The Shifting Signification of Self-Rated Health [♦]

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ABSTRACT

Although self-rated health is one of the most common measures of health in the social sciences, scholars know little about the psychological processes behind it. Scholars generally argue that individuals assess their health through social comparison—that is, by considering their own health relative to that of their peers. Most empirical research, however, provides only mixed support for social comparison. In an attempt to reconcile these inconsistencies, this article tests four different theories of self-rated health using a large, nationally-representative, and longitudinal data set. The changing association between objective measures of health and self-rated health between age-groups is examined. Three objective measures—the presence of chronic conditions, the degree of functional limitations, and the extent of depression—show three distinct age-patterns that, together, suggest a reconsideration of the importance of social comparison. Consistent with social comparison, the correspondence between chronic conditions and self-rated health generally declines with age, although not all conditions show the same pattern and the declines are not equally steep for all conditions. Similarly, the correspondence between functional limitations and self-rate health is exceptionally strong, but decreases precipitously in later life. The most striking finding, however, is entirely inconsistent with social comparison: the correspondence between depression and self-rated health increases substantially with age, despite an increasing prevalence of depression in later life. Indeed, after the age of 74, the correspondence between self-rated health and some common symptoms of depression is stronger than that between self-rated health and several potentially fatal chronic conditions. The results are discussed in light of (i) the many demographic studies that employ self-rated health as an outcome and (ii) research on the psychology of aging.

Self-rated health is among the most pervasive and well-regarded measures of health in the social sciences. Its popularity generally reflects two things. First, it is easy to include in surveys and item-response the question is consistently low: respondents are simply asked to rate their health from "excellent" to "poor" (or "very poor"). Second, it has well-established empirical qualities that usually assuage even the most skeptical scholars. Some have questioned whether self-rated health is preferred when more objective indicators (e.g., "has a doctor diagnosed you with heart disease") are regularly included in surveys, indicative of what most would consider health, and not presumably subject to the same biases as are most global self-assessments (Lawton, Ward, and Yaffe 1967). Yet, self-rated health has unique predictive validity in at least two respects. For one, it does exceptionally well in predicting mortality. Indeed, it usually performs better than a wide array of disease-specific indicators and despite a tendency toward optimism in self-assessments (Ferraro and Farmer 1999; Idler and Benyamini 1997; Kaplan and Camacho 1983). Furthermore, it does exceptionally well in predicting treatment behavior. The health belief model, for example, is premised principally on individuals' *perceptions* of need, rather than on their objective need as might be defined by a health professional (Rosenstock 1966).

Given these qualities, self-rated health has assumed such prominence in the literature that it is often equated, with little or no qualification, with "health" itself. But beyond appreciating self-rated health's predictive validity, scholars know relatively little about the psychological processes behind self-assessments of health. Some studies—mostly framed around the issue of predictive validity—have evaluated self-rated health's correlation with a variety of more "objective" health indicators (e.g., disease diagnoses, functional limitations). These studies indicate that objective indicators are, in fact, correlated with self-rated health (Harlow and Linet

1989). And this correlation is, in turn, interpreted to mean that self-rated health may out-perform

objective indicators in predicting mortality simply because it serves as a comprehensive proxy

for all health problems that even the most extensive battery of objective indicators might miss

(Pijls, Feskens, and Kromhout 1993).

Yet, these studies also reveal that the correlation is far from perfect—and this may have

some more unsettling implications. Indeed, in their review, Suls, Marco, and Tobin (1991:1126)

find that the correlation between objective physical conditions and subjective health perceptions

is rarely greater than .30. Among other things, this modest correlation may imply a severe "bias"

in self-rated health or, at the very least, suggests that individuals are weighing far more than the

presence or absence of disease when they think about health. One line of research has attempted

to offer a theoretical account for the disjuncture. The most dominant framework—by far—has

been social comparison (Mechanic and Angel 1987). Drawing on a long-history of social

psychological research, social comparison theory suggests that individuals assess their global

health relative to that of their age peers and so "norm" their assessments in ways that might

reduce the correlation. Specifically, social comparison predicts that objective health indicators

are more strongly correlated with self-rated health earlier in life than later, resulting in overly

pessimistic evaluations among the young, overly optimistic evaluations among the elderly, and a

general reduction in self-rated health's life-course variation (VanderZee and Buunk 1995).

Although generally well-received, social comparison has received only modest empirical

support to date. Many studies do, to be sure, find that older persons are overly optimistic

regarding their health and, so, provide evidence consistent with a social comparison framework

(Idler 1993; Johnson and Wolinsky 1993; Maddox and Douglass 1973; Rakowski and Cryan

1990). Yet, other studies find equal numbers of health *pessimists* (i.e., those whose objective

health is better than their self-rated health would suggest) as health optimists and so rest far less comfortably with a strict social comparison interpretation (Borawski, Kinney, and Kahana 1996; Goldstein, Siegel, and Boyer 1984; Idler, Hudson, and Leventhal 1999; Levkoff, Cleary, and Wetle 1987).

