Associations between financial stress and interpersonal events: A daily diary study of middle-aged adults and their life circumstances

John A. Sturgeon, PhD [a], Alex J. Zautra, PhD [b], & Morris A. Okun, PhD [b]

[a] Stanford University, Palo Alto, CA 94305

[b] Arizona State University, Tempe, AZ 85287

Corresponding author:

John A. Sturgeon, PhD

Stanford University School of Medicine

1070 Arastradero, Suite 200, MC 5596

jasturge@stanford.edu

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Abstract

This study examined the relationships between daily negative financial events and positive and negative interpersonal events, as well as the moderating effects of life circumstances, for a sample of 182 adults between the age of 40 and 65 providing 30 days of diary data collected between 2008 and 2011. There was a significant and positive relationship between daily negative interpersonal events and daily levels of both negative interpersonal events and positive interpersonal events; these relationships varied by income, employment status, parenting roles, and the experience of major financial challenges over the previous year. The moderating effect of income was non-linear but its effect disappeared when the interaction between major financial challenges over the previous year and daily negative financial events was entered into the model. The results were interpreted in the context of the stress proliferation and resource mobilization theoretical models and directions for future studies were delineated with respect to individual- and community-level factors that influence the role of financial events on the daily social worlds of middle-aged adults.

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Financial resources are necessary to maintain stability in one's home life, to provide basic

necessities like food and medical care, and to access many opportunities necessary during

lifespan development, such as a college education. Indeed, the absence of adequate financial

resources may adversely affect development in a variety of ways. Significant financial problems

adversely affect development through deprivation of basic necessities (Cook & Frank, 2008) and

through decreased exposure to educational opportunities and significant challenges in social and

familial settings (Engle & Black, 2008). However, the psychological consequences of financial

challenges in adulthood have received less attention from researchers. It is reasonable to expect

that financial challenges affect adults in several ways, however. The experience of heightened

financial risk is associated with greater levels of psychological distress (MacFadyen,

MacFadyen, & Prince, 1996) , and financial stress has been identified as a contributor to the

lower ratings of subjective well-being often reported by the underemployed (Friedland & Price,

2003). Adults facing significant financial challenges also report disruptions in their social

relationships (Kahn & Pearlin, 2006). This observation is important, as financial stress may be

accompanied by significant changes in social functioning.

The social context of financial stress

Pearlin, Aneshensel, and LeBlanc (1997) proposed a stress proliferation model, in which

stressors in one domain expand their consequences to other domains of functioning by spilling

over and initiating or exacerbating stressors in other domains. Similarly, individuals facing

financial hardship also find their daily lives characterized by greater stressors arising in the

marital role, work role, and other social roles (Kahn & Pearlin, 2006). Similarly, prior research

has uncovered a persistent relationship between financial stress and interpersonal conflict

(Bornstein, 1995).

It is also important to acknowledge and measure the role of positive interpersonal events

in the examination of stress processes, as these events have an overlapping relationship with the

consequences of negative interpersonal events (Zautra, Affleck, Tennen, Reich, & Davis, 2005).

Studies examining such phenomena as the aftermath of natural disasters (Norris & Kaniasty,

1996) and marital stress (Julien & Markman, 1991) have noted that the onset of new stressors

may initially be accompanied by an increase in supportive responses from an individual's social

support network. The support mobilization theory (Barrera, 1988) posits that the onset of a

stressor may catalyze an initial increase in social support, which may buffer against the

damaging effects of the stressor (Gottlieb & Bergen, 2010). The psychological consequences of

receiving this support, however, may be variable, due to factors including whether the sufferer

must request additional support or if it is mobilized spontaneously (Gottlieb & Bergen, 2010)

and the overall perceived quality of the relationship with the support provider (Uchino et al.,

2012). It is therefore reasonable to consider whether the experience of financial threat may be

accompanied by increased social exchanges, both positive and negative in nature. However,

financial problems may not affect all people the same. For example, a variety of age-related

factors may modify the salience of life stressors.

The role of age in financial stress

Established models of lifespan development (Baltes, Reese, & Lipsitt, 1980) suggest that

development is shaped by sets of challenges that are normative within each stage of typical

development. Historical evidence suggests that age-related differences in exposure to financial

stress may exist, attributable to differential levels in career attainment and the typically higher

level of financial challenge faced by younger adults versus those in middle or older adulthood

(Wrosch, Heckhausen, & Lachman, 2000). This model of age-related stress exposure supposes

that financial worries ameliorate after adults reach a point of financial stability, typically in

middle adulthood, with the establishment of a stable career (Wrosch et al., 2000). The frequency

of exposure to life stress also appears to decline as individuals age (Zautra, Finch, Reich, &

Guamaccia, 1991).

There may also be normative age-related differences in reactivity to life stressors. Some

have suggested that the middle-aged years are characterized by a greater tendency to appraise

these stressors in a more negative way due to the presence of additional responsibilities like

caring for children (Almeida & Horn, 2005). Further, despite reporting lower levels of stress

overall (Birditt, Fingerman, & Almeida, 2005), older adults are more likely to adopt a passive

style of coping with interpersonal problems (Birditt et al., 2005) and financial problems (Caplan

& Schooler, 2007). Thus, financial problems may be felt more acutely by some adults than

others, and this may be a function of their social environment and daily responsibilities.

