Cluster Analysis of Rural Senior-Housing Residents' Social Comparison Behavior

by

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Abstract

Social comparison influences well-being, especially during psychological threat. Social comparison outcomes have been theorized to depend on motivation, frequency, contrast versus identification, with a better- versus worse-off other. To reduce this complexity in the theory, 94 senior-housing residents were interviewed and cluster analysis was conducted. Four clusters emerged. Half the interviewees formed a cluster using only adaptive social comparison methods. Adaptives were contrasted with a cluster of indiscriminate comparers, a cluster striving for improvement, and a cluster of participants disagreeing with most questions. Clusters differed especially in patterns of downward identification, upward and downward contrast. Self-evaluation and uncertainty-reduction also differed between clusters; self-enhancement and self-improvement motivations did not. Cluster membership had no direct effect on well-being, but moderation analysis demonstrated threat-buffering of high neuroticism in the adaptive cluster. The benefits were not due to self-esteem or educational level. By separating individuals rather than behaviors, cluster analysis provides a fresh perspective.

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Dedication

To the 98 elders who agreed to be interviewed:

Thank you for the answers,

which make aging look very appealing!

And thank you for filling me with

stories, snacks, songs, laughs, and love.

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Introduction

Imagine that Sarah and Rebecca, both 80-year-old residents of senior housing, go to the same doctor, who rates their physical health as similar. Further imagine that, at this age, neither of the women thinks there is much to be done to improve her health. When asked to rate her health, Rebecca is realistic (she knows that she is average), while Sarah (who volunteers with Meals on Wheels and thinks about how she is doing so much better than those *old* folks) rates her health as above average. Based on a 6-year longitudinal study by Bailis, Chipperfield, and Perry (2005), Sarah is three times less likely to end up in the hospital and four times less likely to die in the next 2 years than her reality-based peer.

Does the association of a longer life with the metaphorical wearing of rose-colored glasses sound too good to be true? This correlation has been found with younger adults as well: In a longitudinal study of men with AIDS, before the advent of highly active antiretroviral therapy, a lack of realistic acceptance, of how life-threatening the disease was, was associated with an average 9-month increase in longevity (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). This correlation was significant even after controlling for a variety of health behaviors, and mental and physical health measures.

Many investigators have found increased well-being associated with ill and old people's self-inflations (e.g. Bauer, Wrosch, & Jobin, 2008; Cheng, Fung, & Chan, 2008; Efklides, Kalaitzidou, & Chankin, 2003; Heidrich & Ryff, 1993; Wood, Taylor, &

Lichtman, 1985). For instance, in a study of 164 older adults, those, whose self-ratings surpassed objectively-measured physical activity ratings, also reported greater life satisfaction (Bailis, Chipperfield, Perry, Newall, & Haynes, 2008).

Not only is self-enhancement positively correlated with well-being, seeing the self as doing worse than others was found to be quite negatively correlated with overall and mental health (r = -.42 and -.43), in a study of 196 chronically ill adults with an average age of 58 (Dibb & Yardley, 2006a).

Assessing the self against specific or general others, consciously or not, was first considered in depth by Leon Festinger in 1954. Festinger's social comparison theory said that we have a need for accurate self-evaluation, so we compare ourselves to similar others doing slightly better than we are. Current social comparison theory adds self-enhancement, self-improvement, and threat-reduction to self-evaluation as motives, but motivation of the comparer, similarity and difference with the person compared with, direction of the comparison (looking at someone doing better versus worse), as well as frequency of comparison, continue to be the domains of interest.

Half a century of research has broadened and deepened social comparison theory, which now includes key concepts in health psychology. Social comparison is used spontaneously, more so in times of psychological threat (Butzer & Kuiper, 2006; Buunk, Zurriaga, Gonzalez, Terol, & Roig, 2006; Wills, 1981), and it has powerful associations with physical health outcomes (Kulik, Mahler, & Moore, 1996).

Healthy aging is a significant social concern, because the fictional Sarah and Rebecca are in very real company. The proportion of Canadians over 65 years of age is

expected to increase from 13% in 2006 to 21% twenty years later, in 2026 (Statistics Canada, 2007). In 2005, 13% of the residents in the Canadian city Winnipeg, Manitoba, were over 65, and 15% of them lived in 195 different senior residences (Menec, Veselyuk, Blandford, & Nowicki, 2009).

Even the most positive residence change is widely considered a stressful life event (Hobson et al., 1998), but, when individuals move from general community housing, in private homes, to independent-living, senior-housing complexes, it is no ordinary move. What is it like to be surrounded suddenly by other old people? What is the role of social comparison in this transitional experience? Kwan, Love, Ryff, and Essex (2003) conducted a 2-year longitudinal study of 266 older women changing residences. The researchers' 40-item self-enhancement surveys predicted a spectrum of mental health scores. But this was not a study of senior-housing residents, and groups based on social comparison behaviors were not formed and compared.

We do not know if, over time in their new communities of only other old people, seniors like Sarah and Rebecca change how they use social comparison. Do some elders learn how to make good use of their newfound social comparison riches, self-enhancing their way to admirable well-being? Do others struggle with negative effects of unwanted comparisons? What type of person is at risk for using social comparison in a way damaging to the self? Can elders be clustered into groups by the ways they use social comparison? If so, do the groups differ in well-being? Can the groups, including those at risk for reduced well-being, be identified by demographics alone? These are the questions this research addressed, by grouping elders living in senior housing according to social

comparison motives, frequency, direction, identification and contrast, then comparing the groups on well-being measures and demographics.

Social Comparison Theory

Festinger's (1954) social comparison theory said that we are driven to evaluate our abilities and opinions accurately so that we will have the cognitive clarity needed to make decisions. He said that, when objective standards are unavailable, we compare ourselves to others like us, but preferably to others who are somewhat superior at the task at hand, which will give us information to help us improve. The theory has been revised substantially based on subsequent research, as described below, but the realms of motivation, direction, similarity, and frequency are still the key descriptors of social comparison behaviors.

Motivation. Festinger (1954) defined the main social comparison motive as *self-evaluation*, or accurate self-assessment. This is a cognitive concept. Wills (1981) described a different motivation, one with an affective spin: *self-enhancement,* or making oneself feel better without actually becoming better. Wills said the passive or active process of comparing against someone worse off enhances subjective well-being, and that this is most useful for those threatened by low self-esteem, either as a personality trait or a temporary state. He pointed out that it is unpleasant, and impolite, to contemplate those who are suffering, unless one seeks company in one's own misery.

Taylor and Lobel (1989) fine-tuned the theory, showing that, while under threat, people sometimes self-enhance, comparing themselves to worse-off others, at the same time that they practice *self-improvement,* truly trying to make the self better, looking for

information and/or inspiration from more successful or healthier others. This self-improvement can be cognitive, emotional, or both. In the health psychology context, where the threat might not be to self-esteem but could be a life-threatening disease, social comparison for *uncertainty-reduction* has been examined as a fundamental coping response (Buunk, Gibbons, & Visser, 2002), used to address informational and emotional needs. The latter is the broadest approach to conceptualizing social comparison motivation.

Direction. The occasional researcher has looked at comparisons with those at the same level as the self, what are called *lateral* comparisons (Dibb & Yardley, 2006a; Locke, 2003; Wheeler & Miyake, 1992). Most, though, have angled their gaze. Festinger (1954), although primarily discussing self-assessment, alluded to self-improvement when he described an *upward* direction to the drive for self-knowledge (Goethals & Darley, 1987). This is the direction that Taylor and Lobel (1989) showed was appropriate for self-improvement, used by those highly motivated to achieve a goal (Wood, 1989). Upward comparisons are particularly relevant for people dealing with health threats; for them it can be frightening to focus on those who are worse off, but inspiring to associate with those doing better (Buunk, Gibbons, & Visser, 2002).

Self-enhancement, Wills (1981) implied, would look *downward*, the preferred direction in many coping situations. Wills later (1997) made the point that upward and downward comparisons can occur relatively simultaneously.

When Wood, Taylor, and Lichtman (1985) asked women who had been treated for breast cancer how their adjustment compared to others', 80% said they were doing

somewhat or much better. This downward social comparison was not correlated with the seriousness of an individual's prognosis or treatment, which Wills' focus on intensity of threat might predict. Instead, the Wood study found a correlation with timing: Women who were temporally closer to their treatments used downward social comparison more than those who had finished their treatments years before. With downward social comparison used more frequently as a preliminary coping technique, perhaps *threat intensity* can be thought of as how new the threat is.

Another novel finding in the breast cancer study (Wood et al., 1985) was that women were not always judging themselves as superior to others based on overall criteria. Instead they sometimes focused on one particular dimension as a way to see themselves as better off. For instance, many older women commented on how much harder it must be for younger women to deal with breast cancer.

Heidrich and Ryff (1993) found that whether upward or downward comparisons were used by old women depended partly on the realm in question. Regarding physical health and adjustment to aging, downward comparison was used more often, with positive impact on mental health, in the short and long term. (Upward comparisons also had positive impacts.) Similarly, Taylor and colleagues (Helgeson & Taylor, 1993; Taylor & Lobel, 1989) showed that upward inspiration and downward evaluation are sometimes used strategically, in the same general time period, differentially managing the informational and emotional needs which can be heightened under threat.

This choosing of dimensions shows something beyond the selective attention implied by Wills' (1981) downward comparison hypothesis: Social comparison is an

active cognitive process. Goethals and Darley (1987) went as far as to state that we "fabricate" self-serving comparison information (p. 27), and Wood, Taylor, and Lichtman (1985) described the invention of imaginary others when no suitable real person was available for comparison.

Contrast or identification. Festinger (1954) thought about similarities between the comparer and the reference person, but, with his concerns about self-assessment of abilities and opinions, and on how comparisons impact groups, he did not concentrate on individual affective results. Wills (1981) expected downward comparison to make people under threat feel better. Yet, when there is fear that in the future one will slip into the position being observed, downward comparison can be distressing. Buunk and Ybema (1997) focused on differences in outcomes when contrast is used ("he is different from me") as opposed to when identification is used ("I will end up like that"). They found that identifying with those better off and contrasting with those doing worse were associated with greater mental health, and that they can be done by the same individual in the same time frame.

Lockwood and Kunda (1997, 1999) investigated the conditions that lead to upward identification rather than upward contrast. Their experiments showed that, when improvement seems attainable, people tend to be inspired by those who are clearly superior. But if there isn't, for example, enough time to improve, people tend to either contrast with someone doing better, which makes them feel worse, or they avoid that negative outcome with a cognitive dance, telling themselves that the comparison is not

relevant. This is the flip side of the creative construction of self-serving comparison information: the active dismantling of threatening comparisons.

Frequency. Festinger (1954) vastly underestimated the territory that his theory would cover. He saw social comparison as a second-rate stand-in for objective evaluation. But Goethals and Darley (1987) pointed out that, in reality, context is often more important than an absolute. (Is $100 a lot of money? It depends on the year, the country, and what is being exchanged for it.) This, in combination with the previous developments, means that people engage in social comparison for more reasons, in more situations, with a wider range of people, and much more often than Festinger envisioned.

Individual differences. Although social comparison is seen in some sense as a basic map that everyone uses, consciously or not, to navigate choices in life, the relative frequency of social comparison is an important indicator in its own right. Those who continually compare with others do not tend to be very happy people (Fujita, 2007). It is not clear if this is cause, effect, or simply an association: Heidrich and Ryff (1993) found that poor physical health predicted greater upward and downward comparison frequency in old women, rather than comparison frequency predicting poor health outcomes.

The social comparison literature started with discussion of motives (Festinger, 1954; Wills, 1981), but soon shifted to directional accounts and affective results (Gibbons, 1986; Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990). Since then, many individual differences have been shown to interact with situations to produce social comparison outcomes (Bailis & Chipperfield, 2006; Dibb & Yardley, 2006b; Michinov, 2001; Olson & Evans, 1999). Wheeler (2000), reviewing work done with his Rochester

Social Comparison Record, found that extraverts and those with high self-esteem tend to compare downward, while those high in agreeableness and openness to experience tend to compare upward. He found that those high in neuroticism do not use downward comparison more often than others, but, when they do use it, they benefit more than others from it. Diener and Fujita (1997) saw social comparison as being used more frequently by people with uncertainty built into their personalities: those with low self-esteem and high neuroticism. Michinov (2007) added pessimism, depression, and low sense of control to the list of uncertainties.

Social Comparison in Illness and Aging

Threats to health and life are some of the grandest uncertainties around. A series of studies of social comparison in adults, average age 57 to 58, living with cancer (Van der Zee, Buunk, Sanderman, Botke, & Van den Bergh, 1999 & 2000) or chronic illness (Dibb & Yardley, 2006a & 2006b), provides insight into the implications for social comparison's impacts on aging.

In their longitudinal study of 112 people receiving radiation or chemotherapy, Van der Zee and colleagues (Van der Zee, Buunk, Sanderman, Botke, & Van den Bergh, 2000) saw upward identification co-occurring with downward contrast, to positive effect. They saw detrimental downward identification and upward contrast practiced simultaneously by others. Dibb and Yardley (2006a & 2006b) reported comparison categories related to quality of life, with more positive outcomes and correlations (from upward identification and downward contrast) than negative (upward contrast and downward identification), among over 500 participants. In both of their studies, better health status was associated

with more downward contrast, contradicting the idea that downward comparison has a dose-response gradient in reaction to threat.

These particular studies were quite thorough in many aspects, generally encompassing social comparison frequency, direction, and similarity measures, along with well-being scores and potentially moderating variables, yet motives were not assessed in a way that could tie together all components of social comparison theory in any one study.

The literature on social comparison and old people in general is nowhere near as thorough. Cheng, Fung, and Chan (2007), in perhaps the first social comparison study of elders in a collectivist culture, reported that young, midlife, and old Chinese adults (mean ages 25, 46, and 73), in Hong Kong, all rated themselves as in good health, slightly better than "someone" their age. In a longitudinal continuation, with only the old adults from that study, structural equation modeling showed social comparison was more strongly associated with self-reported health than symptoms were, and decreased health led to increased self-enhancing social comparison, which mitigated the effect of symptoms on self-reported health.

Kohn and Smith (2003) studied depression and social comparison in 355 old adults, finding that self-enhancement from downward comparison protected elders from the depression that could result from worsening health. Frieswijk and colleagues found that frail old adults made good use of downward comparison most of the time (Frieswijk, Buunk, Steverink, & Slaets, 2004a & 2004b). A dozen studies contrasted the use of social comparison with *temporal comparison*, how one used to be or who one might become

(e.g. Reis-Bergan, Gibbons, Gerrard, & Ybema, 2000; Rickabaugh & Tomlinson-Keasey, 1997; Robinson-Whelen & Kiecolt-Glaser, 1997), reporting on a variety of helpful positive health illusions in the past, present, and future. But none of these studies looked at all key aspects of social comparison behaviors, and none considered senior housing.

In addition to the work by Ryff and colleagues (Heidrich & Ryff, 1993; Kwan, Love, Ryff, & Essex, 2003), two other large projects considered old people, where they lived, and social comparison.

In what was hoped to be research on housing transitions, almost no one moved during a 2-year longitudinal study of various residence situations in London (Beaumont & Kenealy, 2004). About 160 healthy people over 65 participated; 78% of them reported that they used only downward comparison. They used it to good effect: Downward contrast was associated with higher perceived quality of life. No one used upward identification alone. Only 11 people used negative strategies (such as identifying downward); 150 used positives (such as identifying upward along with contrasting downward). Frequency of social comparison was not associated with quality of life.

The other major study of any type of senior housing was conducted in France. Michinov (2007) used experimental methods to determine if there were interactions between an imposed direction of comparison, a personality factor of sense of control, and individual differences in reported frequency of comparison. His participants, women with an average age of 82.5, had moved into nursing homes in the last 5 months. A remarkable 88% of the women who were invited to participate agreed to.

No interaction was found among the individual differences variables and direction; downward comparisons made the women feel worse across the board. Although not discussed in the article, the manipulation may not have produced enough variability in the responses to create the expected interaction, due to the extreme negativity of the scenario: Participants in the downward comparison condition read one woman's story of pain, deformity, dependence, immobility, inability to concentrate, and a final statement of "everything" going wrong (p. 181).

In life, unlike in experimental research, individuals often are able to turn their attention from deeply threatening stimuli, or to reframe new negative information within an optimistic outlook. Perhaps a less nightmarish scenario would have resulted in the expected outcomes. On the other hand, simply asking participants to recall social comparisons may approximate more closely social comparison cognitions and affects as they are lived, with all of the neural wiggle room humans generally allow themselves. Although Wood (1989) pointed out that, separate from any motivational goals we have, the environment can impose social comparisons we do not seek, Diener and Fujita (1997), reviewing the evidence, said that there is little support for the idea that comparisons imposed by even our daily environments have large and long-lasting effects. They noted that the flexible use of social comparison information is more relevant to coping and health research.

Social Comparison Measurement and Application

Social comparison motivation is usually inferred by the direction of comparison, or not addressed in research, possibly because it is not obvious how to measure it. Within

the social comparison field, there are no agreed upon, validated scales of the classic theoretical motivations. Different research groups have approached the issue different ways. Gibbons and Buunk (1999) declined to try to measure self-enhancement, claiming it was too situation-specific. Bailis, Chipperfield, Perry, Newall, and Haynes (2008) contrasted self-reports with objective measures to determine self-enhancement. Kwan, John, Kenny, Bond, and Robins (2004) described Gordon Allport's 1937 conceptualization of self-enhancement, as rating the self higher than others rate the self, contrasted with the typical follower of Festinger defining it as rating the self higher than one rates others. Kwan and colleagues pointed out that both approaches have confounds: The Allport form is confounded with the self's level of positivity about all people, and the Festinger form is confounded with the self's actual merit.

Yet motivation is certainly worth considering. Aside from social psychology, many areas within psychology address self-enhancement, including cognitive, developmental, clinical, personality, and school psychology. Motivation for self-improvement is of particular interest to health psychologists and to education researchers.

A novel solution to the problem of motivation measurement is to define motivations as relatively stable traits, and to measure self-enhancement, self-improvement, and self-evaluation, as well as uncertainty in general, using tools crafted systematically by individual-difference researchers. That is the approach taken by this project, described in detail in the Method section below.

Beyond issues of measurement, the expansion of social comparison theory means that it is difficult to apply as a complex whole. Extremely little published research has

considered the combined effects of motivation, direction, identification, and frequency, although each has empirical as well as theoretical foundations. The cancer (Van der Zee et al., 2000), chronic illness (Dibb & Yardley, 2006a & 2006b), and London aging (Beaumont & Kenealy, 2004) studies discussed earlier all showed patterns of downward contrast and positive outcomes. This suggested that groups of social comparers exist who are similar to each other across all four dimensions and different from all other groups.

Rather than investigators linking sets of behaviors to measure, defined by arbitrary score cut-offs, researchers can use *cluster analysis*, described in detail in the Methods section, to identify common, naturally-occurring patterns of variables within individuals, including patterns that are unexpected. Cluster analysis groups similar individuals; the resulting clusters then can be tested against each other to examine group differences in average well-being. If clusters also differ in demographics, discrimination of groups can be simplified.

Cluster analysis is reported in the social comparison literature only twice, once with 183 children rating their sports abilities (Weiss, Ebbeck, & Horn, 1997), and once with 96 caregivers of people with eating disorders (Lobera, Garrido, Fernandez, & Bautista, 2010).