Some of these inconsistencies may reflect methodological differences between studies. Many studies, for example, have been limited in their age-ranges and others have focused on a limited set of objective measures of health (Hoeymans et al. 1997; Manderbacka et al. 2003). These limitations introduce a number of interpretive difficulties: it is difficult, for example, to assess age effects over the entire life course; the extent to which all forms of illness are equally subject to social comparison; or whether any apparent age effects reflect cohort effects instead. But these inconsistencies may also reflect the theoretical limitations of most quantitative studies. Quantitative research has focused almost exclusively on social comparison and, in so doing, has limited its attention to those factors that might facilitate the downweighting of health problems with age. Recent qualitative research, by contrast, suggests that social comparison is but one of many biases behind self-rated health and, moreover, that individuals may not always be motivated to deny the health problems that have (Borawski et al. 1996; Idler et al. 1999; Suls, Marco, and Tobin 1991). Although these insights these studies can be lent to reconciling the apparent inconsistencies of previous research, they have not been tested in nationally-representative survey data and, on their own, these studies' small sample sizes and flawed sampling methodologies (e.g., snowballing, sampling only healthy individuals or only minorities) prevent confident generalization to larger populations.

In this article, I explore the psychology of self-rated health using a nationally representative, longitudinal data set with an extensive battery of health-related questions. I

examine the association between a variety of measures of health and global self-rated health across age-groups. The data provide several benefits over those used in previous studies. The longitudinal design, on the one hand, allows me to disentangle the age effects emphasized by social comparison (and other theories) from potentially important, and largely under-recognized, cohort effects. The extensive battery of questions on health, meanwhile, allows me to explore a variety of competing hypotheses regarding self-rated health's psychological underpinnings. As discussed below, the literature points to four different theories of self-rated health that each provides a different prediction regarding age-related changes. By using multiple objective indicators of health, these differences can be identified and tested and, in so doing, a more comprehensive picture of the psychology of self-rated health and aging can be elaborated.

BACKGROUND

Despite the simplicity of self-rated health questions, global health is difficult for anyone to assess: some diseases are asymptomatic, some symptoms cannot be tied to any identifiable disease, and notions of just what "health" is change considerably over time with the progress of modern medicine. In this light, individuals tend to make self-assessments of health that are generally optimistic and premised largely on the health they perceive in others relative to what they identify in themselves. The optimistic bias presumed in most of the literature follows from a venerable tradition of psychological research on self-assessment. Individuals tend to evaluate themselves positively on desirable traits and nd when negative traits are acknowledged, they are usually minimized through a variety of cognitive mechanisms. In support of an "illusory" view of the self, for example, most individuals tend to indicate that they are better on positive attributes than are most others. Undesirable attributes, meanwhile, are regularly dismissed either

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as unimportant, as far less important than one's positive traits, or as less common in the self than in others (Taylor and Brown 1988). Similarly, self-assessments of health may tend toward optimism since good health is generally desirable and acknowledging illness may be psychologically painful or socially damaging.[1] Furthermore, these optimistic evaluations of health may be facilitated by the possibility of downward social comparison, especially in later life.[2] Suls, Marco, and Tobin (1991) suggest that older persons compare themselves with a generalized "frail" elderly person and so arrive at elevated perceptions of their own health even when their actual peers are in generally good health.

Although social comparison is compelling has been the dominant theoretical framework, there are other perspectives that make different predictions and/or proffer different underlying mechanisms. I elaborate the four central perspectives below. These perspectives make divergent predictions regarding different components of health. Although scholars may disagree on how individuals assess health, a central and long-standing conclusion of research on self-rated health is that individuals consider a variety of dimensions when asked about their health (Flykesnes and Forde 1992; Idler et al. 1999; Liang 1986). Research has generally focused on three: *Chronic conditions* refer to discrete diagnosed health problems, such as diabetes, heart disease, or cancer. Such conditions have been the dominant focus of most research on self-rated health's underpinnings. *Functional limitations*, meanwhile, refer to health-related disabilities in activities of daily living. Among other instrumental activities, research has explored an individual's ability to climb stairs, walk several blocks, or do work around the house. Although perhaps

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[1] Exceptions include the possibility of secondary gain (e.g., sympathy, work release) from some health complaints.
[2] Although upward comparisons are possible in the case of health, most research on health has focused on downward comparisons since they are though to provide the most self-enhancement, whereas upward comparisons provide little in the way of motivational (e.g., more inclination to engage in health behaviors) gain.

given short-shrift in studies interested in the linkages between self-rated health and mortality, such limitations are central to self-assessments of health. Individuals may, in fact, judge their health more on the basis of successful role functioning, than on the basis of diagnoses they do or do not have (Liang 1986; Tessler and Mechanic 1978). Indeed, some research suggests that self-rated health reflects functional limitations more than any other single factor (Flykesnes and Forde 1992). Finally, *psychological well-being* refers to the capacity to be happy and avoid negative affect. Depressive symptoms are perhaps the most common indicators of psychological well-being, owing in part to depression's high prevalence relative to other psychiatric conditions (Kessler et al. 2003). Although depression may have a weaker correspondence with self-rated health than do chronic conditions or functional limitations, there are reasons to believe that the (i) importance of depression increases in later life and (ii) that individuals are not always motivated to deny the depression they have. Depression, thus, provides a theoretically useful contrast to other objective indicators of health and to the usual interpretation of the psychological processes behind self-rated health.

Age Patterns in the Sources of Self-Rated Health

The quantitative and qualitative research points to four frameworks for understanding self-rated health. Table 1 presents the predicted hypotheses from the four perspectives, as elaborated in greater detail below.

