

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Daily Ageism, Subjective Age, and Memory Failures: A Multi-Country Integrated Data Analysis**

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### **Abstract**

Memory functioning is central to everyday life, yet memory failures, such as forgetting names, words, or medications, are common daily experiences, particularly in later adulthood. How often individuals experience these memory failures may depend on their general as well as personal views of aging. General views include expectations for older adults (ageist attitudes), whereas personal views can include age-based experiences of discrimination (ageist experiences) and subjective age. Leveraging 14-day daily diary data from 974 participants (aged 50-94 years) who reported on a total of 12,261 days from the USA, Canada, Germany, Austria, Ukraine, India, China, Israel, and Türkiye (Study 1), and momentary data across 14 days with 7 assessments per day from 111 participants (aged 65-91 years) from Switzerland (Study 2), the current studies examined within-person fluctuations in daily ageism and daily subjective age and their links to everyday self-reported memory failures. Preregistered analyses tested between- and within-person effects of subjective age and ageism (ageist attitudes in Study 1, ageist experiences in Study 2) as they predicted daily memory failures. Study 1 results indicate that within- and between-person ageist attitudes were positively associated with daily memory failures, but subjective age was not. Study 2 results with the Swiss data revealed no significant associations. These results suggest that endorsing expectations for older adults may be more powerful than personal views of aging for daily memory failures.

**Key words:** daily ageism, subjective age, everyday cognitive functioning, multi-country integrated data analysis

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### **Daily Ageism, Subjective Age, and Memory Failures: A Multi-Country Integrated Data Analysis**

Daily memory failures are subjective, real-world cognitive errors that are noticeable in everyday routines (e.g., forgetting a name, misplacing items, missing medication doses; Sunderland et al., 1983). These everyday experiences of forgetting are considered naturally occurring, ecologically valid manifestations of memory functioning with importance for quality of life, especially in late adulthood (Allaire & Marsiske, 1999; Neupert et al., 2006). Self-reported memory failures (Crumley et al., 2014; Hülür et al., 2026) and concerns (Hülür et al., 2014) show small but reliable associations with objective cognitive performance and longitudinal change in cognition (Dufouil et al., 2025; Hohman et al., 2011). Importantly, self-reported memory failures have their own unique and important clinical value (e.g., Cappa et al., 2024; Jessen et al., 2014), beyond their association with objective outcomes. Yet, the frequency of memory failures may fluctuate from day to day (Mogle et al., 2023; Neupert et al., 2006; Saruhanlioglu et al., 2025), and can be shaped by experiences (e.g., stressors; Neupert et al.) and the contextual lenses through which older adults interpret those experiences.

From a within-person, lifespan developmental perspective, daily views of aging (VoA) - including momentary shifts in ageist attitudes and experiences and subjective age - may build the backdrop against which individuals perceive and interpret their daily experiences. While general, retrospective self-reports of memory may be limited by recall biases and general beliefs about aging, potentially distorting their association with objective cognition (Mogle et al., 2023), assessments of daily memory failures, which are anchored to specific, recent experiences, offer a more ecologically valid and temporally proximal window into cognitive functioning in everyday life and an opportunity to make connections with specific aging-related experiences (Hülür et al., 2026). The current study focuses on the specific aspects of ageist attitudes (Study 1), ageist

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experiences (Study 2), and subjective age (Study 1 and 2) as they relate to everyday instances of forgetting.

Because age-related experiences are embedded within cultural and societal contexts (Kornadt, Kessler, et al., 2021; Shrira et al., 2022), it is essential to examine these within-person processes from a global perspective. Ageism is a global problem (Ayalon, 2026; Chang et al., 2020), so the present study draws on daily diary data from ten countries representing diverse societies and aging-related values and norms. The goal is not to investigate country differences, but to determine how fluctuations in aging-related perceptions and experiences contribute to corresponding fluctuations in self-reported memory failures across countries, offering insight into the common mechanisms through which everyday experiences of aging become linked with everyday experiences of remembering and forgetting.

