Poor-Quality Daily Social Encounters, Daily Stress, and Subjective Cognitive Decline Among Older Adults

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Abstract

Background and Objectives: Although prior research has shown that social relationships and daily stress are strongly associated with cognitive function, few studies have explored the link between the quality of daily social encounters and subjective cognitive decline (SCD). The present study explores whether the quality of older adults' daily social encounters is associated with SCD through daily stress.

Research Design and Methods: This study used data from 254 adults aged 70 or older (M_{age} = 76.5 years, SD = 4.4; 67.7% women) who completed the Einstein Aging Study, a 2-week experience sampling study. Multilevel mediation analyses were conducted to account for daily measurements nested within individuals. We tested the indirect effect of the quality of daily social encounters on SCD through daily stress levels.

Results: There was a significant positive association between ambivalent and neutral social encounters and daily stress levels at both the within- and between-person levels. Between-person daily stress was, in turn, associated with greater SCD. Specifically, there was a significant indirect path from ambivalent social encounters to SCD through daily stress.

Discussion and Implications: This study contributes to a more detailed understanding of how the quality of daily social encounters can influence cognition via increased exposure to daily stress. The findings suggest that emotional support may be crucial to preserving perceptions of older adults' cognitive functioning.

Translational Significance: Because poor-quality daily social encounters may involve more negative behaviors and fewer emotionally supportive behaviors, such social encounters may cause increased levels of daily stress for aging adults, which may accelerate cognitive decline. The results show a relationship between poorer-quality daily social encounters and daily stress and suggest a mechanism by which poorer-quality social encounters may influence subjective cognitive decline. Understanding how social factors may increase risk of subjective cognitive decline provides an opportunity to create interventions that account for the role of dyads in complex daily social interactions.

Prior research has shown that multiple factors, including common aspects of daily life such as social interactions and minor stressors, are associated with cognition among older adults. One type of social interaction in particular, stressful relationships with family and friends, is related to cognitive decline and the development of dementia (Khondoker et al., 2017; Zhaoyang et al., 2021) as well as functional limitations (Newsom et al., 2008) and cardiovascular disease (Coyne et al., 2001). In addition, when older adults experience more daily stressors, which are minor stressors that are part of everyday life, such as arguments, disagreements, or job overloads (Serido et al., 2004), they report a greater number of memory problems (Neupert et al., 2006). Despite these

important findings, there is little research on how daily social encounters influence cognitive decline and how daily stress affects this link. Accordingly, the current study extends the literature on the quality of older adults' daily social encounters and cognitive decline by examining the mediating role of daily psychological stress.

Social Encounters and Subjective Cognitive Decline

Both clinicians and researchers increasingly recognize subjective cognitive decline (SCD), which is the self-reported experience of worsening cognition, as a potential risk factor

for the development of mild cognitive impairment (MCI) and dementia, particularly Alzheimer's disease (AD; Earl Robertson & Jacova, 2023; Jessen et al., 2014; Kryscio et al., 2014; Mitchell et al., 2014). Although researchers have examined and operationalized MCI and AD extensively, SCD is not as well understood, and the operationalization of SCD continues to be refined in order to improve the sensitivity of MCI/dementia. The National Institute on Aging–Alzheimer's Association included self-reported changes in cognitive performance in the criteria for predementia states (Albert et al., 2013), and has noted that such changes may be an early indication of AD (Jessen et al., 2014; Molinuevo et al., 2017; Verfaillie et al., 2019). Given this context, it is critical to identify modifiable risk factors to inform the development of interventions aimed at slowing or preventing the onset of cognitive decline and AD.

Mild cognitive impairment (MCI) is defined as objectively assessed cognitive deficits beyond those expected due to normal aging; people with MCI have subtle symptoms such as problems with memory, language, and thinking, which may not disrupt the capacity to perform basic daily activities (Alzheimer's Association, 2022). Although there are mixed results on the association between SCD and objective cognitive decline, prior studies have found that memory complaints are negatively associated with future objective memory performance (Jorm et al., 2001). In line with the SCD-I conceptualization, these results suggest that personal perception of impaired memory functioning may represent an early sign of objective cognitive decline (Jessen et al., 2014). The valid use of subjective reports of cognitive decline as an indicator of the first effects of AD pathology on cognition would therefore be of significant benefit (Jessen et al., 2014). Reducing SCD can also lead to other health benefits because SCD itself significantly reduces quality of life, shortens life expectancy, and increases the risk of other neurodegenerative and psychiatric diseases (Cheng et al., 2017; Strand et al., 2018).