Social Comparison. As noted above, social comparison begins with the idea that health is difficult to assess in an absolute sense and that acknowledging health problems may be psychologically painful. Self-rated health, therefore, is usually assessed optimistically and, because social comparisons often provide the possibility of a downward comparison, relative to the health of one's age-peers. Since most conditions become more prevalent with age, social

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comparison predicts that the association between objective illness and self-rated health is stronger among younger persons than among older. Older persons, in other words, are more easily able to evaluate their own health as better than age-peers, even if their own health is clearly worse than it was when they were younger. Several empirical studies are consistent with this idea, although each study tends to focus on specific health conditions, rather than a variety of conditions at the same time. Some studies, for example, find that the relationship between functional status and self-rated health declines in later life (Hoeymans et al. 1997; Levkoff et al. 1987). Similarly, Mechanic and Angel (1987) find that older persons are more likely to normalize bodily discomfort by attributing it to aging, rather than poor health *per se* (see also Tornstam 1975).

Little of this research has focused directly on the role of depression. Although social comparison may be as relevant for mental health problems as for physical health problem, social comparison predicts a slightly different pattern for depression since the prevalence of depressive symptoms does not follow the same monotonic age-pattern as the prevalence of chronic illnesses or functional limitations. Research generally suggests that depression declines until middle age and increases precipitously thereafter—that is, it follows a u-shaped pattern (Mirowsky and Ross 1992). Accordingly, the association between self-rated health and depression should increase until middle-age, followed in later life by a steady decline running in rough parallel with the pattern predicted for chronic illness. The distinction between depression and other chronic conditions is important since it differentiates social comparison from developmental perspectives, which rely on steady changes in the individual's perceptions, rather the prevalence of health problems among age-peers.

Maturity and Health Transcendence. A down-weighting effect with age is also predicted

by theories of human development, but through different mechanisms. Rather than emphasize

social comparison *per se*, these theories emphasize the growing psychological maturity of the

individual and the resulting gradual changes in motivation and cognition. And rather than

emphasize the denial, repression, or avoidance of health problems (as is implicit to social

comparison), developmental perspectives tend to focus on positive psychological changes that

minimize or *offset* the importance of health problems, but do not eliminate their importance

altogether. In this vein, Idler (1993) suggests that later life is characterized by the psychological

transcendence of unavoidable physical ailments and disabilities. Individuals that are health

transcendent, for example, may report good health, but qualify that they have good health despite

some functional limitations or the presence of chronic conditions. In the same vein, older age

may be characterized by greater self-acceptance and, consequently, the elderly may report a

greater balance between positive and negative features of the self (Ryff 1989). In terms of

statistical predictions, health transcendence predicts that the association between objective

indicators of health and self-rated health will attenuate in a monotonic fashion with age.

Illness Preoccupation. Although they proffer different mechanisms, all of the above

perspectives are united in predicting a decrease in the association between self-rated health and

objective health in later life. An entirely different perspective, resting on different set of

cognitive foundations, predicts more pessimistic evaluations of health in later life. Elaborating a

model of illness perception, Leventhal (1984) discusses feedback effects from extant health

problems back to other nascent health problems and emerging symptoms. Existing illnesses may

amplify the perception of other illnesses: individuals with any one health problem may be more

likely to perceive other problems insofar as the development of one health problem cues declines

in health generally (Flykesnes and Forde 1992; Mayne 1999). Along these lines, Tessler and Mechanic (1978) find that those who report more distress also perceive their health more negatively. Applied to self-rated health, illness preoccupation suggests that the accumulation of illnesses and limitations with age results in a preoccupation with illness and, thus, predicts an increase in the association between any one problem and self-rated health. In support of this idea, Strain (1993) documents an increase in the salience of functional limitations with age.

Changes in Health-Related Values. In addition to senescent declines in health, later life is also characterized by changes in health-related values that may be just as important to how health is assessed. Socioemotional selectivity theory argues that social motivations change as an individual comes to perceives his or her remaining lifetime as limited (Carstensen, Isaacowitz, and Charles 1999). Social motives can generally be classified as either related to (i) the acquisition of skills for the future or (ii) the regulation of emotions. Because the former involves long-term payoffs, whereas the latter involves immediate ones, which motivations are dominant, the theory argues, is structured by the amount of time one is perceived as having left. With age, individuals perceive less remaining time and, in this light, focus less on acquiring skills for the future and more on emotional satisfaction in the present. Although the theory has not yet been applied to self-rated health, the theory has been applied to a variety of areas that, together, suggest that negative emotions become increasingly salient in later life and may have important implications for self-rated health. Among other things, research suggests that the elderly weigh negative emotions more heavily in interpersonal decisions than do the young (Blanchard-Fields 1986; Blanchard-Fields, Jahnke, and Camp 1995). Applied to self-rated health, socioemotional selectivity theory suggests that depression may become increasingly associated with self-rated

health with age, whereas chronic illness—especially illnesses with long- rather than short-term consequences—may become less.

DATA AND METHODS

As noted above, previous research on self-rated health has been limited. Some studies lack of adequate age comparisons (Borawski et al. 1996); others have explored a limited set of health problems (Hoeymans et al. 1997; Manderbacka et al. 2003); and virtually all studies on self-rated health are cross-sectional and so are unable to disentangle age effects from potentially important cohort effects. The three waves of the Americans' Changing Lives (ACL) provide a unique opportunity to redress these limitations (House 2003).

