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Living With Chronic Health Conditions: Age Differences in Affective Well-Being

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The current study examined age differences in affective well-being and reactivity to daily stressors among people varying in health status. Participants (N = 3,493), aged 25 to 74 years, reported global affective well-being in the Midlife Development in the United States survey, and a subset (n = 983) reported their affective reactivity to stressors across eight consecutive evenings in the National Study of Daily Experiences. Across groups of people varying in number of chronic conditions, older adults reported higher levels of global affective well-being and lower levels of affective reactivity than did younger adults, with one exception. Among people reporting four or more chronic conditions, older adults were just as reactive to daily stressors as were younger adults.

CHRONIC health conditions are often associated with decreased affective well-being (Mehnert, Krauss, Nadler, & Boyd, 1990). Given that incidence rates for chronic health conditions increase with age (Wolff, Starfield, & Anderson, 2002), older adults should be particularly vulnerable to experiencing lower affective well-being. Empirical evidence from the past several decades, however, defies this logic and instead points to relatively preserved and sometimes even enhanced affective well-being in later life (see review by Charles & Carstensen, 2007). This age-related increase in well-being may thus be even more pronounced when comparing younger and older adults with the same number of chronic conditions. In the current study we examine the association between affective well-being and health status, and how this relationship varies by age in a nationally representative sample of adults.

Affective Well-Being and Age

Global reports of positive and negative affect, defined as the frequency or intensity of emotions experienced during the past several weeks or prior month, often reveal age-related benefits. Both cross-sectional and longitudinal analyses have yielded age-related patterns of decline in negative affect (e.g., Charles, Reynolds, & Gatz, 2001; Mroczek & Kolarz, 1998). When researchers have found age-related increases in negative affect, such increases sometimes disappear and even reverse in direction when controlling for functional constraints (Isaacowitz & Smith, 2003; Kunzmann, Little, & Smith, 2000). Age-related patterns of positive affect often show relative stability or even slight improvement across age groups (see review by Mroczek, 2001); older adults report experiencing positive emotions as frequently and intensely as do their younger counterparts, with small declines evident only in very old age (see review by Consedine & Magai, 2006; Mroczek). Life satisfaction also increases across the life span until middle age, after which it declines slightly. Notably, however, life-satisfaction levels in later life are similar to those observed during young adulthood (Mroczek & Spiro, 2005).

The aforementioned research indicates lower global negative affect and relatively stable if not slightly improved levels of global positive affect with age. Perhaps a more stringent test of emotion regulation, however, is to examine how affect changes on days when a stressor is encountered compared with days when no stressors are reported. In such studies of stressor reactivity, older adults report decreased affective reactivity in response to all daily stressors (Uchino, Berg, Smith, Pearce, & Skinner, 2006), as well as specifically to interpersonal daily stressors (Birditt, Fingerman, & Almeida, 2005). Older adults also report more stable positive emotional states and faster recovery from negative emotional states than do younger adults across the course of a day (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000).

Chronic Health Conditions and Affective Well-Being

Research examining emotional experience in later adulthood presents a positive portrait of well-being that paradoxically occurs during a time in life when losses are more frequent (e.g., Heckhausen, 2005). Specifically, physical health declines with age, and both incidence and prevalence rates of multiple chronic health conditions increase (Wolff et al., 2002). A greater number of conditions, particularly those incurring chronic impairment, are related to lower levels of well-being (e.g., Zeiss, Lewinsohn, Rohde, & Seeley, 1996), increased depressive symptoms (Schnittker, 2005), and lower levels of life satisfaction (Jelicic & Kempen, 1999). Indeed, summed chronic illness scales are important correlates to such psychosocial indices as socioeconomic status (Lichtenstein, Harris, Pedersen, & McClearn, 1993) and social relationship quality (Ryff, Singer, & Palmersheim, 2004).

Given that number of chronic illnesses predicts a variety of risk factors for psychological distress, one potential concern with prior research examining emotion and aging is that the older adults in these samples may have inadvertently been a select group with fewer health problems than their peers (for discussion, see Gatz, Harris, & Turk-Charles, 1995). Alternatively, because health problems are more normative in later adulthood, they may be less stressful for older adults than they are for younger adults (e.g., Williamson & Schulz, 1995). Chronic health conditions are more common in later adulthood (Wolff et al., 2002), and for this reason older adults may be more likely to appraise them as "on-time" events, whereas

younger adults may consider them to be anomalous occurrences (Neugarten, 1968). When asked to rate their physical health, people tend to compare themselves to their same-age peers (Ubel, Jankovic, Smith, Langa, & Fagerlin, 2005); among individuals with chronic conditions, this practice may be more detrimental for younger adults, whose peers represent a generally healthier group, than for older adults. These differential social comparisons may, in turn, influence levels of affective well-being among people with chronic health conditions.