As individuals age, their social networks narrow, and thus, relationships with close friends and family become some of older adults' most important social relationships (Lang & Carstensen, 2002; Thomas et al., 2017). The stability of an interpersonal relationship and an individual's satisfaction with that relationship depend on their subjective evaluation of the rewards and costs of the relationship relative to the potential benefits and costs of other relationships (Hohmann-Marriot & Amato, 2008). Over the past decade, research interest in both negative (e.g., being critical, unreliable, and annoying) and positive (e.g., being understanding, reliable, and approachable) social encounters in old age has grown (Jang et al., 2022; Khondoker et al., 2017). Some social encounters are characterized primarily by either positivity or negativity, while others are characterized as indifferent (neutral), meaning they have low levels of positivity and negativity, and still others entail high levels of both positivity and negativity (ambivalent; Fingerman et al., 2004). Older adults often limit negative social encounters to promote harmony and the perception of closeness (Luong et al., 2011); however, they are more likely than younger adults to report "emotional poignancy," which involves mixed feelings and complex emotions about daily life and is closely related to ambivalent encounters (Carstensen, 2021; Carstensen et al., 2000). Uchino et al. (2004) attributed the detrimental effects of ambivalent relationships to inconsistent behaviors in the

relationship, and the inability to predict whether a given encounter will be positive or negative.

Forming and maintaining successful social relationships requires considerable cognitive effort. For example, to support a relationship, an individual must remember conversation topics; pay attention to and adapt to others' perspectives; infer their expectations, thoughts, and emotions; and inhibit any irrelevant or inappropriate behavior (Maki et al., 2020; Ybarra & Winkielman, 2012). A decline in cognitive functioning makes it difficult for older adults to recognize the social cues necessary for smooth interactions and conversations, leading them to withdraw from socializing (Zhaoyang et al., 2021). Additionally, diminished cognitive function makes it challenging to engage in and enjoy social interactions, as this decline may reduce a person's confidence in their ability to participate in successful exchanges (Zhaoyang et al., 2021); thus, those with decreased cognitive functioning may experience increased negativity or indifference in their relationships with others.

The opposite causal relations—how interpersonal relationships influence cognitive functioning, mostly objective cognitive decline—has also been examined in previous studies (Bourassa et al., 2017; Fingerman et al., 2020; Kelly et al., 2017; La Fleur & Salthouse, 2017); however, there is little research on the link between daily social encounters and SCD. More research is needed to identify additional risk factors for SCD to better understand how to prevent the development of SCD and subsequent dementia. Because interactions with the network members involved in insecure relationships are less predictable, poor-quality social encounters can generate significant daily interpersonal stress (Hopf et al., 2022). Furthermore, because such daily stressors are significantly negatively associated with cognitive health (Neupert et al., 2006), experiencing an insecure interpersonal relationship likely generates additional interpersonal stressors over time, and this stress generation mechanism may be an important interpersonal process that elevates risks to cognition.

Daily Social Encounters, Daily Stress, and Cognition

According to the stress and coping model, a potential stressor (e.g., external event) causes people to undergo two cognitive appraisal processes (Lazarus, 1999; Lazarus & Folkman, 1984). The primary appraisal focuses on the nature of the event (positive, negative, or neutral) and the respective level of threat it presents, whereas the secondary appraisal centers on whether the coping abilities and resources available to the individual are sufficient to overcome the stressor (Lazarus & Folkman, 1984). When individuals appraise events and situations in their lives as stressful, they allocate cognitive resources to coping with these demands; which, in turn, limits available resources and results in poorer cognitive performance compared to nonstressful times (Lazarus, 1999).

Prior research has found that older adults (aged 60–74) are less likely to report daily stressors than their younger counterparts, but they report more network stressors (stressors that happen to other people) and spouse-related stressors (Almeida, 2005). This ongoing difficulty in relationships may not only expose older adults to more stressors but may also increase their reactivity to daily stressors by depleting resources (Almeida, 2005). In addition, individuals vary in how they respond emotionally and behaviorally

to such negative interactions (e.g., arguing vs ignoring the situation; Birditt, 2014). Older adults may consciously try to avoid negative experiences through other actions (i.e., choosing not to get irritated, hurt, or annoyed; Birditt, 2014; Lazarus, 1999). Minimizing negative emotions is strongly associated with negative affect, and older adults may have more expertise in using avoidance strategies and maintaining relationships due to their accumulated life experiences (Blanchard-Fields, 2007).

