

## Women's daily physical health symptoms and stressful experiences across adulthood

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### Abstract

This study investigated the extent to which the experience of daily stressors was related to women's age and daily health symptomology, such as flu and cold symptoms. Respondents were 562 women (aged 25–74) who were a part of the National Study of Daily Experiences (NSDE), a telephone diary study examining daily stressful events. The respondents were interviewed by telephone on eight consecutive nights, which resulted in a total of 3978 days of information analysed. Overall, women had at least one physical symptom on 59% of the study days and at least one daily stressor on 40% of the study days. Results from a series of ANOVAs showed that young and middle-aged women reported more frequent physical symptoms than did the older women. This age pattern was similar to the incidence of daily stressful experiences. Furthermore, daily stressors, specifically interpersonal tensions, were shown to significantly mediate the age–symptom relationship. These findings suggest that women who are exposed to events that threaten their interpersonal relationships are at a greater risk for symptoms of ill-health.

**Keywords:** *Women, adulthood, psychosocial factors, stress, daily health symptoms*

The present study examines the frequency of daily physical health symptoms and stressful events across adulthood in women. Efforts to understand the age–health relationship among women traditionally stems from a biomedical viewpoint, where biological or physiological events of development are seen to be the most significant factors predicting changes in women's health (Defey et al., 1996; Zimmerman, 1987). This argument builds upon findings that suggest that ill-health is associated with or triggered by endocrine changes in women due to menstruation (e.g., menstrual migraine, premenstrual syndrome) in younger women, or due to menopause in older women.

While studies based on this perception have shed light on the physiological nature of women's health, some current researchers are approaching the study of women's physical

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health from a psychosocial model, which considers the role of life experiences of women, including chronic stress, marital status, income, education, and ethnicity (e.g., Brown & Harris, 1989; House et al., 1988; Older Women's League, 1988). This view suggests that circumstances in one's life exposes one to certain stressors that may tax or exceed a person's resources, which in turn, endangers health status and functioning (Lazarus & Folkman, 1984). In the present study, we consider the role of day-to-day stressors in age-related patterns of women's daily physical health.

Daily symptoms, such as headaches and musculoskeletal problems, have been shown to be significant portents of health status by exacerbating more major health problems, and serving in less insidious ways by disrupting one's day-to-day activities, satisfaction, and well-being (Verbrugge, 1986; 1989). Larsen and Kasimatis (1991) point out that examining daily health is crucial because more people are certain to experience common illnesses, such as colds and strained backs, than they do more major conditions, such as, heart attacks and cancer. Thus, while these more common illnesses may be less severe than chronic diseases, they nevertheless represent meaningful and attention-gathering events in the everyday lives of people. However, there is little national data for symptoms and discomforts of daily life, even though these symptoms are the majority of the ill-health experiences during midlife (Merrill & Verbrugge, 1999).

The main objective of this study is to examine age-related patterns of daily physical symptoms. Verbrugge (1986) reported that younger women are more likely to report having headaches, while middle-aged women are more likely to experience musculoskeletal, especially arthritic, and respiratory symptoms as their most frequent daily ailments. For older adults, the foremost daily symptoms are musculoskeletal in nature, including body aches, fatigue, and chest pain that are not related to the heart. Circulatory diseases also make their first appearance as a high rank cause of daily symptoms in the older age groups. With regard to the frequency of symptoms, research findings are mixed. While some studies report peak rates of physical symptoms during middle adulthood (Hannay, 1979), others do not (Rakowski et al., 1988). It is important to note that these studies had their limitations in the sense that they were either based upon retrospective data, where symptoms were typically recalled over weeks or months, or they used small community-based samples. In the present study, we address these limitations by examining the age-related patterns of day-to-day health symptoms in a U.S. national sample of adult women, ranging in age from 25 to 74 years. Our daily diary design remedies previous methodological limitations by allowing our respondents to report on daily symptoms closer to their occurrence (Stone et al., 1991).

The second purpose of this study is to examine how daily stressors account for age-related patterns in daily health symptoms. Research has shown that the incidence of chronic conditions, including osteoporosis, cardiovascular disease, and joint stiffness, increase as women age (Gallant & Derry, 1995; Merrill & Verbrugge, 1999; Older Women's League, 1988). However, age differences in *daily* symptomology may be less tied to biological factors, and more strongly linked to environmental stressors. If stressors do have a significant influence on the age-health relationship, then we might expect the frequency of health symptoms to reflect the same pattern that characterizes the incidence of daily stressful experiences across adulthood.