These models of lifespan development are based on an assumption of a normative level

of financial attainment and stability in middle adulthood. However, development may also be

affected by challenges that may arise due to historical context (e.g., living through an economic

depression) or through stressors that are not typical at any stage of development, such as job loss

(Baltes et al., 1980). Significant financial problems, a stressor that might be considered atypical

for middle-aged adults in the United States from a historical standpoint, may thus pose a unique

challenge to psychological functioning. Although socioeconomic status contributes to social

functioning and socially-derived benefits to emotional health in middle and later adulthood (Van

Groenou & Van Tilburg, 2003), exposure to financial challenges may threaten these benefits, as

changes in one's socioeconomic status appears to be a key predictor of psychological functioning

(Matthews & Gallo, 2011) and may lead to increased psychological distress and decreased well-

being (Price, Choi, & Vinokur, 2002).

Though evidence has begun to emerge for the psychological consequences of major

financial challenges (Economou, Madianos, Peppou, Patelakis, & Stefanis, 2013), it is

worthwhile to consider how financial threat may also permeate day-to-day life, particularly in

those individuals who face a greater degree of financial loss. Some have suggested that smaller,

daily stressors may actually have a greater impact on overall functioning than major life events

(DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982), though everyday stressors and chronic

stressors do appear to interact (Serido, Almeida, & Wethington, 2004). Indeed, evidence

suggests that major life stressors may sensitize individuals, thereby exacerbating their responses

to smaller events in the future (Pillow, Zautra, & Sandler, 1996). The current study sought to

further characterize the nature of financial stress in everyday life for a group of middle-aged

adults during the period of the Great Recession using daily diaries. In addition to their utility in

measuring events soon after they occur, daily diaries are advantageous for examination of effects

in daily life because they decrease potential sources of measurement error (Bolger, Davis, &

Rafaeli, 2003). We expected that, given the potentially destabilizing role of financial struggles

for psychological functioning, the experience of major financial challenges may worsen

individual responses to financial stress on a daily level.

Hypotheses

There were three goals for the current study: first, to examine whether the stress

proliferation model is applicable to the experience of financial stress at a day-to-day level.

Consistent with the stress proliferation model, it was expected that the negative consequences of

financial stressors would be accompanied by more frequent negative events with a significant

other or spouse, family members, friends, or co-workers. We examined the relationships between

daily financial stressors and events in various interpersonal domains (with family members,

friends, co-workers, and with a romantic partner). Given the potentially wide-ranging nature of

financial stress, we thought it possible that financial stressors could show relationships in any

domain of interpersonal functioning. As we did not form a priori hypotheses about financial

stressors having stronger relationships with one domain of interpersonal functioning than in

another, these analyses were conducted as an exploratory step. We also examined these

relationships across days using lagged models and by testing the models in reverse order.

Though we expected that the relationships between financial stress and interpersonal functioning

would be stronger on the same day, we attempted to increase our ability to infer causal

relationships within our models by also examining the relationships of financial stressors with

interpersonal functioning on the subsequent day. Similarly, we expected that a causal effect of

financial stress on interpersonal stress was more likely from a theoretical standpoint, but tested

the models in reverse order with an expectation that interpersonal stressors would not serve as

suitable predictors of financial events, thereby increasing our confidence in the order of the

examined effects.

      The second goal of the current study was to test the applicability of the support

mobilization model to the experience of financial stress by examining whether increases in

negative financial events are coupled with increases in positive interpersonal events. Our

expectations regarding the relationships between financial stressors and positive interpersonal

events were less clear, however; on one hand, it was reasonable to expect that the experience of

financial stress might decrease the likelihood of engaging positively with others, which would

provide further support for the stress proliferation model. On the other hand, sources of support

in one's social network might also spring into action when an individual is facing financial

hardship, a result which would be in line with the support mobilization hypothesis. We thus

examined the relationship between financial stress and positive interpersonal events as a more

exploratory step. As the effects of positive and negative interpersonal events have been found to

be interdependent (Nezlek & Allen, 2006; Rook, 2003), we examined concurrent changes in both

positive and negative interpersonal events that accompanied the occurrence of financial stressors

on the same day.

The third goal of our study was to examine whether non-normative life circumstances

(e.g., major negative financial events) and normative life circumstances (e.g., parenting) might

modify the relationships between financial stressors and interpersonal functioning in midlife.

Therefore, we examined several contextual variables as moderators of the within-person

relationships between financial stress and interpersonal events: age, income, employment status,

marital status, presence of children in the home, and the presence of a major financial stressor in

the previous year. We hypothesized that individuals of varying income levels might respond

differentially to episodic financial stress. It is plausible that individuals with high incomes might

be impacted the most by negative financial events because they have the most to lose, but also

possible that they might be impacted the least by negative daily financial events because their

relative financial security affords them a degree of protection against daily financial threat.

Potential quadratic and cubic effects of income were also tested, as prior research has suggested

that the relationship between income and emotional well-being may be best represented in a non-

linear fashion (Oishi, Diener, & Lucas, 2007).

Similarly, we hypothesized that factors that might increase an individual's feelings of responsibility to provide a stable income, such as employment or having a spouse or children in the home, might alter the social concomitants of financial stress. We also examined the moderating effects of these contextual variables on the relationship between negative financial events and positive interpersonal events. Though the responsibility of having a spouse or children to provide for could conceivably increase the potential for interpersonal stress, we also suspected that these factors might provide some protective influences on social functioning through greater opportunities for positive interpersonal engagement. We also collected data regarding events with major implications for future finances (e.g., losing a job, losing a house to foreclosure). Consistent with previous evidence for the sensitizing effects of major life events for daily challenges (Pillow et al., 1996), we hypothesized that those who had faced major threats to their financial security might also be more sensitive to smaller financial problems on a daily level. For example, occurring against the backdrop of a major threat to financial security, the pinpricks associated with daily negative financial stressors may be more salient and evoke greater friction between spouses. We tested these hypotheses using daily diaries, collected across 30 consecutive days per participant from a community sample of 182 participants collected from September 2008 through October 2011.