Psychological stress can have both short-term impacts (e.g., being preoccupied with a previous argument leads to a reduced ability to pay attention to, keep track of, or remember steps in the task at hand) and long-term impacts (e.g., chronic stress is associated with accelerated cognitive decline) on cognitive function (Scott et al., 2015). Notably, even minor stressors that occur on a daily basis can cause temporary cognitive effects by decreasing the attentional resources available for processing information (Sliwinski et al., 2006; Stawski et al., 2006). For example, people perform worse on complex lab-based tasks of working memory on days they report more daily stressors, and this is especially true for older adults (Scott et al., 2015). Furthermore, in a study that captured the dynamic associations between individuals' social experiences and cognitive function in daily life, Zhaoyang et al. (2021) found that having more pleasant interactions was related to better cognitive performance.

Daily Diary Approach

Daily diary data can provide important information about the quality of social encounters. Specifically, such data offer detailed information on the timescale, which is necessary for measuring the co-occurrence of positive and negative emotions and the occurrence of daily stressors (Rickenbach et al., 2014). Prior research has utilized daily diary data to examine relationships between social relationships, stressors, and cognition. Using daily diary data, Neupert et al. (2006) found that older adults were more likely to report memory failures on days they experienced stressors, particularly interpersonal stressors involving friends and family. Elfgren et al. (2010) found that stress related to psychological factors and the social environment was more common among people with SCD (71%) than among those with MCI (18%) and those with dementia (0%) and suggested that this stress might disrupt participants' ability to evaluate their own SCD and might even affect their memory. Few studies, however, have explored whether the link between the quality of social encounters and SCD is mediated by daily stress.

One limitation of daily diary data is potential recall bias. Because participants retroactively rate the frequency with which they experienced each emotion over the last 24 h and report stressors that occurred over that same period, some of these emotions could have been experienced prior to or after the stressor (rather than concurrently) and would still be included in the count of emotions experienced on this stressful day. Ecological Momentary Assessment (EMA) data may minimize this recall bias, as EMA emphasizes current emotional state and narrows the window of time for each stressor report, in this case to within roughly 3.5 h.

Based on the extant research, this study examines the complex set of associations between daily social encounters, daily stress levels, and SCD. By suggesting daily stress as a pathway, this study contributes to a more detailed understanding of how daily social encounters can influence cognition through increased exposure to daily stress. EMA captures participants' natural lives, which makes them less vulnerable to recall bias and improves ecological validity; hence, researchers have used this approach to assess stress and depression, including psychological symptoms (Kleim et al., 2013). Using EMA, specifically, the study tests the following hypotheses:

H1: Poor daily social encounters (i.e., ambivalent, neutral, and unpleasant) increase daily stress levels at the intrapersonal (within-person) and interpersonal (between-person) levels.

H2: Daily stress mediates the association between the quality of daily social encounters and SCD.

Method

Data and Participants

We utilized data from the Einstein Aging Study (EAS), a longitudinal study of cognition and aging in community-dwelling older adults from Bronx County, NY, USA. Participants were recruited via systematic random sampling from Medicare lists and New York City registered voter lists collected between May 2017 and February 2020. The study used phone calls to verify that potential participants satisfied specific requirements (English-speaking, ambulatory individuals aged 70 years or older) and to enlist those who agreed to participate. Those who had significant hearing or vision issues, substance abuse, severe psychiatric symptoms, chronic medical use of opioids or glucocorticoids, recent cancer treatment, or dementia were excluded from the final sample. The protocol was approved by the institutional review boards of the City University of New York and Albert Einstein College of Medicine. The final sample included 254 older adults. After completing the initial phone screening, qualified participants went through the consent process and were asked to attend a visit to the research clinic. During this visit, they filled out questionnaires that collected data on their demographic and psychosocial characteristics.

