Daily prosocial activities and well-being: Age moderation in two national studies

Kevin Chi[a], David M. Almeida[b], Susan T. Charles[c], and Nancy L. Sin[a]

[a]Department of Psychology, University of British Columbia, Vancouver, BC, Canada

[b]Department of Human Development and Family Studies and Center for Healthy Aging, The Pennsylvania State University, University Park, PA

[c]Department of Psychological Science, University of California, Irvine, Irvine, CA

Author Note

Correspondence concerning this article should be addressed to Nancy L. Sin, Department of Psychology, The University of British Columbia, 2136 West Mall, Vancouver, BC, Canada, V6T 1Z4, Phone: 604-822-5626, E-mail: nsin@psych.ubc.ca.

Abstract

Prosocial activities, such as volunteering, predict better mental and physical health in late adulthood, but their proximal links to well-being in daily life are largely unknown. The current study examined day-to-day associations of prosocial activities with emotional and physical well-being, and whether these associations differ with age. We used daily diary data from the National Study of Daily Experiences (NSDE) II (N = 2,016; ages 33-84) and NSDE Refresher Study (N = 774; ages 25-75). Participants completed telephone interviews on 8 consecutive evenings regarding their prosocial activities (formal volunteering, providing unpaid assistance, providing emotional support), well-being (negative affect, stressors, positive events), and physical symptoms. On days when individuals participated in more formal volunteering or provided more unpaid assistance than usual, they experienced more stressors and positive events but no difference in the number of physical symptoms. Negative affect was reduced on volunteering days for older adults but increased for younger adults (NSDE Refresher). Providing emotional support was associated with higher same-day negative affect, more stressors, more positive events, and elevated physical symptoms. Compared to younger and middle-aged adults, older adults experienced less of an increase in stressors and positive events (NSDE II) and negative affect (NSDE Refresher) on days when they provided more emotional support than usual. These findings demonstrate that prosocial activities are associated with both costs (negative affect, stressors, physical symptoms) and benefits (positive events) for same-day well-being. Older age may protect against negative ramifications associated with prosocial activities.

Keywords: volunteering, aging, emotions, stress, prosocial

Prosocial activities—defined as voluntary activities intended to benefit another person, group, or cause (Eisenberg & Miller, 1987; Wilson, 2000)—are common features of daily life across the adult lifespan (Corporation for National and Community Service, 2013). Adults often engage in prosocial activities outside of the home, for example, by volunteering in the community, helping a neighbor, or providing emotional support to a friend. Importantly, a large body of research has linked prosocial activities to better physical and mental health in late adulthood (Anderson et al., 2014; Wilson, 2000). Older adults who spend more time volunteering have better well-being, including lower depressive symptoms (Musick & Wilson, 2003), greater life satisfaction and better perceived health (Van Willigen, 2000), and reduced mortality risk (Harris & Thoresen, 2005; Lum & Lightfoot, 2005). Older adults who participate in volunteering programs tend to have higher physical activity levels and fewer functional limitations compared to adults who do not volunteer (e.g., Fried et al., 2004; Hong & Morrow-Howell, 2010). Furthermore, more engagement in prosocial activities is linked to a greater sense of purpose (Greenfield & Marks, 2004) and a delay in the progression of physical disability among older adults (Carr, Kail, & Rowe, 2018). The links between prosocial activities and health are bidirectional: Older adults with fewer physical health problems (Li & Ferraro, 2005) and better mental health (Hao, 2008) are more likely to volunteer.

Prosocial activities may produce health benefits through mechanisms such as physical activity or socialization, which are often components of volunteer work (Fried et al., 2004). Indeed, longitudinal evidence suggests that physical activity, cognitive functioning, and depressive symptoms are pathways by which volunteering predict better self-rated health (Luoh & Herzog, 2002). Studying the proximal relationships between prosocial activities and well-being at the daily level may provide further understanding of the potential mechanisms

underlying the long-term associations of prosocial activities with health and well-being. The current study used daily life assessments from two replicate national samples of adults to examine the day-to-day associations of prosocial activities with well-being (specifically, negative affect, stressors, and positive events) and health (as indicated by physical symptoms), in addition to investigating whether these associations differ with age.

Age Differences in Prosocial Activities and Well-Being

Rates of prosocial engagement differ by activity type and by age group. The Current Population Survey—a monthly survey of about 60,000 households in the U.S.—reported that 24.9% of respondents engaged in formal volunteering through an organization in 2015; the most common volunteer activities were fundraising, collecting and distributing food, general labor, and tutoring (United States Bureau of Labor Statistics, 2015). People were even more likely to participate in informal volunteering (i.e., providing unpaid assistance; 62.5%), such as doing favors for neighbors (Corporation for National and Community Service, 2013). In both the U.S. and Canada, midlife adults ages 35-54 years were more likely to volunteer than younger and older adults, although older adults dedicated the most hours towards volunteering (Turcotte, 2015; United States Bureau of Labor Statistics, 2015). For example, Americans ages 65 and older volunteered a median of 94 hours in 2015, compared to 36-56 hours annually among adults 25-64 years old (United States Bureau of Labor Statistics, 2015). These activities contribute enormously towards societal benefits, yet there are reasons to expect that the personal benefits of prosocial activities may vary across adulthood.

Theoretical perspectives on role accumulation (Sieber, 1974) and multiple role identities (Thoits, 1983) have proposed that occupying multiple social roles—such as parent, spouse, employee, and organizational member—should bring privileges, status, and psychological and

social benefits. A greater number of social roles is thought to promote a stronger sense of purpose and direction in one's life (Thoits, 1983), more social integration, and better subsequent health (Moen, Dempster-McClain, & Williams, 1992). Role losses in later life (e.g., retirement, widowhood) limit these opportunities for social integration and psychological well-being; hence, compared to younger and middle-aged adults, older adults may have more to gain from occupying prosocial roles, including being a volunteer, involved community member, helpful neighbor, or supportive friend. Consistent with these ideas, Greenfield and Marks (2004) found that formal volunteering protected older adults with major role-identity absences against poorer psychological well-being in the Midlife in United States Study (MIDUS). In the Health and Retirement Study, recently widowed older adults who started to volunteer at the time of widowhood were less lonely than widows who did not volunteer (Carr, Kail, Matz-Costa, & Shavit, 2018). Using longitudinal data from the nationally representative Americans' Changing Lives Study, Musick and Wilson (2003) found that sustained volunteering predicted lower depressive symptoms among adults ages 65 and older, but not in the younger age group. This association was partially explained by greater attendance at group or club meetings, suggesting that formal volunteering may protect against depressive symptoms by encouraging social interactions that may lead to the cultivation of relationships and social support.

In contrast to the benefits of role accumulation in later life, engagement in prosocial activities may result in greater strain during early and middle adulthood. Younger and middle-aged adults are more likely to participate in prosocial activities as part of their work and family obligations, such as volunteer roles related to their children's schooling or extracurricular activities (Morrow-Howell, 2010). Indeed, parents of school-aged children volunteer at higher rates than do non-parents (United States Bureau of Labor Statistics, 2015). The time, energy, and

resources dedicated to prosocial activities may contribute to overload within parenting and work domains for younger and midlife adults, as well as conflict between the competing demands of different roles. For example, Van Willigen (2000) found that greater commitment to volunteering (i.e., number of volunteer hours) or volunteering for more than one organization predicted greater life satisfaction three years later for older adults ages 60 and over, whereas younger adults ages 25-59 showed declines in life satisfaction. Prosocial activities are therefore expected to produce diminishing returns for younger and midlife adults, possibly due (at least in part) to role strain. Older adults, on the other hand, may benefit from the additional social integration, identity, and resources that come from adopting prosocial roles.