### *Age, stressors, and physical health*

The concept of stress in relation to health and illness has long been recognized (e.g., Lief, 1948). Research has documented that environmental changes can evoke a sequence of

biological responses that directly and indirectly contribute to physical symptoms. Specifically, it is assumed that stressors cause the body to adapt, leading to tension on the body and increased risk of illness (Lepore et al., 1997; McEwen & Stellar, 1993; Selye, 1956). For example, while under stress, the adrenal medulla will secrete epinephrine and norepinephrine in response to sympathetic stimulation. These hormones have actions that enhance the cardiac and the respiratory functions, increase blood sugar levels, and increase blood volume. Other organs of the endocrine system, including the adrenal cortex and the thyroid gland, release hormones (corticoids and thyroid hormones) that can also inhibit inflammation and immune functioning. Not surprisingly, a large body of literature has shown that major life events (e.g., job loss, marital disruption, death of a loved one) predict a variety of physical, mental, and social dysfunctions, including hypertension (Chiriboga, 1989; Markovitz et al., 1993), increased risk for mortality and morbidity (e.g., Kaplan, 1985), arterial damage (Manuck et al., 1995), increased production of interferon, which may lead to an increased risk of cancer (Schleifer et al., 1985), general psychiatric symptomology (Chiriboga, 1984; Dohrenwend & Dohrenwend, 1981), and clinical depression (Brown & Harris, 1986).

Research has highlighted age differences in the frequency and nature of stressful life events. Several investigators have shown that younger adults take on a number of roles within a shorter period of time (e.g., marriage, parenthood, work), whereas the middle-aged and older adults typically experience role changes and losses, including the departure of children, caretaking of parents, loss of family and friends, and retirement (Lowenthal et al., 1975; Rossi, 1980). It has also been reported that younger people experience more events related to school, work, finances, and changes in their personal relationships and living conditions. Older individuals, on the other hand, report experiencing more stressful events related to environmental and social issues (Henderson et al., 1981; Hultsch & Plemons, 1979).

More recent work in the area of stress has focused on the day-to-day experiences of people; that is, the stressors and the hassles of everyday life (e.g., Almeida & Kessler, 1998; Banez & Compas, 1990; Bolger et al., 1989; Evans & Nies, 1997; Stone et al., 1991). Daily stressors have been defined as "environmental demands that tax or exceed the adaptive capacity of an organism, resulting in psychological and biological changes that may place persons at risk for disease" (Cohen et al., 1995, p. 3). These include events, such as child or spousal tensions, work deadlines, home overloads, and getting caught in a traffic jam. This literature indicates that, like any other major life events, there exists a relationship between daily stressor exposure and physical health (DeLongis et al., 1988). In one earlier study, Holmes and Holmes (1970) reported that daily stressors were associated with minor physical complaints, including the common cold. Lazarus and Folkman (1984) reported that daily events exert a stronger influence on health than does exposure to major life stressors. It seems that daily stressors function by exerting not only separate, direct effects on health, but also by piling up over a series of days which cumulatively tax one's frustration tolerance (Kanner et al., 1981), and which result in more serious stress reactions, such as anxiety and depression (Lazarus & DeLongis, 1983; Lazarus & Folkman, 1984; Pearlin et al., 1981). Daily stressors have also been found to be associated with negative mood (Bolger et al., 1989), daily distress (Almeida & Kessler, 1998), and physical health problems (Larsen & Kasimatis, 1991; Lepore et al., 1997; Stone et al., 1987). Further, there is some evidence to suggest that the frequency and the type of daily stressors are also age-graded. Results from a recent study documents that older adults tend to have fewer daily stressors in general (Almeida & Horn, 2004).

Given that both age and stress exposure are critical variables that influence physical health, the present study underscores the value of examining the specific mechanism underlying women's daily health symptomology across adulthood. Viewing women's health via a psychosocial lens, the nature of environmental influences on women's health is considered. The present study thus investigates the potential mediating role of daily stressors in the age–health symptom association.

The current study has three main questions: (1) Are there any age differences in the frequency of daily physical health symptoms? (2) Are there any age differences in the frequency of daily stressful events? and (3) To what extent does the frequency of daily stressors mediate the link between age and the frequency of daily physical health symptoms?

## **Method**

### *Participants*

Participants were 562 adult women, ranging in age from 25–74 years, who were a part of the National Study of Daily Experiences (NSDE), a daily telephone diary study. The respondents in the NSDE had previously participated in the Midlife in the United States (MIDUS) Survey, a nationally representative telephone–mail survey of 3032 people in the age range of 25–74, carried out in 1995–1996 under the auspices of the John D. and Catherine T. MacArthur Foundation Research Network on Successful Midlife Development (for descriptions of the MIDUS project, see Keyes and Ryff, 1998; Mroczek and Kolarz, 1998; Lachman and Weaver, 1998). The respondents for the present study were recruited randomly from the MIDUS and received a check for \$20 for participating in the project.