Participants completed a 2-day practice session of EMA, followed by a formal 14-day EMA session using smartphones provided by the research team. The smartphones were programmed specifically for this study; they delivered surveys at preset times and all other phone functions were disabled. The EMA protocol involved self-initiated wake-up and end-of-day surveys, as well as four randomly beeped surveys each day, with an interval of about 3.5 h between each beep. Beep times were based on participants' self-reported wake-up schedules and varied across days of the week. After the EMA session ended, participants attended a post-EMA clinic visit during which they returned their smartphones and the data were downloaded. Participants who completed all parts of the data collection process received US$160 as compensation. This study used data from the EMAs (beeps and end-of-day) on daily social interactions collected via smartphone. The 254 participants completed 10,189 beep surveys and 2,288 end-of-day surveys over the 14-day period of the formal EMA session. On average, participants completed 13.65 days of EMA (*SD* = 1.34; range = 3–14 days), 83.40% of all assigned beep surveys, and 79.58% of all assigned end-of-day surveys.

Measures

EMA self-reports on the quality of social encounters

In each momentary assessment (beep or end-of-day), participants were asked whether they had experienced any social encounters. They were then asked about the quality of these encounters. The specific question was "Which of the following best describes this recent interaction?" Participants could choose one of four options: "pleasant," "unpleasant," "neutral," or "both pleasant and unpleasant [ambivalent]."

EMA self-report of daily stress (Daily stress exposure)

At each momentary assessment (beep or end-of-day), participants reported their daily stress levels by responding to the question "How stressed are you?" on a scale from "*not at all*" (0) to "*extremely*" (100).

Subjective cognitive decline

Subjective cognitive decline was measured via the Cognitive Change Index (CCI). The CCI consists of 20 items relating to various cognitive domains, including memory, executive functioning, and language. Respondents are asked to compare their current cognitive functioning to their cognitive functioning 5 years ago. All items are rated on a 5-point Likert scale, ranging from 1 (normal ability, no change) to 5 (severe problems, much worse than 5 years ago). The total score is a sum of all items and ranges from 20 to 100, with higher scores indicating worse self-perceived cognition. Of the 20 CCI items, 12 focus on memory performance (e.g., "recalling information when I really try," "remembering things that have happened recently"), five evaluate the individual's executive function (e.g., "focusing on goals and carrying out a plan"), and three evaluate language (e.g., "understanding conversations"). We used self-reported CCI scores, calculated by summing the responses from all 20 items (range: 20–78).

Covariates

Several sociodemographic characteristics were included in the analyses as person-level variables, including age, sex (men = 0; women = 1), race (non-White = 0; White = 1), education (less than college = 0; college or greater = 1), and employment (not employed = 0; employed = 1). Additionally, we added a variable for the structural form of the individual's social network—co-residence with children (*no* = 0; *yes* = 1). Based on the literature, intergenerational relationships, which encompass a tension between the need for autonomy and the need for interdependence, are among the most ambivalent social relationships (Connidis, 2014; Fingerman et al., 2004).

Statistical Analyses

Multilevel mediation path analyses were conducted within a multilevel structural equation modeling (MSEM) framework with two levels of analysis to adjust for the nested data structure where an individual is considered a cluster (level 2), and repeated measures across the fourteen days are considered variations within an individual (level 1). Mediation was assessed following Preacher et al. (2010) for the multilevel 1-1-2 model, including the level-1 independent variable (daily social encounters) and mediator (daily stress) and the level-2 dependent variable (SCD; see Figure 1). We examined the path between daily social encounters and daily stress at both the within- and between-person levels and the path between
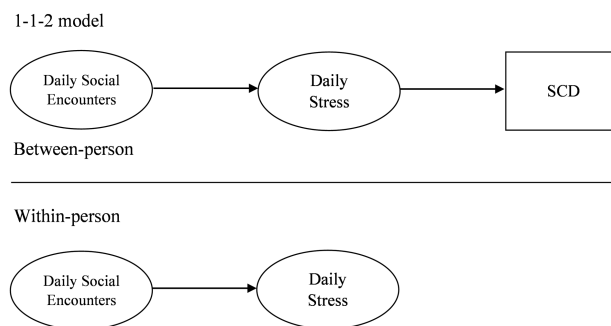

Figure 1. A conceptual model for multilevel mediation analysis. SCD = subjective cognitive decline.

daily stress and SCD at the between-person level (Preacher et al., 2010, 2011).

The estimated indirect effect is specific to the between-person level because both the independent variable and mediator were at level 1. When applied to longitudinal data, MSEM partitions the variance of a time-varying variable into latent within-person components (fluctuations over time relative to the person's own mean) and latent between-person components (person-level means across time points), which estimates separately between- and within-person covariance matrices (Preacher et al., 2010). The within-person association between daily social encounters and daily stress represents the effect that a social encounter on a given day has on the daily stress reported that day. The between-person association represents the effect of daily social encounters on daily stress across study days, which is then associated with an individual's SCD.