Although past research has applied role theory to examine the mental and physical health implications of formal volunteering, aging-related emotion regulation should be considered when focusing on the proximal associations between one-on-one prosocial activities (i.e., interpersonal activities that occur outside of an organization, such as providing unpaid assistance or emotional support to another person) and well-being. These forms of prosociality occur in contexts that are emotion-eliciting and potentially stressful. For example, a support provider may find it distressing to help close others who have tangible or emotional needs. According to the theoretical model of Strength and Vulnerability Integration (SAVI; Charles, 2010), as people age, they become more skilled at using cognitive-behavioral strategies to minimize exposure to negative experiences. In particular, older adults are more likely to disengage from conflict (e.g., letting interpersonal tensions pass rather than arguing; Birditt, Fingerman, & Almeida, 2005), direct their attention towards more positive stimuli and away from negative stimuli (Reed & Carstensen, 2012), and appraise current experiences and recall past experiences as more positive (Charles et al., 2016). When older adults reduce their exposure to negative situations, they show

greater emotional well-being compared to younger adults (Charles, Piazza, Luong, & Almeida, 2009). We may therefore expect older age to be associated with lower negative affect, fewer stressors, and more positive events in response to prosocial activities that call for the use of emotion regulation skills, such as when providing emotional support. To the extent that older adults are protected from stressors and negative affect on days when they engage in prosocial activities, we would also expect age-related advantages in the associations between prosocial activities and physical symptoms.

Prosocial Activities and Well-Being in Daily Life

A first step in determining potential mechanisms linking prosocial behaviors to health is to examine how these behaviors are associated with well-being on the days they occur. Daily diary studies have found that prosocial activities are linked to same-day increases in positive thoughts and emotional states. In a 14-day diary study, higher-than-usual engagement in prosocial activities (e.g., helped with schoolwork, held open a door) was associated with increased same-day positive affect and self-rated mental health, but not levels of negative affect (Raposa, Laws, & Ansell, 2016). Using daily diary data from the MIDUS II Study (one of the two datasets we use in the current analyses), Grossman, Wang, and Gruenewald (2019) found that on days when individuals engaged in formal volunteering or provided informal assistance, they experienced greater feelings of self-enhancement (*proud, confident*) and social connectedness (*close to others, like you belong*) but no difference in positive affect (a composite of positive emotions, e.g., *cheerful, satisfied*), compared to days when they did not engage in these activities. Providing daily emotional support, however, was associated with reduced positive affect but no difference in self-enhancement or social connectedness. Thus, the limited evidence to date suggests that prosocial activities (except providing emotional support) are linked to better end-

of-day positive cognitive-emotional states, yet it remains unknown whether such activities might reduce negative affect.

Prosocial activities may also play a role in daily stress processes. In the above-cited study by Raposa and colleagues (2016), prosocial activities mitigated the within-person associations of daily stressors with affective well-being. In particular, on days when prosocial activities were higher than usual, daily stressors were associated with less-increased negative affect and smaller decreases in positive affect and self-rated mental health. The benefits of prosocial activities also extend to physiological markers of stress: Using daily diary data from MIDUS II, Han, Kim, and Burr (2018) found that the relationship between daily stressors and cortisol output was attenuated on days when participants engaged in formal volunteering, compared to days when volunteering was not performed.

Because these previous studies have focused on prosocial activities as moderators of the links between stressors and well-being, it is unclear whether there are direct associations of prosocial activities with stressor exposure and daily indicators of health, such as physical symptoms. On the one hand, people may be more likely to perform prosocial activities on days when they have lower physical symptoms or when they anticipate fewer competing demands. Prosocial activities may also reduce stress perceptions and physiology in-the-moment, thereby contributing to enhanced subjective health. For example, indirect evidence from research on leisure activities (including socializing and recreation) indicates that people had lower stress, lower heart rate, and better mood when they engaged in leisure activities (Zawadzki, Smyth, & Costigan, 2015). Furthermore, positive cognitive-emotional states associated with prosocial activities (Grossman et al., 2019) may decrease the likelihood of appraising situations as stressful. Alternatively, the time and effort spent in prosocial activities may detract from other

daily responsibilities, potentially leading to increased same-day stressors and physical symptoms. This may be particularly true for younger and middle-aged adults who have relatively more work and family obligations and less time to engage in prosocial activities (Morrow-Howell, 2010).

To the extent that adults experience more stressors on days when they engage in prosocial activities, they may also be exposed to more positive experiences. Charles et al. (2010) found that people who reported more frequent daily stressors also had more positive events, which may be a sign of engagement in more life experiences overall. Examining both stressors and positive events as outcomes may provide a better understanding of the costs and benefits associated with prosocial activities. Positive events are typically associated with upticks in positive affect (Charles et al., 2010), yet these events are important outcomes in their own right because they reflect situations that are (to some extent) external to an individual's emotional states. Positive events are independently associated with better biological and behavioral health (Sin & Almeida, 2018), including lower inflammation (Sin, Graham-Engeland, & Almeida, 2015), steeper diurnal cortisol slopes (Sin, Ong, Stawski, & Almeida, 2017), and better sleep quality (Sin, Almeida, et al., 2017), controlling for positive affect.

Although there are few existing studies of prosocial activities and well-being in daily life, the limited evidence thus far supports emotional benefits associated with prosocial activities, especially for positive emotions. Because Grossman and colleagues (2019) have already evaluated within-person relationships between daily prosocial activities and positive affect in MIDUS II, the current study sought to extend their work by examining negative affect and other well-being indicators as outcomes.

Current Study

This study examined the associations of three types of prosocial activities (formal volunteering, providing unpaid assistance, providing emotional support) with emotional well-being (negative affect, stressors, and positive events) and physical symptoms in daily life. We used data from two large-scale daily diary substudies as part of MIDUS: the *National Study of Daily Experiences (NSDE) II* and *NSDE Refresher*. Drawing on theoretical accounts of role accumulation (Sieber, 1974; Thoits, 1983) and emotional regulation with aging (Charles, 2010), as well as past empirical studies of prosocial activities across the adult lifespan, we hypothesized that engaging in daily prosocial activities would bring benefits (i.e., more positive events) and costs (i.e., elevated negative affect, stressors, and physical symptoms). Age was expected to moderate these associations, such that compared to their younger counterparts, older age would be associated with better emotional well-being and fewer number of physical symptoms on days with more engagement in prosocial activities. In an effort to replicate findings, we conducted parallel analyses in the two datasets. However, we did not have specific predictions for different patterns of results between the two studies.

Method

Design and Participants

Table 1 presents the participant characteristics in the two samples. This study uses data collected from *NSDE II* (2004-2009) and *NSDE Refresher* (2012-2014), two representative subsamples of the MIDUS 2 and MIDUS Refresher, respectively. MIDUS is a longitudinal study designed to assess social, psychological, and physical factors that contribute to health and well-being across adulthood. Data for NSDE II came from 2,022 community-dwelling adults ages 33-84 years old who had participated in the second wave of MIDUS (Sin & Almeida, 2018). Six participants were excluded from the analysis due to missing sociodemographic data on marital

status ($n = 2$) and education ($n = 4$), leaving an analytic sample of 2,016 participants for NSDE

II. The sample was 57% female, 84% White, 69% married, and 56 years old on average (*SD*

= 12.21). The majority of the sample (69%) completed at least some college education. A

separate cohort of 782 adults was enrolled in the NSDE Refresher study (Sin & Almeida, 2018).

Eight participants were excluded from the current analysis for missing data on prosocial

activities ($n = 1$), marital status ($n = 2$), and race ($n = 5$). Thus, the analytic NSDE Refresher

sample consisted of 774 community-dwelling adults. The sample ranged in age from 25 to 75

years old (mean = 48 years, *SD* = 12.69). Similar to NSDE II, the NSDE Refresher sample was

56% female, 85% White, 66% married, and 79% of the participants had completed at least some

college education.

In both NSDE II and NSDE Refresher, participants were asked to report their daily

experiences during telephone interviews on eight consecutive evenings. Participants also

responded to questions regarding their prosocial activities, affect, stressors, positive events, and

physical symptoms. The studies were approved by ethics committees at all study sites, and all

participants provided informed consent.

