fava, 1992). Although this relationship between self-perceptions and participation has been well established (Fox & Corbin, 1989; Mobily et al., 1993; Mobily, Rubenstein, Lemke, O’Hara, & Wallace, 1996; Sonstroem et al.), how these self-perceptions develop is less well known. Social-comparison theory (Festinger, 1954) might provide some insight into how self-perceptions form. In Festinger’s original formulation there were two primary purposes of social-comparison theory. The first was to predict when, and if, individuals would compare themselves with others, and the second was to predict who individuals would compare themselves with when they did conduct social comparisons. Later researchers became interested in how these comparisons affected individuals’ evaluation of their own abilities, either positively or negatively (Goethals & Darley, 1977; Wheeler, Martin, & Suls, 1997; Wood, Taylor, & Lichtman, 1985).

One type of comparison style used by individuals is social comparison, whereby individuals conduct comparisons with others to evaluate their abilities. The second comparison style individuals might rely on is a temporal comparison style, wherein they compare their current performances with their own previous performances or with expectations of their future performances. Currently, the relationship between a primary reliance on social or temporal comparisons and self-perceptions is unclear. The importance of using comparisons to evaluate physical abilities should not be overlooked, however. As Harter (1990) has pointed out, the physical self is often on display, and thus Harter argues that one’s perception of one’s physical self is the single largest predictor of global self-worth among adults. Simultaneously, because others can observe the physical self it can serve as a basis of comparison—people can see the physical abilities of others and compare their own abilities with those of others.

Whether individuals conduct social or temporal comparisons, there is a direction to these comparisons, either upward or downward. Upward comparisons occur when individuals compare themselves with another individual who performs at a higher level than them at a particular task or compare their current performance with a past performance that was better than their current ability. Downward comparisons involve comparing oneself with an individual who performs at a lower level or when one sees that one’s performance has improved over time (Whaley, 2004; Wheeler et al., 1997).

The process of comparison inevitably influences individuals’ self-perceptions. Festinger’s (1954) original formulation incorporated the concept of the unidimensional drive upward. Festinger stated that because all people want to improve they would always compare themselves with individuals who were better than
themselves. Although there was a plethora of evidence for this, Wood et al. (1985) found that breast cancer survivors were more likely to make downward comparisons. They looked to other people who were worse off than themselves and said “At least I’m doing better than x.” This ego-enhancing comparison style seems to come into play with individuals who have had chronic diseases or illness. This finding might have implications for older adults.

In an effort to understand comparison styles from a developmental perspective, Suls and Mullen (1982) asserted that after the age of 40 individuals have an increased awareness of finite and vulnerable aspects of their physical being, and as a result of the loss of social and interpersonal contacts older adults would rely on temporal comparisons to evaluate their abilities. These comparisons, it was postulated, would be upward, resulting in lower self-concept. Although Suls and Mullen provide no empirical evidence to support this theory, Suls, Marco, and Tobin (1991) undertook a study that considered comparison styles and personal evaluations of health. Individuals who were more concerned about their poor health status were more likely to conduct temporal comparisons that were unfavorable (i.e., I used to be healthier, and I am worried about my health in the future). Those who avoided temporal comparisons tended to have more favorable self-assessments. It is interesting that individuals reported making similar numbers of both social and temporal comparisons, belying Suls and Mullen’s assertion that older adults would rely on temporal comparisons. This finding is consistent with the work of Charles and Carstensen (1999), who have shown that older adults might experience a loss in the number of personal contacts they have, but the importance of the remaining contacts increases, and this helps them maintain positive emotional experiences within social circles.

Frey and Ruble (1990) found that older runners typically relied on temporal comparisons but tended to shift to social comparison as their performances declined, because temporal comparisons would threaten self-concept. Rather than comparing with their own increasing times (and poorer performances), older adults compared themselves with others with whom they compared favorably. Frey and Ruble commented that age was a significant factor in the comparisons made by the older runners they studied. Older participants who compared unfavorably with younger participants would not necessarily conclude that they had low ability, because differences could be attributed to changes in age, but favorable comparisons with younger runners would be indicative of high ability.

Rickabaugh and Tomlinson-Keasey (1997) conducted semistructured interviews of senior-center participants in an effort to determine what kind of spontaneous social comparisons they made. They found that individuals made more social comparisons than temporal comparisons. They also found that individuals with higher self-esteem reported more self-enhancing (downward) social and temporal comparisons than individuals with lower self-esteem. These findings indicate that downward comparisons lead to more favorable outcomes than upward comparisons among older adults and that with increasing age (or declining performances) a shift from temporal comparisons to social comparisons might be adaptive. In the physical setting individuals are often told to monitor their own abilities rather than being concerned with the performances of others. This strategy is adaptive when one is making progress, but if performances are declining, older adults might find that comparing themselves with others who they feel are less capable than they are is more effective for maintaining a positive sense of self. Netz and Raviv (2004)
found that although older adults had lower self-efficacy than younger adults in the performance of physical activity, they rated themselves as fitter and more active than others who were the same age and gender as themselves. Thus, social comparisons among older adults might preserve individuals’ self-perceptions. If it can be determined what type of comparison style is related to higher levels of physical self-perception, exercise settings can be designed to increase adaptive types of comparisons and reduce maladaptive comparison styles.