Social comparison often has been studied in young people (e.g. Boissicat, Pansu, Bouffard, & Cottin, 2012; Bounoua et al., 2011; Mussweiler, 2001) and in illness (Bennenbroek et al., 2003; Blalock, DeVellis, & DeVellis, 1989; Helgeson & Taylor, 1993; Tennen & Affleck, 1997). Exploring the use of social comparison in senior-housing residents was an opportunity to examine relatively healthy (non-institutionalized) older

adults in order to clarify psychological theory. There was the potential to learn how to improve length and quality of life for some elders. There was also the thought that, even if almost all residents were already using positive patterns and therefore had little to gain for themselves, senior housing was a prime research setting for social comparison, due to the homogeneity of the population: similar people facing the same new living situation. On the practical side, senior-housing residents were thought to be relatively easy to access for recruitment and likely not too busy to volunteer as participants. With a large aging population, a ubiquitous practice that may extend healthy lives, and a branching theory, this was a welcome research opportunity. No other study examined all of these social comparison behaviors together. This contributes to the literature by allowing simultaneous consideration of all major streams of social comparison theory.

Research Questions

1. Can senior-housing residents be grouped according to social comparison motives, frequency, direction, identification and contrast? 2. If groups can be formed based on use of social comparison, do the groups differ demographically? 3. Are the known benefits of the positive use of social comparison discernible based on these groups?

Method

Participants

The 94 cases included in the analyses ranged in age from 52 to 95 (quartiles were 78, 83, and 89), with a mean of 81 years and a standard deviation of 10.5. Eighty percent were female, 28% lived with a spouse. Residents had lived in their current senior housing for 2 months to 19 years; the mean was 5.7 years, the standard deviation was 4.8. The previous housing was a different senior housing complex for 15%, an apartment for 17%, and a house for 67% of the participants. When asked, "Is your household income, before taxes: less than $15,000 a year, more than $25,000 a year, or between $15,000 and $25,000 a year?" an income category was not reported by 14% of the participants, 20% reported under $15,000, 30% said $15,000-25,000, and 36% reported over $25,000. The population of the town of residence was under 1,000 for 21% of the interviewees, 1,000-8,000 for 40%, 10,000-14,000 for 31%, and approximately 660,000 (the city of Winnipeg) for 7%.

I asked, "In school, did you finish Grade 8?" Only if they said *yes* did I continue with, "Grade 12? Some college? A 4-year degree?" The words *In school* were meant simply as a transitional, orienting phrase, but many of these elders said that high school was not available in the small towns they grew up in, so they completed a year or more of high school through a correspondence course. Grade 12 was often not available to the participants in any form; quite a few finished Grade 11, then were asked to attend nursing

training or a 6-week teacher training program at the university. (Being asked to go to "normal school" to learn to teach was a common story for those who were teenaged girls during World War II, when there was a dire shortage of teachers.). Those with Grade 11 and one of the brief, formal programs were coded the same as those who completed Grade 12. Fourteen percent of the participants did not complete Grade 8, 51% completed Grade 8, 31% had more than 11 years of school but no college degree, 3% had a college degree, and 1 additional participant had a graduate degree (1%).

Participants were asked, "What is your ethnic background?" If they hesitated or asked for more information, I added, "Some people say they are Mennonite, some say they are German, some say they are German Mennonite. I would like to know the words that you use that feel most right for you. Any way that you normally think of yourself or describe yourself is right." (Some who answered Mennonite after this elaboration said that they had been told that "Mennonite" was not an acceptable answer to an ethnic background question.) When data collection was complete, I formed groupings. For instance, German Mennonite, Dutch Mennonite, and Mennonite were combined. The ethnicities were 52% Mennonite, 11% English, 10% Scottish/Irish, 9% French, and 19% other.

Howell's 2010 textbook recommends multivariate sample sizes at least 40 greater than the number of predictors. This project's clustering process used 1 social comparison frequency measure, 2 direction measures, 4 identification-contrast measures, and 4 motive measures, a total of 11 predictors, making 51 cases a minimum.

For this exploratory study, there was no attempt to select participants representative of the Province of Manitoba in terms of income, ethnicity, language, or sex. Criteria for inclusion of individuals were residence in a senior-housing facility meeting the housing requirements detailed below, and the ability to sign a consent form and participate in a 1-hour, spoken interview, in English without an interpreter.

Originally participants were to be restricted to those who had moved to senior housing within the last 2 years, but very few volunteers met this requirement. One rural housing administrator said that turnover in his five buildings was approximately 10% per year. Excluding residents who had arrived more than 2 years ago therefore could have reduced the pool of volunteers by 80%, so the 2-year limit was removed, and no one was ever prohibited from interviewing because of living in senior housing too long.

Procedures

Recruitment.

Recruitment process. Permission to recruit participants was sought for each senior-housing building that met all of the following conditions (or parenthetically-noted exceptions): (a) a listing on the Seniors and Healthy Aging Secretariat Rural Seniors' Housing website with 10 or more suites (or a correction or referral from one of those listings); (b) senior-only housing, not age "mixed" housing, which is also listed on the aforementioned website; (c) independent living, with or without regular visits from "home care" for assistance with personal care tasks: dressing, taking medication, etc.; and zero or some, but not all, units classified as "supportive" housing, where residents are monitored by staff to keep them safe; (d) regular programming providing opportunities

for residents to gather (One interviewee from senior housing without programming was recruited, while he was visiting a sibling in a building that provided congregate meals.); (e) within the specified region: in Manitoba, south of the city of Winnipeg, and within a 75-minute drive of the southern terminus of Route 75, the area's major north-south four-lane highway, which ends at the United States' northern border. (While attempting to get permission to recruit in rural public senior housing from the Manitoba Housing Authority, I received permission to recruit only at two city of Winnipeg buildings. The tenant group representatives who telephoned me were so eager to participate that I agreed to include their buildings.)

After ethics board approval, I contacted building managers via telephone or, rarely, e-mail. After four failed attempts to contact the appropriate manager, I designated a building as unavailable for recruitment. In most cases, after discussion and agreement, I created notices and e-mailed them to the managers to post. I also e-mailed a sample consent form, and an introductory letter signed by me and my research supervisor. (See Appendix A: Recruitment Materials and Consent Form, and Appendix B: Ethics Approvals and License Agreement.)

Participant recruitment was done in person, most often during lunch in the common dining room, usually after flyers had been posted in the building for approximately 1 week. Sometimes I was introduced to the group by the cook, or a program director or manager, other times I went from table to table introducing myself and the project to each small group. During a typical lunch gathering of 30 to 45 minutes,

I spoke to up to 30 individuals. If there were more than 30 people eating, I did not always get a chance to speak to each one, so sometimes a repeat recruitment visit was conducted.

Alternate recruitment arrangements included advanced posting of my availability in a common room for an hour, or, in one case, sitting at a table in a hallway on the way to the lunchroom (in order to avoid recruiting those with advanced dementia who lived in the adjoining building and dined with the others). In this situation, posters, and a large, brightly-colored umbrella open on the table, served as conversation starters.

I usually told managers that, as a way to give back to the residents and let them get to know me, I could give a talk on how elders can protect themselves against identity theft and scams (a topic requested by the first manager I contacted). Following half-hour long anti-scam presentations, advertised with posters, I mimed removing my Community Educator "hat" and replacing it with my Student Researcher "hat." I told the attendees I was switching hats to let them know that the research was separate from the talk and that they were under no obligation to participate. Then I gave my usual speech to introduce the research.

Recruitment talks were delivered in an animated way. The shortest version went along these lines: "I am a student researcher from the University of Manitoba, and I am doing personality surveys of people living in senior housing. I've interviewed __ people so far, in [list of towns, starting with towns of the same ethnic background]. Most people really enjoy it. It takes about an hour. At the end, I ask people how it was. Some say, 'It's over already?' Usually people say, 'That was interesting!' I do the interviews one-on-one, usually in your apartment."

When people were willing to listen longer, the recruitment included such information as, “There are questions about your background, like age, years of education, and ethnic background. There are some questions about feelings, like feeling happy and sad, and what values are important to you. I ask about your personality, such as whether you are reserved, or sociable, or both. There are questions about your activities, like how many days a week you spend with other people on various outings. And there are a few general health questions, such as about your energy level. I keep strict confidentiality with the interviews: No one involved with your housing will ever be told who does and does not volunteer to be interviewed. We are trying to learn more about people who live in senior housing in general, so your answers will be put together with the answers of 50 to 100 other seniors in southern Manitoba, and I am the only one who will ever know that you are the one who gave your answers. Are you interested in being interviewed? I have times this afternoon and this evening. If enough people want to be interviewed, I’ll come back another day.”

The recruitment approach evolved based on what people responded to. During a discussion at lunch after an anti-scam presentation, it came out that the residents did not understand what the advertised research on “everyday experiences in senior housing” was about, an hour seemed like a very long time, and some people felt they didn’t know enough to be interviewed about senior housing. At the end of the interview, one woman who had been part of this discussion said, “It’s a personality survey! We know what personality surveys are!” An amended ethics protocol was approved to change the

recruitment poster wording from "everyday experiences" to "personality," after the 14th interview.

Recruitment data. Between May and September, 2012, in 28 buildings in 11 towns, I held 37 official recruitment sessions. Approximately 20% of the senior-housing residents I told about the study agreed to be interviewed. There were over 20 cancellations, including 6 after or during the informed consent process. Two of the 6 were women in their 90s who said the focused interview sounded like too much work. Four cancellations were due to illness, three were due to anxiety about the project. Most of the other cancellations were after a delay, when many people signed up in a particular location and I could not meet with them all that day. The appearance of visitors interrupted or delayed several interviews, but each of those was completed. For a variety of reasons, 18 of the interviews were conducted in two sessions rather than one, with time between sessions ranging from an hour to more than a month.

I asked for but was not given permission to recruit in 10 rural senior-housing buildings run by the Manitoba Housing Authority, a public housing agency, and in 5 nongovernmental or commercial buildings, 4 of these 5 offering subsidized rent. Of the 28 buildings I visited, at least 9 of them offered subsidized rent on some or all of the units. This means that 93%, of the 15 facilities I was not allowed into, offered reduced rent, compared with as little as 32% of the 28 buildings that I was permitted to visit. The correlation of subsidized housing with refusal of access by administrators limits the generalizability of the study.

Interviews. Interview questions and answers lasted on average 94 minutes, ranging from 47 to 183 minutes. This did not include the minimum 10-minute set-up and consent process, or the 5 minutes to pack the materials at the end.

I set up a laptop computer in front of me, usually at a kitchen table with the volunteer at a 90 degree angle. I said that the first step was to sign a legal form explaining more details of the study, and that I could read the form aloud as the person followed along on a separate copy. Almost no one chose to read the form silently.

Sometimes a spouse or adult child was in the room for all or part of the interview. If both spouses wanted to be interviewed, the interviews were always done without the first spouse being listened to by the second spouse to be interviewed. In other words, some interviews had an audience, but no interviewee had already heard the survey before answering the questions.

In the two urban buildings, instead of conducting the interviews in individual apartment units, the common exercise room, equipped with table and chairs and a door that locked, was reserved for our use.

In all cases, I read aloud the interview script and questions from a word processing document open on the laptop, entering each answer into that participant's file. (See Appendix C**:** Integrated Script, Questions, Answer Cards, and Debriefing.) Most questions had answer choices written out in large print on 8.5 by 11 inch (22 by 28 cm) answer cards. Many participants chose to point to an answer rather than verbalize it. Occasionally volunteers pressed the numbers representing the answer choices, as if they were buttons that a computer would record automatically. This could imply a more

accurate way to record the data, but there were times that the interviewee pointed to a negative number while nodding or saying yes, or pointed to a positive number while saying no. In these cases, I restated the question and the answer the person had pointed to, such as, “That question was _____. You disagree strongly with that,” allowing the person to correct or affirm the answer. This was a way to reduce measurement error, given that some of the question and answer combinations had complex double negatives, such as disagreeing with “I'm not bothered by things that upset my daily routine.”

When volunteers asked, “What should I choose?” as if there were right and wrong answers to questions, I responded by saying: “Whatever is true for you is the right answer.” When someone did not understand the meaning of a word, I explained the word and made a note of my answer so that future questions on that word elicited the same answer each time. The additional wording is shown in Appendix C in braces {like this}.

Measures

Three types of data were collected for the main analyses: Social comparison information was used to answer Research Question 1 (Can senior-housing residents be grouped according to social comparison motives, frequency, direction, identification and contrast?). Demographic information was gathered to answer Research Question 2 (If groups can be formed based on use of social comparison, do the groups differ demographically?). Well-being measures were used to answer Research Question 3 (Are the known benefits of the positive use of social comparison discernible based on these groups?).

Clusters were formed from the social comparison scores, analyzed in relation to demographics, and compared using the well-being scores. Demographic measures are described above, in the Participants section. Social comparison and well-being scales are described below. The Measures section concludes with the additional measures subsection, describing variables that were used in moderation analysis.

Social comparison behavior measures. Explicit social comparison instruments were used to assess frequency, direction, and identification-contrast behaviors.

***Social Comparison Orientation (SCO) scale*.** Frequency of comparison was measured using Gibbons and Buunk's (1999) Social Comparison Orientation (SCO) scale, also known as the Iowa-Netherlands Comparison Orientation Measure (INCOM). It is an 11-item scale with statements to agree or disagree with, using a 5-point Likert scale. Examples are, "I always like to know what others in a similar situation would do," and "I am not the type of person who compares with others." Scale numbers were changed from 1 to 5 to a -2 through +2 scale to be consistent with other scales used in the interview, and age-inappropriate parenthetical words were removed from the following question: "I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing." Two negative items were reverse-scored. In this project, the item scores were averaged to create one scale score, with higher numbers representing a greater tendency toward social comparison, and Cronbach's alpha was .75.

Before the SCO scale was published in 1999, it was administered to 7,500 people in Europe and North America, and was validated as a predictor of social comparison behavior in adolescents taking risks, workers facing burnout, cancer patients, and

romantic partners. It showed moderately strong positive correlations with related constructs, such as private self-consciousness (r = .22 to .43), and Swap and Rubin's (1983) interpersonal orientation (r = .45), as well as a smaller negative correlation with the Marlowe-Crowne (Crowne & Marlowe, 1960) measure of socially desirable responding (r = -.13). It was modestly positively correlated with neuroticism and modestly negatively correlated with self-esteem. It was not correlated with social support, life satisfaction, or need for cognition (Cacioppo & Petty, 1982). The test-retest stability showed the scale's expected sensitivity to state, even as it is grounded in trait: r = .60 over a year, and .72 over 3 weeks.

Upward and downward comparison subscales. Direction of comparison was measured with modifications of the Upward Comparison Subscale and the Downward Comparison Subscale obtained from Frederick Gibbons. These frequency subscales were mentioned in the SCO article (Gibbons & Buunk, 1999), although no data were presented on them other than their means: 2.7 for downward and 3.1 for upward, compared to the SCO's means of 3.1 to 3.6 (3 is the midpoint of the scales). There are six items on each scale, worded the same, other than the direction of comparison. Two of the items are: **"**When it comes to my personal life, I sometimes compare myself with others who have it better than I do," and, "When I consider how I am doing socially (e.g., social skills, popularity), I prefer to compare with others who are more socially skilled than I am." The same answer scale is used as for the SCO measure.

To save time and limit burdensome, repetitive questioning, instead of using the entire scale, I used only six modified questions, including: "Sometimes I compare myself

with others who are doing worse than I am. When things are going badly, often I think of others who are doing worse than I am. When things are going well, often I think of others who are doing worse than I am." The word *better* replaced *worse* in each of the above sentences to form the remaining questions. Each set of three questions was averaged to make a subscale score for the cluster analysis, with higher numbers representing a greater tendency toward each direction of social comparison. In this study, Cronbach's alpha for the upward scale was .69, the same as for the downward scale.

Identification-contrast scale. Identification and contrast were measured using the Identification/Contrast Scale attributed to "Van der Zee, et al., 2000" obtained from Bridget Dibb. Dibb reported (personal communication, May 4, 2011) that she was instructed by Van der Zee to use the items in Van der Zee's 2000 article (Van der Zee, Buunk, Sanderman, Botke, & Van den Bergh) to construct her own scale, as there was no complete English language version in existence. It is a 12-item scale with 6 statements for upward and 6 for downward comparisons. The wording comes from interviews with women with cancer but is generic enough to use with any population. Three items in each subscale cover identification and 3 cover contrast. Examples are: "When I meet others who are doing worse than I am, I fear that I will go the same way," and "When I see others who experience more difficulties than I do, I am happy that I am doing so well myself."

Both the Dibb (Dibb & Yardley, 2006a) and the Van der Zee (Van der Zee et al., 2000) studies used 5-point Likert scales, but the words were changed from Van der Zee's *not at all* through *strongly* to Dibb's *strongly disagree* through *strongly agree*. The latter

wording is consistent with the other social comparison scales and is what was used in this research, with the -2 to +2 scale. The Van der Zee article reported test-retest correlations from r = .64 to .74 and inter-item correlations within the three-item subscales from .87 to .93. The only change from Dibb's version could have been a verbally-administered instruction rather than the written: "Please tick the answer which is correct for you," but with such high inter-item correlations, to reduce participant burden, only the most general item of each subscale was used. The items and their designations follow. For downward identification: "When I think about others who are doing worse than I am, I fear that my future will be similar." For upward identification: "When I think about others who experience fewer problems than I do, I am pleased that things can get better." For downward contrast, "When I think about others who experience more difficulties than I do, I feel relieved about my own situation." For upward contrast: "When I think about others who are doing better than I am, sometimes I feel frustrated about my own situation." Note that the Upward Comparison Subscale and the Downward Comparison Subscale described above ask about frequency; the identification and contrast items here ask about emotional response.

A variety of average scores can be constructed from the complete scale: upward (contrast and identification), downward (contrast and identification), positive (upward identification and downward contrast), negative (upward contrast and downward identification), contrast (upward and downward), and identification (upward and downward). Because cluster analysis can create very specific pattern analysis, only

upward contrast, downward contrast, upward identification, and downward identification subscales were used, with one item each as specified above.

Social comparison motivation measures.

Self-enhancement. The Marlowe-Crowne (Crowne & Marlowe, 1960) family of scales, which measures social desirability in responding, although created to detect faking on personality tests, seems to measure a stable personality trait that can be described as self-promotion (Lonnqvist, Paunonen, Tuulio-Henriksson, Lonnqvist, & Verkasalo, 2007). But those scales do not claim to measure a motivation to feel better by thinking well of the self, separate from an inflated presentation to others. Paulhus' (1991) Balanced Inventory of Desirable Responding (BIDR), on the other hand, separates an externally-focused Impression Management scale from an internally-focused Self-Deception-Enhancement (SDE) scale (Li & Bagger, 2007; Paulhus, 1991; Paulhus & Reid, 1991).

The vast majority of social comparison happens silently, internally, so using the SDE, a 20-item instrument designed to reveal an unconscious trait of exaggerating desirable qualities one possesses, is a rational approach to measuring a self-enhancement motive. The Paulhus scale includes 3 items inappropriate for elders, who may be recently widowed, whose parents likely have been dead for decades, and who may be unable to drive. Rather than removing those items ("I have sometimes doubted my ability as a lover," "My parents were not always fair when they punished me," and "I am not a safe driver when I exceed the speed limit."), using the alternate 10-item scale described below was more appealing.

The International Personality Item Pool (IPIP) offers hundreds of individual difference measures (International Personality Item Pool, 2011). These scales, which are in the public domain, were all developed with one standard psychometric process. Each scale draws systematically from approximately 2000 potential items that are selected based on positive and negative correlations with external criteria. IPIP scales are generally based on classic personality scales, and correlations with the originals are reported.