To assess age differences, three age groups were created: young women, aged 25–39 years ( $n = 186$ ), middle-aged women, aged 40–55 years ( $n = 200$ ), and older women, aged 56–74 years ( $n = 176$ ). Attempts were made to distribute the women across the three age groups as evenly as possible, while maintaining consistency with current literature regarding those ages that constituted each period of adulthood. Overall, 60% of the women were currently married. Compared to the younger and the middle-aged women, a higher proportion of older women had been widowed. Younger women comprised the largest proportion of women who currently have at least one child under the age of 18, living at home. Ninety percent of the sample described themselves to be White or Caucasian. As for their educational status, 40% reported they had received at least some high school education or had completed high school. The remaining reported that they had either completed an associate's or a bachelor's degree, or had had a graduate level training. Approximately two-thirds of the sample reported a household income ranging between \$21,000 to \$74,000 ( $M = \$48,800$ ;  $SD = \$20,000$ ) and 82% reported that they were employed. Older women were more likely to report that they were not employed.

### *Design and procedure*

Respondents completed the short telephone interviews about their daily experiences on each of the eight consecutive evenings. On the final evening of interviewing, the respondents also answered several questions about their previous week. The interview included questions about daily experiences in the past 24 h concerning physical health symptoms and stressors. Data collection spanned over an entire year (March 1996 to March 1997) and consisted of 40 separate “flights” of interviews with each flight representing the eight-day

sequence of interviews from approximately 38 respondents. The initiation of the interview flights was staggered across the days of the week to control for the possible confounding between day of the study and day of week. Of the 1242 MIDUS respondents we attempted to contact, 1031 agreed to participate, yielding a response rate of 83%. Of these individuals, 562 were women, who made up the sample for the present study. Interviews from these women resulted in the analysis of 3978 days of information.

### Measures

*Daily physical health symptoms.* Daily physical symptoms were assessed using a shortened version of Larsen and Kasimatis' (1991) symptoms checklist. The present scale assessed physical health symptoms in five categories: (a) headaches, backaches, and muscle soreness; (b) cough, sore throat, fever, chills, or other cold and flu symptoms; (c) nausea, poor appetite, or other stomach problems; (d) chest pain or dizziness; and (e) other physical symptoms or discomforts. Open-ended responses to the other physical symptom question were subsequently coded and placed into an existing category or left if no category existed. Each day respondents indicated how frequently they experienced each symptom over the past 24h on a 5-point scale from "none of the time" to "all of the time" (Cronbach's  $\alpha = 0.71$ ). From this information, we assessed how often at least one of the symptoms occurred. Respondents were given a score of "1", if they reported the occurrence of any types of symptoms at least some of the time that day and "0", if they did not. The percentage of days respondents were given a "1" was then calculated.

*Daily stressors.* Daily stressors were assessed through a semi-structured Daily Inventory of Stressful Events (DISE, Almeida et al., 2002). The inventory consisted of a series of seven "stem" questions asking whether certain types of events (e.g., tensions, home events, or work events) occurred within the previous 24h along with a set of guidelines probing for affirmative responses. The aim of the interviewing technique was to acquire a short narrative of each event that was then used to rate various components of the events. For example, if a respondent said that a work stressor had occurred, she was then asked follow-up questions, such as, "Could you tell me a little about the background to that?" or "What about this? Do you think most people would consider stressful?" All interviews were tape-recorded, transcribed and then coded. In the present analysis, information regarding the type of event experienced will be used. Based on this information two stressor variables were created: the *frequency* of any stressors and the *types* of stressors. It should be noted that non-events, or responses triggered by sad memories or recollections of the past, were not coded.

*Any Stressors* were created by dummy coding study days into two categories, such that respondents were given a score of "1", if they provided an affirmative response to any of the seven stem questions and "0", if they did not. Next, we calculated the percentage of days where at least one stressor had occurred. We then classified the stressors into five types based on the nature of the stressors: Interpersonal Tensions (e.g., arguments, disagreements, unresolved tensions), Work Stressors, Home Stressors, Network Stressors (events happening to a close friend or relative) and Miscellaneous Other Stressors (e.g., general mistakes and confusion, news events, weather-related). Two expert raters coded approximately 20% of all the stressors. The inter-rater reliability for the types of stressors was 0.90 (Kappa coefficient of agreement). The frequency of *Type of Stressors* was calculated by taking the percentage of days each classification of stressor occurred.