Next, to evaluate the goodness of fit of the hypothesized model, we assessed model fit separately at the within- and between-person levels by producing estimates of saturated covariance matrices at each level (Rappaport et al., 2020). The model fit was evaluated based on the following criteria of the goodness-of-fit indices: (a) comparative fit index (CFI) ≥ 0.95, (b) root mean square error of approximation (RMSEA) < 0.05, and (c) standardized root mean square residual (SRMR) ≤ 0.08. Missing data were handled using the full information maximum likelihood. Data were prepared using Stata 14.2 (Stata Corporation, Texas, USA) and analyses were conducted using Mplus (version 8.8).

Results

Table 1 shows descriptive statistics for the key study variables. Over half of the sample was women (67.72%), just under half were White (42.97%), and about half had a high school degree or less education (50.20%). The average age was 76.5 years, and the age range was 70–90 years. Participants reported having social encounters on 77.6% of all completed EMA surveys. The majority of social encounters reported (84.1%) were pleasant; 10.8% were neutral social encounters; 4.3% were ambivalent social encounters; and only 0.8% were unpleasant social encounters. In addition, the mean SCD was 34.4, and the range was 20–78.

Table 2 shows the results of the multilevel mediation models. Overall, the models fit the data well ($\chi^2 = 755.025$, $p < .001$; RMSEA = 0.007; CFI = 0.978; SRMR = 0.011 [within]; 0.043 [between]). First, there were several significant

Table 1. Summary Statistics of the Study Sample and Key Variables (*N* = 254)

Variable	%	Mean (*SD*)	Observed min./max.
Daily social encounters			
Pleasant	84.1		—
Ambivalent	4.3		—
Neutral	10.8		—
Unpleasant	0.8		—
Daily stress		23.9 (23.4)	0/100
Subjective cognitive decline (Cognitive Change Index)		34.4 (10.9)	20/78
Demographics			
Age		76.5 (4.4)	70/90
Women	67.7		—
White	43.0		—
College degree or greater	49.8		—
Employed	8.0		—
Living with children	15.2		—

Note: N = 254 persons for demographic information collected at the person-level; and *n* = 12,477 ecological momentary assessment for social interactions.

associations between the quality of daily social encounters and daily stress; ambivalent encounters were significantly associated with higher levels of daily stress at both the within- and between-person levels (b = 12.898, p < .001; b = 53.008, p < .001, respectively). The significant within-person effect indicates that individuals exhibited higher levels of daily stress on days they experienced ambivalent encounters than on days they experienced pleasant encounters. The between-person effect indicates that individuals with ambivalent encounters tend to report higher levels of daily stress overall than individuals with pleasant encounters. Neutral encounters were also significantly associated with higher levels of daily stress at both the within- and between-person levels (b = 5.514, p < .001; b = 30.159, p < .001, respectively). For unpleasant encounters, there was a significant positive association with daily stress at the within-person level (b = 34.548, p < .001) but no significant association with daily stress at the between-person level.

Second, higher levels of daily stress were significantly associated with greater SCD (b = .117, p < .05). Compared to pleasant social encounters, ambivalent, neutral, and unpleasant social encounters were not directly associated with SCD. However, there was a statistically significant indirect effect such that individuals with ambivalent encounters reported higher levels of daily stress, which was, in turn, associated with greater SCD relative to 5 years ago (b = 6.210, p < .05), and there was a marginally significant indirect path from neutral encounters to SCD through daily stress (b = 3.533, p = .059).

Another strength of the EMA methods used in this study is that they permitted the modeling of variability in responses at the within-person level. This disentangling of within-person effects considers whether some individuals might report consistently high, medium, or low levels of stress based on the type of social encounter (e.g., individuals who always report being highly stressed after ambivalent encounters regardless of the social partner), which would result in nonsignificant variability in stress, but also capture inconsistency in responses (demonstrated through significant variability). The present study offers evidence that individuals did not report consistently similar levels of stress after each type of social interaction (see Supplementary Table 1 for estimates). Specifically, there was significant within-person variability among ambivalent (b = 0.031, p < .001), neutral (b = 0.072, p < .001), and unpleasant (b = 0.007, p < .001) social encounters, showing more varied than pleasant relationships.