There were several advantages to using these scales in this study. In 2001, 37% of Canadians over 65 had less than a Grade 9 education; in 1994, 53% were barely literate (Statistics Canada, 2001). The more consistent the questions and the answer choices were in the interview, the less confusion was expected as a result. Also, using consistent forms for each of the variable measures meant that the scales could be compared "apple to apple." Because the consistency of the IPIP scales is not just skin deep, variation in measurement error is minimized. With 11 constructs being measured and correlated via cluster analysis, the tighter the control of measurement error, the more powerful the statistical procedure.

On the matter of measuring self-enhancement, the IPIP Self-Deception Scale has good correlation with Paulhus' 1991 SDE (r = .79) and was appropriate for use in a face-to-face interview with elders. The positively keyed items are: "Always know why I do things. Know that my decisions are correct. Feel comfortable with myself. Just know that I will be a success. Like to take responsibility for making decisions." Negatively keyed items are: "Am not always honest with myself. Sometimes have trouble making up my

mind. Dislike myself. Have a low opinion of myself. Worry about what people think of me." Cronbach's alpha for the 10 items in this study was .75.

Each IPIP instrument uses a 1 to 5 Likert *very inaccurate* to *very accurate* scale, with answers averaged to create a scale score. The -2 to +2 scale was used for all IPIP scales in this research.

Self-evaluation. The IPIP offers a 10-item measure of introspection with the following items: "Am constantly reflecting about myself. Examine my motives constantly. Try to examine myself objectively. Don't try to figure myself out. Look for hidden meaning in things. Spend time reflecting on things. Like to get lost in thought. Rarely look for a deeper meaning in things. Seldom daydream. Seldom get lost in thought." Labeled Private Self-Consciousness, it has a correlation of $r = .76$ with the scale it was designed to replace (attributed to Buss, 1980), a subscale of the Personal Attributes Survey. The face validity of the first 4 items listed above is excellent. Rather than using only the most construct-congruent part of the scale, the entire scale was used, given that the psychometrics were known only for the scale as a whole. Cronbach's alpha for the 10 items in this study was .78, for the first 4 items was .64, and for the remaining 6 items was .71. (Re-analysis was done with just the first 4 items. The cluster results were quite similar; only 1 participant shifted to a different cluster.)

Self-improvement. Banaji and Prentice (1994) conceptualized the self-improvement motivation in social comparison as rooted in a need for achievement and/or control (p. 299), and Wood (1989) spoke about self-improvement as "achievement motivation" (p. 232). The IPIP Achievement-Striving Scale was designed to be used

similarly to a subscale of the revised personality inventory known as the NEO-PI-R (Costa & McCrae, 1992). Items are: "Go straight for the goal. Work hard. Turn plans into actions. Plunge into tasks with all my heart. Do more than what's expected of me. Set high standards for myself and others. Demand quality. Am not highly motivated to succeed. Do just enough work to get by. Put little time and effort into my work." This IPIP scale as a whole is highly construct-congruent. Cronbach's alpha in the present study was .82.

Uncertainty-reduction. The Intolerance of Uncertainty Scale, developed by Carleton, Norton, and Asmundson (2007), is the most appropriate, validated, individual difference measure for examining uncertainty and threat in relation to social comparison. Butzer and Kuiper (2006) contrasted four approaches to uncertainty as drivers of social comparison. In their undergraduate sample, path analysis showed that intolerance of uncertainty was a better predictor of social comparison behavior than the cognitive concept *lack of self-concept clarity*, and also was superior to measures of uncertainty associated with anxiety or depression, which are more emotionally-based.

The complete Intolerance of Uncertainty Scale has 12 items. This project used the 7-item Prospective Anxiety Subscale, without the 5-item Inhibitory Anxiety Subscale. Two of the prospective items are: "It frustrates me not having all the information I need. Unforeseen events upset me greatly." There was one modification: Answer choices were -2 to +2 from *very inaccurate* to *very accurate*, rather than the original scale using *not at all* to *entirely characteristic of me*. Cronbach's alpha for the 7 items in this study was .73.

In the proposal for this research, the Intolerance of Uncertainty Scale was considered a convergent variable, but, this most general theoretical conceptualization of a motivation for health-related social comparison – the level of threat response to uncertainty, measured by this scale – when added to the other 10 clustering variables, made the cluster results interpretable. More detail is presented in the Cluster Analysis section below.

Well-being measures. The well-being measures in this study include self-reported health as well as subjective well-being. Subjective well-being is often conceived of as high life satisfaction, low negative affect, and high positive affect (Diener, Emmons, Larsen, & Griffin, 1985). Diener's brief measures of each of the aspects are psychometrically sound, have good convergent validity with a variety of well-being measures, and are appropriate for older participants (Diener et al., 2009).

The Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) has only five items to agree or disagree with, on a 7-point Likert scale. Items include: "The conditions of my life are excellent. I am satisfied with my life. So far I have gotten the important things I want in life." The scores on this scale have fluctuated with time in a way that implies sensitivity to change as well as stability. Cronbach's alpha in this study was .75, using the -2 to +2 scale.

The Positive and Negative Affect Scale, or PANAS (Watson, Clark, Tellegen, 1988), is more widely used than Diener and colleagues' more recent (2009) Scale of Positive and Negative Experience (SPANE). But SPANE does not rely on high arousal concepts as does PANAS (Schimmack, 2007). SPANE's broad items and reduced

intensity are more appropriate for elders. A 5-point Likert scale is used with the following instructions: "Please think about what you have been doing and experiencing during the past 4 weeks. Then report how much you experienced each of the following feelings." The response choices are *very rarely or never* to *very often or always,* for feelings such as pleasant, unpleasant, angry, and contented. The temporal stability of the scale was $r = .68$ (Diener et al., 2009). Cronbach's alpha for the positive items in this study was .83 and for the negative items was .79, using the -2 to +2 scale.

In addition to the above more classically situated subjective well-being scales, Diener's Flourishing Scale (Diener et al., 2009) asks for the level of agreement (*strongly disagree* to *strongly agree*) with eight statements including: "I lead a purposeful and meaningful life," and "People respect me." The temporal stability of the scale was $r = .71$ (Diener et al., 2009). Cronbach's alpha in this study was .78, using the -2 to +2 scale.

A physical health assessment was made, by self-report. Not only was this practical, compared to an objective health measure, but, in a large study of older adults, self-reported health was more strongly correlated with satisfaction with life than objective measures of health were (Cacioppo et al., 2007).

Self-reported health, or Health Related Quality of Life, was assessed with the SF-8 (Ware, Kosinski, Dewey, & Gandek, 2001), one of the shortest of the "Short Forms" (SF) of the classic Medical Outcomes Surveys. (See Appendix B for the SF-8 license agreement.) The SF-8 is used worldwide, is available in many languages, and has been used extensively with older populations. Response options vary with the question, and the

response choices are more complex than the rest of the interview instruments, so questions and answer choices were presented to participants in large type, as well as verbally. Sample items include: "Overall, how would you rate your health during the past 4 weeks? During the past 4 weeks, how much energy did you have? During the past 4 weeks, how much did your physical health or emotional problems limit your usual social activities with family or friends?" Cronbach's alpha for this study was .86. I used software provided by QualityMetric (which licenses the SF-8) to compute one physical health (SF-8 P) and one mental health (SF-8 M) component score. These component scores are equivalent to percentile scores ranked according to a U.S. adult sample (Ware & Kosinski, 2001).

Additional measures. Data were gathered on potential control variables, to analyze convergent validity, to bridge with literature outside the social comparison field, and to explore related realms for later research. All questions are listed in Appendix C; the additional measures that were used in the moderation analyses are detailed below.

Self-esteem. Self-esteem is correlated with social comparison behaviors (Diener & Fujita, 1997; Gibbons & Buunk, 1999; Wheeler, 2000), therefore it was investigated as a control variable. In addition, low self-esteem was explored as a measure of psychological threat.

The Revised-Positive Rosenberg Self-Esteem Scale (Greenberger, Chen, Dmitrieva, & Farruggia, 2003) is a validated measure with the classic 10-items rewritten as needed so that each question is framed in the positive. Items include, "All in all, I am inclined to feel that I am not a failure. I take a positive attitude toward myself." The

authors of this scale reported that the mean did not differ from the mean of the original 10-item scale, in a large, ethnically-diverse undergraduate sample. Cronbach's alpha in this study was .88. The mean of the 10-item scale, which was administered near the end of the survey, using the -2 to +2 scale, was used to quantify self-esteem.

At the beginning of the interview, the Single-Item Self-Esteem (SISE) Scale was used (Robins, Hendin, & Trzesniewski, 2001). It asks for level of agreement with the statement, "I see myself as someone who has high self-esteem," using a 5-point Likert scale. Although the correlation between the SISE and 10-item classic Rosenberg Self-Esteem Scale (1965) it was derived from has been measured from r = .74 to .80, and it has been used with those as old as 90 years of age (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002), the Spearman correlation of the SISE and the 10-item mean was only .23 in this study, so the single item was dropped from the analysis.

Perceived stress. The Perceived Stress Scale-4 (PSS4), by Cohen and Williamson (1988), is a validated scale that asks four questions, including, "In the last month, how often have you felt that you were unable to control the important things in your life? In the last month, how often have you felt confident about your ability to handle your personal problems?" The original answer scale is 0 to 4 with the following words corresponding to those numbers: *never, almost never, sometimes, fairly often, very often*. The usual -2 to +2 numbering was used for this study, with the anchor words changed to match those used with SPANE: v*ery rarely or never, rarely, sometimes, often, very often or always.* The PSS4 was used as a measure of psychological threat. Cronbach's alpha for this study was .62.

Personality. The BFI-10 (Rammstedt & John, 2007) is a 10-item personality questionnaire, one of the shortest in the Big Five Inventory family. Participants rated their agreement, on the -2 to +2 scale for this study, with items such as: "I see myself as someone who is outgoing and sociable," and "I see myself as someone who tends to find fault with others." Of particular interest were the neuroticism scores, given the association between neuroticism and social comparison described earlier. The neuroticism scale score featured prominently in the moderation analysis. The items are: "I see myself as someone who gets nervous easily," and, reversed, "I see myself as someone who is relaxed, handles stress well."

Data Analysis

Preparatory data analysis. Data were entered into a spreadsheet from the separate computer files for each participant. Each variable was then examined for out-of-bound values. Each answer from each original file was then read aloud to a research assistant who checked for consistency with the spreadsheet. After corrections were made and rechecked, scale scores (based on reversed items as appropriate) and descriptive statistics were calculated.

Excluded and missing data. Only 4 of the 98 interviews I began were not included in the analysis. The 4 interviewees, perhaps due to issues with either English vocabulary or cognitive ability, did not complete the interviews. All of these individuals were approximately 90 years old, 3 were men.

Other than the 4 cases removed from the database, missing data were rare. Thirteen people did not report their income, about half of these saying they did not know

what it was. About one third of the volunteers seemed unable to answer the 16 Social Comparison Record (SCR) questions (see Appendix C), even with detailed coaching. Otherwise, only 2 participants skipped more than two questions each. Aside from the SCR and income, all questions had above the recommended minimum of 95% of answers, allowing missing data to be deemed a non-issue (Meyers, Gamst, & Guarino, 2013). Where half or more of a scale was answered, the mean for that case was used for any missing items. All statistical computations were done with pairwise deletion.

Deviation analysis. Any analysis using sum of squares calculations can be biased by influential outliers. To check for multivariate outliers, Mahalanobis distance was computed for the 11 variables used in the cluster analysis. According to criteria recommended by Meyers, Gamst, and Guarino (2013), there are no multivariate outliers within the cluster analysis variables.

Univariate outliers are also a concern. Along with the 11 variables used in the cluster analysis, another 27 variables – key well-being, demographic, and personal differences scores – were examined in order to determine which statistical tests should be used in follow-up analyses. Meyers et al. (2013) suggested that values more than 2.5 standard deviations away from the mean should be considered for deletion, but that it is better to include them if they constitute less than 2% of the sample and are not too extreme. Only 1% of *z* scores were over |2.5| and all were under |4|, out of the 38 variables examined, so no outliers were deleted.

Kurtosis, a measure of density of scores in the center versus the edges of the distribution, influences standard errors and parametric significance tests (DeCarlo, 1997),

which are not used in cluster analysis but are used in moderation analysis. Skewness, how far off center the bulk of the scores fall, impacts means, which is of concern in clustering. Accepting all values under |1| is considered liberal (Meyers et al., 2013). Of the 11 variables used in clustering, only *upward identification* was more extremely skewed, at -1.3. This was not due to the presence of outliers; it was the result of consistent, often strong, agreement with the question, possibly because of ambiguity in the question. (See more comments on this item in the Clusters section of the Results.) No clustering software robust to deviations from normality was accessible. Rather than transform one variable, I chose to live with the skewness.

The 27 other key variables had acceptable skewness, and most had kurtosis under |1|. (See comments in Moderation analysis in the Results.) Heteroscedasticity was an issue (Meyers et al., 2013), therefore robust statistical procedures were used except in the cluster analysis.

Cluster analysis. Cluster analysis was conducted in order to satisfy Research Question 1: Can senior-housing residents be grouped according to social comparison motives, frequency, direction, identification and contrast? Cluster analysis is a way to consider many correlations simultaneously, grouping sets of people, who are similar to each other on multiple measures, separately from those who are different (Huberty, Jordan, & Brandt, 2005). Individual cases are grouped according to scores on variables, which are measured using a chosen metric, according to a particular method. At a certain point in the process, the researcher must choose the number of clusters; this can be done based on a variety of criteria.

The cluster variables were: one social comparison frequency score, two direction scores, four identification-contrast scores, and four motive scores. Each of the motive measures used the same answer scale, with zero as the neutral midpoint of the scale. All of the other social comparison measures used the same scale, which was similar to the motive scale, therefore no standardization of variables was done.

The form of measurement that behaves most predictably in cluster analysis is error sum of squares based on Euclidean distance (Milligan & Cooper, 1987). Squared Euclidean distance is the numerical ruler that was applied to the scores to cluster them according to how far apart they were on a multidimensional grid.

I used a two-part analytic procedure originally recommended by Milligan and Cooper (1987), to make the most cohesive clusters. Ward's (1963) hierarchical method of clustering was used for the first part of the process, to determine the number of clusters and the starting point for each cluster's mean; the *k*-means nonhierarchical method of interactive partitioning was used for the final clustering.

First, Ward's procedure combines the 2 cases that are closest. It then combines the next most similar two entities, which could be 2 different cases or 1 case and the first cluster. Adding the 2 closest cases or clusters continues until all cases and clusters have been joined into one giant group. This straightforward procedure outperforms older and more recent developments in many ways, but, as a hierarchical procedure, once a case is placed in a cluster, it stays there. This can result in a case being classified in one cluster when it is closer to the final centroid, or multidimensional mean, of another cluster. Iterative nonhierarchical methods, in contrast, shuffle cases according to recalculated

centroids as they build the clusters. This means that their final clustering will have the most similar cases grouped together.

The nonhierarchical clustering method that performs best, *k*-means, requires the researcher to input the desired number of clusters. The starting means of these clusters can either be generated randomly and shifted from there, or the Ward's cluster means can be used as the starting seeds for the *k*-means procedure (Milligan & Cooper, 1987). I used the Ward means.

The Ward procedure generates a spectrum of groupings, one of which the researcher must select. Objective methods should be used to make that determination (Clatworthy, Buick, Hankins, Weinman, & Horne, 2005). I used the pseudo-*F* statistic and cubic clustering criterion (CCC) available in SAS Version 9.2 statistical software. These tests are recommended by Milligan and Cooper (1985), based on their Monte Carlo evaluation of 30 different methods. Milligan and Cooper describe the pseudo-*F* statistic as the (1974) Calinski and Harabasz index. They attribute the cubic clustering criterion to Sarle (1983). Each method quantifies between-cluster variation, which can then be compared for the various solutions (Milligan & Cooper, 1985).

The SAS manual (SAS Institute Inc., 1999) suggests that a CCC value above 2 indicates good clustering, values between 0 and 2 can be considered, and values under 0 are a clue that there may be issues with outliers. Other than higher values in general being good, for both CCC and pseudo-*F,* the highest value in a series is a sign of potentially good clustering, with larger jumps between steps also favorable (SAS Institute Inc.).

No CCC in my analysis was over zero. Having already made the decision that there were no outliers to remove, I chose the highest values in the series to consider further, which were associated with two, four, and seven clusters. (See Table 1, below.) Only the four cluster solution could be interpreted meaningfully, therefore I used SPSS Version 20 to create the final clustering with four groups.

Table 1. Cluster Analysis Statistics for 11 Social Comparison Variables

Number of clusters	Cubic clustering criteria	Pseudo-*F*
8	-4.5	12.6
7	**-4.2**	13.3
6	-4.8	13.8
5	-4.7	14.8
4	**-4.6**	15.8
3	-5.0	16.0
2	**-3.9**	**18.6**
1	0	-

Note. Boldface values are the largest or are larger than those above and below.

As mentioned in the Measures section, the original analysis plan stipulated that only 10 of the 11 variables would be used in the cluster analysis. Without the uncertainty-reduction variable included in the clustering procedure, the pseudo-*F* statistic and CCC pointed to a five cluster solution that was not interpretable. According to theory, uncertainty plays a key role in motivating social comparison (Buunk, Gibbons, & Visser,

2002). This motivated the decision to clarify the clustering results with uncertainty-reduction.

Cluster analysis is known to cluster even random data, and there are no widely accepted significance tests to check against, so, in order to know that clusters are based on other than noise, they must be examined against variables which have not been used in the cluster analysis (Huberty, Jordan, & Brandt, 2005). The external criteria for this project were the well-being scales, measuring satisfaction with life, positive and negative emotions, flourishing, and self-reported health.

Differences between cluster means, on variables used to create the clusters, are expected: The clusters were formed to maximize these differences. Therefore finding differences in no way confirms the usefulness of a particular clustering. For that, external criteria analysis is required. But, because the clustering variables in this project were chosen based on theory, I was interested in which aspects of the various theories were empirically important in clustering this data set. Therefore, purely for descriptive reasons, robust ANOVA procedures, explained in the Direct tests section on the next page, were run to see if the clusters differed significantly on all 11 variables used in the clustering. (Alpha was set at .05 for each test and two-tailed tests were used.) These ANOVAs also generated *F*-statistics, which I used to quantify the relative importance of each variable to the clustering separations.

External criteria analysis.

Demographic and individual difference tests. To satisfy Research Question 2, descriptive statistics of the clusters were compared, on age, sex, length of time in the

current senior housing, income, education, ethnicity, the type of housing the person lived in before moving to the current senior housing (a house, an apartment, or a different senior-housing complex), and whether the person lived alone or with a spouse. To clarify further potential differences between clusters, robust ANOVAs were conducted on the self-esteem and personality measures.

Direct tests. To satisfy Research Question 3, detection of increased well-being in those using adaptive comparison, robust ANOVAs, based on resampling, were used to examine differences between the clusters in well-being. Resampling is a computer-intensive process where samples, or sets of data, are randomly selected from the actual data. Resampling draws scores one at a time, with replacement (each score can be reselected in the next draw for the same data set), to create a simulated sample of the same size as the original set. Repeating this procedure thousands of times allows the calculation of *p*-values based on the distribution of the means of the simulated data sets. When data are not normally distributed, this resampling-based method allows accurate calculations of these statistical values (Mooney & Duval, 1993).

Howell's (2000) resampling program starts with the standard ANOVA procedure, then uses resampling to compute *p*-values. Effect sizes are based on the differences of the sum of squared mean errors (Howell, 2006). There is one distinction in the interpretation of these resampled ANOVAs compared to the classic tests: The null hypothesis is that group membership has no effect on scores, not just no effect on score means. For instance, the null would be rejected if the means were the same but the shapes of the

distributions were different between the groups. Rather than a weakness of the method, resampling ANOVAs provide more information about potentially important differences.

