



Memory lapses during a pandemic: Differential associations between COVID-stress and daily memory lapses?

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Abstract

The policies related to COVID-19 pandemic such as stay at home orders and social distancing increased daily stress and associated impairments in mental health. This study examines the association between COVID-related stress and cognitive functioning by examining two different types of daily memory lapses, those related to prospective memory (i.e., memory for future plans) and retrospective memory (i.e., memory for past information) as well as the perceived emotional and functional consequences of daily memory problems. As part of a larger study, 58 adults (18 men; 22 ± 3 years) completed a web-based version of the daily inventory of stressful events including stress related to COVID-19 and positive/negative affect for eight consecutive days between 8 September 2020 and 11 November 2020. Findings showed that prospective lapses were positively correlated with COVID-19 stressors ($r = 0.41$, $p = 0.002$). At the within-person level, daily COVID-19 stressors were significantly associated with the number of prospective lapses ($b = 0.088$, $SE = 0.040$). COVID-19-related stressors were not significantly related to retrospective lapses (all $ps > 0.05$). Our findings suggested that more daily

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COVID-19 stressors were related to greater numbers of prospective lapses in daily life even among healthy younger adults. Thus, future research should address long term relations of COVID-19 stress and cognitive functioning in addition to the specific cognitive impairments related to COVID-19 infection.

KEYWORDS

COVID-19 stressors, memory lapses, prospective memory

1 | INTRODUCTION

Individuals' daily lives were drastically changed with the declaration of a global pandemic by the World Health Organization in January 2020. Public health policies in response to this pandemic, such as stay at home orders, were implemented to protect people from COVID-19 infection and slow the spread of the virus. However, many studies have demonstrated that the experience of the pandemic is associated with decrements in individuals' well-being with increases in daily stress, anxiety, and depression (Greaney et al., 2021; Salari et al., 2020; Vindegaard & Benros, 2020). The current paper explores the association between daily pandemic-related stressors and daily cognitive functioning, specifically memory lapses.

Initial studies indicate COVID-19 infection is associated with cognitive difficulties (Miners et al., 2020; Ritchie et al., 2020) that potentially lead to longer-term deficits (Ferrucci et al., 2022; Zhou et al., 2020). However, the association between pandemic-related stressors and cognitive functioning, regardless of COVID-19 infection, remain less clear. One study of Turkish adults (ages 18–73) examined relations among traumatic COVID-19 stressors and self-reported executive functioning found indirect effects of COVID-19 stressors (Kira et al., 2022). We examined whether this relationship also holds for routine hassles of daily life during the pandemic and across other types of cognitive functioning such as memory.

Daily memory functioning is a foundational cognitive ability that supports daily activities (Cohen, 2008; Jones et al., 2021; Schmitter et al., 2020). Taking medications on time (i.e., prospective memory) and recalling meanings of particular words (i.e., retrospective memory [RM]) are critical to maintaining our social, physical, and psychological health (Cohen, 2008; Kvavilashvili & Rummel, 2020). Under times of widespread stress, there is the potential for new and more frequent stressors related to impaired memory function (Sliwinski et al., 2006). Thus, there is a need to understand the association between daily stressors related to the COVID-19 pandemic and daily memory functioning that potentially disrupt routine activities (Neupert, 2022).

Key to examining daily memory functioning is capturing memory lapses in ecologically valid contexts. We use an innovative daily diary approach to examine problems with prospective memory (i.e., memory for future plans) and retrospective memory (i.e., memory for past information), including the perceived emotional and functional consequences of daily memory problems. Although previous daily diaries focused on memory lapses without discriminating among the different types (Neupert et al., 2006a, 2006b), these lapses rely on different underlying cognitive processes. Prospective memory places greater demands on attention and planning relative to retrospective memory (McDaniel & Einstein, 2007). Further, prospective memory demands are hypothesized to be more prevalent in everyday life (McDaniel & Einstein, 2007), although previous research suggests retrospective memory lapses outnumber prospective memory lapses (Mogle et al., 2022). Our measure differentiated prospective and retrospective memory lapses to expand on previous work and explore the association between COVID-19-related daily stressors and daily memory lapses.