**Results**

The main objective of these analyses was to examine whether exposure to daily stressors accounted for age differences in daily health symptoms. Thus, we sought to evaluate between-person differences in daily stressors based on age. It is important to note that the daily diary design permits the assessment of within-person variation across occasions of measurement, but because the focus of this study was between-person differences rather than within-person processes, we aggregated the daily data across persons.

*Descriptive statistics*

Table I presents the daily frequency of physical symptoms and daily stressors. The first column gives the results for the entire sample and the next three columns show the daily frequency of each health and stressor variable for the three age groups. Overall, women reported to have physical symptoms on 59% of the study days (approximately 5 of the 8 study days) and any stressors on 40% of the days (approximately 3.5 of the 8 study days). Interpersonal tensions were the most frequent specific type of stressors, occurring on 23% of the study days, followed by work and home stressors.

The final three rows present the results for the age patterns. First, a series of regressions were conducted using the linear and the quadratic functions of age of the respondent. These analyses were followed by a set of ANOVAs, using the age categories to better understand the nature of patterns. The regression analyses showed significant linear and quadratic effects for physical health symptoms, any stressors and work stressors. There was also a linear age effect for interpersonal tensions. To test for significant age patterns, a series of one-way ANOVAs with follow-up Tukey tests were conducted. The last column in Table I provides a summary of these findings. The results revealed several significant age differences. Results for physical symptoms suggested a young-to-midlife plateau, whereby younger and middle-aged women reported significantly more frequent days of physical symptoms than did the older group. A similar pattern emerged for the frequency of any daily stressors, whereby young and middle-aged women reported significantly more frequent days of any stressors, as compared to older women.

Table I. Frequency of daily symptoms and stressors.

Measure	Total sample N = 562	Young N = 186	Middle N = 200	Older N = 176	Age $\beta$	Age pattern	
						Age <sup>2</sup> <i>b</i>	<i>F</i>
(A) Physical health symptoms	59%	61%	61%	53%	-0.09*	-0.06*	2.85* Y + M > O
(B) Types of daily stressors:							
Any stressors	41%	45%	44%	32%	-0.20**	-0.69**	15.41** Y + M > O
Interpersonal tensions	23%	28%	24%	17%	-0.21**	0.01	14.48** Y > M > O
Work stressors	9%	10%	12%	4%	-0.16*	-0.32**	14.03** Y + M > O
Home stressors	9%	10%	9%	8%	-0.07	0.02	NS
Network stressors	7%	6%	7%	7%	0.03	0.01	NS
Miscellaneous other	6%	7%	8%	5%	-0.05	0.02	NS

Note: Values in column 6 are significant *F* values. Y = young adults; M = middle-aged adults; O = older adults. NS = not significant. N = 568.

\**p* < 0.05; \*\**p* < 0.01.



Table II. Regression analyses of daily stressors on the frequency of physical health symptoms.

	Frequency of physical symptoms			
	<i>b</i>	(se)	$\beta$	$R^2$
Any stressors	0.38**	(0.05)	0.30	0.10**
Interpersonal tensions	0.33**	(0.07)	0.21	
Work stressors	-0.02	(0.10)	-0.01	
Home stressors	0.24*	(0.11)	0.09	
Network stressors	0.24*	(0.12)	0.09	
Miscellaneous other stressors	0.22	(0.13)	0.08	0.10**
Severe stressors	0.37**	(0.08)	0.20	0.04**

*N* = 568;  $\beta$  = Standardized regression coefficient.

\* $p < 0.05$ ; \*\* $p < 0.01$ .

Because one might not expect older women to report fewer physical symptoms than the younger or middle-aged women, we conducted additional analyses to examine whether other health patterns (i.e., chronic conditions) were more consistent with our previous findings. Therefore, we explored age differences in chronic health conditions using data from the Midlife in the United States (MIDUS) survey. We calculated the frequency of any chronic conditions from a list of 29 common conditions, including arthritis, hypertension, migraine headaches, and diabetes. Consistent with previous literature, a linear increase in the frequency of chronic conditions was found,  $F(2, 532) = 11.48, p < 0.01$ .

We next examined age differences in the types of daily stressors that respondents experienced. As shown in Table II, two significant age patterns were found. First, a linear decline characterized the frequency of interpersonal tensions, such that age was negatively associated with the occurrence of interpersonal tensions. Secondly, a young-to-midlife plateau pattern was observed for work stressors. As described above, this pattern reflected that the younger and middle-aged women experienced a greater percentage of work stressors, as compared to the older group of women.