The ACL survey is nationally representative panel study of adults aged 25 and older. The survey has followed respondents for three panels, beginning in 1986, followed by a panel in 1989 and another in 1994. It uses a four-stage stratified area probability sampling frame. In the first stage, standard metropolitan statistical areas and smaller counties were sampled with a probability proportional to size. Area segments were then sampled within each of these units in the second stage, followed by a sampling of households therein, and followed again in the fourth stage by the selection of an individual within each household. Those over the age of 60 and blacks were sampled at twice their rate in the population. Because of the unequal probability of selection, all the descriptive analyses presented herein are weighted using sampling weights that account both for the unequal probability of selection and for survey non-response. The multivariate regression models, meanwhile, include all features of sample selection (i.e., age and race/ethnicity) as independent variables and so provide unbiased and consistent estimates of the coefficients (Winship and Radbill 1994).

Below I present a series of analyses that examine the association between a variety of objective indicators of health and self-rated health. Self-rated health is asked in a popular manner: respondents were asked "how would you rate your health at the present time? Would you say it is excellent [coded as 1], very good, good, fair, or poor [coded as 5]?"[3] In light of this coding, higher values indicate *worse* health and, in the regression models, positive coefficients indicate a positive association between the given health condition and worse health. Although this coding is reversed from that of most studies that use self-rated health (and so should be kept in mind), it provides a more clear-cut interpretation of an "increasing" association between health problems and poor health: an increasing association with age will be realized in a positive increase of an already positive coefficient. Age-groups were coded in a manner conventional to epidemiological studies (see House et al. 1994). Age is bracketed into six categories: as 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 74, and 75 and older.

The ACL provides a wide assortment of objective health indicators, consistent with the domains outlined above.

Chronic Conditions. Respondents were asked whether they experienced the following health problems in the last twelve months: arthritis or rheumatism, stroke, cancer or a malignant tumor, diabetes or high blood sugar, heart attack or other heart trouble, hypertension, and lung disease.

Functional Limitations. The ACL contains a functional health index. Respondents were asked several questions regarding physical limitations: if they were in a bed or chair most of the

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[3] In different studies, self-rated health is not always asked in exactly the same way. Some self-rated health items include only four response categories and others explicitly ask respondents to compare their health to that of others their age. Despite these semantic differences, most versions of self-rated health are correlated highly with each other and the key empirical properties of self-rated health (e.g., the ability to predict mortality) are nearly equivalent (Idler and Benyamini 1997).

day; and the degrees of difficulty they had in bathing themselves, climbing stairs, walking several blocks, and with heavy housework. Responses to these items were then combined to create a four-point Guttman-style scale, consisting of four consecutive categories: (1) indicates no functional impairments at all, (2) indicates respondents who have difficulty with heavy housework, (3) indicates respondents who have difficulty climbing stairs or walking, and (4) indicates respondents who are in bed or a chair most of the day and/or who have difficulty bathing. Since the distance between adjacent categories may not be constant, the association between self-rated health and functional limitations is estimated in the regression models using a series of three dummy variables (with "no impairments" as the reference category).

The Center for Epidemiological Studies Depression Scale (CES-D). The CES-D is perhaps the most popular dimensional measure of depression in the social sciences (Radloff 1977). The shortened version of the CES-D used in the ACL consists of eleven items. Respondents were asked if during the past week the experienced the following symptoms "hardly ever" (coded 1), "some of the time", or "most of the time (coded 3):

- I felt depressed.
- I felt that everything I did was an effort.
- I felt that there were people who really understood me.
- My sleep was restless.
- I was happy (reverse coded).
- I felt lonely.
- People were unfriendly.
- I felt that no one really knows me well.
- I enjoyed life (reverse coded).
- I did not feel like eating. My appetite was poor.
- I felt sad.
- I felt that people dislike me.

• I could not get "going."

Tests of coefficient reliability were acceptably high (Cronbach's alpha = .83) (Cronbach 1951),

as they are in most general population surveys that employ the CES-D. A summary measure

was, therefore, created using the standardized mean of responses to the eleven items.

Recall that the ACL consists of three panels of data. A person-panel data set was

constructed. Accordingly, the central covariates (e.g., disease presence, CES-D scores, self-rated

health) are time-varying. Two types of models were estimated, both using a similar

specification, but each with a different goal in mind. First, in order to examine the association

between each of the objective health indicators and self-rated health, random-effects regression

models were estimated (Baltagi 1995). Random-effects regression models are similar to

ordinary-least squares regression, but correct for the within-person correlation that obviously

comes from data containing multiple observations per person. Second, in order to examine the

sensitivity of the results to cohort effects, fixed-effects models were estimated (Allison 1990;

England et al. 1988). Fixed-effects models, in contrast to random effects, use only *differences*

within individuals. As a result, fixed-effects models hold constant *all* observed and unobserved

fixed qualities. This property of fixed-effects models is increasingly important in social science

generally since it offers a convenient solution to the common problem of unobserved

heterogeneity. In the present context, it provides a useful way of eliminating the effects of

cohort.

RESULTS

The results begin with three tables that examine the association between the three types

of objective conditions and self-rated health. Tables 2 through 4 present coefficients from

random-effects regression models that simply regress self-rated health on each objective health condition. All the analyses are stratified by age-group. All the models include controls for race/ethnicity, but the coefficients are not presented. Although so-specified the models may appear underspecified, recall that the theories outlined above are only interested in the association between subjective and objective measures and not the *causes* of self-rated health. Including all variables the might be antecedent to variation in self-rated health (e.g., education, income, occupation) would reduce the coefficients for the objective indicators, but would not shed light on the debates outlined above: analytically we are interested only in the simple association between self-rated health and more objective measuers.