### **Views of Aging (VoA)**

Views of aging (VoA) encompass the many ways that people acknowledge, contemplate, and reflect on aging (Diehl et al., 2014; Shrira et al., 2022), and they are related to a wide range of health and well-being indicators. VoA can include general beliefs people have about older adults, old age, and the aging process, such as broad societal stereotypes (Wurm et al., 2017). VoA can also include personal views, reflecting individual's perceptions, attitudes, expectations, and experiences regarding their own aging process (Diehl, 2026). Societal perspectives on aging influence general as well as personal VoA along with the ways people construct age identities, including perceiving and internalizing their own aging process (Diehl, 2026; Diehl & Wahl, 2020; Kornadt & Rothermund, 2012; Levy, 2009; Rothermund & Brandtstädter, 2003; Wahl et al., 2022). There is tremendous heterogeneity in subjective experiences and attitudes about aging (Neupert & Zhu, 2021). The heterogeneity further increases across the lifespan (Nelson &

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Dannefer, 1992; Stone et al., 2017), with older adults representing the most diverse age group (Diehl & Wahl, 2020).

Subjective age is a personal view of aging and reflects the extent to which individuals feel younger or older than their chronological age (Montepare, 2009). It serves as a psychologically meaningful indicator of how people position themselves relative to culturally shared expectations of aging (Barak & Stern, 1986; Kotter-Grühn, Neupert, & Stephan, 2015). Older adults often associate old age with undesirable characteristics - such as frailty, forgetfulness, or reduced social relevance - and feeling younger than one's chronological age can function as a strategy to distance oneself from these negative age-related stereotypes (Kornadt et al., 2023; Weiss & Lang, 2012). In this sense, assuming a younger subjective age can be understood as a form of identity management within a youth-centered cultural landscape, where maintaining a younger self-view may help buffer against anticipated stigma or loss of competence (Montepare, 2009). These identity processes are not static; rather, they may shift from day to day (Bellingtier et al., 2017; Zhou et al., 2026) and within a day (Kornadt, Weiss, et al., 2021) in response to the situations and experiences older adults encounter. A younger subjective age has been associated with better concurrent cognition in long-term longitudinal studies (Stephan et al., 2016), but examining how the daily experience of subjective age may relate to memory failures is underexplored.

Ageism refers to the stereotypes, prejudicial attitudes, and discriminatory behaviors directed towards individuals based on their age (Ayalon, 2026; Iversen et al., 2009). These represent cognitive, emotional, and behavioral manifestations of age-based biases (Iversen et al., 2009). Social identity theory provides some explanation for the existence of ageism (Ayalon, 2026; Bodner, 2009) because it suggests that one way to derive self-esteem is through affiliation

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with esteemed social groups. For older adults, affiliation may take the form of trying to act or look like the esteemed group, an example of which could be trying to dress like younger adults (Ayalon, 2026). Ageist attitudes, particularly those reflected in identity-focused measures, highlight the social prescriptions associated with “acting one’s age” and reflect other-oriented views of aging. These attitudes specify what behaviors are deemed appropriate for older adults and often reflect an implicit sense that older individuals should avoid or withdraw from activities associated with youth (de Paulo Couto & Rothermund, 2022; North & Fiske, 2012). Such prescriptions carry assumptions that older adults risk infringing upon younger people’s identities by behaving in ways perceived as too youthful or by occupying spaces assumed to belong to younger generations (de Paula Couto & Rothermund, 2022; de Paula Couto et al., 2022; North & Fiske, 2012). Embedded within these attitudes is the notion that older adults should compensate for perceived age-related deficits - such as not keeping up with trends or losing social fluency - by enacting behavior that aligns with age-normative expectations (Wirth et al., in press). Having more negative other-oriented, general VoA may lead to a tendency to expect outcomes consistent with negative age stereotypes (Wurm et al., 2013), such as worse cognitive functioning with increased age (Weissberger et al., 2022). Holding more ageist attitudes was cross-sectionally associated with more subjective cognitive complaints (Weissberger et al., 2022), but the current study extends this work by examining within-person day-to-day fluctuations in ageist attitudes as they correspond with daily memory failures.