Discussion

The purpose of the current study was to examine the association between the quality of daily social encounters and daily stress and to test whether daily stress mediated the relationship between the quality of daily social encounters and SCD. We used a daily diary study, including EMA, as a novel way to examine daily social encounters because repeated exposure to a certain state can modify the way individuals perceive and respond to that state, potentially heightening reactivity or vulnerability among older adults in a naturalistic setting (Smyth et al., 2017).

A key finding was that having poor-quality daily social encounters was strongly associated with higher levels of daily stress. For the within-person effect, individuals reported more daily stress on days they were exposed to ambivalent, neutral, or unpleasant social encounters than on days they were exposed to pleasant encounters. Participants also showed considerable variation in their reported stress based on the type of social encounter, as indicated by significant within-person variability. This pattern suggests that not all poor-quality social encounters were perceived as equally distressing at the intrapersonal level, and also provides evidence that individuals were sensitive to differences within encounters (i.e., participants did not always report the same level of stress after each "type" of encounter). For the between-person effect, those who reported more frequent exposure to ambivalent/neutral encounters had higher levels of daily stress on average. As previous research has shown, daily stress emerges more frequently in relation to social relationships involving other people than in relation to events and duties in other realms (e.g., household chores and work demands; Almeida et al., 2002).

Table 2. Multilevel Mediation Predicting Subjective Cognitive Decline: Unstandardized Path Estimates for Direct and Indirect Effects

Variable	b (SE)
Within-person (daily) level	
Daily stress	
Daily social encounters (ref: pleasant)	
Ambivalent	12.898 (1.881)***
Neutral	5.514 (0.887)***
Unpleasant	34.548 (4.799)***
Between-person (person) level	
Daily stress	
Daily social encounters (ref: pleasant)	
Ambivalent	53.008 (8.302)***
Neutral	30.159 (7.648)***
Unpleasant	61.122 (52.232)
Age	0.412 (0.194)*
Women	–2.881 (2.196)
White	2.796 (2.100)
College degree or greater	3.230 (1.826)
Employed	7.289 (4.116)†
Living with children	2.471 (2.745)
Subjective cognitive decline	
Daily stress	0.117 (0.051)*
Daily social encounters (ref: pleasant)	
Ambivalent	6.239 (8.258)
Neutral	–2.121 (5.042)
Unpleasant	29.590 (39.843)
Age	0.004 (0.163)
Women	–2.189 (1.452)
White	–5.940 (1.522)***
College degree or greater	0.167 (0.061)**
Employed	–5.555 (1.935)**
Living with children	–5.607 (1.853)**
Between-person indirect effects	
Ambivalent ➔ Daily stress ➔ Cognitive change	6.210 (2.934)*
Neutral ➔ Daily stress ➔ Cognitive change	3.533 (1.871)†

Notes: Only significant indirect effect results are presented.
†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Furthermore, as the stress-enhancing hypothesis suggests, ambivalent encounters, even in the context of other types of encounters within an individual or relationship, can generate significant interpersonal stress because an ambivalent network member may be less predictable (Uchino et al., 2007). Although ambivalent encounters include positive interactions and emotions, individuals may not be able to benefit from the support such ties offer because they coexist with negativity that may prompt them to question the accuracy or sincerity of this support (Uchino et al., 2007). Importantly, although people are not always aware of these mixed emotions, ambivalent encounters are particularly distressing when people do become consciously aware of them (van Harreveld et al., 2015). This awareness gives rise to conflicting feelings toward the other person, which may reflect past relationship conflicts and transgressions, including disagreements and acts of betrayal that have persistent emotional significance over time (Birditt et al., 2009). As a result, if an individual perceives consistent, repeated encounters that are ambivalent within their social network, this might provide a cognitive lens or expectation for interpreting future encounters more negatively and, thus, may interfere with receiving support in times of need.

Specifically, relationships characterized by ambivalent encounters can then exacerbate difficulty when an individual is exposed to daily stressors. Daily stressors are minor, potentially stressful events that normally occur in daily interpersonal relationships. Yet minor daily stressors affect well-being not only by having separate, immediate, and direct effects on emotional and physical functioning, but also by accumulating over multiple days to create persistent irritation, frustration, and overload that may result in more serious stress reactions such as anxiety and depression (Lazarus, 1999; Zautra, 2003). According to Reblin et al. (2010), individuals who are perceived as sources of ambivalence provide less emotional support and engage in more negative behaviors (e.g., criticizing) in a context where support is provided as judged by independent raters.