Our main purpose in this study was to conduct an exploratory study examining relationships between older women’s physical self-perceptions, comparison styles, functional ability, and physical activity participation level. In particular, we sought to examine two specific research questions: (a) How do individuals who rely primarily on social, temporal, or a combination of both types of comparisons differ in their physical self-perceptions? (b) What is the relationship between the physical self-perceptions and age, functional fitness, activity level, and comparison style? We hypothesized that individuals would differ in their physical self-perceptions based on the comparison style (social, temporal, or a combination of both) they primarily relied on. Because this line of research has been relatively unexplored within the physical domain, however, specific hypotheses as to which comparison style would be related to higher levels of physical self-perception could not be formed before data collection. Based on the findings of Frey and Ruble (1990), we hypothesized that individuals relying on a social comparison style would be older than those using a temporal comparison style. In addressing the second research question, we hypothesized that comparison style, as measured by the Physical Comparison Style Questionnaire (PCSQ), would be a significant predictor of physical self-perception, although again, because of the exploratory nature of the study we could not make specific hypotheses as to which comparison styles would be related to higher levels of physical self-perception.

Method

Participants

The participants in this study were 102 women between the ages of 65 and 99 years ($M = 75.97$, $SD = 7.33$) living in the mid-Atlantic region of the United States. An effort was made to recruit participants from both rural and urban settings and for the sample to reflect the cultural diversity in the area. Participants were recruited through verbal and posted announcements at senior centers, a YMCA, and a senior volunteer group. A letter was sent to the directors of the senior centers and YMCA requesting their permission to recruit participants at these sites. A personal request was made to the director of the volunteer organization for study participants. No incentives were provided to participant volunteers. Participants were all in reasonably good health. In an effort to collect data from participants with varying levels of activity, both active and sedentary women were recruited for the study. The use of volunteers from a convenience sample for the study is a clear limitation, but we thought that the people who volunteered to participate in the study might be representative of individuals who would volunteer to participate in a community-based exercise program and therefore representative of the population of interest. Most of the participants identified themselves as White (91.2%), with the remainder
identifying as Native American (4.9%), Chicana or Latina (1.9%), African American (0.98%), and Asian (0.98%). Of the participants, 59.8% reported living in rural areas, and 40.2% reported that they lived in an urban setting. Paper-and-pencil questionnaires and functional-fitness assessments were generally administered at the locations where individuals had been recruited, the senior centers and YMCA, with the exception of the senior volunteer-group members, who came to the YMCA for both components of the study.

**Measures**

**Comparison Style.** The PCSQ is a 28-item measure that contains questions asking participants to identify the types of comparisons they rely on (social or temporal) and the direction of these comparisons (upward or downward). Participants were asked to consider their comparison styles for their overall physical ability, appearance, functional capacity, and general health. The items on the PCSQ ask individuals to identify (a) how frequently they make social comparisons, (b) the direction of these social comparisons (do they compare better or worse with those with whom they compare?), (c) how often they make comparisons with their past abilities, (d) the direction of these temporal comparisons, (e) how often they compare their current abilities with how they will do in the future, (f) the direction of these future comparisons, and (g) their overall comparison style. This measure was developed for the purposes of this study in an effort to develop a tool that could measure comparison styles. The items were developed based on previous research in the area of comparison style (Frey & Ruble, 1990; Rickabaugh & Tomlinson-Keasey, 1997; Suls et al., 1991). Internal-consistency reliability was good for all subscales of the PCSQ in the present study (α = .71 to .78). Currently there are no other questionnaires that consider comparison style in the physical domain, and most studies have relied on spontaneous remarks made by participants during semi-structured interviews. Because this is the first study to use this measure, reliability and validity cannot be established, which is a clear weakness of the study. Because the items are based on previous research, however, and the nature of the measure is straightforward, we determined that this would be effective in assessing individuals’ comparison styles.