In contrast to ageist attitudes which are other-oriented, ageist experiences which refer to instances of ageism, such as being the target of discrimination, patronizing communication, or exclusion, are more personal and self-relevant. They may be positively associated with memory failures because of stress-related pathways (Leger et al., 2022). Ageist experiences can function

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as a psychosocial stressor (Wilkinson & Pickett, 2007), and repeated exposure to ageist experiences can activate chronic stress responses (Allen et al., 2026), implicating processes like allostatic load (McEwen, 1998; McEwen & Gianaros, 2011). Elevated stress hormones (e.g., cortisol) are known to affect brain regions critical for memory, particularly the hippocampus (Lupien et al., 2009). These experiences can also reduce opportunities for cognitive engagement (e.g., being excluded from decision-making or challenging tasks), indirectly contributing to reduced cognitive performance through reduced stimulation (Stern, 2009). While this past work highlights the connection between chronic or long-term exposure to ageist experiences and cognition, less is known about the day-to-day association between ageist experiences and memory failures.

Subjective age, ageist attitudes, and ageist experiences are fundamentally tied to the question of whether and how individuals adopt or resist the identity of being an older adult. These constructs capture ongoing negotiations about who one is (i.e., personal: subjective age and ageist experiences) and who one should be (i.e., general, other-oriented: ageist attitudes) in the context of aging, and these negotiations unfold continuously in everyday life (Hughes & Touron, 2021; Levy, 2009; Weiss & Weiss, 2019). Daily memory failures offer a particularly salient context for these identity processes, as forgetting is one of the most culturally visible signals that are attributed to aging (Hertzog & Hultsch, 2000).

By examining VoA and memory failures at the within-person level in addition to between-person differences, we can better understand how day-to-day shifts in aging-related identity processes become intertwined with the ways older adults experience their memory failures. Rather than only treating subjective age or ageism as stable, trait-like predictors, a daily lens allows us to complementarily capture how these identity constructs move within individuals

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across the natural rhythms of everyday life, thereby maximizing ecological validity (Bellingtier, Neupert, & Kotter-Grühn, 2017; Bodner et al., 2021; Shenkman et al., 2024). In this way, daily memory failures become not only cognitive events but also moments in which identity, culture, and perception intersect, revealing how the experience of aging is constructed and reconstructed in the flow of daily life.

### **Global Perspectives**

Although most of the current theories and findings on VoA rely on highly functioning and selective (Western, Educated, Industrialized, Rich, Democratic) samples (Palgi et al., 2021), there is an increasing amount of cross-cultural research that is expanding the knowledge base. For example, McConatha and colleagues (2004) found differences in aging perceptions among Turkish and American adults, with Turkish adults endorsing more negative perceptions than American adults. In addition, German adults tend to view aging much more negatively than American adults, but Americans consider themselves to be "old" at a much younger age than Germans (Tahmaseb et al., 2003). A meta-analysis across 24 studies revealed that a younger subjective age was associated with better cognitive performance, and this association was stronger in collectivistic compared to individualistic cultures (Debrecezen & Bailey, 2020). These differential relations indicate the important role of broader contexts in shaping both VoA and their relations with various health outcomes. However, cross-national comparisons often assume homogeneity within countries or societies, but nations are heterogeneous collections of ethnicities, social classes, organizations, school systems, and families (Smith & Bond, 2019). Indeed, Shenkman and colleagues (2024) found that the within-person associations between subjective age and negative affect were significantly stronger for Israeli Arabs compared to Israeli Jews. Further, Wirth and Rothermund (2026) found that East and West Germans differed



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in VoA and their relation to affect in opposite ways of what would be expected from previous literature, likely because Germany does not match the typical East/West country and culture distinction. With respect to ageism specifically, cross-cultural research to date suggests that differences within countries are often larger than differences between countries (Ayalon & Cohn-Schwartz, 2022; Bergman et al., 2013) and these differences can be attributed to a variety of factors beyond cultural and/or country effects (Ayalon & Tesch-Römer, 2018). Focusing on differences between countries and cultures is important, but we assert that a necessary first step with respect to daily VoA is to understand potential homo/heterogeneity across countries in the daily dynamics of memory failures, and whether there are common within-person processes that are shared before trying to find and understand potential differences. The present study utilizes data from 10 countries representing diverse societies to identify similarities (and possible differences) in the ways that VoA may relate to daily memory failures.