Measures

Daily prosocial activities. During the nightly telephone interviews, participants were

asked whether they had engaged in ***formal volunteering*** that day: "Since this time yesterday, did

you spend any time doing formal volunteer work at a church, hospital, senior center, or any other

organization?" Participants were also asked whether they provided ***unpaid assistance***: "Since

(this time/we spoke) yesterday, did you spend any time giving any unpaid assistance to people

who do not live with you, such as free baby-sitting or help with shopping?" ***Provision of***

emotional support was assessed with the question: "Not counting work you might do as part of

your job, did you spend any time giving emotional support to anyone, like listening to their

problems, giving advice, or comforting them, since (this time/we spoke) yesterday?" Responses

to each of these questions were scored 1 for "yes" and 0 for "no."

Participants reported engaging in formal volunteering on 9% (*SD* = 18%) of the daily

interview days in NSDE II and 8% (*SD* = 17%) of the interview days in NSDE Refresher

activities (*Table 1*). Participants also provided unpaid assistance on 12% (*SD* = 19%) of

interview days in NSDE II and 9% (*SD* = 17%) of interview days in NSDE Refresher. Emotional

support was provided on 32% (*SD* = 27%) of interview days in NSDE II and on 31% (*SD* =

27%) of interview days in NSDE Refresher.

Daily negative affect. Negative affect was assessed using scales developed for the

MIDUS study (Mroczek & Kolarz, 1998; Watson, Clark, & Tellegen, 1988). Participants

reported how much of the day they experienced 14 negatively-valenced emotions: *restless or*

fidgety, *nervous, worthless, so sad that nothing could cheer them up, everything was an effort,*

hopeless, lonely, afraid, jittery, irritable, ashamed, upset, angry, frustrated. Responses were

provided using a 5-point scale (0 = *none of the time*, 1 = *a little of the time*, 2 = *some of the time*,

3 = *most of the time*, 4 = *all of the time*). The 14 items were averaged to compute daily negative

affect. The measure showed good internal consistency in both NSDE II (Cronbach's α = 0.86)

and NSDE Refresher (Cronbach's α = 0.87).

Daily stressors. The Daily Inventory of Stressful Events was used to assess daily

stressors (Almeida, Wethington, & Kessler, 2002). Participants reported whether they had

experienced the following stressors in the past 24 hours: (a) arguments or disagreements, (b)

avoided an argument, (c) stressors at work or school, (d) stressors at home, (e) discrimination, (f)

network stressors (i.e., stressful event that happened to a close friend or family member), and (g)

any other stressors. Dichotomous variables were created to indicate whether participants had experienced each stressor (0 = stressor did not occur, 1 = stressor occurred). The scores on the seven items were then summed to compute the number of daily stressors.

Daily positive events. In both NSDE II and NSDE Refresher, participants reported whether they had experienced the following positive events in the past 24 hours: (a) positive social interactions (e.g., "sharing a laugh," "having a good conversation"), (b) positive event at work, school, or at a volunteer position, (c) positive event at home, (d) network positive event (i.e., positive event that happened to a close friend or relative), and (e) any other positive event (Sin, Ong, et al., 2017). NSDE Refresher included an additional positive event item that asked participants whether they had spent any time enjoying or viewing nature (Sin & Almeida, 2018). Responses were scored 1 for "yes" and 0 for "no," and then summed across items to compute the number of daily positive events.

Daily physical symptoms. Physical symptoms were assessed using a measure adapted from Larsen and Kasimatis's (1991) physical symptoms checklist. Participants reported whether they had experienced each of 28 physical symptoms that day (e.g., nausea, allergies, cough, headaches, backache, muscle soreness). We used the number of physical symptoms as an outcome variable.

Sociodemographic factors. Age was tested as a moderator and included as a continuous variable. We controlled for sociodemographic variables that have been shown to be potential confounding factors associated with prosocial activities and well-being (e.g., Morrow-Howell, 2010). Specifically, the analyses controlled for gender (coded as 0 = woman, 1 = man), race (0 = non-White, 1 = White), current marital status (0 = never married, separated, divorced, or

widowed, 1 = married), and education (0 = less than some college education, 1 = completed at least some college education).

Analytic Strategy

First, descriptive analyses and bivariate correlations were conducted. Second, we used multilevel modeling (HLM 6.08 program; Raudenbush, Bryk, & Congdon, 2004) to run unconditional means models to partition the outcome variation at the between-person versus within-person levels of analysis. Intraclass correlation coefficients (ICC; between-person variation/total variation) were computed for the outcome variables; the ICCs for dichotomous variables was computed following guidelines from Snijders and Bosker (2012). Third, separate two-level models were run for each of the daily prosocial activities (*formal volunteering*, *unpaid assistance*, and *emotional support)* and the outcome variables (*negative affect*, *stressors*, *positive events,* and *physical symptoms*) using restricted maximum likelihood estimation. Daily prosocial activities were centered at the person-mean and entered at Level 1 (within-person), whereas age and person-means of prosocial activities were grand-mean centered and entered at Level 2 (between-person; Enders & Tofighi, 2007). Gender, race, education, and marital status were not centered because they were dummy-coded. A random effect for daily prosocial activities was included to allow individuals to differ from one another in the association between prosocial activities and well-being. However, this random effect was removed for some models due to non-convergence (Hoffman & Stawski, 2009) or when the random effect was not significant; these models are denoted in *Tables 2 & 3*. Cross-level interactions for Age x Daily Prosocial Activity were included to evaluate age as a potential moderator of the link between prosocial activities and well-being. A computational tool by Preacher, Curran, and Bauer (2006) was used to estimate simple slopes for significant cross-level interactions. In cases where there were

significant age interactions in one study but not in the other, we ran sensitivity analyses that only

included the same-aged adults in both samples (ages 33-75 years) to determine whether the age

interactions might have been driven by the youngest participants in NSDE Refresher (i.e., ages

25-32) or the oldest participants in NSDE II (i.e., ages 76-84).

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Results

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Descriptives and Correlations

Bivariate correlations for the central study variables and covariates are presented in the

Supplementary Materials for NSDE II (Supplementary Table 1) and for NSDE Refresher

(Supplementary Table 2). In both studies, older age was associated with more frequent formal

volunteering (NSDE II: $r = .06$, $p < .01$; NSDE Refresher: $r = .08$, $p < .05$), lower negative affect

(NSDE II: $r = -.16$, $p < .01$; NSDE Refresher: $r = -.12$, $p < .01$), and fewer stressors (NSDE II: r

$= -.23$, $p < .01$; NSDE Refresher: $r = -.17$, $p < .01$). Older age was also associated with less

frequent provision of emotional support ($r = -.07$, $p < .01$) in NSDE II, as well as more frequent

unpaid assistance ($r = .13$, $p < .01$) and more positive events ($r = .21$, $p < .01$) in NSDE

Refresher. Age was not correlated with the number of physical symptoms in either sample. In

both studies, women were more likely than men to provide unpaid assistance (NSDE II: $r = .13$,

$p < .01$; NSDE Refresher: $r = .17$, $p < .01$) and emotional support (NSDE II: $r = .21$, $p < .01$;

NSDE Refresher: $r = .17$, $p < .01$), although there was no gender difference in the frequency of

formal volunteering.

The ICCs for daily formal volunteering (0.37 in both NSDE II and NSDE Refresher),

providing unpaid assistance (0.30 in NSDE II, 0.34 in NSDE Refresher), and providing

emotional support (0.25 in NSDE II, 0.23 in NSDE Refresher) indicated that most of the

variance in prosocial activities was attributable to day-to-day fluctuations within individuals.