Health problems also require lifestyle modifications that may be more manageable for older adults than for younger adults as a result of their different social roles. Younger adults often face growing responsibilities as they establish careers and start families. For middle-aged adults, family and career responsibilities often create multiple roles and added stressors. In contrast, older adults' social roles often shift as a result of retirement and increased leisure time (see review by Hooker, 1999). These dissimilar social roles each carry a set of responsibilities that may influence how an individual reacts to changes in health status. For people raising a family and working full time, for example, attending to physical symptoms such as pain and fatigue may be viewed as more stressful and time consuming than it may be for a retiree who has raised his or her family and has more time for self-care behavior. Thus, the additional burden of chronic illness may be more difficult for younger and middle-aged adults, who often have a greater number of social roles and responsibilities than do older adults.

The Present Study

In the present study we examine age differences in well-being and affective reactivity to daily stressors among people varying in number of self-reported chronic conditions. We predict that a greater number of chronic health conditions will be associated with lower levels of well-being regardless of age, but we also predict that these effects will be more pronounced among younger adults than older adults. To our knowledge this question has not been systematically examined in prior research, but age differences in coping styles and symptom reports suggest that older adults may be less affected by chronic health conditions than are their younger counterparts. When faced with a chronic health condition, older adults report less hostility and self-blame (e.g., Felton & Revenson, 1987), fewer depressive symptoms (Schnittker, 2005), and less hopelessness in response to chemotherapy (Gil & Gilbar, 2001) than do younger adults. We thus hypothesize that age will be associated with less frequent negative affect and equal if not more positive affect when we examine participants with the same number of chronic physical health conditions. We further predict that there will be age-related decreases in affective reactivity to daily stressors across groups of people reporting the same number of chronic conditions.

To ensure that chronic health conditions are not simply mimicking the disability findings documented strongly in the existing literature (e.g., Fiske, Gatz, & Pedersen, 2003), we include a measure of functional limitations as a covariate in all analyses to examine the unique relationship between number of chronic health conditions and affective well-being. The current study will thus capture other factors associated with chronic illness that have been shown to influence well-being in past research, such as financial strains caused by medical costs, interpersonal stressors resulting from a perceived inability to fulfill certain roles, and a diminished sense of self-mastery caused by ongoing issues associated with chronic illness (Vilhjalmsson, 1998).

Methods

Participants

The MIDUS sample.—Data for this study came from a nationally representative sample of adults ($N = 4,242$) who completed the Midlife Development in the United States (MIDUS) survey. From this sample, 3,789 respondents completed both a telephone interview and a self-administered questionnaire; an additional 453 respondents completed only the telephone survey and thus were not included in the current study. Of the 3,789 participants, 296 were missing information on one or more of the variables of interest: chronic illness ($n = 250$), global negative affect ($n = 114$), global positive affect ($n = 111$), or age ($n = 38$). Participants with complete data ($N = 3,493$) ranged in age from 25 to 74 years ($M = 46.70$, $SD = 13.21$) and were predominantly Caucasian (86%), with the remaining participants African American (6%), other ethnicities (5.6%), or people who declined to state their ethnicity (2.5%). Over half of the participants (55.4%) reported more than a high school education, and men (49.5%) and women (50.5%) were almost equally represented in the sample. See Mroczek and Kolarz (1998) and Brim, Ryff, and Kessler (2004) for further information about the MIDUS data collection.

The NSDE subsample.—The National Study of Daily Experiences (NSDE) includes a subset of randomly chosen participants from the MIDUS sample. Of the 1,242 MIDUS respondents who were contacted, 83% ($N = 1,031$; 562 women, 469 men) agreed to participate in the NSDE. Of these, 48 had incomplete data for the chronic illness questionnaire, resulting in 983 NSDE participants in the current analyses. This subsample was similar in age ($M = 47$ years old), level of education (56.6% had more than a high school education), and ethnicity (86% Caucasian, 5.95% African American, and 8.05% reporting all other ethnic groups or who did not state their ethnicity), and it consisted of a similar percentage of women (50.5%) as in the aforementioned MIDUS sample.

Over eight consecutive evenings, NSDE respondents completed short telephone interviews about their daily experiences. The intraclass correlation (the proportion of intraindividual variability to total variability) for negative affect was .46 for the current sample, thus capturing within-person variation for analysis. For a further description of the NSDE, see research by Almeida and colleagues (Almeida, 2005; Almeida, Wethington, & Kessler, 2002).

Measures

Chronic illness.—In the MIDUS survey, participants endorsed either having (1) or not having (0) each of 27 physical conditions that were later reduced to 20 physical health condition categories. Examples of conditions are asthma, bronchitis or emphysema, diabetes or high blood sugar, ulcer, migraine headaches, and thyroid disease (see Marmot, Ryff,

Bumpass, Shipley, & Marks, 1997 for a description of these categories). We did not include mental disorders in the current analyses. Participants reported elsewhere in the questionnaire whether they had ever had cancer (either yes or no) or heart disease (defined as heart trouble suspected or confirmed by a doctor). These two additional categories resulted in a list of 22 possible health conditions. Results were positively skewed, with almost half of the sample reporting either no or one chronic health condition (47.6%). For this reason, we placed participants into ordinal categories of zero, one, two, three, or four or more conditions. Although 13.1% of the participants reported having more than four chronic conditions, numbers in each category over four conditions were small, making it necessary for us to pool these participants together.