**Physical Self-Perception.** Fox and Corbin (1989) proposed a measure of physical self-perception, the Physical Self-Perception Profile (PSPP), to assess changes in self-esteem through exercise. Sonstroem et al. (1992) found that among individuals age 31–66 years the PSPP could discriminate between exercisers and nonexercisers, with the percentage of correct classification for women and men being 88.6% and 80.2%, respectively. Chase (1991) endeavored to adapt the PSPP into a measure that was more relevant to an aging population and developed the Physical Self-Perception Profile for Adults (PSPP-A). As in earlier studies, Chase found a relationship between physical self-perceptions and the amount and types of activities in which older adults chose to participate. The measure is a four-choice, structured-alternative format, as recommended by Harter (1982) to counter socially desirable responses. The PSPP-A measures four subdomains of physical self-worth: sports competence, appearance, functional capacity, and health/disease state. There is also a six-item physical self-worth subscale constructed at the domain level to more generally assess the physical self. The questionnaire is composed of six items for
each of the four subdomains, as well as six items for the general domain, resulting in a total of 24 questions. Scores on each subscale can range from 4 to 24, as the score of each subscale is totaled. Half the items are reverse scored, and the items of the subscales are presented sequentially. Chase reported that alpha coefficients on these factors ranged from .63 to .90. We did not administer the sport subscale to the participants because pilot data indicated that very few of the participants participated in sport, and sport was not seen by the participants as an important aspect of their overall physical self-perception.

**Functional Fitness.** We used a modified version of the Functional Fitness Test for adults over 60 years (FFT; Osness et al., 1990) to measure participants’ functional fitness. This measure assesses six parameters of physical fitness and functional ability: body composition, flexibility, agility and dynamic balance, coordination, strength, and endurance. For the purposes of this study body composition and endurance were not assessed and measures of balance and lower extremity muscle strength were added. Body composition is not necessarily directly related to functional fitness, but balance ability is more relevant to daily functioning. Endurance was not measured because this test required participants to perform a half-mile walking test. Because participants were tested at a variety of sites, and standard conditions for the walking test could not be prepared (e.g., through the use of a treadmill or all participants walking on a similar indoor track), we omitted this test. We employed a protocol for measuring lower extremity strength suggested by Csuka and McCarty (1985). There is evidence that this multiple sit-to-stand test is related to muscle endurance (Netz, Ayalon, Dunsky, & Alexander, 2004), and therefore we used it in place of the endurance test. Similar modifications of this protocol have been used in a study concerning functional fitness among older adults with positive results (Mobily, Mobily, Lane, & Semerjian, 1998). The FFT has been shown to have acceptable stability and internal-consistency reliability, with test–retest reliability on all factors being above .90 (Mobily & Mobily, 1997).

**Physical Readiness.** The Revised Physical Activity Readiness Questionnaire (rPAR-Q; Thomas, Reading, & Shephard, 1992) was given to all participants to screen out individuals for whom the FFT could be deleterious or dangerous. The r-PARQ was primarily used to identify which participants needed to be more carefully monitored for health concerns. Although there were individuals who answered “yes” to some of the items on the questionnaire, some of them were still included in the study. These individuals indicated that, based on discussions with their doctors, they were capable of completing the testing. Most of the participants who volunteered for the study were able to complete the FFT, but some were unable to complete portions of the protocol. Participants were encouraged to report any signs of discomfort and to stop the testing immediately if they were not comfortable. When such a situation occurred the testing was concluded and the individual was monitored for some time afterward. The most common difficulties encountered were that some women did not feel comfortable lowering themselves to the ground for the flexibility test, and a few reported knee pain during the lower extremity muscle-strength test and were instructed to stop immediately.

**Physical Activity.** The Yale Physical Activity Survey (YPAS; DiPietro, Caspersen, Ostfeld, & Nadel, 1993) asked participants to recall their physical activity for a typical week in the preceding month. Participants were asked about activities
such as yard work, exercise, and recreational activities. This survey was given individually in an interview format. YPAS scores were calculated based on the number of hours individuals reported they participated in these physical activities each week. These were converted to the number of kilocalories spent per week by participants in physical activity. The YPAS has acceptable levels of reliability and validity (Bonnefoy et al., 2001; DiPietro et al.; Pennathur, Magham, Contreras, & Dowling, 2004; Schuler, Richardson, Ochoa, & Wang, 2001), with reliability coefficients ranging from .57 to .789.

Procedure

Participants were recruited through announcements at senior centers, a YMCA, and a senior volunteer group. Interested women were invited to participate in the study and were scheduled in small groups to meet with the investigator. At this time they were presented with a description of the study and given an opportunity to ask any questions. Subsequent to this presentation they were asked to sign an informed-consent form. Next, a demographic questionnaire and the r-PARQ were administered, followed by the PSPP-A and the PCSQ. FFTs were scheduled with individuals at the time they filled out the questionnaires. The FFT was administered by the first author and individuals trained by her. At that time, the interview for the YPAS was also conducted. There were several participants who were unable to complete the second part of the study (the FFT and the YPAS), so their responses to the PSPP-A and PCSQ were not included in the analysis.