Much of the variance in the number of daily stressors (0.24 in NSDE II, 0.22 in NSDE

Refresher) and positive events (0.36 in NSDE II, 0.34 in NSDE Refresher) were also at the

within-person level, whereas more than half of the variance in daily negative affect (0.54 in

NSDE II, 0.56 in NSDE Refresher) and number of physical symptoms (0.67 in NSDE II, 0.69 in

NSDE Refresher) were due to between-person differences.

Formal Volunteering

Results from multilevel models are provided in *Table 2* for NSDE II and *Table 3* for

NSDE Refresher. We first examined daily formal volunteering and well-being (*negative affect,*

stressors, positive events, physical symptoms), and whether age moderated these associations. At

the between-person level, people who engaged in more frequent formal volunteering reported

more stressors in NSDE II and more positive events in both samples, compared to people who

volunteered less frequently. Similar to the between-person findings, the within-person analyses

showed that on days when individuals engaged in more formal volunteering, they experienced

more stressors in NSDE II and more positive events in both studies, compared to days when they

volunteered less. As a sensitivity analysis, we computed the number of daily positive events

excluding those categorized as occurring "at work, school, or a volunteer position." The within-

person associations persisted between daily formal volunteering and non-

school/work/volunteering positive events (NSDE II: $b = 0.08$, $SE = 0.03$, $p = .005$; NSDE

Refresher: $b = 0.15$, $SE = 0.05$, $p = .005$), indicating that formal volunteering was associated with

positive events in other life domains (e.g., positive social interactions, events at home). Finally,

daily formal volunteering was not associated with same-day negative affect nor physical

symptoms in both NSDE II and NSDE Refresher.

In NSDE II, age did not moderate the associations between formal volunteering and well-being. In NSDE Refresher, there was a significant Age x Formal Volunteering interaction on negative affect (see *Figure 1 and Table 3*). Specifically, on days with more engagement in volunteering than usual, older adults experienced lower negative affect (simple slope: $b = -0.03$, $SE = 0.02$, $p = .03$), whereas younger adults experienced higher negative affect (simple slope: $b = 0.04$, $SE = 0.02$, $p = .04$). Volunteering was not associated with same-day negative affect for middle-aged adults (simple slope: $b = 0.01$, $SE = 0.01$, $p = .58$). As a sensitivity analysis, we examined whether the age moderation effect was driven by the youngest participants in NSDE Refresher (n = 101, ages 25-32) who were outside the age range of NSDE II participants. When we excluded the youngest participants, the finding persisted (interaction: $b = -0.002$, $SE = 0.001$, $p = .001$), indicating that the moderation effect was not driven by the youngest adults in NSDE Refresher.

Providing Unpaid Assistance

At the between-person level, individuals who provided unpaid assistance more frequently—compared to those who provided unpaid assistance less frequently—reported more stressors and more positive events across both studies, and more physical symptoms in NSDE II only. Similarly, on days when individuals provided more unpaid assistance than usual, they reported a greater number of stressors and positive events. Daily unpaid assistance was not associated with negative affect nor physical symptoms within-persons. Furthermore, there were no cross-level interactions between age and unpaid assistance on negative affect, stressors, positive events, or physical symptoms in either sample.

Providing Emotional Support

Between-person analyses revealed that individuals who provided emotional support more frequently had higher negative affect, more stressors, more positive events, and more physical symptoms. Within-person analyses, in both studies, showed that on days with more provision of emotional support compared to days with less provision, individuals reported higher negative affect, more stressors, more positive events, and more physical symptoms.

In NSDE Refresher, age moderated the association between emotional support provision and increased negative affect, such that the link between providing emotional support and same-day negative affect was attenuated with older age (*Table 3*). As shown in *Figure 2*, younger adults showed the most pronounced increases in negative affect on days when they provided more emotional support, compared to days when they provided less emotional support (simple slope: $b = 0.09$, $SE = 0.01$, $p < .001$). Emotional support-related increases in negative affect were less pronounced among middle-aged adults (simple slope: $b = 0.06$, $SE = 0.01$, $p < .001$) and were marginally significant among older adults ($b = 0.03$, $SE = 0.02$, $p = 0.09$). This finding remained after conducting a sensitivity analysis that excluded the youngest participants ages 25 to 32 (interaction: $b = -0.003$, $SE = 0.001$, $p = .004$), indicating that the moderation effect was not driven by those participants. In NSDE II, age moderated the within-person associations of providing emotional support with number of daily stressors (*Figure 3* and *Table 2*) and number of daily positive events (*Figure 4* and *Table 2*), such that providing daily emotional support was associated with less-increased stressors and positive events among relatively older adults. The age moderation effects for daily stressors and daily positive events were no longer significant after excluding the oldest participants who were outside of the age range of the NSDE Refresher study (n = 154; ages 76-84), suggesting that the oldest adults in NSDE II contributed

significantly to the effects. There was no interaction between age and providing emotional

support on physical symptoms in either sample.

Discussion

Past research has linked prosocial activities—particularly formal volunteering—with

better mental and physical health across the adult lifespan, but less is known regarding within-

person associations between prosocial activities and well-being in daily life and whether these

associations are moderated by age. Drawing on theories of role accumulation, multiple role

identities, and emotion regulation across adulthood, we used daily diary data from two large-

scale U.S. national studies (NSDE II and NSDE Refresher) to evaluate age differences in the

associations of three daily prosocial activities—formal volunteering, providing unpaid

assistance, and providing emotional support—with negative affect, stressors, positive events, and

physical symptoms. As expected, prosocial activities were both beneficial and costly for same-

day well-being. Specifically, all three types of prosocial activities were associated with more

stressors and more positive events within-persons; providing emotional support was further

associated with increased negative affect and physical symptoms. These associations varied by

age: compared to younger and middle-aged adults, older adults were protected from upticks in

same-day negative affect and stressors when they engaged in prosocial activities but also showed

less of an increase in positive events.

Formal Volunteering and Providing Unpaid Assistance

The main effects of formal volunteering and unpaid assistance on daily well-being were

fairly consistent across both studies. Formal volunteering was associated with more same-day

positive events in the two studies and more stressors in NSDE II only. Similarly, unpaid

assistance was linked to positive events and stressors in both samples. There are several potential

explanations for this pattern of results. First, Grossman and colleagues (2019) previously

reported that volunteering and providing unpaid assistance in the NSDE II sample predicted

increased feelings of same-day self-enhancement and social connectedness, although there were

no associations with positive affect in their analysis, nor with negative affect in our analysis. In

their study, the feelings of self-enhancement and social connectedness—*pride, confidence,*

belonging, and *close to others*—may have prompted people to interpret otherwise mundane

experiences (e.g., a good conversation) as positive events. Second, as previously shown in the

NSDE samples and other studies (e.g., Charles et al., 2010; Sin & Almeida, 2018), daily positive

events and stressors were correlated within- and between-persons. The co-occurrence of positive

events and stressors, alongside prosocial activities, suggests that these were active days in which

individuals were exposed to a greater range of experiences. These prosocial activities also may

have taken time away from other responsibilities in the day, therefore increasing the likelihood

of experiencing stressors across all age groups. Third, we cannot rule out the possibility that the

prosocial activities were stressors and positive events in and of themselves. However, the

positive events inventory asked about events that occurred "at work, school, or at a volunteering

position," and our sensitivity analysis showed that daily formal volunteering continued to be

associated with a higher number of other (non-volunteering) positive events. In addition, because

there were more stressors and positive events on days with prosocial activities and because the

interview asked about events across different domains (e.g., interpersonal, work, family,

network), it is likely that prosocial activities increased exposure to positive and stressful

experiences in other aspects of the person's day.