—Insert Table 2 About Here—

Table 2 presents results from the random-effects regression of self-rated health on each of the chronic conditions, stratified by age group. For each condition (presented by rows), betas are presented in the first row, followed, in the row below, by these coefficients' standard errors, and followed again by the condition's prevalence. Recall that social comparison predicts a decline with age in the beta of each condition. Table 2, however, suggests two patterns not entirely consistent with social comparison. In the first pattern, the coefficients increase until middle age (ages 45 to 54) and decrease thereafter. This pattern is found for cancer, diabetes, and lung problems (arthritis shows this pattern as well, although it is far less pronounced). In the second, the coefficients decrease more consistently with advancing age. This pattern is found for stroke, heart attack, and hypertension. Although these two patterns are distinct, they are united in indicating that the smallest beta for all seven conditions is found for the 75 to 98 age group. If illness preoccupation (which predicts a rise in the association) is occurring up until late middle-age, it is more than negated by maturity or social comparison in later life. The ultimate late-life

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reduction in the coefficients is, in fact, large: the betas for the older age group are often far smaller than those observed for younger age groups. The beta for cancer, for example, decreases from .978 (for those 35 to 44) to .154. The beta for heart attack, meanwhile, decreases from 1.356 (for those 25 to 34) to .573.

—Insert Table 3 About Here—

Table 3 turns to functional health. Recall that functional health is a Guttman-type scale, coded to reflect four ordered levels of severity. In the regression models, three dummy variables are presented, with the "no impairment" category as the reference category. Like some of the results presented in Table 2, the results of Table 3 indicate that the importance of functional limitations increases somewhat from the age of 25 to middle age (age 45 to 54). Yet, in general, the most pronounced pattern is the precipitous decline occurring after the age of 54. For each level of impairment, the smallest coefficient is observed for those 75 to 98. And, as with chronic conditions, the extent of the variation in the beta across age-groups is remarkable. The coefficient for "most severe impairment," for example, fluctuates from a high of 1.539 (for those 45 to 54) to 1.158, a reduction of 25%. The coefficient for "least severe impairment," meanwhile, decreases from .916 (for those 25 to 34) to .480, a reduction of nearly 50%. Beyond the variation in the betas, the absolute value of the betas is in itself remarkable: the betas for the least severe impairments, for example, are larger or nearly as large as those for many of the chronic conditions explored in Table 2.

—Insert Table 4 About Here—

Table 4 turns to depression. As anticipated, the mean for depression follows a u-shaped pattern, rather than the general increase across age-groups found for chronic health problems or for functional limitations, although the point of inflection is more advanced that is found in some

multivariate studies (Mirowsky and Ross 1992). Depression decreases until the age of 65 to 74, followed by a steady increase to nearly the levels observed among those aged 25 to 34. The association between depression and self-rated health, however, decreases in a strong and monotonic fashion. For those aged 20 to 34, the coefficient for depression is .189. For those aged 75 to 103, however, the coefficient is .402, an increase of over 50%. The largest increases in the betas for depression are observed earlier in life (especially between the ages of 25 to 34 and 35 to 44). Nevertheless, steady increases are found for each of the progressively older age-groups. In tandem with the decreases found for many chronic conditions and functional limitations, the results for depression suggest that self-rated health in later life may reflect mental health as much or more than physical health. Supplementary analyses substantiate this conclusion. The weights between the eleven specific symptoms of depression contained in the CES-D and self-rated health are sometimes larger than are those between chronic health problems and self-rated health. In age-stratified models, self-rated health was regressed on each symptom, with each symptom coded as a series of two dummy variables: those who experience the symptom "some of the time" and those who experience the symptom "most of the time" (with those experiencing the symptom "hardly ever" as the reference category). These coefficients were, for the oldest age group, quite large. For example, the "most of the time" coefficients for "I felt depressed," "I felt that everything I did was an effort," "I felt lonely," and "I could not get 'going'" (.821, .887, .599, and .825 respectively) were each greater than *any* of the chronic conditions for those age 75 to 98. Although not as strong, the remaining coefficients are non-trivial and show a similar increase with age.

 The Role of Cohort. Social comparison, along with the other theories of self-rated health discussed above, is premised on age effects. There are, however, a number of cohort-based

interpretations that contravene a strict age-based interpretation (Idler 1993). In addition, it is possible that the increasing salience of depression reflects the unique experience of those clearly nearing the end of life, rather than a general effect of aging *per se*.

Recent cohorts may be more likely to view a variety of physical and especially mental health problems in terms of "health" given the rapid expansion of medical treatments in the 20th century (Flykesnes and Forde 1991; Starr 1982). Similarly, steady increases in life-expectancy may have increased the expectations of recent cohorts to the point that not having such expectations met results in an increase in the association between health conditions and self-rated health. Along these lines, Spiers and colleagues (1996) show that recent cohorts in England and Wales are more likely than are earlier cohorts to include mild conditions in their self-evaluations of health. Others perspectives provide a similar interpretation, although focus on different historical trends: recent cohorts in industrialized nations, for example, may be more concerned with quality of life and psychological well-being than are older cohorts since recent cohorts have enjoyed the fruits of a more prosperous and stable economy more than have earlier cohorts (Abramson and Inglehart 1992; Inglehart and Baker 2000).