Functional limitations.—Participants indicated on a 4-point scale, ranging from 1 (a lot) to 4 (not at all), the extent to which their health limited their ability to do each of nine activities: lifting or carrying groceries; bathing or dressing oneself; climbing several flights of stairs; bending, kneeling, or stooping; walking more than a mile; walking several blocks; walking one block; participating in vigorous activities; and participating in moderate activities. We reverse coded the scores, such that higher scores indicated greater impairment. Results were positively skewed, with 35.1% of the sample reporting no functional limitations. We placed participants into three groups: a nonimpaired group of participants with no functional limitations ($n = 1{,}226$); a mildly impaired group of participants reporting some limitations ($n = 1{,}567$); and a moderately impaired group consisting of participants reporting between some and a lot of limitations ($n = 699$).

Global and daily negative affect.—We measured global and daily negative affect with the Non-Specific Psychological Distress Scale (Kessler et al., 2002; Mroczek & Kolarz, 1998), developed from existing validated instruments. The scale was developed with the use of item response models and factor analysis that yielded a single factor structure representing current, general psychological distress; it was validated in eight separate administrations, sampling from different populations (for further psychometric information, refer to Kessler et al. and to Mroczek & Kolarz). The scale includes six emotion descriptors: worthless, hopeless, nervous, restless or fidgety, that everything was an effort, and so sad that nothing could cheer you up. For global negative affect, respondents indicated how much of the time they experienced each emotion during the past 30 days, on a 5-point scale anchored at 1 (none of the time) and 5 (all of the time). We calculated mean scores across items for each participant, with $\alpha = 0.87$. For daily negative affect, we asked participants how frequently these same six emotions or emotion descriptions had been experienced during the past 24 hours.

Global positive affect.—We assessed global positive affect by asking participants to rate on a 5-point scale, ranging from 1 (none of the time) to 5 (all of the time), how much of the time during the past 30 days they felt each of the following six emotions: cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, and full of life. We calculated mean scores for these six emotion descriptors for each participant, resulting in a global positive affect score with high reliability: $\alpha = 0.91$. We did not collect positive affect data during the nightly interviews. For further information regarding this scale, refer to Mroczek and Kolarz (1998).

Daily stressors.—We assessed daily stressors through the semistructured Daily Inventory of Stressful Experiences (Almeida et al., 2002). The inventory consists of a series of seven stem questions asking whether certain types of daily stressors had occurred in the past 24 hours, such as a problem in the home or an argument with someone, along with a set of interviewer guidelines for probing affirmative responses that were subsequently coded by experts. This coding technique distinguished between a stressful event (e.g., conflict with spouse) and the affective response to the stressor (e.g., crying or feeling sad). We discarded approximately 5% of the reported stressors because they were either solely affective responses or they were identical to stressors that were previously described on that day. For each daily interview, we classified individuals who responded negatively to all stressor questions as having experienced no stressors (0) and those responding affirmatively to any as having experienced a stressor (1).

Reactivity to stressors.—Reactivity is the likelihood that an individual will show emotional reactions to daily stressors (Almeida, 2005; Bolger & Zuckerman, 1995). In this sense, stressor reactivity is not defined as high levels of negative affect but is operationalized as the within-person relationship between stressors and negative affect. Reactivity, therefore, is a dynamic process that links stressors and affect over time. Individuals differ in their environments, and their resources can either limit or enhance coping strategies in response to daily experiences (Lazarus, 1999). Thus, reactivity to stressors is likely to differ across people and across situations. In the present study, we examine how reactivity is related to both age and chronic conditions, as would be indicated by an Age $\times$ Stressor interaction and as Chronic Condition $\times$ Stressor interactions in the multilevel analyses.

Results

Across the sample, participants reported zero (23.7%), one (23.9%), two (17.7%), three (13.4%), or four or more (21.3%) chronic conditions. The conditions reported most often were heart disease, including high blood pressure, hypertension, and stroke ($n = 908$), arthritis, rheumatism, or other bone or joint diseases ($n = 675$), and recurring stomach trouble such as indigestion or diarrhea ($n = 664$). Least reported were varicose veins requiring medical treatment ($n = 41$), diseases of the immune system, such as lupus ($n = 50$), and gall bladder trouble ($n = 70$).