Howell (2006) suggested that resampling ANOVAs are more properly run on the residuals (the difference between each individual score and the group mean) rather than the raw scores, although the results are usually quite similar. Mooney and Duval (1993) pointed out that, in experimental data, where the residuals are the main source of variation, resampling the residuals is appropriate, but, with correlational data, resampling the raw scores, which hold more of the random variability, is theoretically more justifiable. I ran each analysis both ways, and each pair of scores was very close. I report the raw-score-based results. Alpha was set at .05 for each test and two-tailed tests were used.

Moderation analysis. When the above direct tests of well-being did not return the expected results, I pursued Research Question 3, the detection of increased well-being in those using adaptive comparison, via moderation analysis. I investigated psychological threat as a moderator of the impact of social comparison, with the same measures of well-being used in the direct tests (satisfaction with life, positive and negative emotions, flourishing, and self-reported health). Based on theory, the perceived stress, self-esteem, and neuroticism scales were examined in detail as moderators.

Conceptually, moderation, as a statistical entity, exists when the influence of one variable on another is dependent upon the level of a third variable. Social comparison theory says that certain types of people, and people in certain types of situations, can use social comparison to compensate for psychological blows. People suffering more from

stress, low self-esteem, or neuroticism might benefit more, from downward contrast or upward identification, than people who are doing well. Therefore psychological threat should moderate the benefit that people get from social comparison. Moderation analysis is the way to test this interaction between variables.

Moderation can be thought of directionally: Your level of threat might modify how much benefit you get from social comparison. But, algebraically, the interaction is symmetrical (Hayes, Glynn, & Huge, 2012; Preacher, Curran, & Bauer, 2006). If the above is true, then it is also true that the way you use social comparison will modify how bad you feel when threat level is high.

Statistically, moderation analysis is a type of regression modeling. If there is moderation: First, the overall regression model must statistically significantly explain an outcome (e.g., y). Second, although they do not need to be statistically significant, two variables (e.g., m and n) must be written into the equation as additive predictors of that outcome ($y = m + n$). Finally, when those two variables are multiplied (mn) and that term is added to the equation ($y = m + n + mn$), the coefficient of the multiplicative term must be statistically significantly different from 0, which means that the equation as a whole explains significantly more variation in the outcome than when just the two separate variables are used (Jaccard & Turrisi, 2003).

The Johnson-Neyman technique (Preacher, Curran, and Bauer, in 2006, attributed it to Johnson and Neyman, 1936) uses the alpha level set by the researcher (.05), the standard error, and the slope of the line of one group's scores compared to the slope of the line of the other group's scores, to calculate exactly where, on the moderator scale,

those in one group differ from the other group. Without a region of significance, a statistically significant interaction arguably has no substantive significance: Hayes (2013a) warned that statistical significance in interaction does not mean that there are necessarily any values in the actual data where the same score on the moderator yields a statistically significantly different value between those in one group and the other. Aiken and West (1991) described the interaction, of one categorical and one continuous variable, as a difference in slopes; they said that follow-up tests are required to determine the impact of the moderation.

McClelland and Judd (1993) discussed a way to rule out spurious moderation, by statistically controlling for the moderator squared. When I found a moderation effect, I conducted this test, adding the moderator times itself as a control variable. Controlling for the moderator squared did not erase any of the moderation effects.

The unequal variances in this data set meant that using classic parametric statistical tests, such as the usual linear regression for moderation analysis, would not return accurate answers. A solution offered by Hayes (2013b) is Process statistical software, a free program that works as an add-on to the SPSS statistical software drop-down menu system. I used Process Beta Version 140712, with standard errors corrected for heteroscedasticity using the HC3 estimator (Hayes & Cai, 2007). Because the scores used in the moderation tests had zero as their scale midpoints, there was no reason to mean-center any variables (Hayes, 2013a). Confidence intervals were set at 95%. Zero and one were used for dummy coding. For ease of interpretation, there was no standardization of variables or coefficients (Achen, 1982; West, Aiken, & Krull, 1996).

Results

Clusters

Can senior-housing residents be grouped meaningfully according to social comparison frequency, direction, identification-contrast, and motivation? The cluster analysis answer to Research Question 1 is: Yes. Four clusters were formed based on 11 social comparison variables. Table 2 (p. 49) shows the cluster means of these variables.

The table footnote is a reminder of the scoring. The top section of the table, just below the cluster names and the numbers in each group, displays the three frequency scale means (and standard deviations): overall frequency measured by Social Comparison Orientation, the upward comparison frequency measure, and the downward frequency measure. The midsection of the table gives the means for the four individual items used to measure: upward identification, upward contrast, downward identification, and downward contrast. (These ask about emotional response to the specified comparisons, with no reference to frequency.) The bottom section of the table covers the four motive scales measuring: self-improvement, self-evaluation, self-enhancement, and uncertainty-reduction. The three columns on the right report robust ANOVA statistics.

The first cluster is distinguished by the use of both of the specific social comparison behaviors that the literature tells us are positively associated with well-being, without use of either of the specific negative behaviors. This group did not have a high frequency of social comparison in general, and they reported using downward

Table 2. Cluster Means (Standard Deviations) and ANOVA Statistics on 11 Social Comparison Variables

Variable	Cluster				ANOVA		
	Adaptive n = 46	Indiscriminate n = 27	Striver n = 14	Disagreer n = 7	*F* (3, 90)	*p*	*d*
Frequency							
Overall	0.28 (0.49)	0.52 (0.60)	0.29 (0.52)	-0.77 (0.72)	10.34	<.001	0.98
Upward	0.09 (0.75)	0.70 (0.56)	0.26 (0.79)	-1.24 (0.79)	14.46	<.001	1.07
Downward	0.78 (0.76)	0.80 (0.56)	0.95 (0.83)	-0.71 (0.85)	9.75	<.001	0.99
ID-Contrast							
Upward identification	0.87 (0.78)	0.96 (0.76)	1.14 (1.10)	-0.29 (1.70)	4.22	.007	0.64
Upward contrast	-.048 (0.91)	1.00 (0.83)	0.00 (1.30)	-2.00 (0.00)	25.04	<.001	1.20
Downward identification	-1.07 (0.68)	0.67 (0.88)	-0.64 (1.34)	-1.57 (0.79)	26.40	<.001	0.96
Downward contrast	1.20 (0.69)	1.37 (0.56)	-1.43 (0.65)	-1.57 (0.53)	100.39	<.001	2.48
Motivation							
Improvement	0.75 (0.67)	0.66 (0.69)	0.81 (0.65)	0.27 (0.91)	1.12	.353	0.32
Evaluation	0.06 (0.67)	0.23 (0.56)	0.55 (0.65)	-0.53 (0.79)	4.80	.005	0.61
Enhancement	0.22 (0.59)	0.14 (0.61)	0.01 (0.73)	0.70 (0.68)	2.04	.114	0.43
Uncertainty	-0.05 (0.59)	0.37 (0.58)	0.49 (0.99)	-.098 (0.57)	10.23	<.001	0.90

Note. For all scores: 0 is the neutral midpoint, 1 is *agree* or *accurate*, -1 is dis*agree* or *inaccurate*, 2 is *agree strongly* or *very accurate,* and -2 is *disagree strongly* or *very inaccurate*.

comparison more than upward. They had means close to 1, or *agree*, on questions about upward identification and downward contrast. They disagreed with the questions on upward contrast and downward identification. Although using the healthy forms of comparison is expected to be self-enhancing in effect, this cluster was not high in self-enhancement motive. It was higher in self-improvement than in other motivations, but it did not stand out according to any of the motive measures. I labeled this cluster *adaptive* comparers. The adaptives formed the largest group, with 49% of the participants.

The next largest cluster, with 29% of the elders, reported using overall and upward social comparison more than the others, for better and for worse. Although they reported using social comparison in the same healthy ways as the adaptives, they also used the negative forms: They contrasted with those doing better and identified with those doing worse. They did not stand out in any way in terms of motivations. The most notable aspect of that is that they were not high in self-enhancement, which could have raised the suspicion that they simply agreed with almost every question. I labeled this cluster *indiscriminate* comparers.

The next cluster, with 15% of the participants, had social comparison frequencies very similar to the adaptive group, but they differed in identification-contrast patterns. This group reported not using healthy downward contrast or unhealthy downward identification, and they were neutral about using unhealthy upward contrast. They identified upward, which is the social comparison behavior used by those seeking to improve themselves. They scored high on self-improvement, self-evaluation, and

uncertainty-reduction motivations, while scoring low on self-enhancement. I named this cluster *strivers*.

The smallest cluster, with only 7% of the participants, disagreed with most of the social comparison questions they were asked. They disagreed strongly (-2) with the suggestion that they used upward contrast, and gave the lowest scores of any group on 10 of the 11 clustering variables. There was one variable that they scored the highest on: self-enhancement. These people did not report using social comparison in ways that were likely to make them feel better about themselves, but their answers showed that they were high in trait self-enhancement. I labeled them *disagreers.*

In sum, the adaptive cluster used only health-enhancing social comparison behaviors, the indiscriminate cluster used positive and negative social comparison, the striving group was partial to upward identification in alignment with their reported motivations, and the disagreer group denied using social comparison in any way. The adaptive cluster represents the half of the sample using social comparison the ways that social scientists would prescribe.

Robust ANOVA procedures (Howell, 2000) showed statistically significant differences between the means of the clusters on 9 of the 11 variables used in the clustering process. (See Table 2 on page 49.) As detailed in the Cluster Analysis section, these ANOVAs are not typical hypothesis tests; they are descriptive tools, quantifying the contributions of each variable to the clustering as a whole.

Using the *F*-statistics to rate the importance of the variables, (a) healthy downward contrast was the most distinguishing variable, followed by (b) the unhealthy

duo of upward contrast and downward identification, then (c) uncertainty-reduction and the three frequency measures, with (d) upward identification and the three specific classic motive measures contributing much less. The variables that did not reach statistical significance were both measures of classic motivations: self-improvement and self-enhancement. Festinger's original 1954 motivation, self-evaluation, fared a bit better.

Some of my subsequent analyses focus on the adaptive versus the nonadaptive halves of the sample, therefore it is instructive to examine which dimensions differ when comparing these halves. With recalculated ANOVAs, only 3 of the 11 variables are significantly different (*p*-values <.003): downward contrast, upward contrast, and downward identification.

It is interesting to note that the one identification-contrast score that did not differ between groups was in response to, "When I think about others who experience fewer problems than I do, I am pleased that things can get better." Some of the interviewees specified that they were pleased that things could get better for the other person, so the lack of differences between the groups may reflect weakness in the measure as a question about the self, at least in English. (The scale was not developed in English.) Recall that this was the only clustering variable that failed the liberal skewness test, due to consistent agreement with the question, possibly because of ambiguity in the wording.

Demographics and Individual Differences

Do the groups differ demographically? The answer to Research Question 2 is: Not enough to use demographics to predict cluster membership. Table 3, on the next page, shows the means for the continuous variables and the within-cluster percentages for the

categorical variables. With one cluster of only 7 individuals, chi-square tests with two or more levels would not return accurate *p*-values (Howell, 2010), therefore these numbers are presented for descriptive purposes. Most notable is the revelation that a Grade 12 education is not a prerequisite for the adaptive use of social comparison.

Table 3. Cluster Demographics (Means and Within-Cluster Percentages)

Category	Adaptive 49%	Indiscriminate 31%	Striver 16%	Disagreer 7%
Age in years	80.7	83.3	76.8	85.3
Years in current housing	5.3	6.0	6.0	6.4
Previous housing:				
House	73%	59%	71%	57%
Apartment	11%	19%	29%	29%
Senior housing	16%	22%	0%	14%
Female	85%	70%	79%	86%
Living alone	76%	67%	57%	100%
Household income before taxes:				
< $15,000	20%	15%	29%	29%
$15000-$25,000	26%	41%	29%	14%
>$25,000	35%	33%	43%	43%
Did not report	20%	11%	0%	14%
Education:				
< Grade 8	13%	4%	29%	29%
Grade 8	63%	48%	29%	29%
> Grade 11	24%	48%	43%	43%
Ethnicity:				
Mennonite	61%	52%	46%	14%
British/Irish/Scottish	17%	22%	15%	43%
French	4%	15%	15%	0%
Other	17%	11%	23%	43%

Table 4. Cluster Means (Standard Deviations) and ANOVA Statistics on Self-esteem and Big-Five Personality Measures

Variable	Cluster				ANOVA		
	Adaptive	Indiscriminate	Striver	Disagreer	*F*	*p*	*d*
	n = 46	n = 27	n = 14	n = 7	(3, 90)		
Self-esteem	1.16 (0.59)	1.13 (0.48)	1.03 (0.68)	1.16 (0.63)	0.19	.90	0.10
Openness	0.73 (0.99)	0.70 (0.93)	1.25 (0.87)	0.36 (1.52)	1.53	.22	0.32
Conscientiousness	1.10 (0.78)	0.98 (0.92)	1.11 (0.90)	0.93 (0.98)	0.17	.92	0.09
Extraversion	0.35 (0.89)	0.19 (1.02)	0.00 (1.09)	0.50 (1.35)	0.62	.60	0.19
Agreeableness	0.98 (0.79)	0.67 (0.77)	0.82 (0.91)	1.29 (0.64)	1.52	.22	0.29
Neuroticism	-0.51 (1.00)	0.22 (1.09)	0.00 (1.14)	-0.71 (1.04)	3.49	.02	0.36

Note. For all scores: 0 is the neutral midpoint, 1 is *agree*, -1 is dis*agree*, 2 is *agree strongly,* and -2 is *disagree strongly*.

I compared the clusters on self-esteem and personality. Self-esteem and conscientiousness were remarkably consistent across clusters. Resampling ANOVAs showed a statistically significant difference only in neuroticism, with the adaptive cluster lower in neuroticism than all others except the disagreers. The difference in neuroticism

held when the adaptive cluster was compared with the three other clusters combined: F (1, 92) = 5.89, p = .02, d = .25.

Spearman correlations of neuroticism with the well-being measures (Satisfaction With Life, Flourishing, SPANE-P, SPANE-N, SF-8 P, and SF-8 M) and self-esteem were statistically significant except for the physical health measure (SF-8 P). Excluding the latter and SPANE-N, the correlations ranged from -.23 to -.36. The correlation of neuroticism was positive with SPANE-N (negative emotional experiences), r = .38.

Well-being

Research Question 3 asks if the known benefits of the adaptive use of social comparison are discernible based on cluster. This is external criteria analysis, comparing the clusters on variables that were not used in the clustering process. Cluster means on health measures were compared as direct tests of the relationship of social comparison and well-being. Then, moderation analysis tested threat-buffering conditional effects.

Direct tests. Robust ANOVAs tested the four clusters for differences in Satisfaction With Life, Flourishing, the Scale of Positive And Negative Experiences (SPANE-P and SPANE-N), and self-reported physical and mental health (SF-8 P and SF-8 M, which give percentile scores according to answers by U.S. adults of all ages). The only statistically significant difference was in self-reported mental health, where the disagreers reported fewer problems: F (3, 90) = 5.1, p = .003, d = 0.57. The means (and standard deviations) for the clusters were: adaptive = 50.74 (6.49), indiscriminate = 45.97 (8.40), striver = 49.59 (7.78), disagreer = 56.91 (4.59). A recalculated ANOVA, testing

adaptives against the three other clusters combined, was not statistically significant. This does not show a well-being advantage of adaptive comparison.

The results were very similar when I reran the cluster analysis using only the four identification-contrast variables, and when I reran the clustering using nine variables, leaving out the two motive measures that did not differ between the clusters in the robust ANOVAs. These analyses were aimed at reducing the noise-to-signal ratio, because numerical noise can make cluster results less accurate, but they did not yield improved cluster well-being results.

Moderation analysis. When the expected direct benefits of adaptive social comparison were not found, I examined the data for threat-buffering effects, which also are predicted by the literature (e.g., Buunk, Gibbons, & Visser, 2002; Taylor & Lobel, 1989). The same well-being scores used in the direct tests were used to test moderation, by individual difference measures of threat: (high) perceived stress, (low) self-esteem, and (high) neuroticism. In addition to these detailed analyses, other measures were checked as moderators, including sex, and one of the Flourishing Scale items that has face validity as a perceived control measure: "I am competent and capable in the activities that are important to me."

Testing the four clusters separately showed no moderation effect. Testing the adaptive cluster against only the indiscriminate cluster also showed no pattern of moderation.

McClelland and Judd (1993) reported simulations showing that interaction in field studies requires twenty times as many cases as analogous experimental studies, to

achieve the same power to detect a difference. When I combined the three smaller clusters, increasing the power of the analysis, I compared the adaptive cluster, the 49% of the elders who used adaptive social comparison, against the 51% who did not use social comparison adaptively. This analysis did return one set of statistically significant moderation results: Neuroticism moderated the effect of adaptive cluster membership.

Moderation was found with three of the six measures of well-being: Satisfaction With Life, self-reported mental health (SF-8 M), and negative emotional experiences (SPANE-N). Table 5 (p. 58) shows the details for these three statistically significant moderation models. The unstandardized coefficients tell us how many units the slope of the dependent variable goes up or down for each unit of the independent variable, only when all other variables in the equation are set at 0. (These are simple or conditional effects, and the condition is that the other terms are 0.). Zero is the neutral midpoint of the scale for neuroticism, as well as the dummy code for the nonadaptive social comparison group. (Adaptives were coded as 1.) Lower and upper confidence intervals, and their associated *p*-values, are listed. R^2 values are a standard part of moderation reporting, although O'Connor (1998), Achen (1982), McClelland and Judd (1993), and Aiken and West (1991) all warned against their use as an interaction analysis effect size. Cohen's f^2 is recommended instead (Soper, 2013), calculated as R^2 divided by (1-R^2). Cohen and Cohen (1983) defined .15 as a medium and .35 as a large f^2 effect. The three moderation equations have f^2 values ranging from .16 to .49, based on unadjusted R^2 values, calculated on Soper's (2013) website.

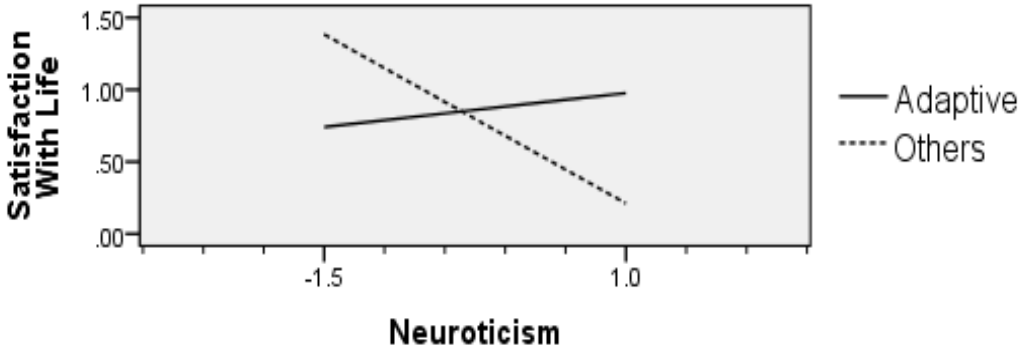
Table 5. Moderation Regression Models

Variable	Unstandardized coefficient	95% CI	*p*
Satisfaction With Life			
Intercept	0.68	[0.48, 0.88]	<.001
Adaptive	0.20	[-0.15, 0.55]	.253
Neuroticism	-0.47	[-0.66, -0.27]	<.001
Interaction	0.56	[0.22, 0.91]	.002
R^2	.23		<.001
f^2	.30		
F	7.86		
SF-8 M (self-rated mental health)			
Intercept	48.69	[46.41, 50.98]	<.001
Adaptive	2.24	[-0.95, 5.43]	.166
Neuroticism	-3.33	[-5.41, -1.25]	.002
Interaction	3.70	[0.85, 6.56]	.012
R^2	.14		.006
f^2	.16		
F	4.39		
SPANE-N (negative experiences)			
Intercept	-0.75	[-0.91, -0.59]	<.001
Adaptive	-0.08	[-0.35, 0.18]	.521
Neuroticism	0.37	[0.19, 0.56]	<.001
Interaction	-0.27	[-0.53, -0.01]	.041
R^2	.24		.001
f^2	.32		
F	5.73		

Satisfaction With Life is predicted by the interaction of adaptive use of social comparison and neuroticism. The most concrete way to describe the impact of the interaction is with the Johnson-Neyman technique, which delineates where, on the score continuum, the moderation functions at a statistically significant level. Moderation is, by definition, a conditional effect. Johnson-Neyman answers the question: Where does the moderator influence the independent variable? The significance regions in the satisfaction with life analysis are, on the neuroticism scale, under -0.99 and above 0.42. Figures 1 and 2 (on the next two pages) each show two lines connecting the 10th percentile score with the 90th percentile score in neuroticism, one line for each group. These lines represent the simple slopes for the moderation equation and also display the range of the data.