*Mediating role of daily stressors on the relationship between age and daily physical health symptoms*

The next step in the analysis examined the extent to which daily stressors mediated the relationship between age and their daily physical symptoms. Several conditions must be met in order for a variable to be classified as a mediator (Baron & Kenny, 1986). First, there must exist a significant relationship between the predictor variable (age) and the criterion variable (frequency of physical symptoms). Second, the predictor variable must be significantly related to the mediator variable (daily stressors). Third, the criterion variable must be significantly related to the mediator variable. Finally, the bivariate relationship between the predictor variable and the criterion variable must be reduced to a nonsignificant level when the mediator variable is controlled for. Given that age was found to be a significant predictor of both the frequency of physical symptoms and the frequency of any stressors, the next step was to determine whether physical symptoms and daily stressors were significantly associated.

Table II presents the unstandardized (*b*) and standardized ( $\beta$ ) regression coefficients from three sets of multiple regression analyses. The frequency of any of the stressors was a significant predictor of the frequency of physical symptoms, accounting for 10% of the variance. In the second set of regressions, the frequency of physical symptoms was regressed

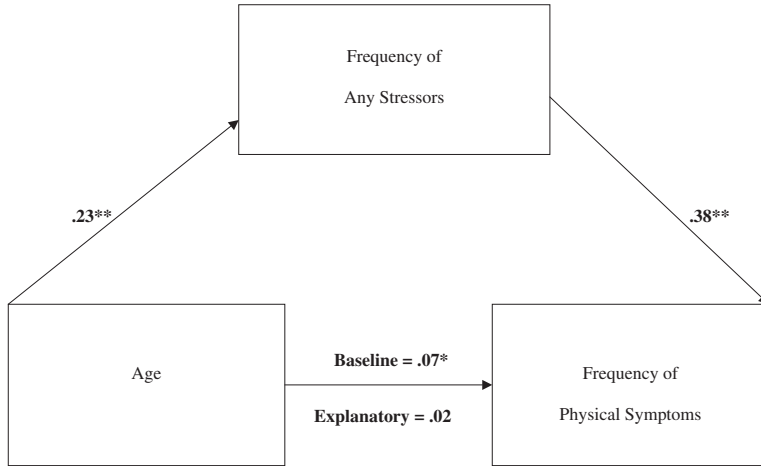


Figure 1. A model of the mediating role of the frequency of any stressors in the relationship between age and the frequency of physical health symptoms. \* $p < 0.05$ ; \*\* $p < 0.01$ .

on the type of daily stressors. Interpersonal tensions had the largest unique relationship with the frequency of physical symptoms. Women who experienced a relatively greater incidence of interpersonal tensions were also more likely to experience a greater frequency of days in which physical symptoms occurred. These stressors were found to be significant predictors of the frequency of physical symptoms, accounting for 4% of the variance.

Given that the first two conditions of mediation were met, the next step was to regress the frequency of physical symptoms on both age and daily stressors. Because young and middle-aged women showed similar frequencies of daily physical symptoms, we simplified the mediation analyses by creating a dummy variable for age, whereby both young and middle-aged women were assigned a code of “1”, and the older women were assigned a code of “0”. This binary coding provides a directly interpretable coefficient that represents the mean differences between the young and middle-aged women as compared to the older women.

To test for mediation, we compared two sets of regressions. In the first step, we calculated a baseline model of the relationship between age and the frequency of physical symptoms. In the explanatory model, we included the mediator (i.e. daily stressor variables) and then compared the age coefficient with the baseline model. Figure 1 shows the results using the frequency of any stressors as the mediator. Because the predictor variable is dummy coded, the coefficient in the baseline model indicates that young and middle-aged women experienced physical symptoms on 7% more days than the older group of women, which translates to an extra symptom day every two weeks. After controlling for the frequency of daily stressors, the effect decreased to a non-significant 2% difference. Thus, if women experienced the same frequency of daily stressors, they would not significantly differ in their frequency of physical health symptoms.

The regression coefficients for the model of the mediating role of the different types of stressors are displayed in Figure 2. The analyses indicated that the previously significant relationship between age and physical health symptoms (baseline) was reduced to nonsignificance (explanatory), with interpersonal tensions serving as the only significant mediator. Specifically, interpersonal tension was the only type of stressor that accounted for the relationship between age and frequency of daily physical symptoms. Thus, if older women