Method

Participants

We examined these questions using daily diary data obtained from a sample of middle-aged adults (ages 40-65) recruited from a community-based healthy aging study. Participants were 182 people between the ages of 40 and 65 (mean age 53.71 years). They were randomly selected, at the ratio of 1 to 4, from a larger community sample recruited to be representative of

the middle-aged population in Maricopa County, Arizona. The sample was comprised of 95

women, 85 men, and 2 participants who chose not to report their gender. Median income in the

sample was 50,000 – 65,000 dollars per year. Ethnicity was reported as follows; Caucasian

(152), Hispanic (23), Native American or Alaska Native (23), African American (9), and Asian

(6). Note that these ethnic categories were not exclusive, as participants could report more than

one ethnicity. At the time of data collection, 51.6% of participants were married. 43.4% of the

participants reported being employed full time, 15.9% of participants reported being employed

part time, and 34.6% of all participants reported not being employed. Of the 63 participants who

reported that they were not currently employed at the time of data collection, 30 reported that

they were retired, 5 were students, 8 reported that they stay at home to take care of their children

or other family members, 8 reported being unable to work due to illness or injury, and 9 reported

that they were working as volunteers without pay (these categories also were not exclusive and

more than one explanation for not being employed could be endorsed by each participant).

Approximately 35% of the sample reported at least one major financial event in the previous

year. Of the 182 participants included in the current study, 69 (37.9%) had at least one child

living in the home at the time of data collection.

Procedure

        After enrolling in the study, participants were trained by a research assistant to use a

tablet computer supplied by the research team to complete daily diaries each night for 30 days.

Participants were encouraged to notify laboratory staff immediately if a problem occurred with

the laptop. A built-in date-checking software program prevented data entry on days other than

the correct day. In the event of laptop malfunction, a research assistant traveled to the

participant's home to replace the malfunctioning laptop with a working one. After completing 30

days of diaries, participants were visited by a research assistant, debriefed, compensated for their efforts, and the data were downloaded for analysis.

Measures

  Interpersonal and Financial Events. Measures of positive and negative interpersonal events in daily life were assessed using ratings from the Inventory of Small Life Events (ISLE; Zautra, Guarnaccia, & Dohrenwend, 1986). The number of daily negative interpersonal events was computed as a sum of daily occurrences of stressful events in friendship (6 items), family (5 items), spouse/significant other relations (6 items) and work life (6 items).The number of daily positive interpersonal events was computed similarly, as a sum of positive events in friendship (7 items), family (11 items), spouse/significant other relations (6 items), and work life (5 items). The number of daily negative financial events was computed as a sum of events endorsed on a given day out of 7 possible events. A list of the daily negative financial events and the frequencies of these events can be found in Table 1. The ISLE contains items that reflect both active participation in social activity (e.g., "Helped a family member", "Went to a party or other social gathering", "Argued with spouse/partner about money") and passive experiencing of social events ("Received a compliment from a friend or acquaintance", "Received a gift from spouse/partner", "Had added pressure to work harder and faster"). The ISLE was designed to assess changes in non-overlapping domains of everyday life, so like other life event inventories, internal consistency reliability is expected to be low (Zautra, Johnson, & Davis, 2005).

  The presence of major financial stressors was also assessed using 6 distinct items from the Psychiatric Epidemiology Research Interview (PERI) Life Events Scale (Dohrenwend, Askenasy, Krasnoff, & Dohrenwend, 1978). Like the ISLE, PERI scores were expressed as a sum of the total number of items experienced over the past year. A list of the major negative

financial events and their frequencies can be found in Table 2. The internal consistency of the

PERI financial stress subscale was acceptable (α = .732).

Contextual variables. Employment status was assessed using a series of yes/no

questions assessing differing levels of employment (e.g., currently working, retired, student,

temporarily not working, volunteering/working without pay, unable to work due to illness,

staying home to take care of children or other family members). Participants could endorse

multiple employment statuses (e.g., endorsement of being both a student and volunteering).

Marital status was assessed using a series of categorical designations (e.g., married, unmarried

but living with partner, in a committed relationship but not living with partner, widowed/partner

deceased, single/never married, divorced or separated). Yearly household income was assessed

using a series of categories (e.g., "$0-$10,000" ranging up to "$125,000 or more"), but was

divided into quintiles for the purposes of analysis, which will be detailed later. Participants were

also asked to report the number of their children that were living in their household, which

included both biological relatives and step-children. Both blood relatives and step-children were

included in the analysis, as their presence in the home was deemed likely to contribute to the

caregiver role of the reporting participant.

Overview of Statistical Analysis Methods

Multi-level modeling was the primary method employed in the analysis of these data; this

analytic approach allows for the regression of linear and non-linear effects in hierarchical

datasets (containing multiple observations across multiple individuals) while adjusting standard

error estimates to prevent artificial inflation of significance values that may occur because the set

of observations obtained from each respondent is likely to have a significant correlation or

clustering of responses according to individual characteristics (Raudenbush & Bryk, 2002). First,

direct linear within-person relationships were tested between negative financial events and both negative and positive interpersonal events. As measurements were taken concurrently for each day, we also constructed lagged models to further examine the possibility of temporal precedence and to potentially strengthen our causal inferences for the examined relationships. We also tested the models in reverse as a step of confirming a stronger causal relationship in our theoretically proposed temporal order. Next, income, employment status, the presence of children in the home, and the occurrence of major financial negative events over the previous year were tested as contextual moderators of these relationships. Participant age and marital status were initially chosen as important contextual variables and were included as potential moderators in initial analyses, but were not found to be significant moderators in any statistical model and were thus excluded from the results of this study.