Figure 1 shows, with the dotted line, that nonadaptive comparers with low neuroticism have high life satisfaction. But those who are high in neuroticism, and do not use social comparison adaptively, have lower satisfaction with life. On the other hand, the adaptive comparers, graphed with the solid line, are not hurt by having high neuroticism; their satisfaction with life hovers around the *agree* (1) mark for all levels of neuroticism. The upper significance region, where the threat buffering is in effect, contains the scores of 28% of the sample. These neuroticism scores are not particularly high, only 0.42 on the -2 to +2 scale. The lower significance region includes the 38% of the sample who are low in neuroticism.

Figure 1. Interaction of Neuroticism and Adaptive Social Comparison Predicting Satisfaction With Life.

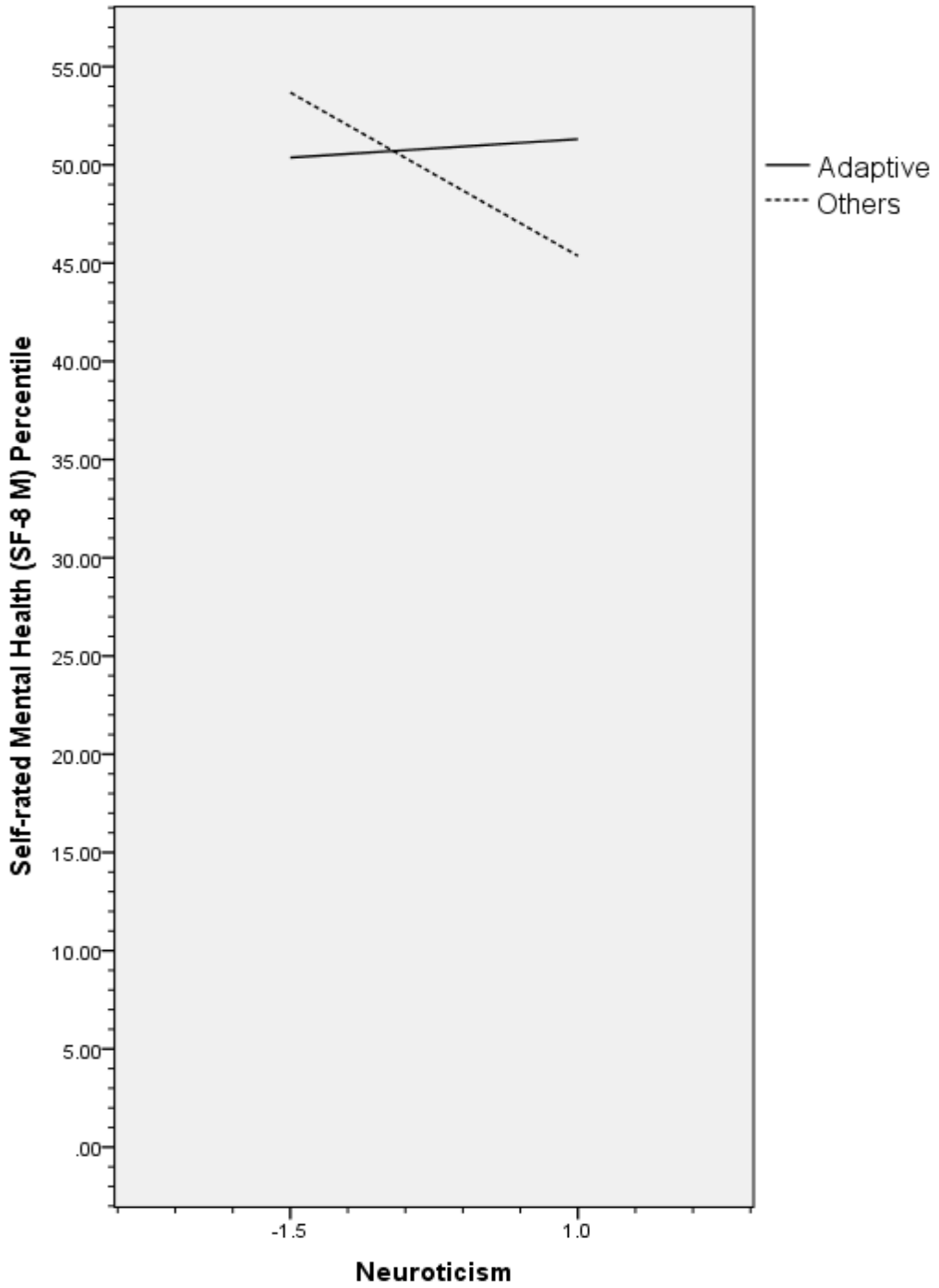


Note: Johnson-Neyman significance regions are found in neuroticism scores < -0.99 and >0.42.

Self-reported mental health (SF-8 M) is also predicted by the interaction of adaptive use of social comparison and neuroticism. There is one Johnson-Neyman significance region in this moderation equation, covering neuroticism scores above 0.33. The pattern of the simple slopes shown in Figure 2 is remarkably similar to that of the Satisfaction With Life graph in Figure 1. The same 28% of scores that are in the upper significance region in the satisfaction with life analysis are in the significance region in this analysis – covering exactly the same people.

Adaptive comparers have good mental health regardless of their level of neuroticism: Their percentile scores on the SF-8 M hover just over the mean for the U.S. samples the component score is based on. Those not using social comparison adaptively who are higher in neuroticism – not very high; this region covers those scoring over 0.33

Figure 2. Interaction of Neuroticism and Adaptive Social Comparison Predicting Self-rated Mental Health (SF-8 M).



Note: The Johnson-Neyman significance region is found in neuroticism scores >0.33.

on the -2 to +2 scale – do not fare as well as the adaptive comparers: Their mental health self-ratings drop multiple percentiles.

The scale of negative experiences, SPANE-N, has a statistically significant interaction between social comparison and neuroticism. But there is no Johnson-Neyman significance region. This means that the statistical significance holds no substantive significance: We cannot say that even one case in the sample is helped by adaptive social comparison, we can only say that the effect of neuroticism on SPANE-N scores depends on social comparison.

Discussion

Summary of Results

This project aimed to use cluster analysis to group senior-housing residents according to social comparison motives, frequency, direction, identification and contrast, and then to compare the clusters on demographics and well-being. No other study had examined all of these social comparison behaviors together, allowing simultaneous consideration of all major streams of social comparison theory.

Cluster analysis succeeded in forming four distinct groups of senior-housing residents, based on their scores on 11 social comparison variables. The cluster separations were mathematically adequate and theoretically meaningful, distinguishing one group of elders, using adaptive types of social comparison, from three other groups, which underutilized adaptive forms and/or used nonadaptive forms of social comparison.

The largest group, encompassing half (49%) of the elders, reported using social comparison in health-enhancing ways, adaptively using upward identification and downward contrast, while avoiding problematic upward contrast and downward identification. They had neither the highest nor the lowest score on any measure, therefore their scores on the specific social comparison variables did not distinguish them from all other clusters, the pattern of their scores did. I labeled them *adaptive* comparers.

The next largest cluster (29% of the total) used healthy social comparison as the adaptives did, but they also reported using unhealthy social comparison, contrasting with

those doing better and identifying with those doing worse. They used social comparison more than all other clusters, comparing indiscriminately. I labeled them *indiscriminate* comparers. The next cluster, which was half the size of the indiscriminate cluster (15% of the total), identified upward, and reported motivation for self-improvement and self-evaluation. I named them *strivers.* They scored the lowest on self-enhancement and the highest on uncertainty-reduction motivation. The smallest cluster (7%) said they did not use any type of social comparison. This cluster was labeled *disagreers.*

The means of the four clusters differed on most of the 11 clustering variables; the self-enhancement and self-improvement motive variables were the exceptions. Social comparison theory started as a descriptor of behavior concerned with accurate self-evaluation, but, self-enhancement (seeking to feel better without any actual betterment) and sincere self-improvement have been the dominant motives discussed in social comparison theory in health psychology, for decades. Self-enhancement has been thought of as motivating downward contrast, while self-improvement has been described as motivating upward identification. The clustering process is designed to maximize differences between groups, and it did so effectively for the other 9 variables, including the self-evaluation and uncertainty-reduction motive measures, so it is curious that these key theoretical motives were relatively unimportant in the cluster analysis.

The clusters did not differ markedly on demographics, contrary to what was found in a meta-analysis showing that women engage in more coping behaviors, of all kinds, than men (Tamres, Janicki, & Helgeson, 2002), and contrary to what was found among urban and suburban old people in the general region where this study was conducted. In

the latter research, women used downward social comparison more often than men (Chipperfield, Perry, Bailis, Ruthig, & Chuchmach, 2007).

The clusters did not differ on self-esteem or personality variables, except on a measure of neuroticism. The adaptive cluster was lower in neuroticism than the combined nonadaptive clusters. When the four separate clusters were compared, the disagreers were the only cluster lower than the adaptives in neuroticism.

Direct tests using robust resampling ANOVA procedures showed no benefit of adaptive social comparison behaviors. A variety of tests examined whether psychological threat moderated the impact of social comparison on well-being. The adaptive cluster, when tested against the three other clusters combined, did show that social comparison moderated the deleterious effects of neuroticism, on Satisfaction With Life and self-reported mental health (SF-8 M). Statistically significant moderation was also found for the effect that social comparison and neuroticism had on negative emotions (SPANE-N), although no Johnson-Neyman region of significance was found within this last interaction model, so there may be no substantive significance to this finding.

McClelland and Judd (1993) reported that interactions in experimental research are very easy to find, but that they are very difficult to find in correlational research, partly due to the magnification of uncontrolled error times uncontrolled error. They stated that the increase in variance explained, in fieldwork, when an interaction is added to a model, is typically only 1 to 3%. They might be impressed at the 13% gain when the multiplicative term was added to the Satisfaction With Life model, or the consistent medium to large f^2 effect sizes found in the three statistically significant models.

These moderation results show a threat-buffering effect. Those in the (combined) nonadaptive clusters who were higher in neuroticism had reduced Satisfaction With Life and lower mental health (SF-8 M). The adaptive cluster members with higher neuroticism scores had no reduction in Satisfaction With Life compared to others in their cluster, and the same was true in the mental health interaction: The adaptives in the upper significance region for neuroticism were doing as well as others in their cluster on self-rated mental health.

Interpretation and Limitations

Cluster analysis succeeded at defining separate groups based on social comparison variables, but these groups did not show the expected direct benefits of adaptive practices versus other patterns of behavior. The literature also specifically predicts a benefit from the use of adaptive social comparison for people low in perceived control (Bailis, Chipperfield, & Perry, 2005), but I did not find it. I did find some evidence of a threat-buffering effect of the adaptive use of social comparison, using one measure of threat on three measures of well-being. This benefit was not the result of greater self-esteem or a higher educational level.

Why, when two of the three statistically significant models were relatively strong, did none of the other measures show moderation? There are some statistical answers. McClelland and Judd (1993) warned of the loss of power to detect interactions when ranges or variances are reduced. The self-esteem measure had scores in only 60% of its potential range, but the other threat measures used 94-100% of their potential ranges. Variance was another matter: Neuroticism had a variance of 1.19 while the other

measures of threat had variances of 0.33 (for self-esteem) up to only 0.55 (for the Flourishing Scale competence item). Therefore, mathematically, compared to the other measures of threat, neuroticism had the most chance to succeed as a moderator.

The study was powered appropriately to find direct effects and relatively large differences; it was not powered to detect more subtle differences in interaction, especially with reduced variances and ranges. Still, it is not clear that this was the only issue limiting the outcomes.

Another potential limitation is homogeneity of the volunteers. Subsidized rent was available in almost all (93%) of the facilities where I was refused permission to recruit, compared with as little as 32% of the buildings where I was permitted to visit. It is possible that the housing administrators who did not grant permission for recruitment were the ones with less happy residents, and it is possible that, in the buildings where I recruited, only the most satisfied old people volunteered. On the other hand, in most buildings, most of the residents did not attend congregate meals regularly. Although some managers encouraged me to recruit during the most popular meals (when fish, or watermelon and *rolkuchen* – German rolled cookies – were served), where a greater variety of people might be present, in some buildings there was no advanced notice to residents, so only those present had the opportunity to volunteer. This could have biased recruitment in favor of those less active in the community at large (some residents go out to volunteer every weekday) or less able to cook for themselves, selecting for those who were worse off. These two biases may have balanced each other: the administrators and

volunteers self-selecting those doing better, and congregate meals as the main recruitment venue selecting those more dependent on services.

Another limitation to participation was language: Low German or French was the first language of most participants, yet the only interviewer available for the study was functionally monolingual. Several administrators asked if I spoke Low German, then warned me that some of their residents over 90 years old had very limited English vocabulary. One participant said that, after she signed up for an interview, an older resident asked her if I spoke French.

Why were the expected direct benefits of adaptive social comparison (Taylor, Buunk, & Aspinwall, 1990) not found? Social comparison is often thought of as a coping mechanism (Buunk & Gibbons, 1997), and coping resources may not benefit those who have no significant threat (Cohen & Wills, 1985). The moderation analysis, which tested threat response, was more successful than the main well-being analysis at finding positive outcomes for the recommended use of social comparison.

The problem might be that the participants were remarkably not threatened. Perceived Stress Scale scores were above the neutral 0 for only 14% of the volunteers, and 6% had scores of only 0.25. Neuroticism scores were above neutral for only 28% of the participants. Self-esteem was above neutral for 95% of them! Those were all the main personality measures of threat.

Situational threat was supposed to be central to this project. The original proposal excluded those who had lived in senior housing for more than 2 years, and the plan was to compare those who had moved in very recently (who were therefore more threatened

by their new living situation) to those who had been there as long as 2 years (who therefore were considered to be not threatened by a new living situation). But, at least partly due to low turnover in senior residences, only six of the volunteers for this study had moved in within 6 months, and only another six had lived there between 6 and 12 months. No significant differences were found between those who had moved in within the last year, the 14 who had been in senior housing 1 to 2 years, and all others, but there was little power to find a difference, given the small numbers. Several interviewees, who had lived in their current residences for many years, mentioned having difficulty adjusting to senior housing, before settling in and very much appreciating it. This means that it is possible that moving into senior housing is psychologically threatening for many people, but the new arrivals in this data set were too few for the effect to be discerned. Recent research on immigrants suggests that much more upward identification might have been found if this study included only relative newcomers to senior housing (Lockwood, Shaughnessy, Fortune, & Tong, 2012).

If the weak predictive results in this research are because the volunteers were generally under too little threat to benefit from a threat-reduction technique, why was this inconsistent with the most similar research in the literature, the study of healthy Londoners, aged 65 to 98? That study, by Beaumont and Kenealy (2004), found no association of quality of life with the Social Comparison Orientation (SCO) measure of comparison frequency (which was also true for Gibbons and Buunk, who published the SCO, in 1999) but did find downward contrast correlated with quality of life.

Cluster analysis forms groups based on their mathematical differences from other groups. If the variables that are better predictors of well-being have a more centralized or more consistent distribution than other variables, as on a seesaw, in the cluster analysis they will be outweighed by the variables with greater or more unequal distributions. In regression analyses not reported here, all 11 social comparison variables (those used in the cluster analysis) did predict well-being in this data set directly, without clustering. If the sample were more heterogeneous, the clustering process, too, might have created groups that showed a direct benefit of adaptive social comparison, rather than only an indirect effect.

Future Directions

The most important variables in the clustering process were the identification-contrast measures, which were the key social comparison instruments in several of the more recent health psychology studies of social comparison (Beaumont & Kenealy, 2004; Dibb & Yardley, 2006a; Van der Zee, Buunk, Sanderman, Botke, & Van den Bergh, 2000). Future research could continue with these, plus the motivation measures (these were the most important variables in the unreported regression analysis), which are based on classic social comparison theories. Using the above two sets of measures, while leaving out the less critical frequency questions, would connect the recent health research with the earlier works in the literature, without overburdening participants. Surveys much shorter than an hour might encourage a broader spectrum of persons to participate, allowing research samples to more closely approximate the populations of interest.

The descriptive differences between the three clusters of nonadaptive comparers are intriguing. The indiscriminate group was the most educated and possibly the wealthiest. The strivers, who were the most interested in improving themselves, had the greatest openness to experience, but scored the lowest on some of the well-being measures (though they were doing well objectively, just not as well as the others). Both of these groups might welcome a simple educational intervention to help them make better use of social comparison. Such a program could be modeled on cognitive behavioral therapy, which brings habitual thinking patterns into greater awareness so that the unhelpful ones can be changed.

This study consisted of one group of old people in one Canadian province. It is not clear if the same clusters would emerge from any other sample. It would be easiest to attempt to replicate the social comparison cluster analysis not with other senior-housing residents but with undergraduates from the same region. If the study were restricted to students living on campus, the ages and physical health would differ from the seniors' in this study, but the ethnicities might be similar. Also similar would be the fact that all participants would be drawn from a socially-interactive, age-restricted, residential establishment devoted to serving people like them.

Conclusion

This study determined that residents of senior housing can be grouped according to social comparison motives, frequency, direction, identification and contrast. Half the sample formed one cluster using social comparison in adaptive ways; the other half formed three clusters not utilizing social comparison in optimal ways. The demographics

of the clusters did not differ markedly. The expected direct benefits of membership in the adaptive cluster were not found. Moderation analysis did show a threat-buffering benefit for those in the adaptive cluster.

In the present study, cluster analysis was not an efficient way to find the benefits of adaptive social comparison, and it did not tell us how to recognize the type of person more likely to be part of a particular cluster, including those who might be at risk of reduced well-being. This limits its usefulness in the applied health psychology of social comparison. Yet the cluster analysis successfully formed groups of elders based on their social comparison behaviors, including all theoretically-relevant aspects, and a threat-buffering effect was found. Cluster analysis offers a unique perspective on the relationship of variables as they are embodied in individuals, allowing a richness of understanding not available in other types of analyses.

References

Achen, C. H. (1982). *Interpreting and using regression.* Newbury Park, CA: Sage.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

Bailis, D. S., Chipperfield, J. G., & Perry, R. P. (2005). Optimistic social comparisons of older adults low in primary control: A prospective analysis of hospitalization and mortality. *Health Psychology, 24*(4), 393-401. doi:10.1037/0278-6133.24.4.393

Bailis, D. S., & Chipperfield, J. G. (2006). Emotional and self-evaluative effects of social comparison information in later life: How are they moderated by collective self-esteem? *Psychology and Aging*, *21*(2), 291-302. doi:10.1037/0882-7974.21.2.291

Bailis, D. S., Chipperfield, J. G., Perry, R. P., Newall, N. E., & Haynes, T. L. (2008). Exploring the commonalities between adaptive resources and self-enhancement in older adults' comparative judgments of physical activity. *Journal of Aging and Health, 20*(8), 899-899-919. doi:10.1177/0898264308324636

Banaji, M. R., & Prentice, D. A. (1994). The self in social contexts. *Annual Review of Psychology, 45*, 297–332.