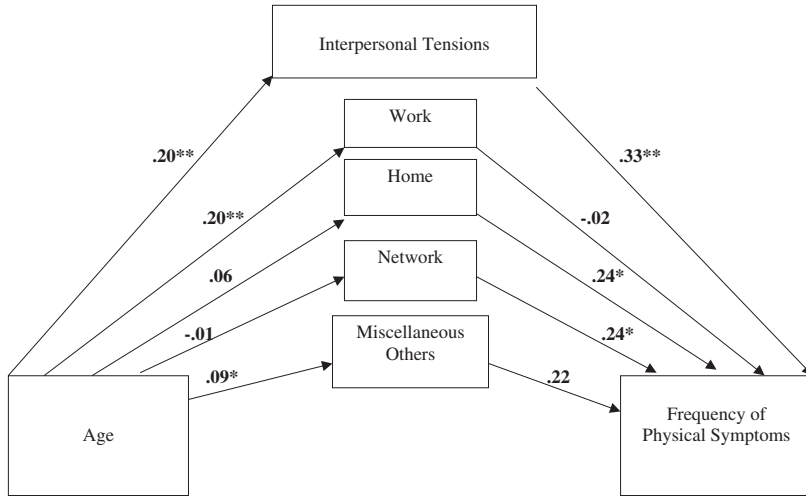


Figure 2. A model of the mediating role of the frequency of types of stressors in the relationship between age and the frequency of physical health symptoms. \* $p < 0.05$ ; \*\* $p < 0.01$ .

had the same frequency of daily interpersonal tensions, as compared with the younger and middle-aged women, we could expect similar frequencies of physical symptoms.

*Indirect effect from age to the frequency of physical health symptoms, via daily stressors*

The previous results provide evidence of a mediated effect of stressors on the relationship between age and physical health symptoms. However, an argument could be put forth that due to the small initial level of association between age and the frequency of daily physical symptoms, it was not difficult to reduce this association. In other words, it is easy to find evidence for mediation when a small baseline association exists. Further, given that none of the explanatory equations were reduced to zero (the strongest evidence of full direct mediation), a stronger test of mediation, via the indirect effects of the age-daily health relationship, was employed.

To test for the significance of the indirect effects of age on the frequency of physical health symptoms through the incidence of daily stressors, Sobel's formula<sup>1</sup> was applied (as cited in Baron & Kenny, 1986) to the present data. Six separate equations tested the following indirect effects: (a) any stressors; (b) interpersonal tensions; (c) work stressors;

<sup>1</sup>Sobel's Formula provides an approximate significance test for the indirect effect of the predictor variable on the criterion variable, via the mediator. The formula provides a method for calculating the standard error of the indirect effect. The standard error then serves as the denominator in the following  $t$  ratio:

$$t = \frac{ab}{\sqrt{b^2 S_a^2 + a^2 S_b^2 + S_a^2 S_b^2}}$$

where the numerator represents the indirect effect between the predictor variable and the criterion variable; where  $a$  = the path estimate for the path from the predictor variable to the mediator;  $S_a$  = the standard error for  $a$ ;  $b$  = the path estimate for the path from the mediator to the criterion variable; and  $S_b$  = the standard error for  $b$ . The numerator therefore represents the estimated indirect effect between the predictor variable and the criterion variable, the denominator represents the standard error of the path.

(d) home stressors; (e) network stressors; and (f) miscellaneous stressors. Any Stressors was found to be a significant indirect mediator, yielding an indirect effect 0.087 ( $t=23.00$ ,  $p<0.05$ ). The indirect path from age to the frequency of physical symptoms, via interpersonal tensions, was also statistically significant, yielding a significant indirect effect of 0.072 ( $t=20.00$ ,  $p<0.05$ ). Home stressors were also found to be a significant mediator of the indirect path between age and the frequency of physical symptoms. This calculation yielded an indirect effect of 0.014 ( $t=2.18$ ,  $p<0.05$ ). Network stressors also served as a significant mediator of the indirect path between age and the frequency of physical symptoms, with a significant indirect effect of 0.002 ( $t=2.00$ ,  $p<0.05$ ). Neither work stressors nor other stressors served as significant indirect mediators. However, it should be noted that while other stressors had a stronger indirect effect than network stressors, the overall  $t$  ratio was not significant.<sup>2</sup>

## Discussion

The present study showed that a young-to-midlife plateau marked the relationship between age and the frequency of daily symptoms. The fact that the age patterns of women's chronic health conditions and daily health symptoms differed from each other may suggest that differences exist either in the etiology or in the origin of each type of health category. One possible explanation is that daily symptoms are more directly linked to environmental stressors and less to biological factors.

To explore this further the analyses addressed the relationship between daily health symptoms and stressors by examining age differences in the frequency and the types of daily stressors. As with daily symptoms, these analyses also indicated that a young-to-midlife plateau characterized the relationship between age and any other stressors. That is, the frequency of any stressor days did not differ between younger and middle-aged women. This finding is in contrast to the earlier literature that shows that it is during midlife that several unique social changes occur (e.g., Ackerman, 1990; Chiriboga, 1984; Fiske & Chiriboga, 1985; Fogel & Woods, 1995), exposing women to increased stressors and responsibilities. The possibility that there were age differences in the specific types and severity of stressors was therefore next explored.