### **Present Study**

The goal of the present study is to identify within-person fluctuations and between-person differences in daily ageism (attitudes and experiences) and daily subjective age, and connect those patterns to everyday self-reported memory failures. It leveraged 14-day daily diary data from 11 datasets across 10 countries, including the USA, Canada, Germany (2 datasets), Austria, Ukraine, India, China, Israel, Türkiye, and Switzerland. Study 1 represents the focus on daily ageist attitudes, subjective age, and memory failures using data from 10 datasets, whereas Study 2 represents the focus on daily ageism-related experiences, subjective age, and memory failures using data from Switzerland. We hypothesized that more ageist attitudes (Study 1) and experiences (Study 2) will be associated with more memory failures, at both the within- (day-to-day) and between-person levels. We also hypothesized that higher subjective age will be

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associated with more memory failures, at both the within- and between-person levels (Study 1 and Study 2).

### **Method**

#### **Preregistration**

The hypotheses, descriptions of datasets, measures, and plan for secondary data analysis along with analytic code for the current study were preregistered and can be found at [https://osf.io/ang8u/overview?view\\_only=682ecee02d4741df8087288fb3595e8c](https://osf.io/ang8u/overview?view_only=682ecee02d4741df8087288fb3595e8c).

#### **Study 1: Datasets and Design**

We leverage 14-day daily diary data from 10 datasets across 9 countries from the Subjective AGES (Aging within Global Everyday ecological Studies; [go.ncsu.edu/subjective\\_ages](http://go.ncsu.edu/subjective_ages)) consortium, including the USA, Canada, Germany (2 datasets), Austria, Ukraine, India, China, Israel, and Türkiye (we deviated from the preregistration by adding data from India and China, as the availability of these data was uncertain at the time of preregistration). Ethical approval for study sites was granted by the according institutional review boards. Participants provided written informed consent and received varying degrees and forms of compensation. In all countries each day, participants reported their ageist attitudes, subjective age, and memory failures. Demographic information for each study can be found in Table 1. Descriptions of translations procedures can be found in Supplement A.

#### **Study 2: Dataset and Design**

In the Swiss sample, participants reported on ageist experiences and memory failures each day, and momentary subjective age (7x/day) across 14 days. Participants provided written informed consent and received monetary compensation. We deviate from the preregistration by including daily ageist experiences as a within-person, daily variable instead of a between-person

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variable. Careful inspection of the data after submitting the preregistration revealed the existence of the within-person variable. Demographic information can be found in Table 1.

### Measures

#### *Study 1: Multi-Country Integrated Analysis Measures*

The data from the USA, Canada, Germany (both datasets), Austria, Ukraine, India, China, Israel, and Türkiye were harmonized and integrated into one dataset for analysis.

**Daily ageist attitudes** were assessed with three items (North & Fiske, 2013) modified for daily use (Bodner et al., 2021) with possible responses ranging from 0 (*completely disagree*) to 4 (*completely agree*). Items included: “In the past 24 hours: a) “I thought that older people shouldn’t go to places where younger people hang out”; b) “I thought that older people should not be expected to know how to use Facebook, WhatsApp or other social networks.”, and c) “I thought it’s not pleasant to see older people trying to dress, talk and behave in a ‘cool way’ (as if they are young)”. A composite score was calculated as the average score across the three items (within-person reliability ranged from  $\omega = .309$  (Austria) to  $\omega = .606$  (Israel); between-person reliability ranged from  $\omega = .717$  (Austria) to  $.985$  (Türkiye).

**Daily subjective age** was assessed with the item “How old did you feel in the past 24 hours?” Proportional discrepancy scores are created by subtracting chronological age from subjective age and then dividing by chronological age. Values more extreme than 3 SD from the sample mean were excluded from analysis (Stephan et al., 2018).