Bauer, I., Wrosch, C., & Jobin, J. (2008). I'm better off than most other people: the role of social comparisons for coping with regret in young adulthood and old age. *Psychology and Aging*, *23*(4), 800–11. doi:10.1037/a0014180

Beaumont, J. G., & Kenealy, P. M. (2004). Quality of life perceptions and social comparisons in healthy old age. *Ageing & Society* 24, 755–769. doi:10.1017/S0144686X04002399

Bem, S. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, *42*(2), 155–162.

Bennenbroek, F. T. C., Buunk, B. P., Stiegelis, H. E., Hagedoorn, M., Sanderman, R., Van den Bergh, A. C. M., & Botke, G. (2003). Audiotaped social comparison information for cancer patients undergoing radiotherapy: Differential effects of procedural, emotional and coping information. *Psycho-oncology*, *12*(6), 567-79. doi:10.1002/pon.674

Blalock, S. J., DeVellis, B. M., & DeVellis, R. F. (1989). Social comparison among individuals with rheumatoid arthritis. *Journal of Applied Social Psychology*, *19*(8), 665-680. doi:10.1111/j.1559-1816.1989.tb00346.x

Boissicat, N., Pansu, P., Bouffard, T., & Cottin, F. (2012). Relation between perceived scholastic competence and social comparison mechanisms among elementary school children. *Social Psychology of Education*, *15*(4), 603–614. doi:10.1007/s11218-012-9189-z

Bounoua, L., Cury, F., Regner, I., Huguet, P., Barron, K. E., & Elliot, A. J. (2011). Motivated use of information about others: Linking the 2 × 2 achievement goal model to social comparison propensities and processes. *The British Journal of Social Psychology*, 1-16. doi:10.1111/j.2044-8309.2011.02027.x

Butzer, B., & Kuiper, N. (2006). Relationships between the frequency of social comparisons and self-concept clarity, intolerance of uncertainty, anxiety, and depression. *Personality and Individual Differences*, *41*(1), 167-176. doi:10.1016/j.paid.2005.12.017

Buunk, A. P., Zurriaga, R., Gonzalez, P., Terol, C., & Roig, S. L. (2006). Targets and dimensions of social comparison among people with spinal cord injury and other health problems. *British Journal of Health Psychology*, *11*(Pt 4), 677-93. doi:10.1348/135910705X81000

Buunk, B. P., Collins, R. L., Taylor, S. E., Van Yperen, N. W., & Dakof, G. A. (1990). The affective consequences of social comparison: Either direction has its ups and downs. *Journal of Personality and Social Psychology*, *59*(6), 1238-49.

Buunk, B. P. & Gibbons, F. X. (1997). (Eds.) *Health, coping, and well-being: Perspectives from social comparison theory.* Mahwah, NJ: Lawrence Erlbaum Associates.

Buunk, B. P, Gibbons, F. X, & Visser, A. (2002). The relevance of social comparison processes for prevention and health care. *Patient Education and Counseling, 47* (1), 1-3.

Buunk, B. P., Van Yperen, N. W., Taylor, S. E., & Collins, R. L. (1991). Social comparison and the drive upward revisited: Affiliation as a response to marital stress. *European Journal of Social Psychology*, *21*, 529–546.

Buunk, B. P., & Ybema, J. F. (1997). Social comparisons and occupational stress: The identification-contrast model. In B. P. Buunk, & F. X. Gibbons (Eds.), *Health, coping, and well-being: Perspectives from social comparison theory* (pp. 359-388). Mahwah, NJ: Lawrence Erlbaum Associates.

Cacioppo, J. T., Hawkley, L. C. Kalil, A., Hughes, M. E., Waite, L., & Thisted, R. A. (2007) Happiness and the invisible threads of social connection. The Chicago health, aging, and social relations study. In M. Eid & R. Larsen (Eds.), *Science of subjective well-being*. New York: Guilford Press.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42,* 116–131.

Carleton, R. N., Norton, P. J., & Asmundson, G. J. G. (2007). Fearing the unknown: A short version of the intolerance of uncertainty scale. *Journal of Anxiety Disorders*, *21*(1), 105-17. doi:10.1016/j.janxdis.2006.03.014

Cheng, S., Fung, H., & Chan, A. (2007). Maintaining self-rated health through social comparison in old age. *Journal of Gerontology: Psychological Sciences, 62B(*5), 277-285.

Cheng, S., Fung, H., & Chan, A. (2008). Living status and psychological well-being: Social comparison as a moderator in later life. *Aging & Mental Health, 12(*5), 654-661. doi: 10.1080/13607860802343241

Chipperfield, J. G., Perry, R. P., Bailis, D. S., Ruthig, J. C., & Chuchmach, L. P. (2007). Gender differences in use of primary and secondary control strategies in older adults with major health problems. *Psychology & Health, 22* (1), 83-105. http://dx.doi.org/10.1080/14768320500537563

Clatworthy, J., Buick, D., Hankins, M., Weinman, J., & Horne, R. (2005). The use and reporting of cluster analysis in health psychology: a review. *British Journal of Health Psychology*, *10*(Pt 3), 329-58. doi:10.1348/135910705X25697

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Cohen, S. & Williamson, G. M. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp ((Eds.), *The social psychology of health* (pp. 31-67). Newbury Park, CA: Sage.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310–57.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory.* Odessa, FL: Psychological Assessment Resources.

Crowne, D. P. & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, *24*(4), 349-354.

DeCarlo, L. (1997). On the meaning and use of kurtosis. *Psychological Methods, 2* (3), 292-307.

Dibb, B., & Yardley, L. (2006a). Factors important for the measurement of social comparison in chronic illness: A mixed-methods study. *Chronic Illness,* 2, 219–230.

Dibb, B., & Yardley, L. (2006b). How does social comparison within a self-help group influence adjustment to chronic illness? A longitudinal study. *Social Science & Medicine, 63,* 1602–1613.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49*, 71-75.

Diener, E., & Fujita, F. (1997). Social comparisons and subjective well-being. In B. P. Buunk, & F. X. Gibbons (Eds.), *Health, coping, and well-being: Perspectives from social comparison theory*, (pp. 329-357). Mahwah, NJ: Lawrence Erlbaum.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi. D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research, 39,* 247-266.

Efklides, A., Kalaitzidou, M., & Chankin, G. (2003). Subjective quality of life in old age in Greece. *European Psychologist*, *8*(3), 178-191. doi:10.1027//1016-9040.8.3.178

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140. doi:10.1177/001872675400700202

Frieswijk, N., Buunk, B. P., Steverink, N., & Slaets, J. P. J. (2004a). The effect of social comparison information on the life satisfaction of frail older persons. *Psychology and Aging, 19*(1), 183-190. doi:10.1037/0882-7974.19.1.183

Frieswijk, N., Buunk, B. P., Steverink, N., & Slaets, J. P. J. (2004b). The interpretation of social comparison and its relation to life satisfaction among elderly people: Does frailty make a difference? *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *59*(5), P250-7.

Fujita, F. (2008) The frequency of social comparison and its relation to subjective well-being. In M. Eid & R. J. Larsen, (Eds.), *The science of subjective well-being*. New York: Guilford Press.

Gibbons, F. X. (1986). Social comparison and depression: Company's effect on misery. *Journal of Personality and Social Psychology*, *51*(1), 140-148. doi:10.1037//0022-3514.51.1.140

Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology, 76*(1), 129-142. doi:10.1037/0022-3514.76.1.129

Goethals, G. R., & Darley, J. M. (1987). Social comparison theory: Self-evaluation and group life. In B. Mullen & G. R. Goethals (Eds.), *Theories of group behavior* (pp. 21–47). New York: Springer-Verlag.

Greenberger, E., Chen, C., Dmitrieva, J., Farruggia, S. (2003). Item-wording and the dimensionality of the Rosenberg Self-Esteem Scale: Do they matter? *Personality and Individual Differences* (35), 1241–1254.

Hayes, A. F. (2013a). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York: Guilford.

Hayes, A. F. (2013b). Process for SPSS [Computer software]. Retrieved from http://www.afhayes.com

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: an introduction and software implementation. *Behavior Research Methods*, *39*(4), 709–22.

Hayes, A. F., Glynn, C. J., & Huge, M. E. (2012). Cautions regarding the interpretation of regression coefficients and hypothesis tests in linear models with interactions. *Communication Methods and Measures*, *6*(1), 1–11. doi:10.1080/19312458.2012.651415

Helgeson, V. S., & Taylor, S. E. (1993). Social comparisons and adjustment among cardiac patients. *Journal of Applied Social Psychology*, *23*(15), 1171-1195. doi:10.1111/j.1559-1816.1993.tb01027.x

Heidrich, S. M., & Ryff, C. D. (1993). The role of social comparisons processes in the psychological adaptation of elderly adults. *Journal of Gerontology*, *48*(3), 127-36.

Hobson, C. J., Kamen, J., Szostek, J., Nethercut, C. M., Tiedmann, J. W., & Wojnarowicz, S. (1998). Stressful life events: A revision and update of the Social Readjustment Rating Scale. *International Journal of Stress Management*, *5*(1).

Howell, D. (2000). Resampling procedures freeware version 1.3 [Computer software]. Retrieved from http://www.uvm.edu/~dhowell/StatPages/Resampling/Resampling.html

Howell, D. (2006). Bootstrapping one-way analysis of variance. Retrieved from http://www.uvm.edu/~dhowell/StatPages/Resampling/Bootst1way/bootstrapping_oneway.html

Howell, D. (2010). *Statistical methods for psychology*, (7th ed.). Belmont, CA: Wadsworth.

Huberty, C. J., Jordan, E. M., Brandt, W. C. (2005). Cluster analysis in higher education research in J. C. Smart (Ed.)*, Higher education: Handbook of theory and research, 20*, 437–457.

International Personality Item Pool: *A scientific collaboratory for the development of advanced measures of personality traits and other individual differences*. (2011). Retrieved from http://ipip.ori.org/

Jaccard, J., & Turrisi, R. (2003). *Interaction effects in multiple regression,* (2nd ed.). Thousand Oaks, CA: Sage.

Kohn, S. J., & Smith, G. C. (2003). The impact of downward social comparison processes on depressive symptoms in older men and women. *Ageing International*, *28*(1), 37-65. doi:10.1007/s12126-003-1015-7

Kulik, J. A., Mahler, H. I. M., & Moore, P. J. (1996). Social comparison and affiliation under threat: Effects on recovery from major surgery. *Journal of Personality and Social Psychology, 71*(5), 967-979. doi:10.1037/0022-3514.71.5.967

Kwan, C. M. L., Love, G. D., Ryff, C. D., & Essex, M. J. (2003). The role of self-enhancing evaluations in a successful life transition. *Psychology and Aging, 18*(1), 3-12. doi:10.1037/0882-7974.18.1.3

Kwan, V. S. Y., John, O. P., Kenny, D. A., Bond, M. H., Robins, R. W., (2004). Conceptualizing and assessing self-enhancement bias: A componential approach. *Psychological Review*, Volume 111(1), 94-110.

Li, A., & Bagger, J. (2007). The Balanced Inventory of Desirable Responding (BIDR): A reliability generalization study. *Educational and Psychological Measurement*, *67*(3), 525-544. doi:10.1177/0013164406292087

Lobera, I. J., Garrido, O., Fernández, M. J. S., & Bautista, E. Á. (2010). Social comparison as a coping strategy among caregivers of eating disorder patients. *Journal of Psychiatric and Mental Health Nursing, 17*(9), 775-782. doi:10.1111/j.1365-2850.2010.01611.x

Locke, K. D. (2003). Status and solidarity in social comparison: Agentic and communal values and vertical and horizontal directions. *Journal of Personality and Social Psychology*, *84*(3), 619-631. doi:10.1037/0022-3514.84.3.619

Lockwood, P., Chasteen, A. L., & Wong, C. (2005). Age and regulatory focus determine preferences for health-related role models. *Psychology and aging*, *20*(3), 376-89. doi:10.1037/0882-7974.20.3.376

Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, *73*(1), 91–103. doi:10.1037//0022-3514.73.1.91

Lockwood, P., & Kunda, Z. (1999). Increasing the salience of one's best selves can undermine inspiration by outstanding role models. *Journal of Personality and Social Psychology*, *76*(2), 214–28.

Lockwood, P., Shaughnessy, S. C., Fortune, J. L., & Tong, M.-O. (2012). Social comparisons in novel situations: Finding inspiration during life transitions. *Personality & Social Psychology Bulletin*, *38*(8), 985–96. doi:10.1177/0146167212447234

Lönnqvist, J.-E., Paunonen, S., Tuulio-Henriksson, A., Lönnqvist, J., & Verkasalo, M. (2007). Substance and style in socially desirable responding. *Journal of Personality*, *75*(2), 291-322. doi:10.1111/j.1467-6494.2006.00440.x

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin*, *114*(2), 376–90.

Menec, V. H., Veselyuk, D. M., Blandford, A. A., & Nowicki, S. (2009). Availability of activity-related resources in senior apartments: Does it differ by neighbourhood socio-economic status? *Ageing and Society*, *29*(03), 397. doi:10.1017/S0144686X08007939

Meyers, L.S., Gamst, G. & Guarino, A.J. (2013). Applied Multivariate Research (2nd ed.). Los Angeles: Sage.

Michinov, N. (2001). When downward comparison produces negative affect: The sense of control as a moderator. *Social Behavior and Personality, 29*(5), 427-444.

Michinov, N. (2007). Social comparison and affect: a study among elderly women. *Psychology*, *147*(2), 37-41.

Milligan, G. W., & Cooper, M. C. (1985). An examination of procedures for determining the number of clusters in a data set. *Psychometrika,* 50, 159–179.

Milligan, G. W., & Cooper, M. C. (1987). Methodology review: Clustering methods. *Applied Psychological Measurement, 11*(4), 329-354. doi:10.1177/014662168701100401

Mooney, C. Z., & Duval, R. D. (1993). *Bootstrapping: A nonparametric approach to statistical inference.* Newbury Park, CA: Sage.

Mussweiler, T. (2001). Seek and ye shall find: Antecedents of assimilation and contrast in social comparison. *European Journal of Social Psychology*, *31*(5), 499-509. doi:10.1002/ejsp.75

O'Connor, B. P. (1998). SIMPLE: All-in-one programs for exploring interactions in moderated multiple regression. *Educational and Psychological Measurement,* 58, 833-837.

Olson, B. D., & Evans, D. L. (1999). The role of the big five personality dimensions in the direction and affective consequences of everyday social comparisons. *Personality and Social Psychology Bulletin*, *25*(12), 1498-1508. doi:10.1177/01461672992510006

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp.17-59). San Diego: Academic Press.

Paulhus, D. L., & Reid, D. (1991). Enhancement and denial in socially desirable responding. *Journal of Personality and Social Psychology, 60*, 307-317.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*(4), 437–448. doi:10.3102/10769986031004437

Rammstedt, B., & John, O. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, *41*(1), 203-212. doi:10.1016/j.jrp.2006.02.001

Reis-Bergan, M., Gibbons, F. X., Gerrard, M., & Ybema, J. F. (2000). The impact of reminiscence on socially active elderly women's reactions to social comparisons. *Basic and Applied Social Psychology*, *22*(3), 225-236. doi:10.1207/15324830051036117

Rickabaugh, C. A, & Tomlinson-Keasey, C. (1997). Social and temporal comparisons in adjustment to aging. *Basic and Applied Social Psychology*, *19*(3), 307-328. doi:10.1207/15324839751036986

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin, 27*, 151-161.

Robins, R. W., Trzesniewski, K. H., Tracy, J. L., Gosling, S. D., Potter, J. (2002). Global self-esteem across the life span. *Psychology and Aging*, *17*(3), 423–434. doi:10.1037//0882-7974.17.3.423

Robinson-Whelen, S., & Kiecolt-Glaser, J. (1997). The importance of social versus temporal comparison appraisals among older adults. *Journal of Applied Social Psychology*, *27*(11), 959-966. doi:10.1111/j.1559-1816.1997.tb00281.x

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

SAS Institute Inc. (1999). SAS/STAT User's Guide, Version 8, Cary, NC: Author.

Seniors and Healthy Aging Secretariat. (n.d.). *Rural seniors' housing*. Retrieved from http://www.gov.mb.ca/shas/resourcesforseniors/housing/rural_housing.html

Schimmack, U. (2007). The structure of subjective well-being. In M. Eid, & R. Larsen (Eds.), *Science of subjective well-being.* New York: Guilford Press.

Schwinghammer, S. & Stapel, D. (2006). The effects of different types of self-activation on social comparison orientation [Retracted]. *Social Cognition, 24*(6), 703-722, doi: 10.1521/soco.2006.24.6.703

Soper, D.S. (2013). Effect size calculator for multiple regression. Retrieved from http://www.danielsoper.com/statcalc

Statistics Canada, (2001). *Seniors in Canada* (Canadian Centre for Justice Statistics Profile Series. ISBN 0-662-30008-4). Ottawa, Ontario: Author.

Statistics Canada, (2007). A portrait of seniors. *The Daily.* February 27, 2007. http://www.statcan.gc.ca/daily-quotidien/070227/dq070227b-eng.htm

Swap, W. C., & Rubin, J. Z. (1983). Measurement of interpersonal orientation. *Journal of Personality and Social Psychology*, *44*(1), 208-219. doi:10.1037//0022-3514.44.1.208

Tamres, L. K., Janicki, D., & Helgeson, V. S. (2002). Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. *Personality and Social Psychology Review*, *6*(1), 2–30. doi:10.1207/S15327957PSPR0601_1

Taylor, S. E., Buunk, B. P., & Aspinwall, L. G. (1990). Social Comparison, stress, and coping. *Personality and Social Psychology Bulletin*, *16*(1), 74–89. doi:10.1177/0146167290161006

Taylor, S. E., Kemeny, M. E., Reed, G. M., Bower, J. E., & Gruenewald, T. L. (2000). Psychological resources, positive illusions, and health. *American Psychologist, 55*, I. 99-109 DOI: 10.I037//0003-066X.55.1.99

Taylor, S. E., & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contacts. *Psychological Review, 96*(4), 569-575. doi:10.1037/0033-295X.96.4.569

Tennen, H. & Affleck, G. (1997). Social comparison as a coping process: A critical review and application to chronic pain disorders. In B. P. Buunk & F. X. Gibbons (Eds.) *Health, coping, and well-being: perspectives from social comparison theory.* Mahwah, NJ: Lawrence Erlbaum Associates.

Thompson, M. M., Naccarato, M. E., Parker, K. C. H. & Moskowitz, G. B. (2001). The Personal Need for Structure (PNS) and Personal Fear of Invalidity (PFI) scales: Historical perspectives, present applications and future directions. In G. B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton symposium on the legacy and future of social cognition* (pp. 19-39). Mahwah, NJ: Erlbaum.

Van der Zee K., Buunk, B. P,. Sanderman, R., Botke, G., Van den Bergh, F. (1999). The big five and identification-contrast processes in social comparison in adjustment to cancer treatment. *European Journal of Personality, 13*(4), 307-326. doi:10.1002/(SICI)1099-0984(199907/08)13:4<307::AID-PER342>3.0.CO;2-R

Van der Zee K., Buunk, B. P,. Sanderman, R., Botke, G., Van den Bergh, F. (2000). Social comparison and coping with cancer treatment. *Personality and Individual Differences,* 28: 17–34.