It was found that a young-to-midlife plateau characterized the relationship between age and work stressors. The finding that older women experienced the fewest work stressors can be easily explained by the fact that they worked the fewest hours. The majority of older women did not work at all or were employed for less than 20 h a week, while the majority of their younger counterparts worked full-time and beyond. Furthermore, that the young and middle-aged women experienced similar frequencies of work stressors can be attributed to similar hours on the job. Indeed, Table I reveals a similar distribution of the total hours of work per week between these two groups of women.

While the frequency of work stressors followed a young-to-midlife plateau, the relationship between age and interpersonal tensions, on the other hand, was characterized by a linear decline. Stressors of this type significantly decreased in daily frequency across the

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<sup>2</sup>The mediation analyses were also conducted with age as a continuous variable. Consistent with the model where age was a categorical variable, the results of the model testing for mediation by any stressors were significant; that is, the age differences in physical symptoms were reduced to non-significance when stressor exposure was added. The model testing for mediation by specific stressor types also indicated a significant effect of interpersonal tensions (similar to the model with categorical age groups). Because the results of the continuous and categorical analyses were similar, the categorical analyses are presented for ease of interpretation purposes.

three age groups. While the authors are unaware of any literature regarding age differences in daily interpersonal tensions, socioemotional selectivity theory can help us speculate about this specific age pattern. In general, the theory holds that as we age, there is a temporal emphasis on the present. As a result, activities that are unpleasant or devoid of meaning are not compelling. Further, there is an increase in the value people place on life and emotion (Carstensen et al., 1999). In concert with this theory, older individuals would be less apt to fight or to engage in interpersonal tensions in order to ensure that the interactions they do have are of positive emotional quality. They are more likely to accept relationships as they are, appreciate what is good and ignore what is troubling, rather than seek new solutions to problems. Further, older adults are more likely to select opportunities with individuals with whom interactions are positive.

#### *The mediating role of daily stressors on the age-health relationship*

The next set of analyses tested the extent to which daily stressors mediated the relationship between age and the frequency of daily health symptoms. The significant age differences in daily health symptoms diminish after controlling for daily stressors. These results suggest that if young and middle-aged women had the same amount of daily stressors, they would not differ in their reports of health symptoms.

Further, of the five types of stressors measured, interpersonal tensions served as the only significant mediator. These findings highlight the importance of considering the objective nature or characteristics of stressors that influence women's daily health across adulthood. First, it seems interpersonal tensions play a unique role in the lives of women's health. Perhaps because a woman's identity is often greatly tied to success in interpersonal relationships (Thoits, 1991; Wethington et al., 1997), any event that threatens such relationships puts her at risk for ill health. This is not to imply that enacting roles in the work and home domains are not critical to the development of a woman. It may be that the nature of the stressors classified under the work or home categories, which were often events involving time changes, mechanical breakdowns, and overloads or demands (e.g., company at home, extra duties assigned at work), reflect better the frustrations to which women have adjusted and prepared themselves to. Similarly, network stressors involving a close friend or relative (e.g., health and safety events) did not necessarily involve the well-being or an active emotional involvement of the respondent. Thus, it may be that those events that women are actively involved in and to which direct relational risk is posed, serve as critical factors in women's daily health.

In summary, these results suggest one avenue through which age predicts the experience of daily health symptoms – through the occurrence of daily stressful experiences. Specifically, while age is associated with exposure to daily physical health symptoms, age is also associated with exposure to daily stressors. It is this latter form of exposure that may serve to facilitate the experience of daily health symptoms. In contrast to much of the literature that suggests that women's health is defined by major biological or menopausal changes (Apter, 1995; Defey et al., 1996), the present study found evidence of a stress-health link. One conclusion to be drawn is that a woman's health is, in part, influenced by the stressors to which she is exposed to.

#### *Limitations of the study and future directions*

Findings from this study should be considered in light of its limitations. Primarily, it is possible that there might have existed a reporting bias in the women's responses. Given that