Data Analysis

We conducted a priori calculations to determine the number of participants necessary to obtain the statistics required to test the hypotheses of the study. Based on an estimated effect size of .06, power of .80, and categorization of participants into one of three comparison-style groups, we determined that 75 participants would be required. To provide further power to the statistical analyses, and because the factors structure of the PSPP was to be tested (see Semerjian, 2001), we determined that 100 participants would be included in the study. A significance level of \( p \leq .05 \) was used for all analyses.

To answer the first research question we conducted analyses of variance (ANOVAs) using the general linear model of SPSS, version 11.5. Individuals were categorized into three groups of comparison style, and these groups served as the independent variable. Scores on the PSPP subscales served as dependent variables. Because we hypothesized that the age of the participants might have an impact on PSPP measures, an ANOVA was also conducted using age as an independent variable and the PSPP-A subscale scores as dependent measures. For this analysis individuals were categorized into two groups, with individuals falling below the mean age of study participants (76 years) placed into one group and individuals above the mean age into a second group.

To demonstrate the relationship between comparison styles and physical self-perceptions, a series of hierarchical regressions was performed. Hierarchical regressions are intended to partition the variance accounted for into components attributed to the different independent variables (Pedhazur & Schmelkin, 1991). Physical self-perceptions were used as the criterion variable, and age, activity level,
functional fitness, and PCSQ scores were used as predictor variables. For this analysis each domain of the PSPP-A was considered separately; thus, four hierarchical regressions were performed, one for each domain. For each hierarchical regression, the first predictor variable, age, was forced into the analysis in Step 1. This was done to identify the variance in physical self-perceptions accounted for by age before seeing what unique variance could be explained by other variables. Next, the participants’ reported level of physical activity was entered in Step 2. This was calculated based on individuals’ responses on the YPAS. This allowed the variance accounted for by physical activity to be removed before we entered the other components of the hierarchical regression. Functional-fitness variables were entered in a stepwise manner in Step 3. In Step 4 of the analysis, answers to the PCSQ on the relevant domain were also entered in a stepwise manner. Stepwise analyses were used in Steps 3 and 4 to determine which of the components of functional fitness and which items on the PCSQ would predict a statistically significant amount of the variance in physical self-perception. For these analyses, all the questions on the PCSQ for each relevant domain were included in the regression, as well as all six functional-fitness scores. Functional-fitness scores reflected individuals’ abilities in six areas: flexibility, agility and dynamic balance, coordination, arm strength, balance, and lower extremity strength.

**Results**

**How Do Individuals Relying on Various Comparison Styles Differ in Their Physical Self-Perceptions?**

Pearson two-tailed bivariate correlations were calculated to determine the relationships between age, comparison style, and scores on the PSPP-A subscales. There was a significant correlation between age and self-perceptions of health. There were also significant correlations between YPAS scores and self-perceptions of overall physical ability, health, and functional ability but not attractiveness. As expected there were significant correlations between subscales of the PSPP-A (see Table 1).

ANOVAs revealed that individuals did not differ in their physical self-perceptions of overall physical self-worth, health, or attractiveness (see Table 2), contrary to our hypothesis. There were, however, significant differences between groups in their evaluation of their functional ability. Post hoc analyses revealed that individuals who used temporal comparisons had significantly higher levels of physical self-perception when evaluating their functional ability ($M = 3.47$) than those who used a combination of comparison styles ($M = 3.19$), $F(2, 99) = 3.22, p = .044$; power = .60. The effect size for this difference was .06, indicating a small difference. This finding indicates that participants who relied on an evaluation of their own abilities over time had higher estimations of their ability to do everyday tasks than those who used a combination of comparison styles.

It was expected, based on the work of Frey and Ruble (1990), that individuals using different comparison styles might differ in age, so an ANOVA was conducted using comparison style as the independent variable and age as the dependent variable. Individuals who used social comparisons tended to be older ($M = 80.08, SD = 6.04$) than those who used temporal comparison styles ($M = 74.66, SD = 6.77$), $F(2, 99) = 3.160, p = .047$. The mean age of participants using a combination of
Table 1 Two-Tailed Pearson Bivariate Correlations Between Age, Comparison Style, and PSPP-A Factors

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Physical activity</th>
<th>Comparison style</th>
<th>Overall physical</th>
<th>Health</th>
<th>Attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>-.222*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparison style</td>
<td>-.243*</td>
<td>.152</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall physical</td>
<td>-.005</td>
<td>.241*</td>
<td>.131</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>-.251*</td>
<td>.318***</td>
<td>.042</td>
<td>.618***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attractiveness</td>
<td>-.014</td>
<td>.104</td>
<td>.060</td>
<td>.668***</td>
<td>.393***</td>
<td></td>
</tr>
<tr>
<td>Functional ability</td>
<td>-.183</td>
<td>.346***</td>
<td>.217*</td>
<td>.465***</td>
<td>.550***</td>
<td>.249***</td>
</tr>
</tbody>
</table>

Note. PSPP-A = Physical Self-Perception Profile for Adults.
*p < .05. ***p < .001.