Apparent age patterns may also reflect the idiosyncratic perceptions of those clearly nearing the end of life, rather than the perceptions of those who are simply aging (Idler 1993). Although the theory can be applied to aging, the theory of socioemotional selectivity gains its force by arguing that individuals place more emphasis on emotional well-being when their time is perceived as limited. The theory, thus, speaks to those who self-perceive that they are nearing the end of life. If the responses of those nearing the end of life and substantial enough, the clear age-patterns observed for depression and minor functional limitations might be driven largely— or entirely—by the responses of those facing mortality in subsequent panels.

—Insert Tables 5 and 6 About Here—

Tables 5 and 6 presents three models and two types of sensitivity analysis. As before, in each model, self-rated health is the outcome. The independent variables include the CES-D score (in Table 5), functional limitations (in Table 6), a term for age, and an interaction between age and the CES-D score and functional limitations. Since, as demonstrated earlier, the betas for functional health limitations and depression decrease with age, we should expect a negative interaction in both tables. Each table presents three models: the first is a random-effects model; the second is a fixed-effects model; and the third is random-effects model where the analytic sample is limited only to those who survived the entire three-panel period of observation. If the age-attenuating (in the case of functional limitations) or accelerating (in the case of depression) effects observed early are driven by the perceptions of those immediately prior to death, the patterns from the first model should be reduced dramatically in the third.

The results reinforce the aging interpretation offered earlier. In the first model, all the interactions with age are statistically significant, as we would expect given the results presented earlier in Tables 3 and 4. Model 2 turns to fixed effects models. The significant interactions remain, suggesting that cohort (or any other fixed characteristic) does little to explain the decrease in the importance of functional limitations or the increase in the importance of depression. Similarly, Model 3 provides little evidence that the patterns are driven by those facing mortality in subsequent panels: limiting the analytic sample only to those who survived through all three panels does not reduce the interactions with age to statistical insignificance. Altogether, the results presented in Tables5 and 6 are suggestive of an age-pattern, as emphasized by most theories of self-rated health.

CONCLUSION

In recent years, self-rated health has assumed such dominance in the literature that scholars have done little to question its underlying sources or to evaluate its potential biases. The present study has attempted to fill the numerous gaps this reluctance has left. In addition to filling these gaps, the results point to several fruitful lines for future research. Above all, the results suggest that the meaning of self-rated health shifts substantially with age and, thus, that self-rated health is not strictly age-comparable. There are two general patterns in this regard. The first indicates that correspondence between some chronic illnesses and self-rated health generally declines with age, but especially after mid-life. Similarly, the correspondence between functional health and self-rated health declines precipitously in later life. The second, however, indicates that the correspondence between depression and self-rated health *increases* consistently throughout the life course. This finding is as striking as much for its monotonicity as for its strength. Indeed, considering all three patterns together, the association between some symptoms of depression and self-rated health appears to be stronger by the end of life than is the association between chronic illnesses and self-rated health.

The results are inconsistent with much of the previous speculation, especially with research that has emphasized social comparison or the necessity of minimizing health problems. Although social comparison does anticipate the decreases found for chronic illness and functional limitations, it clearly does not anticipate the increases found for depression. Perhaps a more accurate interpretation of the shifting significant of self-rated health is that age-related changes reflect changes in health-related values as much as social comparison or that changes in health-related values occurs in tandem with growing maturity. This distinction is important since it reflects how scholars understand the age-related biases underlying self-rated health, as well as

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how they conceptualize the psychological dynamics of aging populations. Specifically, the results suggests that any apparent biases in self-rated health may not necessarily reflect an aging individual's desire to deny or minimize his or her health problems, as most psychological accounts of self-rated health would seem to suggest. This is especially apparent with respect to depression. Consistent with previous research, the mean CES-D score increases in later life (after a decline from the mid-20s up until late mid-life). Since, at the same time that depression increases, the association between depression and self-rated health increases, the results provide little evidence that the elderly are substituting dimensions on which they assess well on for dimensions on which they assess poorly. In its focus on denial, avoidance, unrealistic optimism, and so on, the self-rated health literature has implicitly cast the elderly as (perhaps desperately) trying to overcome the inevitable declines of aging in order to arrive at a positively inflated sense of health. The present study suggests, to the contrary, that the declining importance of some conditions may occur in tandem with an increasing salience of psychological well-being.

What do these results suggest for research that employs self-rated health as an outcome? The results speak both to the predictive validity of self-rated health across age groups and to research on age-related trajectories of health. The results are perhaps less troubling for the former than for the latter. Even if the weights associated with various indicators of well-being shift as individuals age, this shift probably not undermine self-rated health's much-touted ability to predict mortality. For one, the association between chronic illness and self-rated health is not eliminated entirely—it remains positive well into later life despite the notable declines. Thus, the declines in later life should be understood as declines *relative* to former levels and not as *absolute* declines to the point of insignificant relationship between objective indicators and self-rated health. Furthermore, depression itself is not entirely unrelated to mortality. Prospective

research has demonstrated a correspondence between depressive symptoms and accelerated mortality among those with cardiovascular disease and a variety of other chronic conditions (Anda et al. 1993; Cohen and Rodriguez 1995; Frasure-Smith, Lesperance, and Talajic 1995; Glassman and Shapiro 1998; Kiecolt-Glaser et al. 2002). There are at least two ways to account for this effect: (i) it may represent a direct effect of depression of immunosuppression or other physiological channels or (ii) it may reflect more lax health behaviors of those who are depressed. Research continues to explore the relative strength of each of these channels, but has not to date arrived at any strong conclusions. Regardless of which channel is most important, however, the fact that older adults consider depression more in their self-ratings of health, together with depression's apparently unique abilities to predict mortality, suggests that the ability of self-rated health to predict mortality may not be compromised in later life simply because self-rated health is associated more with depression and less with chronic conditions.