Older age was associated with a greater number of chronic health conditions ($r = .26$, $p < .001$, $n = 3{,}493$). Severity ratings were not included in the survey, but those most often reported by older adults were also more severe, as suggested by their relationship to common causes of death. For example, the probability of reporting heart disease, $\chi^2(1, N = 3{,}493) = 338.95$, $p < .001$, odds ratio = 1.06 (1.06–1.07), and cancer, $\chi^2(1, N = 3{,}493) = 115.88$, $p < .001$, odds ratio = 1.06 (1.05–1.07), increased with age. For a complete listing of type

Table 1. Percentage of Participants Reporting Chronic Health Conditions by Age Group

Type of Chronic Illness	Younger Tertile (%)	Middle Tertile (%)	Older Tertile (%)
Arthritis, rheumatism; bone or joint diseases	6.0	19.3	34.5
Asthma, bronchitis, emphysema	12.5	12.1	13.3
Constipation	5.9	5.4	6.0
Cancer	2.4	6.2	13.2
Diabetes or high blood sugar	1.8	5.1	9.2
Foot trouble	7.5	11.8	15.0
Gall bladder trouble	1.6	2.0	2.6
Hay fever	18.0	17.0	13.7
Heart problems, high BP, HT, or stroke	11.6	24.3	44.5
Hernia or rupture	1.1	2.6	4.9
Autoimmune disorders	0.9	1.8	1.6
Migraine headaches	12.2	11.6	7.0
Trouble with gums, mouth, or teeth	13.0	12.9	11.5
Piles or hemorrhoids	8.1	12.1	12.2
Sciatica, lumbago, or recurring backache	14.7	20.9	24.7
Skin trouble	9.7	10.8	13.0
Stomach trouble, indigestion, or diarrhea	19.0	18.9	19.2
Thyroid disease	1.7	3.9	7.6
Tuberculosis–other lung problems	2.2	3.3	5.3
Urinary or bladder problems	9.5	10.8	19.0
Varicose veins requiring treatment	0.8	1.2	1.6
Ulcer	2.8	3.7	5.0

Notes: Younger tertile = 25–39 years, n = 1,208; middle tertile = 40–54 years, n = 1,228; older tertile = 55–74 years, n = 1,057 . Heart problems, trouble with gums, and tuberculosis types represent combined categories. BP = blood pressure; HT = heart attack.

Table 2. Age, Chronic Health Conditions, and Global Negative and Positive Affect (N = 3,493)

Variables	β (*SE* β) Negative Affect	β (*SE* β) Positive Affect
Intercept	1.26** (.048)	3.76** (.058)
Age	−0.011** (.002)	0.008** (.002)
Health status		
1 condition	0.054 (.029)	−0.075* (.036)
2 conditions	0.111** (.032)	−0.165** (.039)
3 conditions	0.152** (.035)	−0.205** (.043)
4+ conditions	0.442** (.033)	0.454** (.040)
Education	−0.010* (.004)	−0.009 (.005)
Gender	0.056** (.020)	0.019 (.024)
Limits		
Limit 1	0.140** (.023)	−0.187** (.028)
Limit 2	0.389** (.031)	−0.337** (.038)
Interactions		
Age × 1 condition	0.001 (.002)	0.000 (.003)
Age × 2 conditions	−0.002 (.002)	0.004 (.003)
Age × 3 conditions	0.002 (.003)	0.004 (.003)
Age × 4+ conditions	−0.005* (.002)	0.007* (.003)
R^2	.17	.10

Notes: Limits refers to functional limitations, which were dummy coded in all analyses, with zero limitations serving as the reference group. Limit 1 refers to participants reporting between zero and some limitations; Limit 2 refers to participants reporting between some and a lot of limitations. *SE* = standard error.
*p <. 05; **p <. 01.

of conditions as reported by younger, middle-aged, and older adults, please see Table 1.

Global Positive and Negative Affect

Two hierarchical linear regressions examined the associations between well-being, age, and health, with negative affect as the dependent variable in the first set of regressions and positive affect as the dependent variable in the second set of regressions. We assessed chronic conditions by using an ordinal variable, such that each level (i.e., one, two, three, or four or more) was dummy coded and entered individually into the regression, with zero serving as the reference group. Covariates in the model included gender and education. Functional limitations, which was also included as a covariate, was dummy coded, with zero serving as the reference group. We included interaction terms for age and health conditions to test whether a greater number of health conditions had a more deleterious effect on the well-being of younger adults than it did on that of older adults.

Age, Chronic Health Conditions, and Global Negative Affect

Results for regression analyses examining negative and positive affect, health status, and age are presented in Table 2. Compared with people who reported no chronic conditions (i.e., the reference group), people with two or more conditions reported experiencing greater negative affect. Having one chronic condition, however, did not increase the likelihood of reporting greater negative affect. Age was associated with less negative affect overall, and a significant interaction between age and four or more health conditions emerged; this revealed that the reported negative affect for those with no chronic health conditions compared with those reporting four or more chronic conditions was far greater among younger adults than among older adults. Results are displayed in Figure 1, which also shows the main effects of lower negative affect with age for each number of chronic health conditions.

Age, Chronic Health Conditions, and Global Positive Affect

Age was associated with higher positive affect, and number of health conditions was associated with lower positive affect. A significant two-way interaction between age and four or more health conditions emerged, indicating that the difference in reports of positive affect between those with no chronic health conditions and those with four or more chronic conditions was, again, far greater among younger adults than among older adults (see Figure 2).