In line with predictions from role theory, older adults in the NSDE Refresher Study

showed lower negative affect on days with more volunteering versus less volunteering, middle-

aged adults had no difference in daily negative affect due to volunteering, and younger adults exhibited elevated negative affect on days when they volunteered more than usual. This age difference is consistent with prior research in which formal volunteering was prospectively associated with lower depressive symptoms in adults over age 65 (Musick & Wilson, 2003) and greater life satisfaction and perceived health in adults over age 60 (Van Willigen, 2000), but not among younger adults. Our study extends these past findings of between-person relationships by demonstrating that it is worthwhile to consider day-to-day fluctuations in psychosocial well-being and health on days when people engage in volunteering activities. The age interaction that we observed between volunteering and negative affect may have been attributable to the more obligatory nature of volunteer activities and to role strain for younger versus older adults. Younger and midlife adults tend to volunteer based on career- and skill/knowledge-related motives and as an extension of their family and work responsibilities (Morrow-Howell, 2010; Okun & Schultz, 2003). These competing responsibilities may have led to the increased negative states among younger adults on days when they volunteered more than usual. By contrast, older adults may have more choice in selecting discretionary volunteer activities and are perhaps more motivated to pursue volunteering as a way to strengthen their social relationships (Okun & Schultz, 2003), thus contributing to reduced daily negative affect.

Contrary to our predictions, age did not moderate the associations between providing unpaid assistance outside of one's household and daily well-being. Here, the potential intersection of age with other social roles and sociodemographic characteristics (e.g., gender) may be important to consider. For example, providing informal help was linked to a lower risk of incident cardiovascular disease in men but not women in the Health and Retirement Study, whereas formal volunteering was associated with lower cardiovascular disease risk in women

only (Burr, Han, Lee, Tavares, & Mutchler, 2018). Men tend to provide help that is more

discretionary and less taxing (e.g., less direct care) and therefore may show greater well-being

benefits from providing assistance. By contrast, helping others is normative and expected for

women; thus, the more discretionary nature of formal volunteering may confer greater benefits

than other forms of prosocial activities among women (Burr et al., 2018). Future research could

examine whether gender differences in the links between prosocial activities and well-being may

differ across the adult lifespan.

Furthermore, as a result of differing social roles across adulthood, there are likely to be

age differences in the types of assistance provided, the level of commitment involved, and the

meaning derived from these activities. For example, in a 7-day diary study, most middle-aged

adults provided advice, emotional support, or practical help during the week to their grown

children—which was related to increased end-of-day positive affect—and to their aging parents,

which was associated with more negative affect on days when support was provided (Fingerman,

Kim, Tennant, Birditt, & Zarit, 2016). Future research could compare similar prosocial activities

(e.g., tutoring, assisting a friend) among age groups to determine whether age variations in the

link between prosocial activities and well-being are attributable to the types of activities (e.g.,

Are younger adults more likely to participate in potentially negative and stressful prosocial

activities?) or whether older adults are more adept at minimizing the negative psychological

ramifications of prosocial activities.

Providing Emotional Support

Across NSDE II and NSDE Refresher, on days when more emotional support was

provided than usual, people experienced increases in negative affect, stressors, positive events,

and physical symptoms. These findings speak to the complexity of emotional contexts

underlying social support. As suggested by other research (Fingerman et al., 2016), providing

emotional support can result in better or worse mood, depending on recipients of the support and

reasons underlying support provision. Furthermore, in line with our hypotheses derived from the

SAVI model (Charles, 2010), the within-person associations of providing emotional support with

negative affect and stressors varied by age. Although these associations were apparent across

both samples, the links between providing emotional support and more daily stressors in NSDE

II, and upticks in negative affect in NSDE Refresher, were more pronounced for younger adults.

Extending the literature on age-related strengths in avoiding or reducing exposure to negative

situations (e.g., Birditt et al., 2005; Carstensen, Isaacowitz, & Charles, 1999; Charles, 2010;

Charles et al., 2009), our results may reflect older adults' ability in applying interpersonal

problem-solving skills (Blanchard-Fields, 2007) to regulate their own responses to others'

problems and perhaps in offering advice and in regulating the responses of their support

recipients as well.

Surprisingly, younger adults evidenced *more* of an increase in their number of reported

positive events on days when they provided more emotional support than usual, compared to

midlife and older adults in NSDE II. This unexpected finding suggests that younger adults are

relatively more sensitive to both the negative and positive experiences that may arise from

support provision. When we excluded the oldest participants (ages 76-84) in a sensitivity

analysis, the association between emotional support provision and positive events no longer

differed with age, suggesting that the oldest adults were driving this association. The age

differences may be due to engagement in more diverse daily activities among younger adults

(Lee et al., 2018), which provide them with more opportunities to encounter or generate positive

events on days when they provide emotional support. The possible mediators linking support

provision and increased positive events are unknown, yet unlikely to be due to positive affect,

given that daily emotional support was associated with *decreased* same-day positive affect in

NSDE II (Grossman et al., 2019). The age moderation effect was not hypothesized and was not

replicated in NSDE Refresher; as such, the effect should be interpreted with caution.

Limitations and Future Directions

Given the correlational nature of this study, we cannot draw causal conclusions about

whether daily prosocial activities lead to fluctuations in well-being. Social activity may be a key

contributing factor, such that on days when people were more socially active and therefore

exposed to more positive events and stressors, they were also more likely to be in situations

where they had opportunities to volunteer, assist others, and provide emotional support.

Nevertheless, our research on the covariation of distinct types of prosocial activities with well-

being is an important step towards identifying candidate mechanisms involved in the links

between prosocial activities and downstream outcomes. With regard to the age interactions, we

cannot rule out the possibility that older adults were more likely than middle-aged or younger

adults to choose to participate in prosocial activities on days when they were not hindered by

higher levels of negative affect and more stressors and on days when they had fewer positive

events. To tease apart the directionality and to pinpoint the aspects of prosocial activities that are

most related to well-being, future studies should collect in-depth subjective assessments of daily

prosocial activities (e.g., activity types, appraisals and emotions during these experiences), as

well as consider the timing of these activities in relation to other daily events (both positive and

negative) and emotional experiences.

A strength of daily diary methods is that participants serve as their own controls, thus

ruling out sociodemographic and other between-person influences on the links between prosocial

activities and daily well-being. Nonetheless, our study cannot address issues of social selection, in which people who are healthier (Li & Ferraro, 2006), more educated, and socially connected (Wilson & Musick, 1997) are more likely to participate in prosocial activities. We controlled for sociodemographic factors and health indicators, yet these factors are important to consider in their own right and in terms of their intersection with age.

Conclusion

Across two large U.S. national studies, prosocial activities were associated with day-to-day fluctuations in negative affect, stressors, positive events, and physical symptoms. We found that there were both benefits (i.e., more positive events) and costs (i.e., greater negative affect, stressors, and physical symptoms) to engaging in prosocial activities, especially when providing emotional support. Older age played a protective role in buffering against the negative ramifications associated with engaging in prosocial activities, yet surprisingly, younger adults (followed by midlife adults) experienced a greater number of positive events on days when they provided more emotional support than usual. These findings contribute towards understanding age variations in the short-term emotional and physical health correlates of prosocial activities. Future studies will need to document whether these day-to-day effects of prosociality accumulate over time to predict longer-term trajectories in health and well-being. Because adults often engage in a variety of prosocial activities in daily life, the transient positive and negative impacts of these activities should be considered in future research and in programs designed to promote prosociality.

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Table 1. Means (*SD*) and Percentages for Participant Characteristics in NSDE II and NSDE Refresher.

Participant characteristics	NSDE II (N = 2,016)	NSDE Refresher (N = 774)
Demographics		
Age, mean (SD) in years	56.23 (12.21)	47.97 (12.69)
Men	43%	44%
White race	84%	85%
Married	69%	66%
Some college education	69%	79%
Daily prosocial activities, mean (SD)		
Formal volunteering (% of days)	9% (18%)	8% (17%)
Unpaid assistance (% of days)	12% (19%)	9% (17%)
Emotional support (% of days)	32% (27%)	31% (27%)
Daily well-being and physical symptoms, mean (SD)		
Daily negative affect	0.21 (0.27)	0.23 (0.29)
Number of daily stressors	0.53 (0.48)	0.56 (0.45)
Number of daily positive events	1.12 (0.68)	1.30 (0.73)
Number of daily physical symptoms	1.90 (1.92)	1.91 (2.05)

Table 2. Multilevel Models for Prosocial Activities Predicting Daily Well-Being and Physical Symptoms in 2,016 Participants in NSDE II.