Daily reports of COVID-19 stressors and memory lapses increase assessment validity by measuring these experiences closer in time to their occurrence. Shorter reporting intervals potentially improve the accuracy of reporting when it was difficult to determine the timing of events due to the high stress levels (Holman & Grisham, 2020). Additionally, analysis of daily diary data allow an examination of two processes. First, we can test whether *on days when* an individual experienced more COVID-19 stressors, this was related to more memory problems (within-person relations). Second, we can test whether *individuals who* experienced more COVID-19 stressors also tended to report greater difficulties with memory (between-person relations).

Based on previous studies, the following hypotheses were tested.

1. Within-person: Participants will report a greater number of memory lapses and greater levels of consequences on days when they also report greater numbers of stressors related to COVID-19 (vs. lower numbers of stressors) (H1).

Due to the higher cognitive demands of prospective memory, we hypothesize that these within-person relationships will be stronger for prospective memory lapses relative to retrospective memory lapses.

2. Between-person: Individuals who experience the greater average COVID-19-related stressors will also report a greater numbers of memory lapses and the higher levels of consequences related to their memory lapses (vs. lower levels) (H2).

Due to the higher cognitive demands of prospective memory, we hypothesize that these between-person relationships will be stronger for prospective memory lapses relative to retrospective memory lapses.

2 | METHODS

2.1 | Participants

Participants were recruited as part of a lab-based study however, due to the pandemic-related restrictions to in-person research at the time, screening and initial daily diaries were conducted completely online. We report here on secondary analyses from the parent study (Greaney et al., 2021). Participants were recruited from (blind review) and the surrounding area (blind review) through advertisements, such as recruitment fliers and social media. The procedures of the parent study were approved by the Institutional Review Board at (blind review) (2020-0912).

Of 64 participants enrolled in this study, 58 completed more than one daily diary and 6 did not completed any of that. Participant ages ranged from 18 to 29 years ($M = 22.39$, $SD = 3.13$), 36 (62.1%) were non-Hispanic White, and 39 (68.4%) were female. Most participants were enrolled students ($n = 52$, 89%). Eight (14%) reported a previous COVID-19 diagnosis.

2.2 | Procedures

Participants completed a screening and demographics questionnaire, received their first diary link the next day. Next, across eight consecutive evenings, participants received text messages and emails at 5 PM local time and completed a web-based version of daily survey. Diaries were excluded if completed after 4 AM of the next day ($n = 12$). Of 58 participants, 47 participants (81%) completed all eight daily diaries. Participants completed 7.6 ± 1.1 diaries from 8 September 2020, until 11 November 2020. A total of 442 days of diaries were collected during a time when individuals were transitioning to in-person activities (e.g., colleges were holding classes in-person again).

3 | MEASURES

3.1 | COVID-19 stressors

Daily stressors related to the COVID-19 pandemic were drawn from other openly available surveys (Klaiber et al., 2021; Nelson & Bergeman, 2021). Participants indicated whether they had experienced: (1) financial problems; (2) unable to spend time with others; (3) challenges at home; (4) trouble obtaining supplies; (5) distressing news reports; (6) experience of physical symptoms of COVID-19; (7) difficulty completing work or school requirements; and (8) greater work or home responsibilities. Each item included the frame "because of COVID-19" to encourage participants to focus on pandemic-related experiences. Items were dichotomous (0 = *no*, 1 = *yes*). The sum of items endorsed each day was calculated to indicate the total of COVID-19 stressors experienced.

3.2 | Memory lapses

Memory lapses were assessed using the Daily Memory Lapse Checklist (Mogle et al., 2022). Participants reported on any of five prospective and four retrospective lapses each day. Prospective items included forgetting: a meeting/appointment; to finish a task; to start/complete a chore; to take a medication; or the reason for entering a room. Retrospective items included forgetting: important information; someone's name; a word in a sentence; or where something was placed. A total number of lapses each day was computed as the sum of the possible lapses for each type.

If participants reported the experience of a memory lapse, they indicated the level of emotional consequences as "how much did forgetting this bother you?" and level of functional consequences as "how much did forgetting this disrupt your activities today" from 1 to 10 once for each type of memory (i.e., prospective and retrospective).