Multilevel regression coefficient estimates were calculated using the SAS PROC MIXED program. Three contextual variables were modeled as covariates (gender, education, and average number of hours worked each week) to test whether these variables substantially altered the significance of observed moderating effects of the contextual variables. As contextual variables are statistically independent from daily-level variance, their inclusion does not change correlation coefficient estimates of daily-level predictors (Raudenbush, 2002). As a result, covariates were not modeled for non-moderated relationships involving only daily-level variables. For lagged models, an AR(1) autoregressive component was used to account for autocorrelation of scores between days, yielding unique estimates of cross-day effects, independent of same-day effects. Moderating effects were modeled as interactions of daily negative financial events with each of the contextual variables (income, employment, presence of children in the home, and presence of major financial events over the previous year).

For predictors measured at the daily level, scores were centered using cluster (or person) means, not the grand mean. This centering procedure yields predictors containing only daily-level variance by removing the influence of contextual variance (i.e., variance that remains stable across all days) in the predictor (Enders & Tofighi, 2007). The income moderator was constructed as a categorical variable representing quintiles (i.e., 20% divisions) of the overall distribution in the sample. Participants in the 0%-20% quintile reported incomes of $25,000 or less, those in the 20%-40% quintile reported incomes between $25,000 and $50,000, those in the 40%-60% quintile reported incomes between $50,000 and 80,000, those in the 60%-80% quintile reported incomes between $80,000 and $125,000, and those above the 80% quintile reported incomes above $125,000 per year. Contextual variables were centered using the grand mean (the mean of all participant mean scores). Outcome variables were not centered, as modeling of cross-level interactions may alter both daily-level variance and contextual (stable) variance in outcomes (Raudenbush, 2002). Changes in daily-level variance and contextual variance were computed as an effect size measure using a proportional reduction of variance (PRV) statistic. PRVs were computed by comparing daily-level variance and contextual-level variance from a null model (modeling only the intercept as a predictor of the outcome variable) to a full model, including both the intercept and the predictors of interest in each predicted relationship, and dividing the difference by the null model variance (Raudenbush, 2002). This approach yielded estimates of the PRV for daily-level and contextual-level intercept variances separately. The effect size estimates for each outcome variable can be found in Table 4.

Results

Descriptive statistics for all variables are found in Table 3, effect size estimates for the direct relationships between daily financial events and positive and negative interpersonal events

can be found in Table 4, and the moderating effects of contextual variables on the relationships

between daily financial events and negative and positive interpersonal events are represented in

Tables 5 and 6, respectively. Due to the non-linear nature of the income moderation analyses,

these results were excluded from Table 5. Diary main effects are reported first, followed by an

examination of both main effects and moderating effects of income on the relationships among

diary measures.

Financial stress and the negative interpersonal events

When non-moderated models were analyzed, there was a significant positive relationship

between the number of negative financial events experienced on a given day and the total

number of negative interpersonal events (across all domains) experienced on the same day (B =

.510, $p < .001$). When this relationship was tested using lagged models, there was no significant

relationship between negative financial events and next-day negative interpersonal events (B =

.032, $p = .326$). When the models were reversed in order, negative interpersonal events were

significantly predictive of same-day negative financial events (B = .075, $p < .001$). However,

negative interpersonal events did not predict next-day financial events (B = .008, $p = .227$).

When the relationships between daily negative financial events and negative events from each

interpersonal domain were examined separately, a greater number of daily financial events were

found to significantly predict more same-day negative events with family members (B = .152, p

$< .001$), friends (B = .145, $p < .001$), one's spouse or significant other (B = .116, $p < .001$), and

with co-workers (B = .097, $p < .001$).

Financial stress and positive interpersonal events

There was also a significant positive relationship between the number of negative

financial events experienced on a given day and the total number of positive interpersonal events

experienced on the same day (B = .849, $p < .001$). However, when tested using a lagged model, there was no significant statistical relationship between negative financial events and next-day positive interpersonal events (B = .037, $p = .588$). When the order of the model was reversed positive interpersonal events were found to significantly predict negative financial events on the same day (B = .023, $p < .001$), but not on the next day (B = .002, $p = .681$). When the relationships between daily financial stressors and positive events from each interpersonal domain were examined separately, there were significant and positive relationships between same-day levels of daily negative financial events and positive events with one's family (B = .344, $p < .001$), friends (B = .156, $p < .001$), one's spouse or significant other (B = .233, $p < .001$), and co-workers (B = .117, $p < .001$).

Moderating effects of contextual variables

Income. When income was included as a potential moderator of the relationship between daily negative financial events and daily negative interpersonal events, significant cubic ($B^3 = -.088$, $p < .001$), quadratic ($B^2 = .7250$, $p > .10$) and linear (B = -1.699, $p < .001$) effects of income were observed. A graphical representation of this cubic effect can be seen in Figure 1. The significant cubic effect of income indicated that the relationship between daily negative financial events and daily negative interpersonal events was stronger for individuals with incomes under $25,000 per year and for those individuals with incomes between $50,000 and $125,000 per year than for people with incomes between $25,000 and $50,000 per year and for those individuals with incomes above $125,000 per year. When the slopes representing the relationship between negative financial events and negative interpersonal events were examined across different income levels, no significant outliers were noted.

There was also a significant interaction between income and negative financial events predicting daily positive interpersonal events (B = .198, p < .001), such that the positive relationship between negative financial events and positive interpersonal events was stronger for individuals with higher incomes. The direction and significance of these interactions did not change when gender, education, and average number of weekly work hours were entered as covariates.