	Negative affect	Stressors	Positive events	Physical Symptoms
	Coefficient (*SE*)	Coefficient (*SE*)	Coefficient (*SE*)	Coefficient (*SE*)
<u>Formal Volunteering</u>	*n* = 14,856 days	*n* = 14,856 days	*n* = 14,853 days	*n* = 14,858 days
Level 1				
Formal volunteering (WP)	0.003 (*0.007*)[a]	0.081 (*0.026*)**	0.222 (*0.031*)**	0.017 (*0.043*)[a]
Level 2				
Intercept	0.295 (*0.022*)**	0.425 (*0.027*)**	0.906 (*0.043*)**	2.705 (*0.152*)**
Formal volunteering (BP)	-0.048 (*0.031*)	0.242 (*0.064*)**	0.814 (*0.088*)**	-0.396 (*0.234*)
Age, years	-0.003 (*0.000*)**	-0.008 (*0.001*)**	0.001 (*0.001*)	0.004 (*0.003*)
Men	-0.026 (*0.011*)*	-0.084 (*0.019*)**	-0.126 (*0.029*)**	-0.542 (*0.081*)**
White race	-0.037 (*0.019*)	0.026 (*0.028*)	0.015 (*0.044*)	-0.285 (*0.137*)*
Married	-0.057 (*0.014*)**	-0.001 (*0.021*)	0.035 (*0.031*)	-0.258 (*0.100*)*
Some college education	-0.015 (*0.012*)	0.159 (*0.019*)**	0.328 (*0.029*)**	-0.240 (*0.097*)*
Age x Formal volunteering	-0.000 (*0.001*)	-0.002 (*0.002*)	-0.002 (*0.002*)	0.004 (*0.003*)
<u>Providing Unpaid Assistance</u>	*n* = 14,856 days	*n* = 14,856 days	*n* = 14,853 days	*n* = 14,858 days
Level 1				
Unpaid assistance (WP)	0.012 (*0.007*)[a]	0.094 (*0.023*)**	0.145 (*0.026*)**	0.033 (*0.046*)
Level 2				
Intercept	0.296 (*0.022*)**	0.408 (*0.026*)**	0.857 (*0.042*)**	2.704 (*0.152*)**
Unpaid assistance (BP)	0.060 (*0.034*)	0.266 (*0.055*)**	0.394 (*0.086*)**	1.094 (*0.250*)**
Age, years	-0.004 (*0.000*)**	-0.008 (*0.001*)**	0.002 (*0.001*)	0.003 (*0.003*)
Men	-0.022 (*0.011*)*	-0.076 (*0.019*)**	-0.123 (*0.029*)**	-0.477 (*0.082*)**
White race	-0.037 (*0.019*)*	0.034 (*0.028*)	0.033 (*0.044*)	-0.287 (*0.136*)*
Married	-0.059 (*0.014*)**	0.003 (*0.021*)	0.050 (*0.032*)	-0.271 (*0.099*)**
Some college education	-0.017 (*0.012*)	0.166 (*0.019*)**	0.361 (*0.030*)**	-0.262 (*0.097*)**
Age x Unpaid assistance	-0.001 (*0.001*)	-0.003 (*0.002*)	0.002 (*0.002*)	-0.002 (*0.004*)
<u>Providing Emotional Support</u>	*n* = 14,853 days	*n* = 14,853 days	*n* = 14,850 days	*n* = 14,855 days
Level 1				
Emotional support (WP)	0.052 (*0.005*)**	0.257 (*0.015*)**	0.261 (*0.018*)**	0.346 (*0.033*)**
Level 2				
Intercept	0.295 (*0.022*)**	0.422 (*0.024*)**	0.878 (*0.038*)**	2.714 (*0.149*)**
Emotional support (BP)	0.197 (*0.024*)**	0.700 (*0.039*)**	1.127 (*0.055*)**	1.408 (*0.174*)**
Age, years	-0.003 (*0.000*)**	-0.007 (*0.001*)**	0.003 (*0.001*)**	0.005 (*0.003*)
Men	-0.001 (*0.011*)	-0.000 (*0.017*)	-0.007 (*0.027*)	-0.356 (*0.081*)**
White race	-0.033 (*0.019*)	0.036 (*0.024*)	0.038 (*0.039*)	-0.271 (*0.134*)*
Married	-0.057 (*0.013*)**	0.004 (*0.019*)	0.055 (*0.028*)	-0.262 (*0.098*)**
Some college education	-0.036 (*0.013*)**	0.096 (*0.017*)**	0.252 (*0.028*)**	-0.377 (*0.098*)**
Age x Emotional support	-0.001 (*0.000*)	-0.003 (*0.001*)*	-0.003 (*0.001*)*	-0.002 (*0.003*)

Note. WP = within-person, BP = between-person. Formal volunteering, providing unpaid assistance, and providing emotional support were dummy-coded such that 1 = occurred that day and 0 = did not occur that day.
[a]To ensure model convergence, we did not estimate the random effect for the slope between daily prosocial activities and well-being for the specified models.
* *p* < .05, ** *p* < .01

Table 3. Multilevel Models for Prosocial Activities Predicting Daily Well-Being and Physical Symptoms in 774 Participants in NSDE Refresher.

	Negative affect	Stressors	Positive events	Physical Symptoms
	Coefficient (*SE*)	Coefficient (*SE*)	Coefficient (*SE*)	Coefficient (*SE*)
Formal Volunteering	n = 5,706 days	n = 5,706 days	n = 5,706 days	n = 5,702 days
Level 1				
Formal volunteering (WP)	0.011 (*0.012*)[a]	0.051 (*0.045*)	0.290 (*0.060*)**	0.021 (*0.082*)[b]
Level 2				
Intercept	0.279 (*0.036*)**	0.400 (*0.044*)**	1.009 (*0.085*)**	3.026 (*0.304*)**
Formal volunteering (BP)	-0.051 (*0.041*)	0.147 (*0.094*)	0.572 (*0.179*)**	-0.460 (*0.378*)
Age, years	-0.003 (*0.001*)**	-0.005 (*0.001*)**	0.012 (*0.002*)**	0.008 (*0.005*)
Men	-0.024 (*0.021*)	-0.053 (*0.032*)	-0.131 (*0.048*)**	-0.597 (*0.145*)**
White race	0.030 (*0.026*)	0.090 (*0.041*)*	0.088 (*0.076*)	-0.071 (*0.222*)
Married	-0.067 (*0.024*)**	0.010 (*0.033*)	0.052 (*0.054*)	-0.573 (*0.168*)**
Some college education	-0.025 (*0.030*)	0.124 (*0.037*)**	0.290 (*0.060*)**	-0.534 (*0.208*)*
Age x Formal volunteering	-0.002 (*0.001*)**	-0.003 (*0.003*)	0.002 (*0.005*)	-0.002 (*0.005*)
Providing Unpaid Assistance	n = 5,706 days	n = 5,706 days	n = 5,706 days	n = 5,702 days
Level 1				
Unpaid assistance (WP)	0.003 (*0.015*)[a]	0.097 (*0.047*)*	0.146 (*0.055*)**[b]	0.012 (*0.083*)[b]
Level 2				
Intercept	0.270 (*0.036*)**	0.367 (*0.044*)**	0.922 (*0.087*)**	2.964 (*0.310*)**
Unpaid assistance (BP)	0.145 (*0.085*)	0.363 (*0.093*)**	0.786 (*0.188*)**	1.008 (*0.519*)
Age, years	-0.003 (*0.001*)**	-0.006 (*0.001*)**	0.012 (*0.002*)**	0.006 (*0.005*)
Men	-0.015 (*0.021*)	-0.037 (*0.032*)	-0.100 (*0.048*)*	-0.533 (*0.146*)**
White race	0.031 (*0.026*)	0.099 (*0.041*)*	0.111 (*0.077*)	-0.066 (*0.223*)
Married	-0.068 (*0.024*)**	0.009 (*0.033*)	0.069 (*0.053*)	-0.582 (*0.166*)**
Some college education	-0.018 (*0.030*)	0.148 (*0.04*)**	0.345 (*0.061*)**	-0.489 (*0.209*)*
Age x Unpaid assistance	-0.001 (*0.001*)	0.001 (*0.003*)	0.002 (*0.005*)	-0.006 (*0.007*)
Providing Emotional Support	n = 5,705 days	n = 5,705 days	n = 5,705 days	n = 5,701 days
Level 1				
Emotional support (WP)	0.066 (*0.009*)**	0.366 (*0.028*)**	0.393 (*0.032*)**[b]	0.354 (*0.050*)**
Level 2				
Intercept	0.289 (*0.036*)**	0.439 (*0.041*)**	1.036 (*0.080*)**	3.041 (*0.294*)**
Emotional support (BP)	0.254 (*0.049*)**	0.692 (*0.067*)**	1.020 (*0.098*)**	1.532 (*0.283*)**
Age, years	-0.003 (*0.001*)**	-0.005 (*0.001*)**	0.013 (*0.002*)**	0.008 (*0.005*)
Men	0.001 (*0.021*)	0.004 (*0.029*)	-0.047 (*0.047*)	-0.418 (*0.146*)**
White race	0.020 (*0.025*)	0.060 (*0.038*)	0.066 (*0.071*)	-0.114 (*0.215*)
Married	-0.070 (*0.023*)**	0.004 (*0.030*)	0.052 (*0.051*)	-0.586 (*0.162*)**
Some college education	-0.037 (*0.030*)	0.089 (*0.033*)**	0.243 (*0.057*)**	-0.588 (*0.204*)**
Age x Emotional support	-0.002 (*0.001*)*	-0.003 (*0.002*)	0.000 (*0.003*)	0.004 (*0.003*)