**Daily memory failures** were assessed through a shortened version of a questionnaire developed by Sunderland and colleagues (1983). Questions included five items that have been widely used in several daily diary studies (e.g., Neupert, 2022; Neupert et al., 2006; Neupert et al., 2016; Whitbourne et al., 2008; Yorgason et al., 2020): “In the past 24 hours: a) Did you go

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back to check whether you had done something that you meant to do?; b) Did you find that a word was ‘on the tip of your tongue,’ you knew what it was but could not quite find it?; c) Did you have difficulty picking up a new skill, for example, finding it hard to learn a new game or to work some new gadget after you had practiced once or twice?; d) Did you fail to recognize, by sight, close relatives or friends, or fail to recognize famous people seen on TV or in photographs? and; e) Did you forget to take your medication as scheduled?” Possible responses included yes and no. A sixth item (“Did you start to read something [a book or an article in a newspaper or magazine] without realizing you had already read it before?”) was included in all datasets except the one from India, so we deviated from the preregistration and used the five items available for all countries. We conducted a sensitivity analysis to compare results for six memory failure items for all data except India and then five items for all countries. The pattern of results remained the same, so we report the results with five items for all countries. The total score was calculated as the total number of reported failures across the five items.

### *Study 2: Swiss Study Measures*

**Daily ageist experiences** were assessed with one daily item directing participants to reflect back on their own experiences of ageism on a scale from 1 (*never*) to 4 (*frequently*) (Kessler & Warner, 2023; Stokes & Moorman, 2020). That is, “Have you been treated with less respect or courtesy than other people today because of your age?”.

**Daily subjective age** was assessed with one momentary item: “How old do you feel at this moment (in years)?” Proportional discrepancy scores were derived from the momentary scores as above and then aggregated as the mean score across momentary assessments at the daily level. Values more extreme than 3 SD from the sample mean were excluded from analysis (Stephan et al., 2018).

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**Daily memory failures** were consistent with the daily items used in the multi-country integrated analysis.

### Covariates

Based on previous research (e.g., Neupert et al., 2006), we included age, education, physical health, depressive mood, and neuroticism as covariates. Neuroticism was not assessed in the Ukrainian data and thus Ukraine is excluded from models with neuroticism as a covariate. Details regarding the measurement of each construct can be found in Supplement A.

### Analytical Approach

#### *Study 1: Multi-Country Integrated Analysis*

The daily diary datasets from the USA, Canada, Germany (both datasets), Austria, Ukraine, India, China, Israel, and Türkiye were harmonized into one, integrated dataset for analysis by producing an overall coding scheme and aligning each dataset to be consistent. To examine the relations between subjective age and ageist attitudes on daily memory failures, we fitted generalized linear mixed-effects models (GLMMs) with a Poisson distribution. This approach allowed us to account for the nested structure of the data, with daily observations (Level 1) nested within individuals (Level 2), who were further nested within countries (Level 3). The Poisson distribution was selected because of the count nature of daily memory failures. According to model comparison and convergence and referring to variance allocated across levels (Table 2, ICCs), two-level models with random intercept and random slope of ageist attitudes were specified for individuals. Three-level models with random slopes did not converge. Specifically, Model 1 included time (day), between-person and within-person subjective age, and between-person and within-person ageist attitudes. Model 2 additionally adjusted for covariates. All continuous covariates were grand-mean centered for ease of

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interpretation. Model estimation was conducted in R (version 4.5.2, R Core Team, 2025) using the lme4 package version 1.1-37 (Bates et al., 2015). Effect size was indicated by conditional and marginal  $R^2$  using the performance package version 0.15.2 (Lüdtke et al., 2021).

### *Study 2: Swiss Study*

Similar to Study 1, two-level random-intercept generalized linear mixed-effects models (GLMMs) with a Poisson distribution were estimated. Inclusion of random slopes of within-person variance of subjective age or ageist experiences led to problems in model convergence.

## **Results**

### **Study 1: Multi-Country Integrated Analysis**

Table 2 reports the descriptive statistics, ICCs, and intercorrelations of the three key variables for the multi-country integrated analysis. The ICC results indicate that a majority of the variance in each variable was between-person, while minimal variance existed between countries. Results from the unadjusted Poisson mixed-effects model (Model 1) are presented in Table 3. Between-person differences in ageist attitudes were positively associated with mean daily memory failures, suggesting that individuals who generally endorsed stronger ageist attitudes reported more memory failures on average (see Figure 1). Similarly, within-person fluctuations in ageist attitudes were linked to higher daily memory failures, indicating that on days when participants expressed stronger ageist attitudes than usual, they also tended to report more memory failures (see Figure 1). In contrast, between- and within-person subjective age were not significantly associated with memory failures in this model.