3.3 | Positive and negative affect

Participants reported the frequency of positive (enthusiastic, satisfied, attentive, cheerful, proud, confident, active, extremely happy, in good spirits, calm and peaceful, close to others, full of life, and like you belong) and negative (hopeless, nervous, lonely, afraid, worthless, jittery, irritable, ashamed, upset, angry, frustrated, restless or fidgety, so sad nothing could cheer you up, and everything was an effort) affect each day using a five-point scale (0 = *none of the time* to 4 = *all of the time*; Kessler et al., 2002; Mroczek & Kolarz, 1998). Reliability was calculated using the formula recommended for intensive measurement designs by Hox et al. (2017) and was adequate: R_{change} positive affect = 0.97; R_{change} negative affect = 0.93. Positive and negative item ratings were averaged to produce one positive and one negative affect score for each day.

3.4 | Other daily stressors

A web-based version of the Daily Inventory of Stressful Events (DISE; Almeida et al., 2009; Klaiber et al., 2021) was used. The DISE interview, a standard assessment for daily stressor exposure, was used to assess exposure to naturally-occurring stressors regardless of their relationship to COVID-19 in the previous 24-h. Participants indicated whether they had experienced arguments, avoided arguments, work/school overloads, a home event, an event related to racial/ethnic/sexual discrimination, an event that happened to someone else that the participant experienced as stressful, and any other stressful events (Almeida et al., 2002). The occurrence of any stressor that day was coded dichotomously (0 = *no*, 1 = *yes*). The sum of occurrences was computed each day.

3.5 | Analytic strategy

Data analyses were conducted using SAS 9.4. We calculated descriptive information and correlations across the primary dependent and independent variables. The primary predictors were number of daily COVID-19 stressors and average number of COVID-19 stressors across 8 days.

For the primary hypotheses, we examined the relationship between daily COVID-19 stressors and memory lapses at within-person and between-person levels with multilevel models (MLM). MLM allows us to separate the relationship between daily experiences of COVID-19 stressors and daily memory lapses as well as the individual differences in this relationship independent of daily fluctuations (Hox et al., 2017). All models used restricted maximum likelihood estimation so that all individuals could be included in analysis regardless of the number of days of data provided. Random slopes for daily COVID-19 stressors were tested but did not significantly improve model fit and were removed (all $ps > 0.065$).

For all models, continuous within-person predictors were person-centered and between-person predictors were grand mean-centered to aid in interpretation of coefficients. Covariates in the models included variables that could potentially influence cognitive functioning such as age (Salthouse, 2009), COVID-19 infection (Miners et al., 2020; Ritchie et al., 2020), and daily stressors (Neupert et al., 2006a, 2006b) as well as anything that could potentially influence exposure to daily stress including daily affect (Moyle, 1995), sex (Almeida et al., 2002), and race/ethnicity (Cichy et al., 2012). Models tested month of data collection as a potential covariate given the rapidly changing context of COVID-19 infections. However, this covariate did not influence substantive conclusions and was dropped for parsimony. Effect sizes were calculated as the standardized difference (d) at ± 1 standard deviation on the predictor (within-person or between-person COVID-19 stressors; Hoffman & Stawski, 2009).

4 | RESULTS

Participants reported experiencing a COVID-19 related stressor on 158 (36.8%) of 442 days. The most common stressor from COVID-19 was exposure to distressing news reports ($n_{\text{day}} = 72$, 16%). Means and correlations are presented in Table 1.

Initial models without covariates indicated significant within-person associations across all outcomes except for association between COVID-19 related stressors and total RM lapses (Tables S1 and S2). However, after including covariates, daily COVID-19 stressors were only significantly related to greater total of prospective lapses ($b = 0.088$,

TABLE 1 Descriptive statistics and correlations for memory lapses and COVID-19 stressors.