It is worth noting that people with higher incomes reported a significantly greater number of both positive and negative interpersonal events on average, as well as a lower average number of negative financial events. Thus, it was possible that the interaction of the income variable with daily negative financial events were due to differences in the average number of daily negative financial events, positive interpersonal events, or negative interpersonal events. However, when the average number of both negative financial and negative interpersonal events reported by participants were modeled in interactions with daily changes in negative financial events predicting daily changes in negative interpersonal events, the negative financial events-by-income cubic interaction remained significant. Similarly, the cross-level interaction between negative financial events and self-reported income also persisted after participant means for negative financial events and positive interpersonal events were modeled in interactions with daily negative financial events. Thus, the significance of these interactions was not dependent on the average number of financial and interpersonal events reported across the 30 days by participants.

Major financial stressors over the previous year. A significant positive interaction was observed between the occurrence of major financial events over the previous year and daily negative financial events (interaction B = .048, p = .039), such that the relationship between

daily negative financial events and daily negative interpersonal events was stronger for those

who reported one or more major financial stressors over the previous year. Further, modeling of

this interaction rendered the linear, quadratic, and cubic relationships between income and daily

negative interpersonal events non-significant. As an additional step to clarify this finding,

income was also tested as a predictor of the number of major financial events over the previous

year; not surprisingly, the number of reported major financial events over the previous year was

significantly higher for individuals of lower incomes (B(1, 98) = -.351, p = .001). The interaction

of major financial events and daily negative financial events in predicting daily negative

interpersonal events did not change when gender, education, or number of hours worked each

week were included as covariates. The presence of a major financial stressor over the previous

year did not significantly moderate the relationship between daily negative financial events and

daily positive interpersonal events.

Employment status. The relationship between negative financial events and negative

interpersonal events was stronger for employed participants than unemployed participants

(interaction B = .219, p = .0013); however, this interaction was reduced to non-significance (B =

.192, p = .676) when the number of hours worked by participants was included in an interaction

with negative financial events in the same model, which yielded a statistically significant

interaction (interaction B = 1.039, p = .039). Inclusion of other covariates (gender and education)

did not alter this interaction. Employment status did not moderate the relationship between daily

levels of negative financial events and positive interpersonal events.

Presence of children in the home. Participants who reported currently having more

children in their homes showed a greater relationship between negative financial events and

negative interpersonal events than participants with fewer or no children in their homes

(interaction B = .068, *p* = .0045). Similarly, there was a stronger positive relationship between

negative financial events and positive interpersonal events for those individuals with children in

the home (interaction B = .186, *p* = .0003). The direction or significance of these interactions did

not change when gender, education, or number of hours worked each week were modeled as

covariates.

Discussion

The current study tested variants of the stress proliferation and support mobilization

models by examining the relationships between daily negative financial events and interpersonal

events in a sample of middle-aged adults. We found that daily threats to one's financial status are

accompanied by an increased number of negative events in one's social relationships. On days

that individuals experienced a greater number of negative financial events, they also reported a

greater number of co-occurring negative interpersonal events. These findings are among the first

to illuminate the interconnectedness of social and financial stress, and the first to do so using a

method that allows for examination of within-person changes in social functioning at the day-to-

day level. The results of the current study are consistent with previous models of stress

proliferation that suggest that financial stress may be accompanied by disruptions in other

domains of functioning, namely interpersonal relationships (Kahn & Pearlin, 2006).

The current results add incrementally to the examination of this phenomenon, as we

examined the relevance of financial stress for interpersonal functioning more broadly through the

inclusion of positive interpersonal events. On days when individuals faced financial stressors,

they were also likely to experience an increase in the number of positive interpersonal events that

they experienced. This pattern of findings indicates the presence of protective influences in our

everyday social environment that contribute to adaptive responses to stress, but also may reflect

mobilization of sources of social support as has been described by Barrera (1988), among others. Though we did not measure attempts to solicit social support in this study, we propose that some of these supportive responses may be maintained by sustainable relationships that are rewarding for both the provider and recipient of such supportive responses. Further, it is notable that these supportive responses were robust across domains, as significant and positive relationships were noted between daily negative financial events and positive events with one's spouse or significant other, friends, family members, and co-workers.

The role of context in financial stress

We also sought to further characterize the relationships between financial stress and interpersonal events through the examination of contextual factors that were likely to be most relevant for midlife adults. Notably, we found that the relationship between the number of reported financial stressors and interpersonal events on the same day varied by income. These results complement previous findings that suggest a non-linear relationship between income and ratings of subjective well-being (Oishi et al., 2007). Individuals with the lowest incomes (under $25,000 per year) and those with moderately high levels of income (between $50,000 and $125,000 per year) reported greater changes to the negative side of their interpersonal lives on days of higher financial strain than those with modest ($25,000 to $50,000 per year) or high incomes (above $125,000 per year). This finding was characterized by a greater relationship between daily levels of negative financial events and negative interpersonal events. It is noteworthy that middle-class individuals showed the strongest relationship between their levels of financial stress and their negative interpersonal functioning. It may be that this finding reflects the precariousness of the social status of the middle class. Whereas those in the highest income groups have resources to overcome emergent financial challenges and the poorest individuals

have already experienced substantial loss, those in the middle class face the possibility of

substantial upheaval in their way of life, and this threat of losing social status contributes to

greater disruption of interpersonal functioning. These findings are not meant to diminish the

struggles of the poor, however; those who suffer from the lowest incomes almost certainly face

greater day-to-day challenges in their psychological functioning, but our findings also indicate

the presence of a unique effect that may reflect the consequences of facing a threat to one's

social status for those who have attained a relatively higher level of financial success.