After adjusting for demographic, health, and psychological covariates, the effects of ageist attitudes remained statistically significant (Table 3, Model 2). Among covariates, a significant negative effect of day indicated that daily memory failures decreased slightly over

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time. Whereas higher education was associated with fewer memory failures, chronological age, the number of illnesses, depressive mood, and neuroticism were each associated with more memory failures. Physical health was not a significant predictor. Together, these results suggest that daily and individual differences in ageist attitudes are robustly related to self-reported memory failures.

### **Study 2: Swiss Study**

Table 4 reports the descriptive statistics and intercorrelations for the Swiss data. Results indicated that neither subjective age nor ageist experiences, at the between- or within-person level, was significantly associated with memory failures (Table 5, Model 1). In an adjusted model controlling for covariates, the pattern of results remained unchanged (Table 5, Model 2). Similar to Study 1, higher chronological age and a greater number of illnesses were associated with more frequent memory failures.

## **Discussion**

The present study investigated how daily and individual differences in subjective age and ageism (attitudes [Study 1] and experiences [Study 2]) relate to daily memory failures across a diverse set of global samples. Notably, there was very little variance at the country level across all study variables, indicating that heterogeneity within countries far exceeded differences between them, in line with Smith and Bond (2019). Most of the variance emerged between individuals, with additional meaningful fluctuations occurring within individuals from day to day. Against this backdrop, the multi-country integrated daily diary analyses in Study 1 showed that days characterized by stronger ageist attitudes were also days in which individuals reported more memory failures, and people who generally endorsed stronger ageist attitudes tended to report more forgetting overall. In contrast, neither daily nor between-person differences in

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subjective age were associated with daily memory failures. This pattern underscores the multidimensionality of views of aging and the value of examining their distinct components (Diehl, 2026; Diehl et al., 2014; Shrira et al., 2022; Wurm et al., 2017; Zhou et al., 2026). It also highlights that socially embedded, prescriptive beliefs about aging may be more influential for moment-to-moment interpretations of memory failures than personal age-related self-perceptions.

Although subjective age and ageist attitudes both involve positioning oneself in relation to “old age,” they represent different identity processes. Subjective age is an internal, self-referential evaluation of how old or young a person feels relative to cultural age norms (Barak & Stern, 1986; Kotter-Grühn et al., 2015; Montepare, 2009). Thus, it is possible that the associations between subjective age and memory failures are more country specific than the global effects of ageist attitudes reported here. Ageist attitudes reflect externally oriented prescriptions and stereotypes that specify how older adults should behave, reinforcing age-graded expectations about competence, engagement, and decline (de Paulo Couto & Rothermund, 2022; North & Fiske, 2012). These types of expectations and norms represent an important part of the environmental context and culture in which adult development and aging takes place and are being shaped. Because forgetting is a culturally visible marker of aging (Hertzog & Hultsch, 2000), individuals who endorse prescriptive age norms may scrutinize and interpret daily memory failures through a more evaluative lens, perceiving them as violations of age-appropriate behavior or as evidence of decline. These identity pressures may therefore heighten the salience of everyday forgetting more strongly than internal feelings of being younger or older. Because of the correlational nature of the current study, it is also possible that the association is bidirectional such that becoming aware of or experiencing a memory failure



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may increase one's subjective age or ageist attitudes. Identity management processes, including distancing from negatively stereotyped groups (Levy, 2009; Weiss & Lang, 2012), may contribute to these patterns by making prescriptive beliefs more immediately reactive to small fluctuations in daily experiences.

The Swiss data in Study 2 presented a contrasting pattern, showing no significant within-person or between-person associations between either VoA construct and memory failures. Several explanations derive from important contextual differences. First, the Swiss measure of ageism focused on personal experiences of age discrimination rather than prescriptive evaluations. Drawing on stereotype embodiment theory (Levy, 2009), it is possible that exposure to ageist experiences over time can result in the internalization of ageist attitudes. Thus, the effect of ageist experiences may not be directly associated with memory failures, but indirectly through ageist attitudes, which should be tested in future research. Second, experiences of age discrimination tend to occur most frequently in workplace settings and less often in healthcare or leisure contexts (e.g., Centre for Aging Better, 2024; Federal Statistical Office, 2025). The Swiss sample consisted largely of retired individuals (84%), with only one full-time and eighteen part-time workers. If most participants were no longer embedded in contexts where age discrimination is most prevalent, they may have had few relevant experiences to activate links between discrimination-based experiences and daily cognitive evaluations.