Note. WP = within-person, BP = between-person. Formal volunteering, providing unpaid assistance, and providing emotional support were dummy-coded such that 1 = occurred that day and 0 = did not occur that day.
[a]To ensure model convergence, we did not estimate the random effect for the slope of the association between daily prosocial activities and well-being.
[b]To keep the models parsimonious, the random effect for the slope between daily prosocial activities and well-being was removed because it was not significant in the specified models.
* $p < .05$, ** $p < .01$

Figure Captions

Figure 1. In NSDE Refresher, age moderated the within-person association between daily formal volunteering and negative affect such that younger adults experienced greater negative affect on days where they engage in more volunteering, relative to days when they engaged in less volunteering. By contrast, older adults experienced less negative affect on days when they engaged in more volunteering, relative to low-volunteering days. The simple slope for middle-aged adults was not significant. For illustrative purposes, simple slopes were depicted for adults at ages 35 (younger), 50 (middle-aged), and 70 (older). Age was used as a continuous variable in all models.
b = unstandardized coefficient of simple slope. *SE* of simple slopes are indicated in parentheses.
* *p* < .05

Figure 2. In NSDE Refresher, age moderated the association between daily emotional support and negative affect such that compared to younger adults, middle-aged adults showed less-increased negative affect on days when they provided greater emotional support relative to less-emotional support days. The simple slope for older adults was marginally significant. For illustrative purposes, simple slopes were depicted for adults at ages 35 (younger), 50 (middle-aged), and 70 (older). Age was used as a continuous variable in all models.
b = unstandardized coefficient of simple slope. *SE* of simple slopes are indicated in parentheses.
*** *p* < .001, †*p* < .10

Figure 3. In NSDE II, emotional support provision was associated with more same-day stressors. Age moderated the association between providing emotional support and stressors, such that emotional support-related increases in stressors were less pronounced with older age. For illustrative purposes, simple slopes were depicted for adults at ages 35 (younger), 50 (middle-aged), and 70 (older). Age was used as a continuous variable in all models.
b = unstandardized coefficient of simple slope. *SE* of simple slopes are indicated in parentheses.
*** *p* < .001.

Figure 4. In NSDE II, emotional support provision was associated with more same-day positive events. This association was moderated by age, such that younger adults showed a stronger association between providing emotional support and more positive events, followed by middle-aged adults. Older adults had less-pronounced increases in positive events on days when they provided more emotional support, compared to days when they provided less emotional support. For illustrative purposes, simple slopes were depicted for adults at ages 35 (younger), 50 (middle-aged), and 70 (older). Age was used as a continuous variable in all models.
b = unstandardized coefficient of simple slope. *SE* of simple slopes are indicated in parentheses.
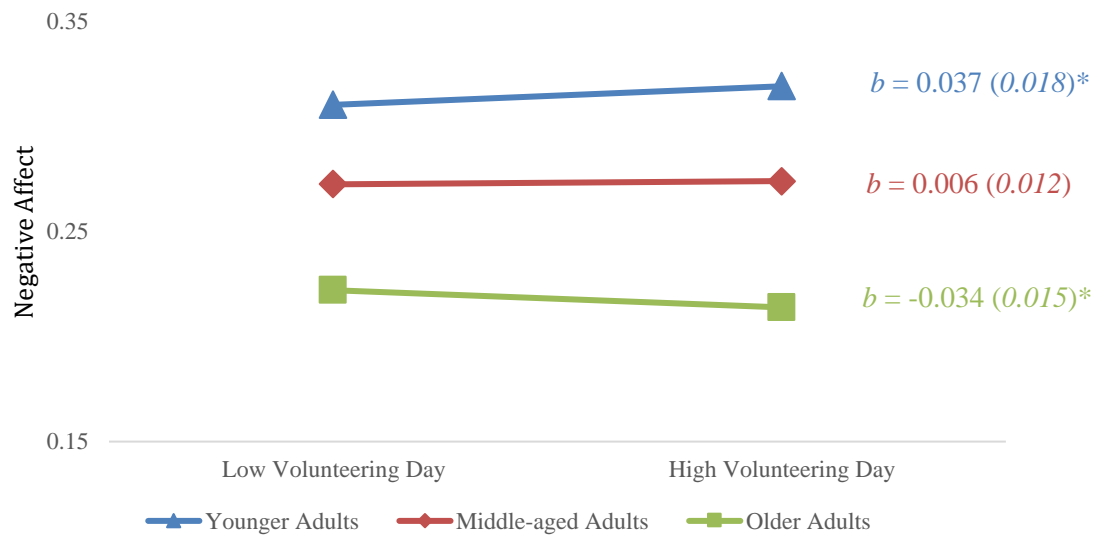*** *p* < .001