Daily Negative Affect and Reactivity to Daily Stressors: The NSDE Sample

We used multilevel modeling to examine associations between age, chronic health conditions, daily negative affect, and affective reactivity to stressors, using SAS PROC MIXED (SAS Institute, 1997) and estimated from unstructured covariance matrices by means of a restricted maximum likelihood method. These analyses model both between-person processes, or interindividual variability, and within-person differences, or intraindividual variability, through a two-level hierarchical model (Raudenbusch & Bryk, 2002). Level 1 represents within-

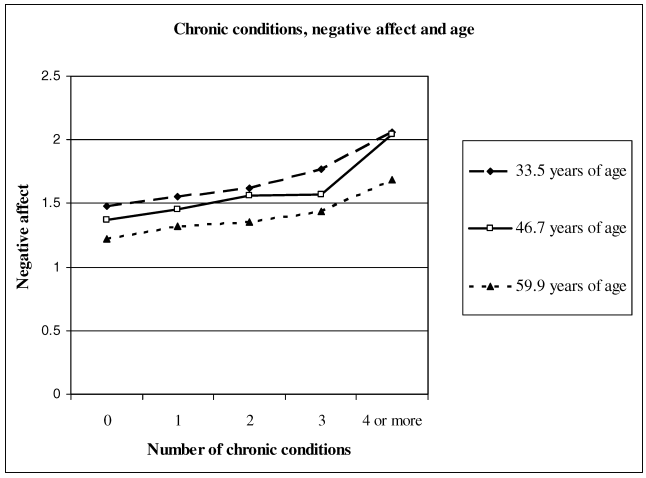

Figure 1. Reports of global negative affect according to age and number of chronic health conditions. (Ages represent $M \pm 1$ *SD* on the graph, which is for illustrative purposes; no covariates were included in the analyses.)

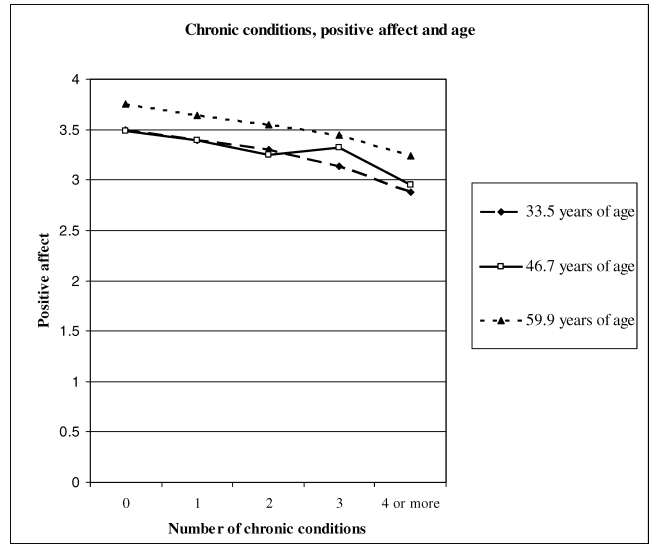

Figure 2. Reports of global positive affect according to age and number of chronic health conditions. (Ages represent $M \pm 1$ *SD* on the graph, which is for illustrative purposes; no covariates were included in the analyses.)

person variability, making it possible for one to examine how negative affect varies each day according to the events of that day, such as a stressor. Level 2 allows for the inclusion of between-person variables, such as age and health status, so that one can examine how these variables relate to Level 1 variables, such as daily negative affect. Using this technique, we can also model whether between-subject factors (such as age, gender, or the presence of a chronic condition) influence the degree to which within-person processes (such as experiencing a stressor) are associated with changes in negative affect. For a full description of the statistical methodology of multilevel modeling, refer to Raudenbusch and Bryk; for its application to daily diary paradigms, refer to Vansteelandt, Van Mechelen, and Nezlek (2005).

Variable entry was similar to the aforementioned hierarchical regressions. We first entered age (centered and continuous), stressor exposure (0 or 1), chronic conditions (with 0 as the reference group), and the covariates of functional limitations (with 0 as the reference group), gender, and education, followed by interaction terms for Stressors $\times$ Age, Stressors $\times$ Health Status, and Stressors $\times$ Health Status $\times$ Age, to examine how both age and health status may influence reactivity to daily stressors.

Complete results are presented in Table 3. The final model presented here includes only significant interactions. In this model, age was associated with less reactivity to daily stressors, as revealed by a significant Age $\times$ Stressor interaction. Stressor Exposure $\times$ Health interactions (for health $= 3$, and health $= 4$ or more) were also significant, indicating that on days when stressors were encountered, people with three or more health conditions were more reactive than were people with no chronic conditions. Moreover, among people with fewer than four chronic conditions, age was associated with less reactivity to daily stressors. For people with four or more chronic conditions, however, a significant three-way Age $\times$ Health Status $\times$ Stressor Exposure interaction emerged, revealing that older adults with multiple chronic conditions were just as reactive to daily stressors as were younger and middle-aged adults (see Figure 3).