older women are faced with more chronic, disabling conditions than their younger counterparts, it is possible that they are less likely to report daily symptoms, such as headaches, as having occurred. Perhaps older women have become more resilient to the discomfort of less severe symptoms. Similarly, bias may have existed in the responses to the daily stressful questions, such that older women may also be less likely to report that daily stressors have occurred, due to differences that exist in coping with or appraisal of stressful events (Levkoff et al., 1987). As suggested by Aldwin et al. (1996), age differences in appraisal exist because older adults may have better "management strategies" that enable them to construct their lives in ways that limit everyday problems. As applied to the present study, this may be due to a shift in the temporal aspects of stressful events whereby older adults, as compared to their younger counterparts, are likely to face more chronic health diseases and major life stressors, such as widowhood, as opposed to acute health symptoms and minor stressors, and have thus learned to incorporate these experiences into their everyday lives. In adapting to the ongoing, chronic, and more severe problems, older adults may not perceive single occurrences of stressors, such as an argument, as stressful, especially if it is not a threat or danger to their immediate life situation. This is consistent with Hobfoll's (1989) conservation of resources model of stress that builds upon the idea that people actively seek resources (defined as objects, personal characteristics, conditions, or energies that are valued) when confronted with stress, in order to minimize loss of these valued resources. It is possible that the older women are not reporting minor health symptoms and daily stressors as often as the younger women do because they attempt to maintain their resources.

Although it could be expected that older women would under-report their health symptoms, the data revealed that their overall pattern of health reporting is consistent with the literature. First, chronic conditions were positively related to age. Secondly, additional analyses were conducted on the frequency of menstrual symptoms and hot flashes/flushes. Results showed that the youngest women reported the greatest menstrual-related symptoms, followed by the middle and older women. This is compatible with the fact that as women age, there is a decrease in estrogen. Further, the finding that middle-aged women experienced the greatest hot/flushes and flushes, the group most likely to be peri-menopausal, is also concordant with the menopausal literature that it is during this time that a woman is most symptomatic (Fuchs, 1977; Gallant & Derry, 1995). These findings indicate a general and overall exactitude in symptom reporting.

This study is also limited because of the cross-sectional design which minimizes our ability to make any judgements regarding age changes. Future research should attempt to track the relationship between daily health and stressors across time to obtain insight into developmental changes and concomitant patterns. In addition, although the participants were randomly selected from an original, nationally representative sample of 7,189 non-institutionalized, English-speaking adults, the majority of the women in the present study were Caucasian, educated, and of moderate-to-high socioeconomic status. Future studies should be designed to assure better representation of all income levels and the minority groups who might otherwise be reached in small numbers by the national probability sample surveys only. This is especially important given that the lower socioeconomic status and ethnicity predict less positive health outcomes, even when controlling for access to health care (e.g., Adler et al., 1994). This will not only allow us to make better generalizations of the findings, but also let us to begin to unravel community and individual level relationships on the stress-health relationship, allowing us to build a more clear picture of the role of psychosocial factors contributing to physical health status.

### *Contributions and implications*

Notwithstanding the limitations, this study makes a number of important contributions to the literature. Primarily, the present study contributes to the growing body of work focused on understanding women's health. It adds to the knowledge base of women's health by providing a descriptive summary of the frequency and nature of daily health symptoms experienced by a national sample of adult women. Specifically, this study documents the occurrence of specific types of daily symptoms experienced, as well as how these symptoms differ in daily incidence across the life course of women.

Further, the present study also reveals meaningful information about the quality of women's lives. While a small daily estimate of the effect size of the age-symptom relationship was found for young and middle-aged women, when translated over time, this estimate indicates that these women have an additional health symptom day, once every two weeks. Over the course of one's life, this may help one to better understand the overall portrait of women's health, including rates of physical illness, frequency of disability days and physician visits, and use of prescription and non-prescription drugs, as well as barriers that may inhibit achieving optimal health. Such information can only be used to advance women's health research by allowing us to refine our conceptualizations of what it means to be a "healthy woman".

Further, while many researchers and professionals often continue to view changes in women's health from a biomedical perspective, for example, attributing ill health to menopause, this study makes us realize the necessity of shifting our attention to the role of psychosocial factors. Within this lies the potential for further research not only on etiology but also on treatments that minimize risks and take into account the interplay of biological and psychosocial factors in women's health. Future research should continue to examine how these factors may interact to predict health risk and behavior.

The present study is also unique in its design and sample in that it has utilized a telephone diary approach in order to gather information regarding the *daily* and often unrecognizable experiences of women. The opportunity to explore these daily health and stressful experiences in a relatively current and representative data set of women allowed us to begin to break down any stereotypes surrounding women's adult development, especially those depicting health as a purely biological process of decline and loss. By providing evidence that daily stressors play a significant role in the occurrence of daily symptoms, this study provides evidence of the psychosocial influences on women's experience of health and helps to disentangle myths, if any, from the reality of women's health.

Finally, the present study went beyond simply demonstrating that the occurrence of daily stressors has a significant role in the lives of adult women, but was able to probe into the specific aspects of daily stressors that play a role in the age-health relationship. As discussed previously, interpersonal tensions served as a critical mediator through which daily symptoms occurred. This is meaningful information in that it allows us to have a better understanding of the qualities and mechanisms of stressors through which women's health status can be affected.

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