The most troubling consequences are for studies that explore trajectories of age-related changes in health. Above all, the results indicate that self-rated health is not entirely age-comparable. This could affect the conclusions of studies that examine age-trajectories of health or studies that examine age-based changes in the effects of socioeconomic status on health. Recent demographic studies have explored whether the effects of socioeconomic status increase (consistent with a *cumulative advantage* approach) or decrease (consistent with an *age-as-leveler* approach) in later life. The conclusions are mixed, as are the methodologies and outcomes these studies employ. Consider two examples: On the one hand, some, using prospective data from a relatively short time and diverse health outcomes (i.e., number of chronic conditions, functional status), find that the association between socioeconomic status (as indicated by income and education) and health increases until mid-life and decreases thereafter (House et al. 1994).

Others, meanwhile, more effectively eliminated the role of cohort by using longitudinal data observed over a longer period of time, but rely exclusively on self-rated health as an outcome. They find, by contrast, that the association between education and health increases continuously with age (Lynch 2003). Although both of these studies have their particular benefits, when viewed in tandem with the present results, one possibility they raise is that the association between education and depression may increase with age (and so, then, does the association between education and self-rated health), while the association between education and physical health truly does decline. Research that uses self-rated health to explore age-based changes should, therefore, be cautious about inferring changes in the effects of socioeconomic status when such changes may actually reflect changes in what the dependent variable indicates.

With respect to help-seeking, the results are somewhat less clear. In general, the results would seem to suggest that the perceived need for care decreases with age. If aging individuals are defining health less in terms of chronic conditions and functional limitations, they may also be less motivated to seek medical care for these problems. Even if they are, instead, focusing more on depression, they may nevertheless be unwilling to seek medical care for the depression they find so troubling. Americans have long been more resistant to seek treatment for depression than for many other physical health problems (Kessler et al. 2003). The observation of a decline in consumption of care is not uncommon in the literature: some research, for example, suggests that the demand for health care increases until the age of approximately 80, but declines thereafter, even though the objective need for such care is presumably not declining as well (Wolinsky, Mosely, and Coe 1986).

These results also help to expand research on the psychology of aging. Most research suggests that individuals mature as they age and so they are better able to confront inevitable

senescent declines in health with hard-won resilience. The results presented here are consistent with this notion insofar as chronic conditions become less salient to global evaluations of health. But they also suggest some potential discrepancies and several areas for future research. Since depression increases with age, as does the salience of depression for global evaluations of health, one of the key psychological struggles facing America's rapidly aging population might be in overcoming the depression they experience. That depression becomes so central to health is an invitation for future research on self-assessments of health; a call for greater reflection on what studies of age-related changes in self-rated health truly suggest; and one indication of the emotional struggles and strengths of the elderly.

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TABLE 1. Predictions of Four Models of Subjective Health Assessment

Predicted Change in the Association between
Health Domain and Self-Rated Health with Age

| | *Health Domain* | | |
	Mental Health	Physical Health	Functional Limitations
Downward Social Comparison	∩	-	-
Health Transcendence	-	-	-
Illness Preoccupation	+	+	+
Changing Health-Related Values	+	-	

TABLE 2. Coefficients from Bivariate Random-Effects Regressions of Self-Rated Health on Objective Health Indicators by Age Group: Americans' Changing Lives (1986 – 1994)

			Age Group			
	25 – 34	35 – 44	45 – 54	55 – 64	65 – 74	75 – 98
Arthritis	0.467**	0.452**	0.516**	0.459**	0.485**	0.371**
	(0.100)	(0.063)	(0.065)	(0.056)	(0.049)	(0.065)
	[7.3 %]	[15.8 %]	[26.5 %]	[48.8 %]	[56.5 %]	[62.8 %]
Stroke		0.903**	0.723	0.728**	0.720**	0.508**
	NA	(0.348)	(0.386)	(0.190)	(0.134)	(0.150)
		[.3 %]	[.3 %]	[1.4 %]	[2.4 %]	[3.3 %]
Cancer	0.632*	0.978**	1.141**	0.323*	0.498**	0.154
	(0.293)	(0.239)	(0.198)	(0.146)	(0.104)	(0.127)
	[.7 %]	[.7 %]	[1.9 %]	[4.4 %]	[5.6 %]	[7.0 %]
Diabetes	0.548*	0.816**	1.025**	0.534**	0.515**	0.467**
	(0.217)	(0.128)	(0.123)	(0.093)	(0.072)	(0.088)
	[1.3 %]	[3.2 %]	[4.8 %]	[10.2 %]	[13.1 %]	[13.7 %]
Heart Attack	1.356**	1.239**	0.912**	0.800**	0.763**	0.573**
	(0.211)	(0.126)	(0.121)	(0.084)	(0.065)	(0.082)
	[1.3 %]	[2.8 %]	[4.8 %]	[12.0 %]	[13.0 %]	[15.7 %]
Hypertension	0.828**	0.759**	0.665**	0.478**	0.493**	0.407**
	(0.087)	(0.069)	(0.071)	(0.063)	(0.049)	(0.064)
	[7.8 %]	[11.1 %]	[20.0 %]	[32.6 %]	[43.4 %]	[42.8 %]
Lung Disease	0.735**	0.887**	1.177**	0.777**	0.621**	0.467**
	(0.178)	(0.136)	(0.129)	(0.107)	(0.089)	(0.118)
	[1.8 %]	[2.8 %]	[4.7 %]	[7.5 %]	[8.6 %]	[7.1 %]
Total N	1298	1686	1176	1440	1969	1312
Individuals	742	1040	762	922	1220	808