Variables of interest	M	SD	1	2	3	4	5	6	7	8	9
1. COVID stressors ^a	0.68	0.84	-								
2. Positive affect ^b	0.63	0.49	-0.05	-							
3. Negative affect ^b	1.89	0.93	0.30*	-0.62***	-						
4. PM lapses	3.48	3.45	0.41**	-0.31*	0.33*	-					
5. PM irritation	4.10	2.29	0.01	-0.49***	0.51***	0.43**	-				
6. PM interference	3.51	2.40	-0.05	-0.36*	0.27	0.33*	0.65***	-			
7. RM lapses	2.88	3.69	0.19	-0.21	0.41**	0.59***	0.21	0.09	-		
8. RM irritation	4.56	2.78	0.11	-0.23	0.20	0.22	0.57***	0.56***	0.10	-	
9. RM interference	3.08	2.17	0.04	-0.20	0.18	0.36*	0.55***	0.63***	0.19	0.86***	-

Note: Correlations are Spearman's rho.

Abbreviations: PM, prospective memory; RM, retrospective memory.

^aDaily COVID stressors range from 0 to 3.

^bMeans of positive/negative affect range from 0 to 4.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 2 Within- and between-person associations of daily PM lapses and COVID-19 stressors.

Variable	Total PM lapses <i>b</i> (<i>SE</i>)	Irritation <i>b</i> (<i>SE</i>)	Interference <i>b</i> (<i>SE</i>)
Intercept	0.404 (0.129)**	3.160 (0.691)***	2.236 (0.809)**
Within-person			
Number of COVID-19-related daily stressors	0.088 (0.040)*	0.251 (0.184)	0.238 (0.214)
Negative affect	-0.150 (0.080)	0.383 (0.347)	0.873 (0.400)*
Positive affect	-0.049 (0.063)	0.175 (0.305)	0.585 (0.354)
Between-person			
Average COVID-19 related daily stressors	0.164 (0.072)*	-0.265 (0.364)	0.017 (0.427)
Negative affect	0.233 (0.132)	1.976 (0.655)**	1.121 (0.770)
Positive affect	-0.048 (0.065)	-0.360 (0.336)	-0.116 (0.395)
Covariates			
Sex (ref = male)	-0.137 (0.114)	0.632 (0.632)	0.532 (0.743)
Ethnicity (ref = White)	0.107 (0.115)	0.509 (0.605)	1.027 (0.711)
Age	-0.020 (0.017)	-0.039 (0.093)	-0.017 (0.109)
Ever test positive for COVID-19 (ref = no)	-0.066 (0.151)	-1.340 (0.831)	-1.572 (0.976)
Non-COVID-19 daily stress (ref = no)	0.223 (0.076)**	0.566 (0.374)	0.629 (0.432)

Note: Coefficients are unstandardized.

Abbreviations: PM, prospective memory; RM, retrospective memory.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 3 Within- and between-person associations of daily RM lapses and COVID-19 stressors.

Variable	Number of RM lapses <i>b</i> (<i>SE</i>)	Irritation <i>b</i> (<i>SE</i>)	Interference <i>b</i> (<i>SE</i>)
Intercept	0.395 (0.144)**	2.541 (1.087)*	2.771 (0.924)**
Within-person			
Number of COVID-19-related daily stressors	0.048 (0.035)	0.437 (0.305)	0.388 (0.247)
Negative affect	0.088 (0.071)	0.143 (0.540)	0.506 (0.436)
Positive affect	0.087 (0.055)	0.040 (0.594)	-0.034 (0.479)
Between-person			
Average COVID-19 related daily stressors	0.062 (0.082)	-0.377 (0.648)	-0.328 (0.554)
Negative affect	0.372 (0.151)*	1.289 (1.109)	1.681 (0.947)
Positive affect	-0.008 (0.075)	-0.292 (0.528)	-0.161 (0.452)
Covariates			
Sex (ref = male)	-0.132 (0.131)	1.279 (0.915)	0.248 (0.784)
Ethnicity (ref = White)	0.003 (0.131)	0.871 (0.963)	0.257 (0.824)
Age	-0.015 (0.020)	0.173 (0.142)	0.096 (0.122)
Ever test positive for COVID-19 (ref = no)	-0.013 (0.173)	-1.722 (1.279)	-1.529 (1.095)
Non-COVID-19 daily stress (ref = no)	0.134 (0.070)	0.649 (0.595)	-0.273 (0.483)

Note: Coefficients are unstandardized.