Notably, those participants who experienced a major financial stressor in the prior year

not only showed a stronger relationship between daily negative financial events and negative

interpersonal events, this interaction reduced the moderating effects of income for the

relationship between daily negative financial events and negative interpersonal events to non-

significance. Thus, the experience of recent major financial stressors may be a more salient

predictor of daily reactions to financial stress than an individual's income. These findings may

also reflect a difference in the nature of these measured variables, however; whereas income

might be considered a relatively static marker that confers protective value in many instances,

our major financial stress variable might be considered a dynamic marker that reflects a unique

financial threat characteristic of a financial downturn. Our results are thus consistent with

previous findings, which suggest that major life events may increase susceptibility to the adverse

effects of smaller stressors (Pillow et al., 1996).

Further, our results suggested that those individuals who were in current parenting roles

of children in the household showed a greater relationship between daily negative financial

events and negative interpersonal events, but also showed a stronger relationship between

negative financial events and positive interpersonal events. Thus, engagement in the role of a

parent, while increasing the likelihood of interpersonal stress on days of higher financial stress,

also provided additional opportunities for positive engagement. The role of parenting in the lives

of middle-aged adults may therefore be viewed as an important contextual factor that contributes

to unique vulnerability to some stressors like financial threat but also confers increased

opportunities for positive interpersonal connections, which are an important source of positive

emotion (Zautra et al., 1986).

Interestingly, employed participants also showed a stronger relationship between daily

negative financial events and negative interpersonal events, but did not show an increased

relationship between negative financial events and positive interpersonal events. It is somewhat

difficult to draw definitive conclusions from this finding, as employment status is nevertheless

likely to be a protective factor for psychological functioning in many cases. However, our

findings indicate that the benefits of employment do not appear to extend to buffering of

financial stressors when they occur. Though our results do not allow us to draw this conclusion

definitively, it is reasonable to consider whether the occurrence of daily financial stressors may

be more salient for the employed because they serve as reminders that holding a job may not be

sufficient to protect oneself and one's family against the threat of financial loss. Alternatively,

employed individuals, needing to balance both work and family, may experience the effects of

financial stressors more acutely due to these competing demands. In either case, these

possibilities warrant future examination, as this phenomenon reflects a salient example of the

overlapping nature of seemingly independent stressors in daily life. Further, our results suggested

that maintaining the role of employee is not necessarily the primary contributor to this enhanced

relationship between financial stress and interpersonal stress; instead, there may be aspects of

one's job (such as the number of hours worked each week) that are more salient contributors to stress.

The complex nature of the study results suggest that the effects of financial stress might be best represented through modeling of multiple moderating factors. "Risk" and "resilience" factors may not be mutually exclusive, but instead may co-occur and contribute to a more nuanced understanding of the dynamics of adaptation to stress including both competing and additive mediated effects, as well as the presence of complex moderators that may enhance or suppress direct relationships (Shahar, Elad-Strenger, & Henrich, 2012). Our analyses indicated that the occurrence of financial stress on a given day was related to increases in both negative interpersonal events and positive interpersonal events, and these relationships were modified significantly by a variety of factors, including income, employment status, parenting responsibilities, and exposure to previous financial stress. For example, events thought to be largely negative in their emotional consequences, such as negative financial events, may show unexpectedly complicated effects when additional aspects of vulnerability and resilience are considered.

These reactions to financial stress varied according to several contextual factors pertinent to midlife (e.g., employment, being a parent). However, the occurrence of major financial stressors may be more appropriately defined as period events, in that major financial losses are not a unique or characteristic aspect of middle age. Instead, the occurrence of such stressors may be partially attributable to the sampling period, which occurred during a period of heightened worldwide financial discord (between 2008 and 2011). Nevertheless, it should be noted that only one-third of our sample reported any major financial stressors over the previous year, which suggests that the experience of financial loss was far from uniform across individuals. The

relatively low rate of endorsement of these items may suggest that, despite widespread economic instability, many individuals were able to avoid significant losses to their financial standing.

These findings highlight the importance of conceptualizing patterns of stress occurrence and response as a series of graded reactions, some of which reflect deleterious consequences of financial stress while others reflect the response of an individual's social network that may confer resilience against the threat. Our findings also highlight the necessity of constructing these models with an understanding of both linear and non-linear relationships, as well as potential modifiers (i.e., moderators) of these relationships. Our results further illustrate that examination of daily life may be a fruitful window for studying the dynamic interplay of adaptive and maladaptive responses to life stressors.

Notably, our results did not reveal any age-based differences in the relationships between interpersonal functioning and financial stress. However, our sample did not allow us to compare these relationships to the same relationships in younger adults, for whom financial stress may be more normative (Wrosch et al., 2000). Nevertheless, our current findings highlight that when financial stress occurs, it is accompanied by changes in interpersonal functioning of individuals in middle age.

Future directions for study

The findings of the present study suggest several areas for future research. First, our results highlight the importance of considering developmentally-salient social roles in the articulation of daily stressors and interpersonal functioning. It may thus be beneficial for future research to examine other age-relevant roles and their implications for stress reactivity and exposure. For example, those individuals in the role of a caretaker for a sick relative or spouse or are disabled themselves may show heightened consequences of financial stress as a result of

increased feelings of responsibility or an inability to generate additional financial resources to compensate for financial loss. Older individuals who are widowed or have not chosen to marry or have children, meanwhile, may be less likely to be in a position of needing to provide financial support to others, and consequently may be less reactive to financial stress. Similarly, our study measured the importance of having children within the home, but did not account for adult children who may be living outside the home but are still dependent on their parents for financial support (e.g., for living expenses or college tuition). We urge further attention to this question in the future, as young adults are facing increasingly uncertain financial prospects upon leaving the home, which may limit their ability to live without financial support from their parents (Furstenberg, 2010). In addition, future research could address whether reactivity to negative daily financial stressors vary across the adult life course.