Figure 1

Figure 2

$b = 0.087 \ (0.013)\text{***}$

$b = 0.063 \ (0.009)\text{***}$

$b = 0.030 \ (0.018)^{\dagger}$

Figure 3

$b = 0.313 \ (0.033)^{***}$

$b = 0.273 \ (0.018)^{***}$

$b = 0.220 \ (0.021)^{***}$

Stressors

Provided Less Emotional Support   Provided More Emotional Support

Younger Adults   Middle-aged Adults   Older Adults

Figure 4

$b = 0.219 \ (0.027)$***
$b = 0.280 \ (0.021)$***
$b = 0.326 \ (0.038)$***
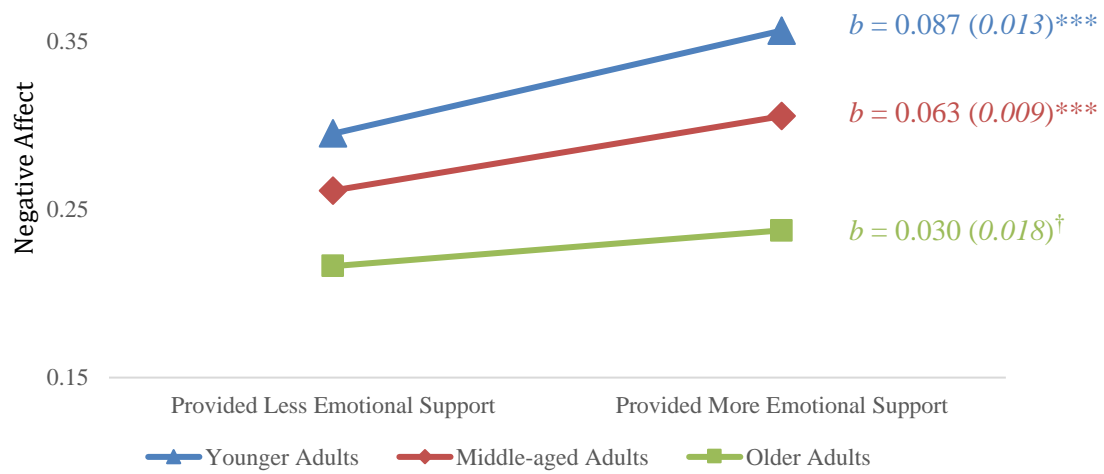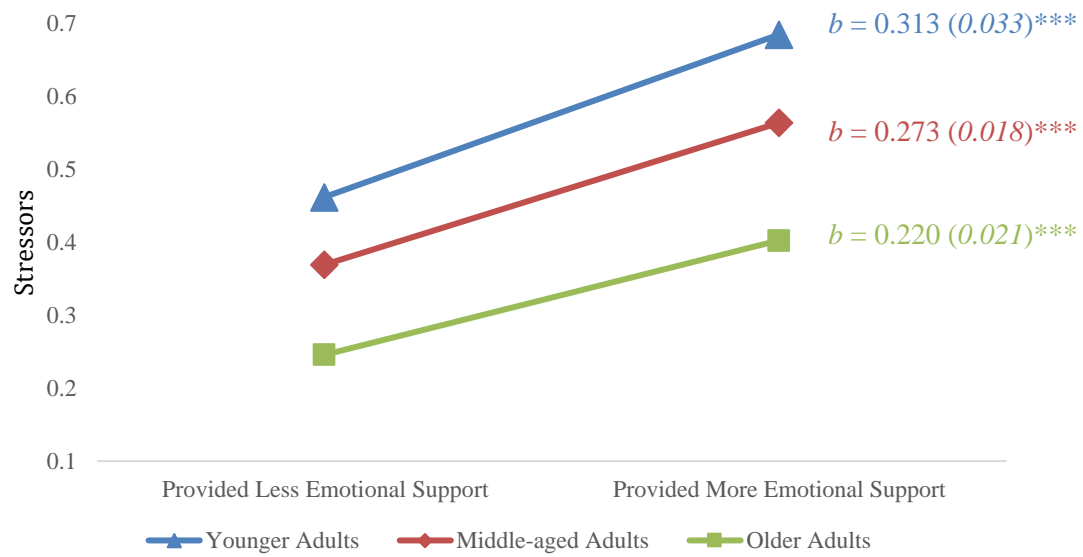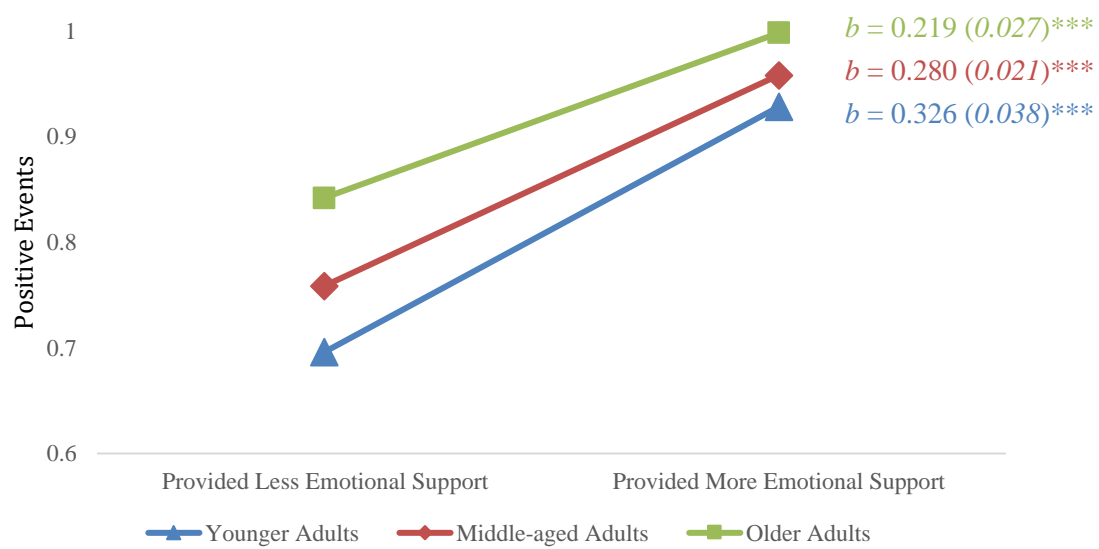
Supplementary Table 1: Person-level Correlations for Variables in NSDE II (N = 2016 persons)

		2	3	4	5	6	7	8	9	10	11	12
1	Age	.024	-.110**	.070**	-.038	.062**	.013	-.068**	-.162**	-.230**	-.004	.023
2	Gender		.069**	.051*	.176**	-.042	-.131**	-.214**	-.073**	-.084**	-.076**	-.158**
3	Education			.101**	.062**	.098**	-.006	.154**	-.027	.179**	.240**	-.083**
4	White race				.229**	.064**	-.013	-.006	-.098**	.015	.035	-.087**
5	Marital Status					.054*	-.014	-.033	-.120**	.012	.034	-.108**
6	Formal Volunteering						.080**	.137**	-.039	.119**	.243**	-.038
7	Unpaid Assistance							.231**	.045*	.113**	.112**	.126**
8	Emotional Support								.202**	.451**	.477**	.206**
9	Negative Affect									.490**	.065**	.503**
10	Stressors										.430**	.282**
11	Positive Events											.070**
12	Physical Symptoms											

Note. Gender was coded 0 = women, 1 = men. Education was coded 0 = less than some college education, 1 = completed at least some college education. Race was coded as 0 = non-White, 1 = White. Marital status was coded as 0 = not married, 1 = married.

*p < .05, **p < .01.

Supplementary Table 2: Person-level Correlations for Variables in NSDE Refresher (N = 774 persons)

		2	3	4	5	6	7	8	9	10	11	12
1	Age	-.023	-.104**	.056	-.014	.077*	.126**	-.003	-.120**	-.166**	.208**	.063
2	Gender		.119**	.085*	.149**	-.041	-.174**	-.169**	-.061	-.035	-.080*	-.181**
3	Education			.040	.102**	.059	-.175**	.061	-.045	.136**	.142**	-.149**
4	White race				.203**	.054	-.041	.029	.006	.067	.056	-.055
5	Marital Status					.075*	-.053	.005	-.118**	.022	.050	-.174**
6	Formal Volunteering						.079*	.087*	-.043	.060	.160**	-.039
7	Unpaid Assistance							.217**	.101**	.098**	.155**	.148**
8	Emotional Support								.239**	.397**	.403**	.217**
9	Negative Affect									.445**	.059	.599**
10	Stressors										.272**	.273**
11	Positive Events											.117**
12	Physical Symptoms											

Note. Gender was coded 0 = women, 1 = men. Education was coded 0 = less than some college education, 1 = completed at least some college education. Race was coded as 0 = non-White, 1 = White. Marital status was coded as 0 = not married, 1 = married.

*p < .05, **p < .01.