Abbreviations: PM, prospective memory; RM, retrospective memory.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

$SE = 0.040$, $d = 0.18$), not emotional or functional consequences ($ps > 0.27$, $ds = 0.50$ and 0.47 , respectively) for prospective lapses (see Table 2). Also, after inclusion of covariates, daily COVID-related stressors did not significantly relate to any of the retrospective lapse indicators ($ps > 0.05$, total number of lapses $d = 0.09$; emotional consequences $d = 0.87$; functional consequences $d = 0.77$; see Table 3).

At the between-person level, initial models without covariates indicated only a significant association between greater average number of COVID-19 stressors and a greater number of prospective lapses (Table S1). After including covariates, that association remained significant ($b = 0.164$, $SE = 0.072$, $d = 0.32$). Consistent with models without covariates, models with covariates showed that average number of COVID-19 stressors was not related to average levels of emotional or functional consequences for prospective memory ($ps > 0.56$; $ds = 0.54$ and 0.03 , respectively; see Table 2) and none of the between-person retrospective lapse variables (all $ps > 0.5$; number of lapses $d = 0.12$; emotional consequences $d = 0.75$; functional consequences $d = 0.65$; see Table 3).

5 | DISCUSSION

Overall, the findings indicated that greater numbers of daily COVID-19 stressors were related to a greater number of prospective lapses at the within- and between-person levels. This is a demonstration that COVID-19-related stressors may have had effects on individuals' daily cognitive functioning, beyond actual infection and other daily stressors.

As shown in this study, the relationship between daily stressors with COVID-19 and prospective memory function (rather than retrospective memory) among cognitively-intact younger adults, is concerning. Prospective memory maintains, updates, and prompts completion of items on our mental "to-do" list (McDaniel & Einstein, 2007). This includes health-related activities such as taking medication on time and personally meaningful activities such as attending a work meeting. The differential relations likely have to do with the additional cognitive demands of successful prospective memory task completion. Previous work demonstrates prospective memory places higher demands on attention and planning capacities among adults of all ages (Burgess & Shallice, 1997; Jones et al., 2021; Loft & Yeo, 2007) relative to retrospective memory. Past work on stress and cognitive performance suggests stressors consume the same attentional resources that support successful prospective memory functioning (Boag et al., 2019; Sliwinski et al., 2006). The relationship of COVID-19 daily stressors to the number of prospective lapses suggests that COVID-19-related stressors may have burdened attentional resources needed for the completion of other daily tasks.

In contrast, COVID-19 related stressors were not significantly associated with greater emotional or functional consequences. The lack of relationships with retrospective memory lapses or consequences is consistent with previous work suggesting that memory lapses are not consistently related to daily stressful experiences and that the type of stressor matters (Neupert et al., 2006b). Due to the lower cognitive demand of retrospective memory relative to prospective memory (Jones et al., 2021), the current results extend Neupert and colleagues' work that the type of memory lapse matters in addition to the type of stressor. Whether this would hold true for older participants remains less clear. Older participants tend to report greater numbers of retrospective lapses compared to younger (Mogle et al., 2022) which could leave them vulnerable to stressors such as those in the COVID-19 pandemic.

Some limitations impact the generalizability of these findings. First, the small sample size ($n = 58$) and limited time period of recruitment makes this data specific to the transition back to in-person activities particularly the transition to in-person classes among college students during the COVID-19 pandemic. The age (range 18–29) and occupation (mostly students) limits our conclusions to this age and contextual group. Additionally, measuring daily experiences such as stressors and memory lapses may fail to capture all possible events of these types. Some of the memory lapse experiences may not apply to a given individual (e.g., if an individual doesn't take a medication, they won't have one to forget). Further, stressors related to COVID-19 extend beyond the dimensions assessed here, and it is difficult to separate the effect of stressor severity and other life contexts (e.g., social isolation). This makes our measures conservative estimates of these experiences as they represent an undercount of events.

Given the extreme and widespread stress associated with COVID-19, examining daily memory functioning during this time helps to understand the patterns of daily memory lapses among cognitively healthy young adults.

Based on our findings, future research should address long-term associations of COVID-19 stressors and memory lapses at the international level and among other age groups.

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CONFLICT OF INTEREST STATEMENT

No financial relationships or conflicts of interest to report.