Ward, J. H., Jr. (1963). Hierarchical grouping to optimize an objective function. *American Statistical Journal, 58* (301), 236-244.

Ware, J., & Kosinski, M. (2001). Interpreting SF-36 summary health measures: A response. *Quality of Life Research, 10*(5), 405-413.

Ware, J.E., Kosinski, M., Dewey, J.E., & Gandek, B. (2001). *How to score and interpret single-item health status measures: A manual for users of the SF-8 Health Survey*. Lincoln, RI: QualityMetric.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.

Weiss, M. R., Ebbeck, V., & Horn, T. S. (1997). Children's self-perceptions and sources of physical competence information: A cluster analysis. *Journal of Sport & Exercise Psychology, 19*(1), 52-70.

West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental personality designs: Analyzing categorical by continuous variable interactions. *Journal of Personality*, *64*(1), 1–48.

Wheeler, L. (2000). Individual differences in social comparison. In J. Suls, & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research.* (pp. 141-158). Dordrecht, Netherlands: Kluwer Academic Publishers.

Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology, 62*(5), 760-773. doi:10.1037/0022-3514.62.5.760

Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin, 90*(2), 245-271. doi:10.1037/0033-2909.90.2.245

Wills, T. A. (1997). Modes and families of coping: An analysis of social comparison in the structure of other cognitive and behavioral mechanisms. In B. P. Buunk, & F. X. Gibbons (Eds.), *Health, coping, and well-being: Perspectives from social comparison theory*. Mahwah, NJ: Lawrence Erlbaum Associates.

Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 106*(2), 231-248. doi: 10.1037/0033-2909.106.2.231

Wood, J., Taylor, S., & Lichtman, R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personal and Social Psychology, 49*(5), 1169-1183.

Appendix A: Recruitment Materials and Consent Form

UNIVERSITY OF MANITOBA | Department of Psychology

190 Dysart Road
Winnipeg, Manitoba R3T 2N2
Canada
Phone (204) 474-9338

Hello.

I am a student researcher, under the supervision of Dr. Dan Bailis, Department of Psychology, University of Manitoba, interested in interviewing people living in senior housing, for my master's thesis project, "Everyday Experiences in Senior Housing." I am writing to ask if I may set up a table and post notices at the facility to recruit volunteers from among your residents.

The project involves interviewing residents once, in their apartments, one on one for 1-2 hours, about their everyday social experiences with other seniors. The questions include ethnicity, age, years of education, personality (reserved or sociable or both), feelings (happy and sad), what values are important, a few general health questions such as energy level, and about how many days a week are spent with others on various outings.

Strict confidentiality will be maintained, according to Manitoba law, with all processes approved by the appropriate university research ethics board. No one involved with the housing will ever be told who does and does not volunteer to be interviewed. We are trying to learn more about people who live in senior housing in general; we are not testing people in the building. The answers of any participating residents here will be put together with the answers of 50-100 other seniors in southern Manitoba.

I have attached the informed consent statement which will be given to volunteers, to explain the research in more detail. I would be happy to speak with you about other considerations, such as any way I can give something back to the residents, which might include a presentation of some kind.

You may reach me or my supervisor at the addresses and phone numbers below. I very much appreciate your consideration, and I look forward to talking soon.

Sincerely,

[redacted]

Clove Haviva
Master's Student, Department of Psychology, University of Manitoba
Clove_Haviva@umanitoba.ca, [redacted]

[redacted]

Research Supervisor: Dr. Dan Bailis
Associate Professor & Graduate Head, Department of Psychology, University of Manitoba
Dan.Bailis@ad.umanitoba.ca, [redacted]

UNIVERSITY OF MANITOBA | Department of Psychology

190 Dysart Road
Winnipeg, Manitoba R3T 2N2
Canada
Phone (204) 474-9338

Research Project Title: Everyday Experiences in Senior Housing
Principal Investigator: Clove Haviva, Clove_Haviva@umanitoba.ca
Master's Student, Department of Psychology, University of Manitoba
Research Supervisor: Dr. Dan Bailis, Dan.Bailis@ad.umanitoba.ca
Associate Professor & Graduate Head, Department of Psychology, University of Manitoba

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

My name is Clove Haviva, and I am conducting this research as my Master's Thesis, under the supervision of Dr. Dan Bailis. The purpose of the research is to understand more about people's everyday experiences in senior housing.

You will be interviewed one time, in your own apartment, or in a private room in the apartment building. The interview is expected to take 1-2 hours to complete. If you prefer to stop the interview at any point and reschedule the rest of it for another day, that is fine.

You will be asked questions about: your background (such as your ethnicity, age, how many years of education you've had, and how many siblings you grew up with), your personality (such as if you are reserved, or sociable, or both), your feelings (such as how negative or positive you are feeling in the moment, and what values are important to you), a few general questions about your health (such as how much energy you have), and about other people in your life (how many days a week you spend with others on various outings).

I will ask you each question out loud. Many of the questions have answer choices that I will show you in large print, such as a choice: to agree with a statement, to disagree, to agree strongly, to disagree strongly, or to neither agree or disagree. I will also tell you the answer choices, so you are not required to be able to read the answers.

I will type your answers into a laptop computer as we talk, repeating your answers so you can tell if I heard you correctly.

At the end of the interview, I will tell you a little more about the research, and I will leave 5 copies of a form containing 10 questions. You are not required to fill out any of them. If you do fill out a form, it is expected to take 5-10 minutes per form. At the end of the week, if you have filled out any of the forms,

I would appreciate if you would drop them in the mail, in the stamped, addressed envelope that I also will leave with you.

You will get no particular benefits from the interview. Some participants may enjoy talking about their backgrounds and thoughts, and learning about social science research. You are welcome to ask questions at the end to learn more about the research process.

Some participants may find some of the questions sensitive. You are free to skip any questions you prefer not to answer, but, in case the interview is upsetting in some way, a list of places to call for support is at the end of this form.

The answers you give in this interview are confidential. No one else in the building or anywhere else will know how you answered. I am the only person who will ever hear your answers knowing that they are from you. Your name will not be written with your answers. Your answers will have a code, and, within one week, the only way to connect your answers with your name will be in a password protected file. The only reason anyone will look at the protected file is to supervise my research.

No one involved with your housing will ever be told who does and does not volunteer to be interviewed, not the managers, not the staff, and not other residents. That means that nothing good or bad can happen with your housing based on you volunteering or deciding not to volunteer to participate in the interview.

We are not testing you, or the people in the building; we are trying to learn more about people who live in senior housing in general. Your answers will be put together with the answers of 50-100 other seniors in southern Manitoba. We hope to learn things that other researchers will be interested in, so we expect to write about our study, present the results at scientific meetings, and publish in research journals. Nothing will be said or written that could identify you as the one who gave any particular answer.

It is possible that the answers of all the seniors combined will be helpful enough that we will want to ask you questions later, possibly in a year or two. At the end of this form you can mark if you are or are not interested in being invited to participate in another interview. If you are not interested, we will keep only your coded answers; we will shred any paper that has your name on it by September, 2012. If you are interested in participating in future research, we will keep your name and contact information for as long as four years. By December, 2015, we will shred any paper that has your name on it and destroy the way to connect your answers with any electronic files containing your name.

As long as we keep the code to connect your name with your answers, we will keep your name and the code protected separately with locked doors at the university or passwords on computer files.

At the end of the interview, I will ask you if you would you like a summary of some the results of our research when we've had a chance to do the first analysis, sometime around August, 2012.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued

participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board and a representative of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the the Psychology-Sociology Research Ethics Board at the University of Manitoba. If you have any concerns or complaints about this project you may contact any of the above-named persons, or the Human Ethics Coordinator (HEC) at 474-7122, or by e-mail at Margaret_Bowman@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

Researcher's Signature _____ Date _____

Participant's Signature _____ Date _____

Please initial ONE of the following:

_____ I am NOT interested in being invited to participate in follow up research later. OR:

_____ I AM interested in being invited to participate in follow up research later, so here is my contact information for you to use for that purpose:

email:

phone:

mailing address:

If you are upset and need someone to talk to, trained people can help you, free.

Anytime, day or night, you can call to talk to someone at:
Klinic's 24-hour Crisis Line, toll-free: **1-888-322-3019.**

If you live in Winnipeg:
Age & Opportunity's social workers offer free, in-person counselling.
Call for an appointment, Monday to Friday, 8:30 a.m. to 4:30 p.m. **1-204-956-6440.**

If you live outside Winnipeg:
Manitoba Farm & Rural Stress Line offers free, confidential support,
to all rural Manitobans, Monday to Friday, 10 a.m. to 9 p.m. **1-866-367-3276.**

Would you enjoy taking a personality survey?

All kinds of seniors are invited.

Student Researcher Clove Haviva will be in the **common room**
to answer questions about her research
& to make appointments for 1-2 hour interviews,
Monday, August 20, 3:30-4 p.m.

Clove Haviva, Master's Student, Department of Psychology, University of Manitoba
[redacted] Clove_Haviva@umanitoba.ca
Research Supervisor:
Dr. Dan Bailis, Associate Professor, Department of Psychology, University of Manitoba
Dan.Bailis@ad.umanitoba.ca

UNIVERSITY OF MANITOBA | Department of Psychology

Appendix B: Ethics Approvals and License Agreement

Human Ethics
208 - 194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Fax 204-269-7173

UNIVERSITY OF MANITOBA | Office of the Vice-President (Research and International)
Research Ethics and Compliance
APPROVAL CERTIFICATE

March 20, 2012

TO: **Clove Haviva** (Advisor D. Bailis)
Principal Investigator

FROM: **Bruce Tefft, Chair** [redacted]
Psychology/Sociology Research Ethics Board (PSREB)

Re: **Protocol #P2011:112**
"Experiences in Senior Housing"

Please be advised that your above-referenced protocol, as revised, has received human ethics approval by the **Psychology/Sociology Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). This approval has been issued based on your agreement with the change(s) to your original protocol required by the PSREB. It is the researcher's responsibility to comply with any copyright requirements. **This approval is valid for one year only.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **If you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to the Office of Research Services, fax 261-0325 - please include the name of the funding agency and your UM Project number. This must be faxed before your account can be accessed.**

- **if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

UNIVERSITY OF MANITOBA | Office of the Vice-President (Research and International)
Research Ethics and Compliance

Human Ethics
208 - 194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Fax 204-269-7173

AMENDMENT APPROVAL

May 22, 2012

TO: **Clove Haviva**
Principal Investigator

FROM: **Bruce Tefft, Chair** [redacted]
Psychology/Sociology Research Ethics Board (PSREB)

Re: **Protocol #P2011:112**
"Experiences in Senior Housing"

This will acknowledge your request received May 18, 2012 requesting amendment to the above-noted protocol.

Approval is given for this amendment. Any further changes to the protocol must be reported to the Human Ethics Secretariat in advance of implementation.

APPENDIX B

LICENSE AGREEMENT - DETAILS

Licensee: University of Manitoba
Clove Haviva
[redacted]

License Number: QM009377
Amendment to: N/A
License Term: 10/01/11 to 09/30/12

Approved Purpose
Profiles in Social Comparison

Licensed Surveys (Modes) and Services:

Item	Description	Mode of Admin	Quantity
PROJ01	Project Registration	Paper	1
ADM012	Patients Enrolled		120
ADMINS	Administrations		120
ES0250	SF-8, Standard Recall	Paper	1
Approved Languages: Canada (English)			
SS040	Scoring Software v4		1
SS042	SS v4 Key: SF-8		120
EM124	SF-8 Quick Start Guide		1
Approved Languages: United States (English)			

TOTAL FEES: **0.00 USD**

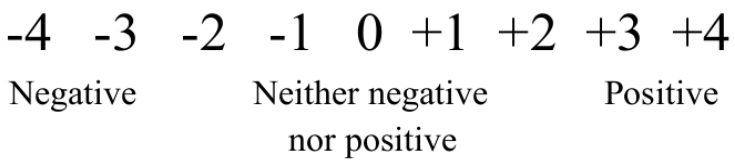
Appendix C: Integrated Script, Questions, Answer Cards, and Debriefing

***QUESTION SOURCE (with reference, if not cited in the body of the thesis)**

Are you ready to get started? Okay, let's start. [Record the number of times the interviewee laughs, starting here.] It's fine to let me know that you would like to take a break, or to ask for a question to be repeated, or to tell me that you do not want to answer a particular question. I want to apologize for the fact that there are some similar and repetitive questions. That's part of research: Getting answers in slightly different ways really helps clarify things. I very much appreciate your willingness to answer as many of them as you are comfortable answering. But, please, if at any point, for any reason, you'd prefer to stop the interview and reschedule for another day, or if you decide you don't want to do it after all, let me know.

Now, some questions have answer choices that I will show you, some don't. The first one does. This is the

Negative-Positive Scale

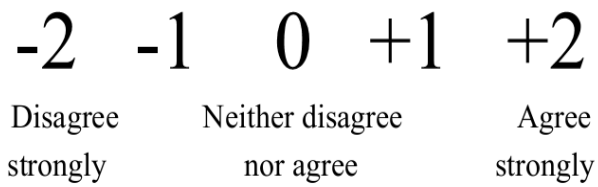


Using this scale,
***FROM RETRACTED ARTICLE (Schwinghammer & Stapel, 2006).**
*how positive or negative are you feeling at the moment?

Okay. In your own words, using about 5 words or 5 short groups of words, please describe yourself. [Record summaries of the first 5 statements.] So, you are saying: [Read summaries, make changes if warranted, based on feedback.]?

For the next set of questions, we'll use the

Disagree-Agree Scale



How well do the following statements describe your personality?
I see myself as someone who:

***SINGLE ITEM SELF-ESTEEM SCALE**

*has high self-esteem
does well in times of transition

***BIG FIVE INVENTORY-10**

*is reserved
*is generally trusting
*tends to be lazy
*is relaxed, handles stress well
*has few artistic interests
*is outgoing, sociable
*tends to find fault with others
*does a thorough job
*gets nervous easily
*has an active imagination
tends to be curious

***FROM BEM SEX ROLE INVENTORY (Bem, 1974)**

*is sensitive to others' needs
*is forceful
*is eager to soothe feelings
*is willing to take risks
*is dominant
*is tender
*is aggressive
*is soft-spoken
*is masculine
*is feminine.

***SOCIAL COMPARISON ORIENTATION SCALE**

*Now I'm going to ask you a set of questions about comparisons. Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly good or bad about this type of comparison, and some people do it more than others. We would like to find out how often you compare yourself with other people. To do that we would like to ask you to indicate how much you agree with each statement.

***UPWARD-DOWNWARD SCALES**

*When things are going badly, often I think of others who are doing worse than I am.
*When things are going badly, often I think of others who are doing better than I am.
*When things are going well, often I think of others who are doing worse than I am.
*When things are going well, often I think of others who are doing better than I am.
*Sometimes I compare myself with others who are doing better than I am.
*Sometimes I compare myself with others who are doing worse than I am.

***IDENTIFICATION-CONTRAST SCALES**

*When I think about others who are doing worse than I am, I fear that my future will be similar.
*When I think about others who experience fewer problems than I do, I am pleased that things can get better.
*When I think about others who experience more difficulties than I do, I feel relieved about my own situation.
*When I think about others who are doing better than I am, sometimes I feel frustrated about my own situation.

***SOCIAL COMPARISON ORIENTATION SCALE**

*I often compare how my loved ones are doing with how others are doing.
*I always pay a lot of attention to how I do things compared with how others do things.
*If I want to find out how well I have done something, I compare what I have done with how others have done.
*I often compare how I am doing socially (e.g. social skills, popularity) with other people.
*I am not the type of person who compares with others.
*I often compare myself with others with respect to what I have accomplished in life.
*I often like to talk with others about mutual opinions and experiences.
*I often try to find out what others think who face similar problems as I face.
*I always like to know what others in a similar situation would do.
*If I want to learn more about something, I try to find out what others think about it.
*I *never* consider my situation in life relative to that of other people.

***BASED ON ROCHESTER SOCIAL COMPARISON RECORD (Wheeler & Miyake, 1992)**

*Now, think of the most recent time, that you can remember clearly, that you compared yourself to anyone else. Can you think of one particular time that you compared yourself to someone else? [When affirmed:] Was it a woman or a man? [(1) female (2) male (3) not sure].

*Was s/he about the same age you are, older or younger? [If not the same:] Somewhat older/younger or a lot? [(-2) a lot younger, (-1) somewhat younger (0) about the same, (1) somewhat older or (2) a lot older].

*Was the person: (6) a friend or acquaintance (5) a close friend (4) a family member (3) a stranger (2) an imaginary person (1) someone in the news or a famous person?

*Were you with the person so you could actually see or hear her/him in person?
[If yes:] (1) Did you have a conversation or (2) Did you share any words or even a nod or wave or (3) Was there no interaction?
[If no:] (4) Were you on the phone or (5) Were you writing the person, either online or on paper, or (6) Were you reading about the person or (7) Were you talking about the person or (8) Were you just thinking about the person?

*When you remember how you compared yourself to this person at the time, which aspects did you compare on? Please say yes (1) or no (2) for each of these:

things you own or how much money you have
your health
your personality or abilities that are not about your health
your accomplishments that are not related to health or how much money you have
your opinions
your feelings
your appearance
how you cope or adapt to difficulties
your quality of life?

*Now we'll use the <u>Negative-Positive Scale.</u> [Negative -4 -3 -2 -1 Neither negative nor positive 0 +1 +2 +3 +4 Positive]

How did you feel right before you compared yourself?
How did you feel right after you compared yourself?

*Overall, would you say that, compared to the other person, you come out: about the same or better or worse? [If not the same:] Somewhat better/worse or a lot? [(-2) a lot worse, (-1) somewhat worse, (0) the same, (1) somewhat better or (2) a lot better].

[Record Sex: F (1) M (2)] How old are you? [Record age in years.]

What is your ethnic background? {Some people say they are Mennonite, some say they are German, some say they are German Mennonite. I would like to know the words that you use that feel most right for you. Any way that you normally think of yourself or describe yourself is right.}

When you were growing up, how many siblings did you have living with you most of the time? How many were older than you?

In school, did you finish [(0) not Grade 8] (1) Grade 8? (2) Grade 12? (3) some college? (4) a 4-year degree? (5) graduate school?

When did you move here, to this senior-housing complex? So, about __ months ago.

How would you describe where you lived before? Was it (1) a house (2) apartment (3) senior housing, or (4) some other arrangement?

How many individuals were in your previous household, the place you lived before you moved here?

Did you live: (1) alone (2) with a spouse or romantic partner (3) relative (4) close friend (5) roommate?

How old were the people you lived with, at the time that you moved out?

Why would you say you moved here? [Do not read list; mark as many as are mentioned without further prompt: (1) health or safety (2) wanted a smaller place or to not have to keep up with a yard (3) child wanted me to move closer (4) widowed (5) divorced (6) social opportunities (7) convenience (8) other _____ .]

Do you like living here? [If yes or no:] A little or a lot? [(-2) dislike a lot (-1) dislike a little (0) don't like or dislike (1) like a little (2) like a lot]

Using about 10 words or 10 short groups of words, please tell me about the other people who live here. [Record summaries of the first 10 statements.] So, are you saying: [Read summaries, make changes if warranted, based on feedback.]? [If statements are not descriptive (e.g. “nice,” “great”), probe with “anything else,” “can you be more specific,” “can you give me an example?”]

How many individuals are in your household now?

[If not 1:] How old are the people you live with?