Age Differences in Frequency of Reported Stressors

To determine if age differences in stressor reactivity could be due to frequency of daily stressors, we examined the associations between age, affect, number of chronic health conditions, and frequency of daily stressors. Health conditions were, indeed, related to greater frequency of daily stressors, $r = .14$, $p < .05$. Moreover, because older adults experienced fewer stressors, $r = .18$, $p < .001$, and the occurrence of more stressors was associated with greater negative affect, $r = .26$, $p < .001$, one concern with the current findings was that older adults with chronic health conditions reported less negative affect than did their younger counterparts merely because they experienced fewer stressors overall. We examined this possibility by using a hierarchical linear regression, with frequency of stressors as the dependent variable, and age, number of chronic health conditions, and the interaction between age and number of chronic health conditions as the independent variables. The interaction was not significant, $F(4, 968) = .034$, indicating that age and number of chronic conditions did not predict frequency of stressors. Furthermore, the pattern of results did not change when we included number of stressors as a covariate in the analyses testing the main hypotheses.

DISCUSSION

The average younger adult is healthier than the average older adult (Center on an Aging Society, 2003). Given that the physical and psychological ramifications of having a chronic health condition are well documented (e.g., Burg & Abrams, 2001; Dickens, McGowan, Clark-Carter, & Creed, 2002), the higher prevalence rates with age stand in contrast with age-related maintenance or improvements in affective well-being.

Table 3. Age, Chronic Health Conditions, Exposure to Stressors, and Affect Reactivity

	Daily Negative Affect	
Variables	β	*SE* β
Intercept	.166***	.033
Age	−.003***	.001
Health status		
1 condition	.013	.017
2 conditions	−.013	.019
3 conditions	.055	.035
4+ conditions	.117***	.030
Stressors	.099***	.009
Education	−.013	.003
Gender	−.002	.013
Limits		
Limit 1	.001	.016
Limit 2	.105***	.022
Interactions (affective reactivity)		
Stressors × Age	−.003**	.001
Stressors × 3 conditions	.100***	.022
Stressors × 4 conditions	.058***	.018
Stressors × Age × 3 conditions	.002	.002
Stressors × Age × 4 conditions	.004**	.001
Deviance	2071.7	
AIC	2079.7	
BIC	2099.3	
R^2	.13	

Notes: Limits refers to functional limitations, which were dummy coded in all analyses, with zero limitations serving as the reference group. Limit 1 refers to participants reporting between zero and some limitations; Limit 2 refers to participants reporting between some and a lot of limitations. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; *SE* = standard error; $n = 983$.

*$p < .05$; **$p < .01$; ***$p < .001$.

Including number of health conditions as a covariate in analyses examining age and affect allows researchers to examine affect separate from health processes, but questions remain: Does the average older adult who has two or more chronic conditions, for example, report higher affective well-being than the average healthy younger adult? As the number of chronic health conditions increase, does the age-related advantage for well-being disappear? The current study examined age differences in affective well-being across groups of people reporting zero, one, two, three, or four or more chronic health conditions. Findings suggested age-related improvements for most outcomes, with the exception of daily affective reactivity for those individuals with the greatest number of illnesses.

Age, Chronic Health Conditions, and Affective Well-Being

Age was associated with less negative affect and more positive affect at every level of health condition, with differences strongest among people with multiple (i.e., four or more) chronic conditions. Additionally, age was related to lower negative affect in response to daily stressors among people reporting fewer than four chronic conditions. These results demonstrate that previous findings of age-related differences in affective well-being are not an artifact of studying a select group of healthy older adults. As displayed in Figure 1, levels of global negative affect reported by older adults with three chronic conditions were similar to the levels reported by younger adults with no chronic conditions. This finding is particularly notable as older people in the current sample had higher rates of the most life-threatening chronic health conditions, such as cancer, heart disease, and diabetes (see Table 1). Indeed, these findings at first appear contrary to many studies indicating that older age is related to additional burdens when one is coping with chronic health problems (see review by Rook, Charles, & Heckhausen, 2006). Studies suggesting age-related advantages in cognitions and behaviors related to emotion regulation, however, may help to explain why older adults may cope better with health problems.

Reserve Capacity

Originally intended to describe biological processes, the concept of reserve capacity has been adopted by social scientists to explain the social and psychological resources people use to cope with stressful situations (e.g., Gallo & Matthews, 2003). In this model, people accumulate a reserve of resources throughout their lives that enables them to withstand adverse circumstances. When confronted with a stressor that taxes one's resources beyond their usual level, this reserve capacity enables an individual to maintain well-being. When circumstances become too challenging, however, they can overwhelm an individual beyond these resources, resulting in diminished affective well-being (Grundy, 2006).