DATA AVAILABILITY STATEMENT

The raw data will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Study procedures approved by the Institutional Review Board at the University of Texas at Arlington (2020-0912).

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REFERENCES

- Almeida, D. M., McGonagle, K., & King, H. (2009). Assessing daily stress processes in social surveys by combining stressor exposure and salivary cortisol. *Biodemography and Social Biology*, 55(2), 219–237. <https://doi.org/10.1080/19485560903382338>
- Almeida, D. M., Wethington, E., & Kessler, R. C. (2002). The daily inventory of stressful events: An interview-based approach for measuring daily stressors. *Assessment*, 9(1), 41–55. <https://doi.org/10.1177/1073191102091006>
- Boag, R. J., Strickland, L., Loft, S., & Heathcote, A. (2019). Strategic attention and decision control support prospective memory in a complex dual-task environment. *Cognition*, 191, 103974. <https://doi.org/10.1016/j.cognition.2019.05.011>
- Burgess, P. W., & Shallice, T. (1997). The relationship between prospective and retrospective memory: Neuropsychological evidence. In M. A. Conway (Ed.), *Cognitive models of memory* (pp. 247–272). The MIT Press.
- Cichy, K. E., Stawski, R. S., & Almeida, D. M. (2012). Racial differences in exposure and reactivity to daily family stressors. *Journal of Marriage and Family*, 74(3), 572–586. <https://doi.org/10.1111/j.1741-3737.2012.00971.x>
- Cohen, G. (2008). The study of everyday memory. In G. Cohen & M. Conway (Eds.), *Memory in the real world* (3rd ed., pp. 1–20). Psychology Press.
- Ferrucci, R., Dini, M., Rosci, C., Capozza, A., Groppo, E., Reitano, M. R., Allocco, E., Poletti, B., Brugnera, A., Bai, F., Monti, A., Ticozzi, N., Silani, V., Centanni, S., D'Arminio Monforte, A., Tagliabue, L., & Priori, A. (2022). One-year cognitive follow-up of COVID-19 hospitalized patients. *European Journal of Neurology*, 29(7), 2006–2014. <https://doi.org/10.1111/ene.15324>
- Greaney, J. L., Darling, A. M., Turner, J. R., Saunders, E. F., Almeida, D. M., & Mogle, J. (2021). COVID-19-related daily stress processes in college-aged adults: Examining the role of depressive symptom severity. *Frontiers in Psychology*, 12, 693396. <https://doi.org/10.3389/fpsyg.2021.693396>
- Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development*, 6(2–3), 97–120. <https://doi.org/10.1080/15427600902911189>
- Holman, E. A., & Grisham, E. L. (2020). When time falls apart: The public health implications of distorted time perception in the age of COVID-19. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(S1), S63–S65. <https://psycnet.apa.org/doi/10.1037/tra0000756>
- Hox, J. J., Moerbeek, M., & Van De Schoot, R. (2017). *Multilevel analysis: Techniques and applications*. Routledge.
- Jones, W. E., Bengel, J. F., & Scullin, M. K. (2021). Preserving prospective memory in daily life: A systematic review and meta-analysis of mnemonic strategy, cognitive training, external memory aid, and combination interventions. *Neuropsychology*, 35(1), 123–140. <https://doi.org/10.1037/neu0000704>

- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., Walters, E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959–976. <https://doi.org/10.1017/S0033291702006074>
- Kira, I. A., Alpay, E. H., Ayna, Y. E., Shuwiekh, H. A., Ashby, J. S., & Turkeli, A. (2022). The effects of COVID-19 continuous traumatic stressors on mental health and cognitive functioning: A case example from Turkey. *Current Psychology*, 41(10), 7371–7382. <https://doi.org/10.1007/s12144-021-01743-2>
- Klaiber, P., Wen, J. H., DeLongis, A., & Sin, N. L. (2021). The ups and downs of daily life during COVID-19: Age differences in affect, stress, and positive events. *The Journals of Gerontology: Series B*, 76(2), e30–e37. <https://doi.org/10.1093/geronb/gbaa096>
- Kvavilashvili, L., & Rummel, J. (2020). On the nature of everyday prospection: A review and theoretical integration of research on mind-wandering, future thinking, and prospective memory. *Review of General Psychology*, 24(3), 210–237. <https://doi.org/10.1177/1089268020918843>
- Loft, S., & Yeo, G. (2007). An investigation into the resource requirements of event-based prospective memory. *Memory & Cognition*, 35(2), 263–274. <https://doi.org/10.3758/BF03193447>
- McDaniel, M. A., & Einstein, G. O. (2007). *Prospective memory: An overview and synthesis of an emerging field*. Sage Publications, Inc.
- Miners, S., Kehoe, P. G., & Love, S. (2020). Cognitive impact of COVID-19: Looking beyond the short term. *Alzheimer's Research & Therapy*, 12(1), 1–16. <https://doi.org/10.1186/s13195-020-00744-w>
- Mogle, J., Turner, J. R., Rabin, L. A., Sliwinski, M. J., Zhaoyang, R., & Hill, N. L. (2022). Measuring memory lapses and their impact on daily life: Results from two daily diary studies. *Assessment*, 30(5), 1454–1466. <https://doi.org/10.1177/10731911221077962>
- Moyle, P. (1995). The role of negative affectivity in the stress process: Tests of alternative models. *Journal of Organizational Behavior*, 16(S1), 647–668. <https://doi.org/10.1002/job.4030160705>
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology*, 75(5), 1333–1349. <https://doi.org/10.1037/0022-3514.75.5.1333>
- Nelson, N. A., & Bergeman, C. S. (2021). Daily stress processes in a pandemic: The effects of worry, age, and affect. *The Gerontologist*, 61(2), 196–204. <https://doi.org/10.1093/geront/gnaa187>
- Neupert, S. D. (2022). Anticipatory coping diversity: Implications for emotional, physical, and cognitive reactivity to daily stressors. *The Journals of Gerontology: Series B*, 77(4), 721–732. <https://doi.org/10.1093/geronb/gbab169>
- Neupert, S. D., Almeida, D. M., Mroczek, D. K., & Spiro, A., III (2006a). Daily stressors and memory failures in a naturalistic setting: Findings from the VA Normative Aging Study. *Psychology and Aging*, 21(2), 424–429. <https://doi.org/10.1037/0882-7974.21.2.424>
- Neupert, S. D., Almeida, D. M., Mroczek, D. K., & Spiro, A., III (2006b). The effects of the Columbia shuttle disaster on the daily lives of older adults: Findings from the VA Normative Aging Study. *Aging & Mental Health*, 10(3), 272–281. <https://doi.org/10.1080/13607860500409682>
- Ritchie, K., Chan, D., & Watermeyer, T. (2020). The cognitive consequences of the COVID-19 epidemic: Collateral damage? *Brain Communications*, 2(2), fcaa069. <https://doi.org/10.1093/braincomms/fcaa069>
- Salari, N., Hosseini-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., Khaledi-Paveh, B., & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Globalization and Health*, 16(1), 1–11. <https://doi.org/10.1186/s12992-020-00589-w>
- Salthouse, T. A. (2009). When does age-related cognitive decline begin? *Neurobiology of Aging*, 30(4), 507–514. <https://doi.org/10.1016/j.neurobiolaging.2008.09.023>
- Schmitter-Edgecombe, M., Sumida, C., & Cook, D. J. (2020). Bridging the gap between performance-based assessment and self-reported everyday functioning: An ecological momentary assessment approach. *Clinical Neuropsychologist*, 34(4), 678–699. <https://doi.org/10.1080/13854046.2020.1733097>
- Sliwinski, M. J., Smyth, J. M., Hofer, S. M., & Stawski, R. S. (2006). Intraindividual coupling of daily stress and cognition. *Psychology and Aging*, 21(3), 545–557. <https://doi.org/10.1037/0882-7974.21.3.545>
- Vindegaard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, 89, 531–542. <https://doi.org/10.1016/j.bbi.2020.05.048>
- Zhou, H., Lu, S., Chen, J., Wei, N., Wang, D., Lyu, H., Shi, C., & Hu, S. (2020). The landscape of cognitive function in recovered COVID-19 patients. *Journal of Psychiatric Research*, 129, 98–102. <https://doi.org/10.1016/j.jpsychires.2020.06.022>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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