Table 2 Differences Between Comparison-Style Groups and Physical Self-Perceptions, M (SD)

<table>
<thead>
<tr>
<th>PSPP-A factor</th>
<th>Social, ( n = 12 )</th>
<th>Combination, ( n = 32 )</th>
<th>Temporal, ( n = 58 )</th>
<th>Total, ( N = 102 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall physical</td>
<td>2.58 (.379)</td>
<td>2.61 (.617)</td>
<td>2.78 (.698)</td>
<td>2.70 (.645)</td>
</tr>
<tr>
<td>Health</td>
<td>2.73 (.504)</td>
<td>2.59 (.720)</td>
<td>2.73 (.641)</td>
<td>2.69 (.650)</td>
</tr>
<tr>
<td>Attractiveness</td>
<td>2.38 (.403)</td>
<td>2.38 (.562)</td>
<td>2.45 (.625)</td>
<td>2.42 (.580)</td>
</tr>
<tr>
<td>Functional ability</td>
<td>3.22 (.569)</td>
<td>3.19 (.568)**</td>
<td>3.47 (.506)**</td>
<td>3.35 (.545)</td>
</tr>
</tbody>
</table>

Note. PSPP-A = Physical Self-Perception Profile for Adults.
**p = .044.

styles was 76.81 (\( SD = 8.21 \)). The effect size for this difference was small, .06. There were no differences between the comparison-style groups in their level of regular physical activity as measured by the YPAS.

A final ANOVA was conducted using age as the independent variable and scores on the PSPP-A as the dependent variable. Individuals were categorized into younger and older age-group categories. There were no significant differences between younger and older participants on the PSPP-A scores, with the exception that younger participants had significantly better health self-perceptions (\( M = 2.84, SD = .731 \)) than older participants (\( M = 2.49, SD = .650 \)), \( F(1, 100) = 7.90, p = .006 \). The effect size for this difference was small, .073.

What Is the Relationship Between Physical Self-Perceptions and Age, Functional Fitness, Activity Level, and Comparison Style?

Overall Physical Self-Worth. The results of the first hierarchical regression considering overall physical self-worth revealed that avoidance of comparison with past
performances emerged as the most significant predictor of physical self-perception, accounting for 15.1% of the total variance. The tendency to compare oneself favorably with others (or better than others) when making social comparisons emerged as the second strongest predictor, accounting for 9.7% of the variance. Balance ability was also found to be a significant predictor, accounting for 6.9% of the total variance in participants’ perception of their overall physical self-worth (see Table 3). These results indicated that the participants who infrequently compared with their own past performances, compared favorably with others in their social comparisons, and had better scores on the balance test tended to have greater overall physical self-worth. It is worth noting that for this domain, psychological predictors accounted for more of the variance in self-perception (24.8%) than the functional-fitness predictors (19.7%).

**Health Self-Perception.** An examination of the $R^2$ values and beta weights for the second hierarchical regression, considering health, revealed that participants’ tendency to compare favorably when making social comparisons emerged as the most significant predictor of self-perception of health, accounting for 8.3% of the total variance. Scores on the coordination component of the FFT emerged as the second strongest predictor, accounting for 13.5% of the total variance. Frequency of past temporal comparisons was found to be a significant predictor, accounting for 3.6% of the total variance. The fourth significant predictor was activity level, which accounted for 5.6% of the total variance in individuals’ perception of their health. Balance and flexibility scores were also significant in predicting health scores, accounting for 3.9% and 2.9% of the variance, respectively (see Table 4).

These results indicate that the participants who believed that they had better health than others, had higher coordination scores, tended not to compare with their past health status, had higher activity levels, and had better balance and better flexibility tended to have higher perceptions of their health. Although the strongest predictor of health self-perception reflected a psychological variable, when viewed in combination, psychological variables accounted for 11.9% of the total variance, whereas functional fitness accounted for 20.3% of the total variance.