Do you live with a: (1) spouse or romantic partner (2) relative (3) close friend (4) roommate

Is your household income, before taxes: (1) less than $15,000 a year, (3) more than $25,000 a year, or (2) between $15,000 and $25,000 a year?

Is that for you only or combined with someone else? [Record number of people income covers.]

Are there any activities that you do at least once a week where you are around people your age (other than the person/people you are living with)? Let's go through a typical week. Was last week fairly typical for you in terms of your activities? [If no: Can you think of a week that was typical?] Okay, now, thinking about meals or errands, clubs or hobbies, religious gatherings, outings or exercise groups, volunteer or paid work, were you around people your age on Monday? Tuesday? Wednesday? Thursday? Friday? Saturday? Sunday? [Record total.]

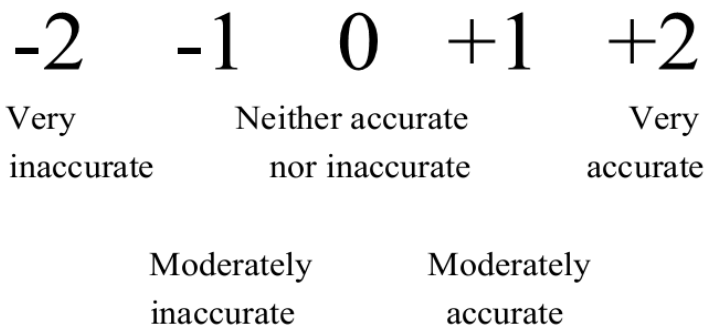
From spending time with people your age [Leave out the following parenthetical phrase if none were listed] (as you've just described), have you gotten a sense of their adjustments to getting older? In general, how do you think you are adjusting to getting older, compared to people your age that you spend time with? About the same or better or worse? [if not the same:] Somewhat better/worse or a lot? [(-2) a lot worse (-1) somewhat worse (0) the same (1) somewhat better or (2) a lot better]

Well, we've gone through about half of the interview now. Would you like to take a short break? [If yes, pause recording laughs here.]

Are you ready to continue the interview now? [If yes, restart recording laughs here.] I want to remind you that it's fine to take breaks, or to ask for a question to be repeated, or to not answer a particular question, or to end the interview and reschedule the rest for another day, or to decide at any point that you'd rather just not finish it.

Next I will be reading phrases describing people's behaviors. We'll use the

Inaccurate-Accurate Scale



***INTERNATIONAL PERSONALITY ITEM POOL (IPIP) SCALES**

*Please: Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know, of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please consider each statement carefully:

***IPIP ACHIEVEMENT STRIVING SCALE**

*Go straight for the goal. {You decide what you want and go for that directly.}
*Work hard.
*Turn plans into actions.
*Plunge into tasks with all my heart.
*Do more than what's expected of me.
*Set high standards for myself and others.
*Demand quality.
*Am not highly motivated to succeed.
*Do just enough work to get by.
*Put little time and effort into my work.

***IPIP PRIVATE SELF-CONSCIOUSNESS SCALE**

*Am constantly reflecting about myself.
*Examine my motives constantly.
*Look for hidden meaning in things.
*Try to examine myself objectively.
*Spend time reflecting on things.
*Don't try to figure myself out.
*Rarely look for a deeper meaning in things.
*Seldom daydream.
*Like to get lost in thought.
*Seldom get lost in thought.

***IPIP SELF-DECEPTION SCALE**

*Always know why I do things.
*Just know that I will be a success.
*Know that my decisions are correct.
*Feel comfortable with myself.
*Like to take responsibility for making decisions.
*Am not always honest with myself.
*Sometimes have trouble making up my mind.
*Dislike myself.
*Worry about what people think of me.
*Have a low opinion of myself.

***INTOLERANCE OF UNCERTAINTY SCALE**

*Unforeseen events upset me greatly.
*It frustrates me not having all the information I need.
*One should always look ahead so as to avoid surprises.
*A small, unforeseen event can spoil everything, even with the best of planning.
*I always want to know what the future has in store for me.
*I can't stand being taken by surprise.
*I should be able to organize everything in advance.

***FROM HEALTH-RELATED REGULATORY FOCUS (Lockwood, Chasteen & Wong, 2005)**

*I frequently think about my ideal level of health.
*I frequently think about negative health experiences that I may have down the road.
*I frequently think about how I can improve my health.
*I frequently think about how to avoid experiencing major health problems.

*** BASED ON Buunk, Van Yperen, Taylor, & Collins (1991).**

*I feel uncertain about aging.
I would like more information about aging.
I'm the type of person who likes information about almost anything.

Next we'll use the Disagree-Agree Scale. [Disagree strongly -2 Disagree -1 Neither disagree nor agree 0 Agree +1 Agree strongly +2]

***PERSONAL NEED FOR STRUCTURE SCALE (Thompson, Naccarato, Parker, & Moskowitz, 2001)**

*It upsets me to go into a situation without knowing what I can expect from it.
*I'm not bothered by things that upset my daily routine.
*I enjoy having a clear and structured mode of life.
*I like a place for everything and everything in its place.
*I like being spontaneous. {deciding to do things in the moment}
*I find that a well ordered life with regular hours makes my life tedious. {boring & tiring}
*I don't like situations that are uncertain.
*I hate to change my plans at the last minute.
*I hate to be with people that are unpredictable.
*I find that a consistent routine enables me to enjoy life more.
*I enjoy the exhilaration of being put in unpredictable situations. {thrill}
*I become uncomfortable when the rules in a situation are not clear.

***PERSONAL FEAR OF INVALIDITY SCALE (Thompson, Naccarato, Parker, & Moskowitz, 2001)**

*I may struggle with a few decisions but not very often.
*I never put off making important decisions.
*Sometimes I become impatient over my indecisiveness.
*Sometimes I see so many options to a situation that it is really confusing.
*I can be reluctant to commit myself to something because of the possibility that I might be wrong.
*I tend to struggle with most decisions.
*Even after making an important decision I continue to think about the pros and cons to make sure that I am not wrong.
*Regardless of whether others see an event as positive or negative, I don't mind committing myself to it.
*I prefer situations where I do not have to decide immediately.
*I rarely doubt that the course of action I have selected will be correct.
*I tend to continue to evaluate recently made decisions.
*I wish I did not worry so much about making errors.
*Decisions rarely weigh heavily on my shoulders.
*I find myself reluctant to commit to new ideas but find little comfort in remaining with the tried and true.

***BASED ON BEM SEX ROLE INVENTORY (Bem, 1974)**

*It's important to me that I am sensitive to others.
*It's important to me that I feel for others.
*It's important to me that I take care of others.
*It's important to me that I take care of myself.
*It's important to me that I can rely on myself.
*It's important to me that I am assertive.
*It's important to me that I am a leader.
It's important to me that I'm a good person.
It's important to me that I'm a good wo/man.

***SATISFACTION WITH LIFE SCALE**

*Indicate your agreement with each item. Please be open and honest in your responding:

*In most ways my life is close to my ideal.
*The conditions of my life are excellent.
*I am satisfied with my life.
*So far I have gotten the important things I want in life.
*If I could live my life over, I would change almost nothing.

Next we'll use the

Rarely-Often Scale

-2	-1	0	+1	+2
Very rarely or never		Sometimes		Very often or always
	Rarely		Often	

***SCALE OF POSTIVE AND NEGATIVE EXPERIENCES © Copyright by Ed Diener and Robert Biswas-Diener, January 2009 [Permission for use is granted in the published article.]**

*Please think about what you have been doing and experiencing during the past 4 weeks. Then report how much you experienced each of the following feelings:

*Positive
*Negative
*Good
*Bad
*Pleasant
*Unpleasant
*Happy
*Sad
*Afraid
*Joyful
*Angry
*Contented
Frustrated

***PERCEIVED STRESS SCALE**

*The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate how often you felt or thought a certain way.

*In the last month, how often have you felt that you were unable to control the important things in your life?
*In the last month, how often have you felt confident about your ability to handle your personal problems?
*In the last month, how often have you felt that things were going your way?
*In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

***SF-8™ Health Survey © Copyright 1999, 2000 by QualityMetric Incorporated (See license agreement in Appendix B.)**

*Next are some questions with different answer choices. I'll read them as usual, but I'll also show you the questions and the answers. Here's the Health Survey. [Show large print SF-8 with questions and answers (without the diagonal stamps, and without an introductory page and "thank you" messages as shown below).]

Your Health
– *and* –
Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Thank you for completing these questions!

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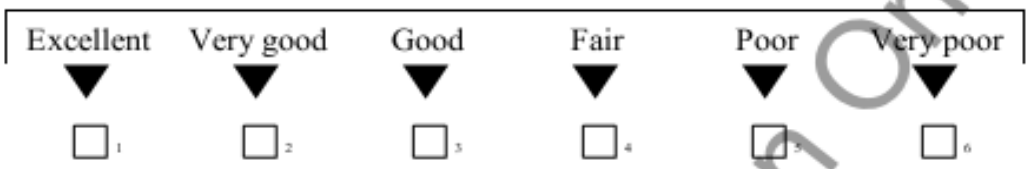
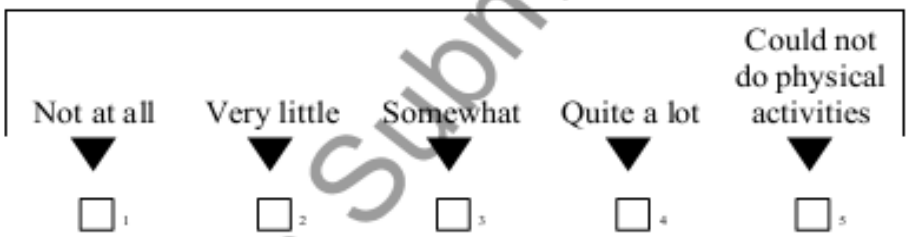
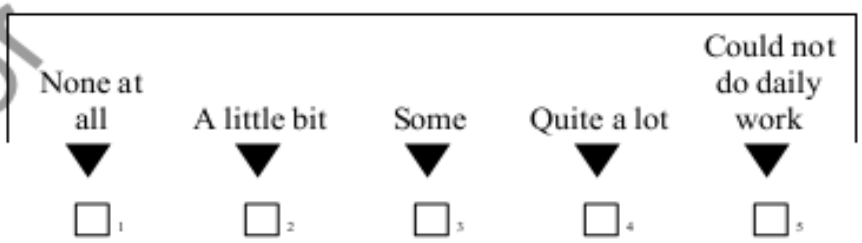
1. **Overall, how would you rate your health during the past 4 weeks? [Mark an ☒ in the one box that best describes your answer.]**



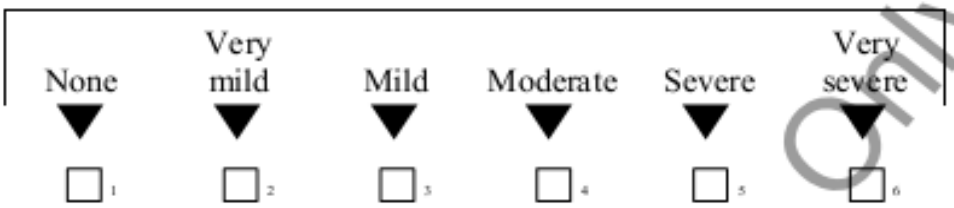
2. **During the past 4 weeks, how much did physical health problems limit your usual physical activities (walking, climbing stairs)?**



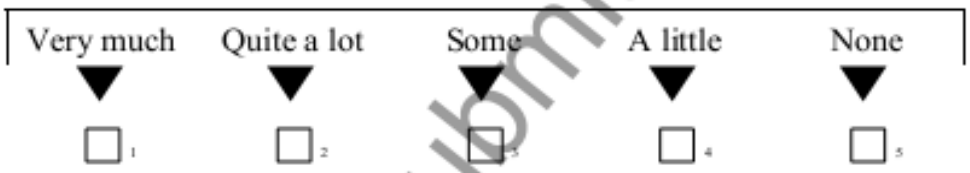
3. **During the past 4 weeks, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?**



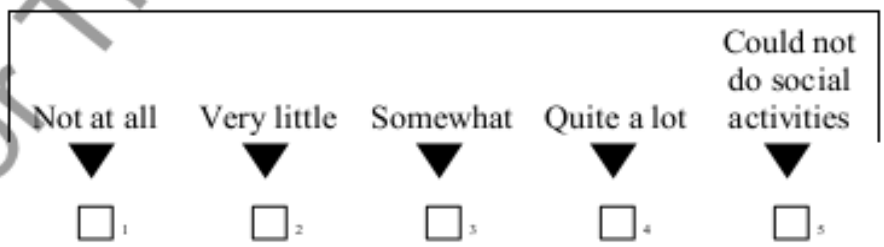
4. How much <u>bodily</u> pain have you had during the <u>past 4 weeks</u>?



5. During the <u>past 4 weeks</u>, how much energy did you have?

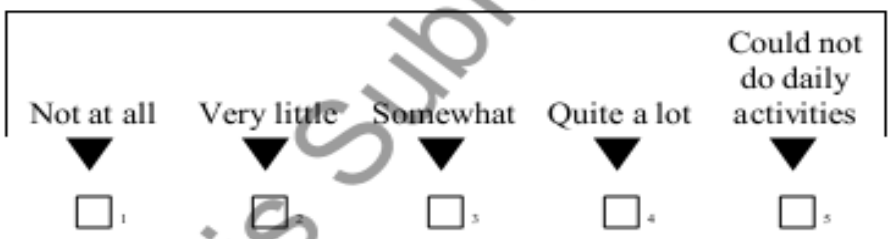


6. During the <u>past 4 weeks</u>, how much did your physical health or emotional problems limit your usual social activities with family or friends?



7. During the <u>past 4 weeks</u>, how much have you been bothered by <u>emotional problems</u> (such as feeling anxious, depressed or irritable)?

8. During the <u>past 4 weeks</u>, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities?



Thank you for completing these questions!

This is the last big set of questions. We'll use the Disagree-Agree Scale. [Disagree strongly -2 Disagree -1 Neither disagree nor agree 0 Agree +1 Agree strongly +2]

***FLOURISHING SCALE © Copyright by Ed Diener and Robert Biswas-Diener, January 2009 [Permission for use is granted in the published article.]**

*I lead a purposeful and meaningful life.
*My social relationships are supportive and rewarding.
*I am engaged and interested in my daily activities.
*I actively contribute to the happiness and well-being of others.
*I am competent and capable in the activities that are important to me.
*I am a good person and live a good life.
*I am optimistic about my future.
*People respect me.

If I could give advice to someone 10 years younger, I would say that being my age *can* be the best time in your life.

***REVISED-POSITIVE ROSENBERG SELF-ESTEEM SCALE**

*On the whole, I am satisfied with myself.
**At times,* I think I am pretty darn good.
*I feel that I have a number of good qualities.
*I am able to do things as well as most other people.
*I feel I have much to be proud of.
*I really feel useful at times.
*I feel that I'm a person of worth, at least on an equal plane with others.
*I think I have enough respect for myself.
*All in all, I am inclined to feel that I am not a failure.
*I take a positive attitude toward myself.

There are just 4 more questions now. This one uses the Negative-Positive Scale. [Negative -4 -3 -2 -1 Neither negative nor positive 0 +1 +2 +3 +4 Positive]

***FROM RETRACTED ARTICLE (Schwinghammer & Stapel, 2006).**
*****How positive or negative are you feeling at the moment?

And now, using about 3 words or 3 short groups of words, please answer: When I think of myself as a person, what's most important is: [Record summaries of the first 3 statements.] So, you are saying: [Read summaries, make changes if warranted, based on feedback.]?

Now, using about 3 words or 3 short groups of words, please complete the following sentence: When I think of myself as a wo/man, what's most important is: [Record summaries of the first 3 statements.] So, you are saying: [Read summaries, make changes if warranted, based on feedback.]?

Now, using about 3 words or 3 short groups of words, how would anybody who knows and likes you – a close friend or a family member – describe you? [Record summaries of the first 5 statements.] So, you are saying: [Read summaries, make changes if warranted, based on feedback.]?

That's the end! Thank you so much! Do you have any questions or feedback? [Record summaries.] [For feedback, ask:] Are you saying: _____? [Record response to feedback.] [Counting the number of times the interviewee laughs ends here.]

[DEBREIFING]

The main point of the interview was to help us in our study of healthy aging, looking at how different *kinds* of people adjust to the transition to senior housing. That's why there were so many questions about the type of person you are, especially how you are around other people and new situations. No studies that have been done before on senior housing have looked at all of these pieces of the puzzle. So, we really don't know what we'll find, we're trying to find out how people naturally act.

I also counted each time that each one of us laughed, because I'm interested in how laughter is related to health. It'll give me ideas on how to do a better job studying laughter and health in the future, if I know how many times people normally laugh during an interview. If you *don't* want me to use your laugh count, I can remove that from your answers.

So, do you have questions about the study? Would you like to receive a summary of some the results of our research when we've had a chance to do the first analysis, sometime around August, 2012? [If yes:] Okay, I will write this separate from your answers, so your name is never with your answers. Email is the easiest way for us to get the summary to you. Do you have an email address I can send the results to? [If no:] What is your postal address?

It is entirely optional whether you fill out any of these, but I will leave you 5 copies of this form [Comparison Research Form, on the next page] and a stamped, addressed envelope to return them in, in case you want to fill out one or more of them and send them back to me. Each answer sheet is the same, with 10 of the questions I asked you pretty early in the interview. Any time in the next week or so that you notice that you have just compared yourself to anyone else, you can fill out one of the forms, and that would help us learn even more. [Show & read form. Then ask:] Do you have any questions about that? Okay, thank you so much. It was wonderful to get to interview you.

UNIVERSITY OF MANITOBA | Department of Psychology **Comparison Research Form**

1. When are you filling out this form?

Day: _____ Month: _____ Date: ___ Hour: ___ a.m. / p.m.

2. About when did you make the comparison?

Day: _____ Month: _____ Date: ___ Hour: ___ a.m. / p.m.

3. About how old was the person you compared yourself with?

Age: ___

4. Was it a woman or a man?

Sex: ___

5. Who was the person? Please mark one of these:
___ someone in the news or a famous person
___ an imaginary person
___ a stranger
___ a family member
___ a close friend
___ a friend or acquaintance

6. Please mark one OR MORE of the choices below. When you compared yourself:
___ I was on the phone with the person.
___ I was writing the person, either online or on paper.
___ I was reading about the person.
___ I could see the person, but there was no interaction at all, not even a nod.
___ I was in the same room or area with the person, and we nodded, smiled or waved.
___ I was with the person and we had a conversation.
___ I was talking about the person with someone else, and the person wasn't listening.
___ I was ONLY thinking about the person, I was not seeing, not writing, not reading about, not talking to or about the person.

PLEASE ANSWER THE QUESTIONS ON THE BACK OF THIS SHEET NOW.

7. How did you feel right before you compared yourself? Please circle a number:

Negative -4 -3 -2 -1 0 +1 +2 +3 +4 Positive

8. How did you feel right after you compared yourself? Please circle a number:

Negative -4 -3 -2 -1 0 +1 +2 +3 +4 Positive

9. What did you compare on? Check as many of these as you thought about at the time:
___ my health
___ things I own or how much money I have
___ my personality or abilities
___ my accomplishments
___ my opinions
___ my feelings
___ my appearance
___ how I cope with or adapt to difficulties
___ my quality of life

10. Overall, how do you compare to the other person? Please check one:
___I'm a lot worse than the other person.
___I'm somewhat worse than the other person.
___I'm the same as the other person.
___I'm somewhat better than the other person.
___I'm a lot better than the other person.

THANK YOU SO MUCH FOR HELPING WITH OUR RESEARCH!

Please return this in the stamped envelope I left for you, mailing to:
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