Note: All coefficients from separate random-effects models regressing self-rated health on each chronic illness and race/ethnicity (coefficients for race/ethnicity not shown). All models are stratified by age-group.

* $p < .05$; ** $p < .01$ (standard errors in parentheses; prevalence estimates in brackets)

TABLE 3. Coefficients from Random-Effects Regression of Self-Rated Health on Functional Health Status Dummy Variables by Age Group: Americans' Changing Lives (1986 – 1994)

	Age Group					
	25 – 34	35 – 44	45 – 54	55 – 64	65 – 74	75 – 98
Functional Health (vs. No Impairment)						
Least Severe	0.916**	0.819**	0.906**	0.909**	0.666**	0.480**
Impairment	(0.172)	(0.121)	(0.114)	(0.083)	(0.060)	(0.071)
Moderately Severe	1.312**	1.500**	1.522**	1.207**	1.114**	0.977**
Impairment	(0.269)	(0.130)	(0.137)	(0.090)	(0.069)	(0.082)
Most Severe	1.346**	1.526**	1.539**	1.391**	1.284**	1.158**
Impairment	(0.215)	(0.136)	(0.157)	(0.107)	(0.082)	(0.084)
Mean for Age Group	1.057	1.124	1.174	1.395	1.522	1.918
Total N	1298	1686	1176	1440	1969	1312
Individuals	742	1040	762	922	1220	808

Note: All coefficients from random-effects models regressing self-rated health on dummy-variables for functional health status and race/ethnicity (coefficients for race/ethnicity not shown). All models are stratified by age group.

* $p < .05$; ** $p < .01$ (standard errors in parentheses)

TABLE 4. Coefficients from Bivariate Random-Effects Regressions of Self-Rated Health on CES-D by Age Group: Americans' Changing Lives (1986 – 1994)

	Age Group					
	25 – 34	35 – 44	45 – 54	55 – 64	65 – 74	75 – 98
CES-D	0.189**	0.274**	0.332**	0.378**	0.394**	0.402**
	(0.024)	(0.022)	(0.029)	(0.027)	(0.024)	(0.029)
CES-D Mean	.019	-.128	-.156	-.151	-.201	.017
Total N	1298	1686	1176	1440	1969	1312
Individuals	742	1040	762	922	1220	808

Note: All coefficients from random-effects models regressing self-rated health (by age group) on CES-D and race/ethnicity (coefficients for race/ethnicity not shown). All models stratified by age group.
* $p < .05$; ** $p < .01$ (standard errors in parentheses)

TABLE 5. CES-D and Self-Rated Health Sensitivity Analyses: Americans' Changing Lives (1986 – 1994)

	Random-Effects	Fixed-Effects	Survivor Sample, Random-Effects
CES-D	0.099**	0.049	0.120**
	(0.034)	(0.043)	(0.035)
Age	0.019**	0.030**	0.018**
	(0.001)	(0.003)	(0.001)
CES-D × Age	0.004**	0.002**	0.003**
	(0.001)	(0.001)	(0.001)
Constant	1.448**	0.908**	1.495**
Total N	8707	8707	7879
Individuals	3617	3617	3071

Note: Both random-effects models also include race/ethnicity (coefficients not shown). Survivor sample represents those who survived all three panels of observation.
* $p < .05$; ** $p < .01$ (standard errors in parentheses)

TABLE 6. Functional Health and Self-Rated Health Sensitivity Analyses: Americans' Changing
Lives (1986 – 1994)

	Random-Effects	Fixed-Effects	Survivor Sample, Random-Effects
Functional Health (vs. No Limitations)			
Least Severe Impairment	1.415**	0.971**	1.330**
	(0.154)	(0.183)	(0.161)
Moderately Severe Impairment	2.005**	1.236**	2.086**
	(0.183)	(0.222)	(0.195)
Most Severe Impairment	1.926**	1.264**	1.850**
	(0.183)	(0.224)	(0.197)
Age	0.012**	0.023**	0.011**
	(0.001)	(0.003)	(0.001)
Interactions			
Least Severe Impairment $\times$ Age	-0.012**	-0.009**	-0.011**
	(0.002)	(0.003)	(0.002)
Moderately Severe Impairment $\times$ Age	-0.015**	-0.010**	-0.017**
	(0.003)	(0.003)	(0.003)
Most Severe Impairment $\times$ Age	-0.012**	-0.010**	-0.012**
	(0.003)	(0.003)	(0.003)
Constant	1.638**	1.180**	1.670**
Total N	8707	8707	7879
Individuals	3617	3617	3071

Note: Both random-effects models also include race/ethnicity (coefficients not shown). Survivor
sample represents those who survived all three panels of observation.
* $p < .05$; ** $p < .01$ (standard errors in parentheses)