### Table 3  Hierarchical-Regression Analysis Predicting Overall Physical Self-Perception From Age, the YPAS, the Functional Fitness Test, and the Physical-Comparison-Style Questionnaire

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>$R^2$ change</th>
<th>$R^2$ cumulative change</th>
<th>$F$ change</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>0.067</td>
<td>.005</td>
<td>.005</td>
<td>0.454</td>
<td>.485</td>
</tr>
<tr>
<td>2</td>
<td>Physical activity</td>
<td>0.125</td>
<td>.040</td>
<td>.045</td>
<td>3.819</td>
<td>.162</td>
</tr>
<tr>
<td>3</td>
<td>Balance</td>
<td>0.197</td>
<td>.069</td>
<td>.113</td>
<td>7.033</td>
<td>.046</td>
</tr>
<tr>
<td>4</td>
<td>Past temporal comparison</td>
<td>-0.373</td>
<td>.151</td>
<td>.264</td>
<td>18.521</td>
<td>.000</td>
</tr>
<tr>
<td>5</td>
<td>Directions of social comparison</td>
<td>0.320</td>
<td>.097</td>
<td>.362</td>
<td>13.584</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note. YPAS = Yale Physical Activity Survey. $F(5, 89) = 10.093, p = .000.$
**Attractiveness Self-Perception.** The third hierarchical regression analysis considered the relationship between the attractiveness factor on the PSPP-A and several variables. This analysis revealed that participants’ tendency to compare their appearance less frequently with that of others emerged as the most significant predictor of attractiveness self-perception, accounting for 9.6% of the total variance. The tendency to compare favorably with others (or better than others) when making social comparisons emerged as the second strongest predictor, accounting for 7.6% of the variance. Balance ability approached significance and accounted for 8.8% of the total variance in individuals’ perception of their attractiveness (see Table 5).

Participants who infrequently compared with others, compared favorably with others in their social comparisons when they did make these comparisons, and had better scores on the balance test tended to have greater self-perceptions.

### Table 4 Hierarchical-Regression Analysis Predicting Health Self-Perception From Age, the YPAS, the Functional Fitness Test, and the Physical-Comparison-Style Questionnaire

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>$R^2$ change</th>
<th>$R^2$ cumulative change</th>
<th>F change</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>−0.013</td>
<td>0.107</td>
<td>0.107</td>
<td>11.129</td>
<td>.889</td>
</tr>
<tr>
<td>2</td>
<td>Physical activity</td>
<td>0.195</td>
<td>0.056</td>
<td>0.162</td>
<td>6.107</td>
<td>.018</td>
</tr>
<tr>
<td>3</td>
<td>Coordination</td>
<td>−0.225</td>
<td>0.135</td>
<td>0.298</td>
<td>17.494</td>
<td>.025</td>
</tr>
<tr>
<td>4</td>
<td>Balance</td>
<td>0.192</td>
<td>0.039</td>
<td>0.337</td>
<td>5.350</td>
<td>.051</td>
</tr>
<tr>
<td>5</td>
<td>Flexibility</td>
<td>0.174</td>
<td>0.029</td>
<td>0.366</td>
<td>4.013</td>
<td>.032</td>
</tr>
<tr>
<td>6</td>
<td>Direction of social comparison</td>
<td>0.279</td>
<td>0.083</td>
<td>0.449</td>
<td>13.262</td>
<td>.001</td>
</tr>
<tr>
<td>7</td>
<td>Past temporal comparison</td>
<td>−0.199</td>
<td>0.036</td>
<td>0.484</td>
<td>6.025</td>
<td>.016</td>
</tr>
</tbody>
</table>

*Note.* YPAS = Yale Physical Activity Survey. $F(7, 87) = 11.674, p = .000.$

### Table 5 Hierarchical-Regression Analysis Predicting Attractiveness Self-Perception From Age, the YPAS, the Functional Fitness Test, and the Physical-Comparison-Style Questionnaire

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>$R^2$ change</th>
<th>$R^2$ cumulative change</th>
<th>F change</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>0.044</td>
<td>0.000</td>
<td>0.000</td>
<td>0.045</td>
<td>.675</td>
</tr>
<tr>
<td>2</td>
<td>Physical activity</td>
<td>−0.025</td>
<td>0.003</td>
<td>0.003</td>
<td>0.212</td>
<td>.794</td>
</tr>
<tr>
<td>3</td>
<td>Balance</td>
<td>0.205</td>
<td>0.088</td>
<td>0.091</td>
<td>8.825</td>
<td>.059</td>
</tr>
<tr>
<td>4</td>
<td>Social comparison</td>
<td>−0.285</td>
<td>0.096</td>
<td>0.187</td>
<td>10.662</td>
<td>.003</td>
</tr>
<tr>
<td>5</td>
<td>Direction of social comparison</td>
<td>0.285</td>
<td>0.076</td>
<td>0.263</td>
<td>9.121</td>
<td>.003</td>
</tr>
</tbody>
</table>

*Note.* YPAS = Yale Physical Activity Survey. $F(5, 89) = 6.345, p = .000.$
of attractiveness. The psychological predictors accounted for more of the variance (17.2%) than the physical variables (8.8%). Age and physical activity level were not significant predictors of participants’ evaluations of their attractiveness. Balance was the only physiological factor that approached significance in accounting for the variance in self-perceptions of attractiveness.