Second, it is intriguing that individuals that might fall in the "middle" or "upper-middle" socioeconomic class due to their income level (between $50,000 and $125,000 per year) appeared to be more reactive to financial stressors than participants with lower levels of income ($25,000 to $50,000 per year) as well as those with greater levels of income (above $125,000 per year), which we did not predict at the outset of the study. Perhaps low-income individuals are chronically financially stressed and thus are non-reactive to day-to-day negative variations in their financial world. High-income individuals, in contrast, may be largely insulated from the impact of daily fluctuations in negative financial stress. Thus, those with moderate incomes report the strongest reactions in terms of negative interpersonal events to increases in negative financial stressors. Examination of the mechanisms underlying income-based differences in reactivity to financial stress may be a fruitful area of further inquiry.

It is important to acknowledge that our findings focus primarily on the interconnected nature of stressors, and do not examine other important indices of psychological functioning, such as emotional states. Social relationships are a key predictor of both positive and negative emotional states (Zautra et al., 1986), and emotions also affect both the perception and quality of social engagements (Eisenberg, Fabes, Guthrie, & Reiser, 2000). It is thus important to understand that emotions, through a mutually influential relationship with social functioning, may be a key area of future study when examining financial stress in the future.

Limitations

The relationships between daily financial stress and interpersonal functioning gleaned from a daily diary methodology are correlational. Our use of lagged models and reversed models yielded no additional information regarding the temporal or causal nature of these relationships, so our comparison of study results to the stress proliferation and support mobilization models is based on theoretical assumptions, rather than unequivocal statistical evidence. Financial and interpersonal functioning were coupled at the day-to-day level, but we cannot state with certainty that financial stress causes changes to interpersonal functioning. Consequently, our results should be interpreted with this caution in mind and future research may be valuable to further tease apart the temporal and causal associations between distinct domains in which stress may occur. To this end, use of multiple observations per day, as in the case of experience sampling methods (Larson & Csikszentmihalyi, 1983), could yield a greater ability to draw causal inference from these examined relationships.

Our use of the ISLE, a well-validated measure of daily interpersonal functioning (Zautra et al., 1986), included item content that describes both active social activities as well as passive experiencing of social events, across several domains of functioning. While the wide-ranging

nature of item content for this measure is effective in capturing the diverse nature of

interpersonal functioning, it is also important to note that the sums of items used for

interpersonal functioning include heterogeneity in the amount of control that the individual has

over each social event. It is possible that interpersonal events assessed by the ISLE vary in the

magnitude of their relationships with financial stressors. For example, financial stress may have

a larger effect on the likelihood of having an argument with a loved one than on the likelihood of

meeting a rude person for the first time. Our interpretation of the data in the context of the stress

proliferation and support mobilization hypothesis should thus be understood with this limitation

in mind. Although the item content on the ISLE does not measure specific responses to stress

that might unequivocally reflect stress proliferation or support mobilization, our findings

nevertheless reflect a robust increase in both negative and positive events across all interpersonal

domains on days of greater financial stress.

Previous research has indicated that individuals with very low income (i.e., under

$10,000 per year) are more likely to report financial and psychological distress than individuals

making more money (Diener, Sandvik, Seidlitz, & Diener, 1993). Our findings indicated a

similar pattern, but in our study less than 20 percent of the sample reported income levels below

$25,000 per year. Similarly, incomes at the highest end were not fully represented in our sample;

only a few of 182 participants reported incomes above $150,000 per year. Thus, the relationships

between financial and interpersonal stressors found here for the high income group may not be

sustained when examined with a larger sample of wealthy residents.

During the time period of data collection (2008 to 2011) unemployment rates in the

United States rose to a level unseen since the 1930s, leading to national concerns about financial

stability and long-term employment prospects (Farber, 2011). It is therefore reasonable to

suspect that concerns about finances were likely higher during this period than prior to 2008.

Though our sample is informative in characterizing these relationships during the Great

Recession in the United States, we do not have data from a period of relative economic stability

against which we can compare the frequency or consequences of similar financial stressors. As a

result, it cannot be assumed that individual reactions to negative financial events characterized in

this study generalize to periods of economic stability or growth, nor can we assume that our

findings reflect a unique effect of the Great Recession itself, such that participants in our sample

experienced a higher number of financial stressors or worse reactions to these stressors than they

might have during a period of greater economic stability. Though our sample was drawn from

individuals during the time of the Great Recession, this historical event is best viewed as the

backdrop to our current analysis.

Conclusions

Our investigation is among the first to examine a potentially powerful source of everyday

stress, financial stress, and its relationship to social functioning using a daily diary data method

of assessment. Our participant sample yielded data suggesting the presence of substantial

financial stress in individuals in middle adulthood, a stage of life that has been traditionally

characterized by lower levels of financial stress. We demonstrate that even day-to-day stressors

spill over into daily life and are accompanied by disruptions in the individual's social

relationships. The deleterious concomitants of financial stresses may be countered by a

responsive social network, at least initially, and are modified by developmentally relevant factors

and responsibilities. Indeed, an individual's stage of life and its corresponding demands can have

complex and potentially profound implications for psychological functioning, and further efforts

to delineate the specific effects of these variables may be a valuable area of pursuit.