Structuring the Social World to Maintain Affective Well-Being

Older adults place a greater emphasis on emotion regulation goals and engage in strategies that allow for the preservation of well-being (Carstensen, Isaacowitz, & Charles, 1999), including proactively structuring the environment to avoid stressors. Occasionally, however, difficult situations cannot be avoided. When avoidance is impossible, researchers have found that age is related to other resources that may also enhance emotion regulation. For example, older adults, relative to younger adults, are more likely to reappraise stressful events in a positive light (Folkman et al., 1987) and to view their previously chosen options as having more positive and fewer negative attributes (Mather & Johnson, 2000). Even when older adults appraise situations as being stressful, they do not report the same level of severity as do their younger counterparts, despite their being no differences in objective severity (Almeida & Horn, 2004).

In the current study, older adults with zero, one, two and even three chronic health conditions were less reactive to daily stressors than were their younger counterparts. Similarly, global affective well-being was higher among older adults at every level of chronic illness. These findings suggest that older adults may have a greater psychosocial reserve capacity than do their younger counterparts. Studies revealing age-related advantages in coping strategies, goal adjustment, and social comparison offer support for this possibility. Compared with younger adults, older adults utilize a greater repertoire of coping strategies (Blanchard-Fields, Jahnke, & Camp, 1995; see review by Carstensen, Fung, & Charles, 2003), are more apt to adjust their

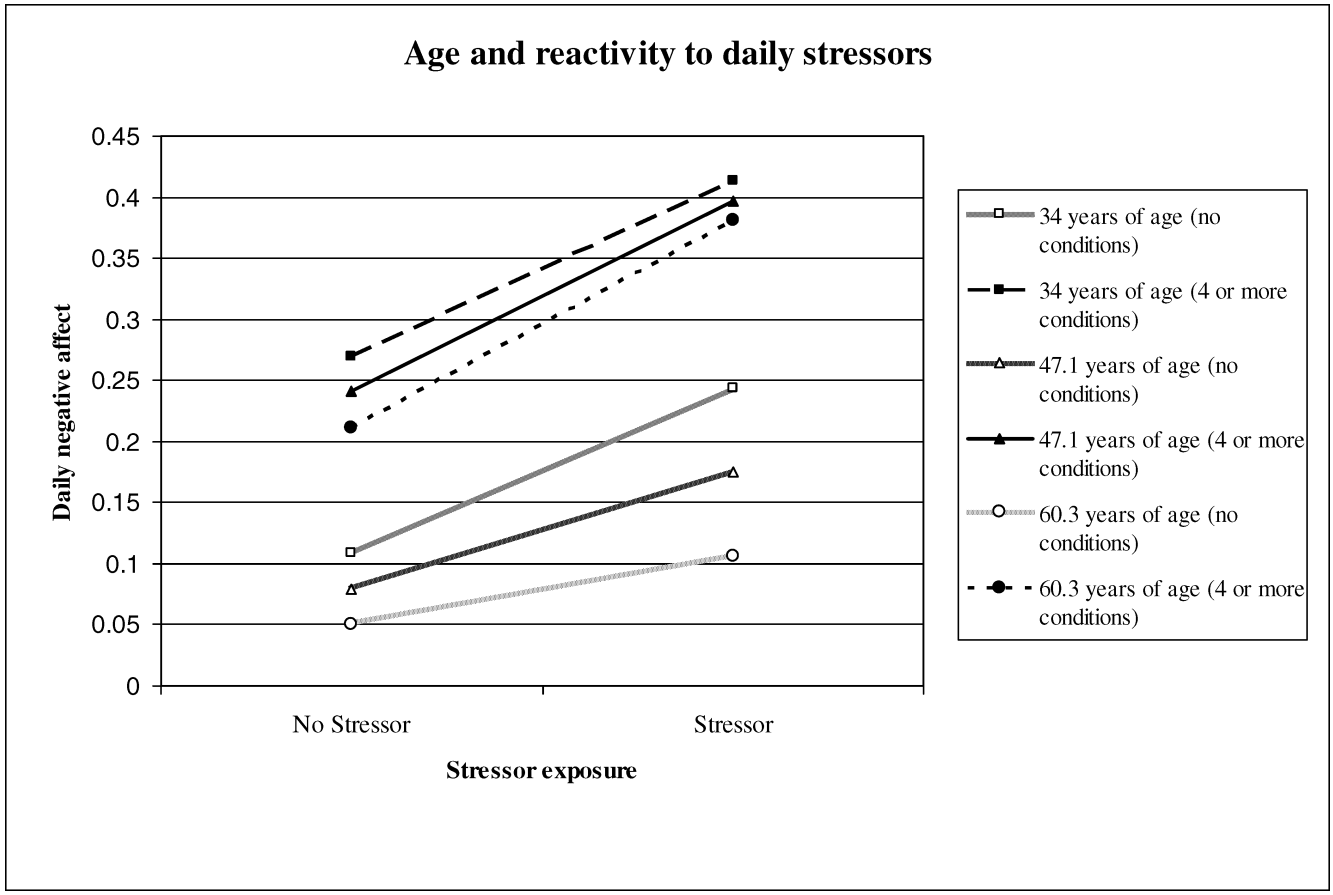

Figure 3. Reports of daily negative affect by age, whether a stressor was encountered, and whether an individual reported four or more chronic conditions. (Ages represent $M \pm 1$ *SD* on the graph, which is for illustrative purposes; no covariates were included in the analyses.)

goals if the need arises (Heckhausen & Schulz, 1995), and are more likely to engage in less upward and more downward social comparison (Heckhausen & Krueger, 1993). Mechanisms such as these may enable older adults to preserve affective well-being when they are faced with a stressor and may be particularly useful in the context of chronic health problems. For example, an illness diagnosis may necessitate lifestyle modifications and goal adjustments. These changes may be easier for older adults, who are more flexible and less resistant to altering their planned trajectories (Heckhausen & Schulz).