**Functional-Ability Self-Perception.** The final hierarchical regression revealed that the strongest predictor of self-perceptions of functional ability was the tendency to compare oneself favorably with others when evaluating one’s functional ability, accounting for 7.9% of the total variance. Those who expected to be worse in the future tended to have higher levels of current functional ability, with this predictor accounting for 5.8% of the total variance. Physical activity level was also found to be a significant predictor, accounting for 6.2% of the total variance in self-perception of functional ability. The tendency to make fewer social comparisons accounted for 3.5% of the total variance in functional-ability self-perception (see Table 6).

Individuals who made favorable social comparisons, expected to be worse in their functional fitness in the future, had higher levels of activity, and tended to avoid comparing themselves with others who had higher levels of functional-ability self-perception. Similar to the results for attractiveness, individuals who tended to make fewer social comparisons had higher levels of functional-fitness self-perception. None of the FFT scores accounted for a significant amount of the total variance when predicting functional-ability self-perception.

**Discussion**

This study was designed to examine the relationships between physical self-perceptions, comparison style, functional fitness, and activity level among women beyond the age of 65. Relationships between older adults’ physical self-perceptions and fitness levels have been established (Chase, 1991; Fox & Corbin, 1989; Mobily et al., 1993; Sonstroem et al., 1992). What has been less clear is how comparison styles relate to self-perceptions. Previous research has shown that in some cases

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Beta</th>
<th>( R^2 ) change</th>
<th>( R^2 ) cumulative change</th>
<th>( F ) change</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>-0.165</td>
<td>.071</td>
<td>.071</td>
<td>7.150</td>
<td>.079</td>
</tr>
<tr>
<td>2</td>
<td>Physical activity</td>
<td>0.187</td>
<td>.062</td>
<td>.133</td>
<td>6.542</td>
<td>.045</td>
</tr>
<tr>
<td>3</td>
<td>Direction of social comparison</td>
<td>0.354</td>
<td>.079</td>
<td>.212</td>
<td>9.137</td>
<td>.000</td>
</tr>
<tr>
<td>4</td>
<td>Direction of future temporal comparisons</td>
<td>-0.209</td>
<td>.058</td>
<td>.270</td>
<td>7.090</td>
<td>.035</td>
</tr>
<tr>
<td>5</td>
<td>Social comparisons</td>
<td>-0.196</td>
<td>.035</td>
<td>.305</td>
<td>4.486</td>
<td>.037</td>
</tr>
</tbody>
</table>

*Note.* YPAS = Yale Physical Activity Survey. \( F(5, 89) = 7.801, p = .000. \)
social comparisons are related to higher self-perceptions and that with increased age there would be a shift from temporal comparison style to a primary dependence on social comparisons (Frey & Ruble, 1990). Other researchers have anticipated a shift from social to temporal comparisons with increased age (Suls & Mullen, 1982). How comparison style is related to actual level of fitness or physical activity participation level had not previously been considered. If it is clear that a particular type of comparison style leads to increased self-perceptions and, subsequently, increased physical activity, this would have implications for how to design exercise settings to increase particular types of comparisons.

Participants who tended to use temporal comparisons when evaluating their abilities had higher self-perceptions of their functional ability than those who used a combination of comparison styles. This finding provides some evidence that temporal comparisons are positively related to physical self-perceptions. This is a surprising finding, because one might expect that if older women rely on their performances over time to evaluate their abilities, they would see their performances declining and therefore have lower self-perceptions than those who compare their abilities with those of others. Older women might have control over whom they compare themselves with and can choose to compare with others who will make them feel better about themselves. They do not have the ability to control their performance or their past abilities. It is possible, however, that older women can either adjust their evaluations of their past abilities or that they truly do perceive that they have improved over time. Many of these women have more time to exercise and concern themselves with their physical fitness than they could when they were younger and had more demands on their time. These analyses also demonstrated that there were differences in age based on comparison style, with those relying on social comparisons being older than those who relied on temporal comparisons. This finding suggests a shift from temporal to social comparison with increasing age and is consistent with the findings of Frey and Ruble (1990). In addition, younger women had higher self-perceptions of health than older women. Perceptions of health might be more susceptible to individuals’ perception that, with aging, health declines than perceptions of attractiveness, functional ability, or overall physical self-worth.

Participants’ evaluations of declines or improvements in their abilities over time were not significant in their current evaluation of their abilities. This is a curious finding, because one might expect that those who feel they have declined over time would have lower self-perceptions. Much research has established, however, that individuals engage in self-enhancing evaluations, and therefore it might be possible that even if individuals are declining over time, they still maintain relatively high self-perceptions (Levine & Green, 1984; Ruble & Frey, 1991; Wills, 1981). In addition to comparison style there were several markers of physical ability included in these analyses. One of these markers was a measure of physical activity level, the YPAS. Participants’ reported weekly activity levels were related to both health and functional-ability self-perceptions but not to physical self-worth or attractiveness self-perceptions. Of the functional-fitness measures, only balance, coordination, and flexibility were significant in any of the regressions. Balance predicted a significant amount of the variance for physical self-worth and health self-perceptions and approached significance for attractiveness self-perception.