Acknowledgments

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Tables

Table 1

Frequency table of stressful daily financial events

	Frequency of Event (Percent of days with endorsed event)
Had to pay large bill (e.g., household or auto repair, medical bill)	578 (11.4%)
Overdrew checking account	66 (1.3%)
Had expensive household repair	121 (2.4%)
Ran out of money to cover living expenses	297 (5.9%)
Could not help child(ren) or other family member with finances	247 (4.9%)
Conflict with creditors (demanding phone calls or letters)	156 (3.1%)
Lost money gambling	19 (0.3%)

Observations were made based on 182 participants, with daily diary assessments of up to 30 days.

Table 2

Frequency table of major negative financial events over the previous year

	Frequency of Event (Percent of participants who endorsed event)
Have a major worsening of financial condition	45 (23.7%)
Been pressured to pay bills by stores, creditors, or bill collectors	29 (15.3%)
Fallen behind in paying the rent or mortgage	20 (10.5%)
Been unable to pay for medication or other medical necessities	18 (9.5%)
Been unable to purchase needed food	10 (5.3%)
Had a car, furniture, or some items bought on an installment plan repossessed	5 (2.6%)

Observations were made based on responses from 190 participants who completed this assessment.

Table 3

Descriptive statistics

	Mean	Standard Deviation
Daily Negative Financial Events	.229	.605
Major Negative Financial Events	.894	1.356
Negative Interpersonal Events	.771	1.440
Positive Interpersonal Events	3.380	3.337
Age	53.49	7.494
Number of children in Household	.678	1.162

Observations were made based on 182 participants, with daily diary assessments of up to 30 days.

Table 4

Estimates of Effect Size for Each Outcome Variable Based On Proportional Reduction of

Variance Statistics

Outcome	Predictors	Daily Variance PRV	Contextual Variance PRV
Negative Interpersonal Events	NFE	.046	.005
Positive Interpersonal Events	NFE	.028	.000

NFE= Negative Financial Events

Observations were made based on 182 participants, with daily diary assessments of up to 30 days.

Note: PRV stands for "Proportional Reduction of Variance"

Table 5

Moderating effects of contextual variables on the relationship between daily financial events and

daily negative interpersonal events

Moderator	Predictor	B
Employment Status	NFE	.364**
	EMP	.408**
	NFE*EMP	.229**
Major Financial Stressor Over	NFE	.429**
Previous Year	MFS	.115†
	NFE*MFS	.049*
Number of Children in Household	NFE	.408**
	CHI	.127*
	NFE*CHI	.091**

Observations were made based on 182 participants, with up to 30 daily diary assessments.

†p < .10. *p < .05. **p < .01.

NFE= Daily Negative Financial Events, EMP = Employment Status, MFS = Major Financial

Stressors Over Previous Year, CHI = Number of Children in Household

Note. Asterisks (*) indicate tests of interactions between predictors and moderators.

Table 6

Moderating effects of contextual variables on the relationship between daily financial events and daily positive interpersonal events

Moderator	Predictor	β
Employment Status	NFE	.770**
	EMP	-.059
	NFE*EMP	.128
Major Financial Stressor Over	NFE	.997**
Previous Year	MFS	-.318*
	NFE*MFS	-.088†
Number of Children in Household	NFE	.605**
	CHI	.098
	NFE*CHI	.220**
Income	NFE	.358*
	INC	.347**
	NFE*INC	.199**

Observations were made based on 182 participants, with up to 30 daily diary assessments.

†p < .10. *p < .05. **p < .01.

NFE= Daily Negative Financial Events, EMP = Employment Status, MFS = Major Financial Stressors Over Previous Year, CHI = Number of Children in Household, INC = Income

Note. Asterisks (*) indicate tests of interactions between predictors and moderators.
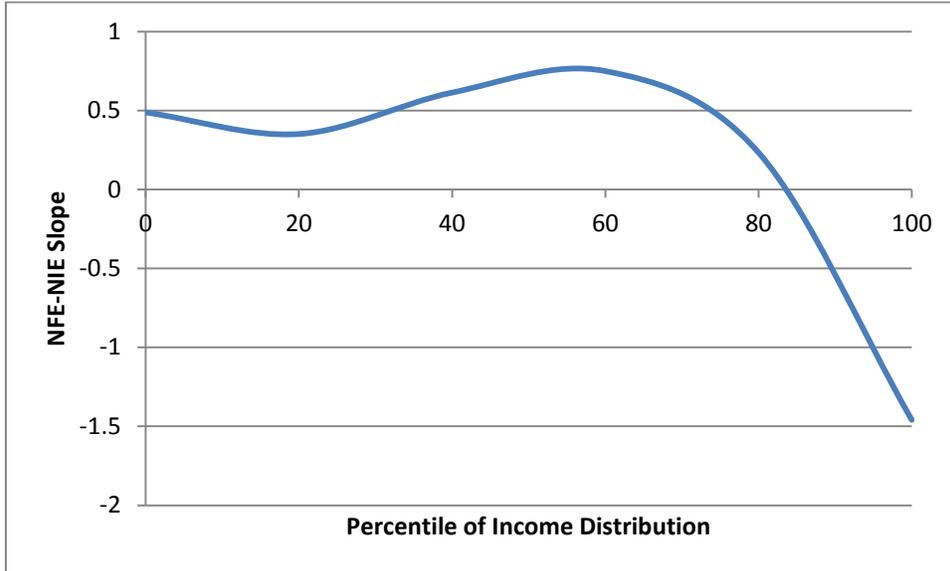
Figures

Figure 1. Graph representing the relationship between daily negative financial events and

negative interpersonal events across income quintiles.

NFE = Negative Financial Events, NIE = Negative Interpersonal Events