### **Limitations and Future Directions**

Several limitations warrant consideration. First, the within-person reliability of ageist attitudes was relatively low. Importantly, low reliability biases associations toward zero, suggesting that the significant within-person effects observed here may underestimate the true strength of the relationships. We used the original three items of the Identity scale developed by

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North and Fiske (2013), but future within-person research may wish to develop additional items to boost reliability. Second, all variables were assessed through self-report, raising concerns about social desirability, especially in reporting memory failures or acknowledging ageist attitudes. Incorporating objective memory indicators, implicit age bias measures, or informant reports would strengthen future work. Third, while theoretical models suggest that identity processes underlie the association between views of aging and memory failures (Diehl & Wahl, 2020; Levy, 2009), we did not directly assess identification with the social category of “older adults.” Future studies should incorporate explicit measures of age-group identity to test proposed mechanisms - and also clarify the identity-relevant role of age discrimination (tested here only in the Swiss data) in different global contexts. Fourth, we included subjective age and ageism as two views of aging, but acknowledge that there are additional constructs such as awareness of age-related change (Diehl, 2026; Diehl & Wahl, 2010) that could be incorporated into future work as additional dimensions. Fifth, the current analyses focus on concurrent-day associations, but future work that could systematically test the possibility of reversed directionality such that experiencing a memory failure may increase the salience of ageist attitudes would be important. Sixth, establishing procedures and then testing measurement invariance for three levels of analysis (occasions, persons, countries) will provide increased confidence in the ability to detect cultural similarities and differences. Seventh, the shortened daily memory failure measure has been used in several previous daily diary studies and was selected to minimize participant burden, but it primarily focuses on retrospective memory failures with only one prospective item. Future work that could include a longer inventory would be able to address potential differences between retrospective and prospective memory failures. Finally, although this study includes data from ten countries and substantially improves on the

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geographic concentration of prior aging research (Palgi et al., 2021), representation gaps remain.

Australia and countries in Africa and South America were not included, and additional cross-cultural work is needed to determine whether the patterns of daily within-person associations hold in broader sociocultural contexts (Kornadt, Kessler, et al., 2021; Smith & Bond, 2019).

Future research with more countries and clear hypotheses about country differences in the associations could apply a multi-group SEM approach to test bidirectional associations.

### **Conclusion**

Across ten culturally diverse daily diary samples, ageist attitudes - but not subjective age - emerged as robust predictors of daily memory failures. These findings suggest that prescriptive, socially embedded general views about aging may play a more consequential role in memory failures than personal feelings of how old they are. Although the Swiss study did not replicate these associations, the focus on personal ageist experiences instead of general ageist attitudes offers a plausible explanation. Taken together, this work advances understanding of how everyday identity processes surrounding aging become intertwined with the experience of remembering and forgetting. By focusing on within-person dynamics and cross-cultural diversity, the present study highlights the need for further investigation into how societal norms and aging identities shape older adults' real-world cognitive experiences.

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### Ethical Approval:

USA: Ethics approval was granted by the Institutional Review Board of North Carolina State University (IRB#: 24609)

Germany: German datasets: Ethical approval was granted by the Ethics Review Panel at the University of Luxembourg (ERP-22-086-DACE) and at the Friedrich-Schiller-University Jena (project title “Expectations for active ageing”; FSV 22/018).

Canada: Ethics approval was granted by the UBC Behavioural Research Ethics Board (certificate H24-02653).

Israel: The study received approval from the Institutional Review Boards of the second and last authors’ institutions (IRB approval #1923 and #507/21, respectively)

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Ukraine: Ukrainian data set: Ethical approval was granted by the Ukrainian Catholic University (Protocol # 58/23)

China: Ethical approval was obtained from the Chinese University of Hong Kong, Shenzhen (Ref. No: EF20250219001).