Fingerman et al. (2012) suggested that for some grown children and parents in their daily lives, negative feelings may reflect communication and interaction styles, whereas for other parents and grown children ongoing, relationship dilemmas set a tone of ambivalence. Although we did not examine potential mechanisms in this study, future studies should explore possible behavioral mechanisms (e.g., support interference and stress exacerbation) by which ambivalent encounters increase daily stress. Furthermore, we did not find significant effects of unpleasant encounters at the between-person level, although this may be due to the very low frequency of reports of unpleasant encounters. Although most studies found significant positive associations between negative encounters and negative health outcomes, negative encounters do not always result in higher subjective stress. Prior studies found that accepting negative emotions experienced during daily stressors can be positively associated with good psychological health (Ford et al., 2018).

Additionally, the findings revealed a significant indirect effect of ambivalent encounters on SCD through daily stress. Ambivalent encounters entail more negative behaviors (e.g., criticism and argument) and fewer emotionally supportive behaviors and thus increase stress (Reblin et al., 2010). Specifically, this study extends the scholarly understanding of how the accumulation of daily stress due to poor-quality daily social encounters influences SCD. As shown by previous findings, daily stress has potent immediate effects and can accumulate to have long-term effects on cognitive health (Sliwinski et al., 2006; Stawski et al., 2010). Researchers posit that as people age, they become increasingly skilled at regulating their emotions by proactively avoiding stressors (Charles, 2010); in addition, people may increasingly seek to maximize pleasant experiences and suppress unpleasant and ambivalent feelings to maintain subjective well-being. Although older adults may be more adept at avoiding the presence of stressors, they may not be better at regulating the high levels of distress that stressors elicit (Almeida et al., 2023).

Furthermore, we found a marginally significant indirect effect of neutral encounters on SCD through daily stress. Neutral social encounters occur when individuals distance themselves psychologically from disliked individuals with

whom they have a nonvoluntary relationship by reducing their involvement, detaching themselves emotionally, or avoiding them (Hess, 2000). Previous studies indicate that making a decision to set limits and create boundaries in such a relationship may be a significant predictor of older adults' mental health (e.g., depressive symptoms; Bundy-Fazioli et al., 2013; Jang et al., 2022). Finally, in an analysis using three large national data sets, Hill et al. (2021) found that memory complaints that accompany depressive symptoms may influence cognition. Therefore, future research should include detailed examinations of the complex ways that daily social encounters, depressive symptoms, and daily stress jointly influence cognition.

Limitations and Conclusion

The current study highlights the importance of the quality of daily social encounters and daily stress for SCD; however, there are some notable limitations. First, the measures of daily stress and SCD are based on subjective reports. Although subjective reports are considered less reliable (e.g., due to subjective interpretation), they can be valid, whereas the validity of objective approaches should not be taken for granted (Strauss, 2005). Second, prior research suggests that cultural and personality differences can heighten the experience of ambivalence (van Harreveld et al., 2015). Some cultures and individuals are more tolerant of ambivalence than others. Future research should consider these characteristics in examining the influence of social encounters on cognitive function. Third, although the EAS cohort was recruited systematically and was similar to the population of older adults in the U.S. Census, the findings should be replicated in larger samples and with a wider spectrum of cognitive performance measures. Furthermore, we used one item to assess stress levels. Although this item has face validity, a multi-item scale or more robust measures of stress may provide better information on participants' stress levels.

Despite these limitations, this study provides valuable information about daily social encounters, daily stress, and SCD. The results contribute to the scholarly understanding of the impact of daily stress resulting from poor-quality daily social encounters on SCD. Because ambivalent daily encounters may involve more negative behaviors and fewer emotionally supportive behaviors, such encounters may cause increased levels of daily stress, which may accelerate cognitive decline. Using evaluation at the between-person level, this work highlights the need to better understand the ways in which daily social encounters influence older adults' cognitive decline. Future research should examine other potential mechanisms that increase daily stress (e.g., psychological states and emotional well-being) with the goal of generating findings that can be used to support cognitive functioning.

Supplementary Material

Supplementary data are available at *Innovation in Aging* online.

Funding

Conflict of Interest

None.

Data Availability

The data analyzed in this study are subject to the following licenses/restrictions: Interested collaborators are asked to complete a concept proposal form (details for potential project, paper, or abstract) to be reviewed and forwarded to the Einstein Aging Study Steering Committee for consideration.

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