When the Structure Begins to Crumble: Testing the Limits of Reserve Capacity

Using strategies such as these may enable older adults to preserve affective well-being; at some point, however, situations may become too difficult for these strategies to work. Among people reporting four or more chronic conditions, older adults reported higher global affective well-being than did younger adults; when examining reactivity to daily stressors, however, we found that older adults with four or more chronic health conditions were just as reactive as were their younger counterparts. One possible explanation for this discrepancy between global affective well-being and daily stressor reactivity is that they represent two different affective constructs. After experiencing a stressor, people need to downregulate the consequences of the negative event. The emotion question in the current study asked individuals about the duration of time spent experiencing negative emotions. Similar to prior studies (Carstensen et al., 2000), healthy older adults in this study reported a relatively shorter duration of negative emotions following a stressor than did younger adults. Older adults with multiple physical illnesses, however, reported reactivity similar to that reported by younger adults and longer reactivity compared with healthy older adults. For vulnerable older adults, processes of emotion regulation may take longer for them to employ in response to a stressor. Taking a longer time to recover from a negative event may not influence overall evaluations of well-being in general, as captured by global indices, but would be captured by prolonged stressor reactivity.

Age Differences in the Frequency of Daily Stressors

Increasing age was related to the experiencing of fewer stressors overall, a finding that may be indicative of the changing number of responsibilities over the adult life span. For example, younger adults, who are establishing their careers, raising their families, and perhaps taking care of aging parents, may face a greater number of challenges at this stage in their lives. In contrast, older adults may benefit from experiencing

fewer conflicting roles (see review by Hooker, 1999). Nevertheless, even with fewer stressors experienced, older adults with four or more conditions were similarly reactive to these stressors as were younger adults.

Multiple Health Conditions

We hypothesized that successively higher levels of chronic conditions would be accompanied by decreased affective well-being and heightened reactivity to daily stressors. Results, however, indicated that the presence of one chronic condition was no different in its association with either negative affect or stressor reactivity than was having no chronic conditions. This finding supports research documenting that it is not chronic illness, per se, but rather the presence of multiple chronic health conditions that influences affective well-being (e.g., Mehnert et al., 1990; Ubel et al., 2005). The compounding effects of each additional illness may explain this finding. Compared with people who have one chronic health condition, people with multiple conditions report accomplishing less than they would like, are less likely to work, have lower incomes, and spend a greater proportion of their time at home sick (Center on an Aging Society, 2003). In the current study, people with three or four conditions also reported encountering more daily stressors than did people with fewer than three conditions. These correlates may explain why affective well-being is lower among people with multiple chronic conditions.

Limitations

The study did not include additional information that would further enhance our understanding regarding how living with a chronic health condition is associated with well-being, and how this relationship may vary by age. First, studying these processes over time, particularly among people before and after the onset of chronic health conditions, would help to establish potential causal links that cannot be examined with cross-sectional data. In addition, the current study included people ranging from 25 to 74 years of age. Rates of "minor" depression increase with age (Hybels, Blazer, & Pieper, 2001), a finding that may, in part, be due to higher rates of chronic health problems such as frailty and functional disability. To explore this possibility, future studies should examine people older than 74 years of age.

Investigating other factors related to health conditions, such as time since diagnosis, illness severity, and pain symptoms, would also provide additional insight. Some researchers find that people who are diagnosed with an illness earlier in life are more likely to report lower levels of well-being in later life (e.g., Schnittker, 2005); alternatively, it is also possible to adjust to life circumstances, such that a chronic condition may no longer elicit the same emotional response over time as it did immediately after diagnosis. Because we did not collect time since illness diagnosis in the current study, its role as either a protective or a risk factor is unknown. Severity of illness would also enhance this research, as mortality issues as well as greater associated medical complications may strongly influence well-being. Furthermore, we did not include pain experience in the current study. Chronic pain is associated with heightened affective distress (Robinson & Riley, 1999), and because age is related to differences in chronic pain experience (Riley, Wade, Robinson, & Price, 2000), pain may play a role in these age differences.

Conclusions

Chronic health conditions are associated with negative affect. This association, however, is tempered by age. At every level of illness, older adults report higher levels of global affective well-being and lower levels of daily negative affect than do younger adults. At some point, however, even the best strategies may not combat the overwhelming effect that the combination of multiple chronic conditions and exposure to stressors can have on daily affective well-being.

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