Coordination and flexibility were both significant predictors of health self-perceptions. Balance might be particularly important in individuals’ self-perceptions
because it is readily observable. Although individuals might not be aware of how quickly they can navigate around cones or get up and out of a chair 10 times, they usually have a sense of their ability to balance, particularly as it relates to balance during walking. During the course of the study many women commented before the beginning of the balance test as to whether they were good or bad at this task. Some women surprised themselves, but most were accurate in their own assessments. Balance might also be important because those with poor balance might be less confident in their abilities to walk without tripping and falling, an issue that is of concern to many older women with the increased media attention given to falls and hip fractures.

Another interesting finding in these regression analyses is that in each analysis, with the exception of the health factor, most of the variance was accounted for not by physical activity or functional-fitness measures but, rather, by the psychological measure of comparison style. This finding is important because it supports the work of Schoenfeld, Malmrose, Blazer, Gold, and Seeman (1994), who found that perception of health was a better predictor of mortality during the following 3 years than objective measures of health. This indicates that the ways in which older adults, and in this case women in particular, think about their physical selves is more influential than their objective physical abilities. In this study, however, health was the one factor where balance, flexibility, and coordination were also significant in predicting self-perceptions. It might be that when older women evaluate their perceptions of health they consider readily observable markers of their functional ability in conjunction with the information they gather from social and temporal comparisons.

As with most research, there were a number of limitations with this study. The first limitation relates to the generalizability of the study. The participants in this study were selected to be a representative group of older women in the mid-Atlantic region of the United States. Most of these women were active to the point of being involved in exercise classes or community organizations, which might or might not represent most older women. An additional limitation of the findings relates to the ethnic makeup of the sample in this study. Specifically, 92% of the women identified themselves as White. Therefore, the results cannot be generalized to other ethnic groups. Many of the senior centers where this study was conducted were rural, and thus the findings might not be generalizable to other populations, particularly those in large metropolitan areas. There were also limitations in terms of measurement. Specifically, the PCSQ has not been used previously. The findings from this instrument should be interpreted with caution because it might be limited in content validity. The final limitation was related to the cross-sectional study design. Causal relationships between comparison style, self-perceptions, and physical activity cannot be established based on this study. In the future, longitudinal intervention studies that consider the impact of the types of comparison styles encouraged in exercise settings on physical self-perception and subsequent exercise participation will be critical in further elucidating the relationship between these variables.

Once there is a greater understanding of the relationships between self-perception, comparison style, activity level, and fitness, this information can be used to improve the exercise experiences of older women and men. The development of interventions is critical, and through future research appropriate interventions aimed at encouraging initial participation, as well as adherence, can be developed. Future
studies that consider comparison styles—such as intervention studies that consider the impact of environments that compare the emphasis of temporal comparisons, social comparisons, and the avoidance of comparisons and include a control condition—would be essential to a clearer understanding of the impact of comparison style on physical self-perceptions and exercise adherence.

What complicates the practical implications of these findings is that although downward social comparisons were related to higher physical self-perceptions, avoidance of comparisons was also related to higher levels of self-perceptions. This suggests that a downplaying of comparisons would be best in an exercise setting. The preliminary findings indicating that temporal comparisons might be more adaptive than social comparisons or a combination of comparison styles also indicate that an emphasis on individual performances is warranted. Further research that clarifies the relationship between comparison style and self-perceptions will lead to the development of exercise programs that can enhance self-perceptions. Ideally it could also lead to promotional methods that will encourage individuals to participate in exercise programs.

For those who are experiencing improvements in their performance, encouraging temporal comparisons will be adaptive. For individuals who are experiencing a decline in their performances, because of increased age or illness, for example, encouraging social comparisons will likely be beneficial. One implication for practical settings is that when social comparisons are made, they should be downward. In an exercise setting, that might involve instructors encouraging participants to think about others their age who do not exercise. For individuals with declining performances, encouraging them to compare themselves with others who are not as fit as they are, others who do not exercise, or others in class or exercise settings is a possible technique to increase social comparisons. Specific techniques for increasing temporal comparisons would be to have older adults track their performances through a workout log or journal so that they can keep track of their improvements over time. The finding indicating that avoiding comparisons is also adaptive suggests that downplaying comparisons with others in the class or with previous performances might be best. Ultimately, it is likely that there are individual differences between older women and that these differences will require different comparison strategies to maintain positive physical self-perceptions. What is critical is for older women to develop and maintain positive physical self-perceptions and adherence to exercise to increase their functional ability and independence.

References