India: Ethics approval was granted by the Institutional Review Board of North Carolina State University (IRB#: 24609)

Türkiye: Ethics approval was granted by the Institutional Review Board of North Carolina State University (IRB#: 24609)

Austria: Ethical approval was granted by the Institute for Developmental and Educational Psychology at the University of Vienna (No. 9\_25)

Switzerland: Ethical approval was granted by the Ethics Committee of the Faculty of Arts and Social Sciences at the University of Zurich (approval number 17.2.4).

Preregistration is available at

[https://osf.io/ang8u/overview?view\\_only=682ecee02d4741df8087288fb3595e8c](https://osf.io/ang8u/overview?view_only=682ecee02d4741df8087288fb3595e8c).

Analytic code is available at

[https://osf.io/x3j7g/overview?view\\_only=d020cf2688144e159cdb13c90ff3ed8b](https://osf.io/x3j7g/overview?view_only=d020cf2688144e159cdb13c90ff3ed8b).

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**Table 1.** *Demographic Information by Country*

| Variable                   | Israel<br>(N = 76) | USA<br>(N = 71) | Türkiye<br>(N = 50) | Germany<br>(N = 268) | Ukraine<br>(N = 71) | Canada<br>(N = 103) | Austria<br>(N = 108) | India<br>(N = 109) | Switzerland<br>(N = 121) | China<br>(N = 125) |
|----------------------------|--------------------|-----------------|---------------------|----------------------|---------------------|---------------------|----------------------|--------------------|--------------------------|--------------------|
| Mean age (SD)              | 66.71<br>(9.52)    | 68.20<br>(7.05) | 59.36<br>(7.95)     | 64.47<br>(7.65)      | 60.06<br>(6.83)     | 71.23<br>(9.08)     | 63.03<br>(9.30)      | 58.90<br>(7.04)    | 75.41 (5.57)             | 65.05 (4.57)       |
| Sex                        |                    |                 |                     |                      |                     |                     |                      |                    |                          |                    |
| male                       | 35                 | 25              | 17                  | 97                   | 18                  | 28                  | 48                   | 52                 | 51                       | 51                 |
| female                     | 41                 | 46              | 33                  | 171                  | 52                  | 75                  | 60                   | 57                 | 70                       | 74                 |
| other                      | 0                  | 0               | 0                   | 0                    | 1                   | 0                   | 0                    | 0                  | 0                        | 0                  |
| Education                  |                    |                 |                     |                      |                     |                     |                      |                    |                          |                    |
| no formal<br>education     | 10                 | 0               | 2                   | 0                    | 0                   | -                   | 0                    | 3                  | 0                        | 7                  |
| primary school             | 4                  | 2               | 3                   | 3                    | 0                   | -                   | 12                   | 15                 | 0                        | 0                  |
| some high<br>school        | 5                  | 34              | 6                   | 40                   | 0                   | 2                   | 10                   | 19                 | 31                       | 28                 |
| completed high<br>school   | 28                 | 27              | 13                  | 30                   | 22                  | 11                  | 20                   | 21                 | 4                        | 51                 |
| college/Bachelor<br>degree | 13                 | 8               | 6                   | 51                   | 41                  | 28                  | 20                   | 36                 | 80                       | 25                 |
| graduate/Master<br>degree  | 16                 | 0               | 13                  | 106                  | 8                   | 22                  | 27                   | 15                 | -                        | 14                 |
| doctorate                  | 0                  | 0               | 7                   | 26                   | 0                   | 10                  | 8                    | 0                  | -                        | 0                  |
| other                      | 0                  | 0               | 0                   | 12                   | 0                   | 29                  | 11                   | 0                  | -                        | 0                  |
| missing (%)                | 0                  | 0               |                     | 0                    | 0                   | 1 (1%)              | 0                    | -                  | 6 (5%)                   | 0                  |
| Birthplace                 |                    |                 |                     |                      |                     |                     |                      |                    |                          |                    |
| same as data<br>collection | 58                 | 67              | 50                  | 251                  | -                   | 69                  | 88                   | 108                | -                        | 125                |
| other                      | 18                 | 4               | 0                   | 17                   | -                   | 33                  | 20                   | 1                  | -                        | 0                  |
| missing (%)                | 0                  | 0               | 0                   | 0                    | 71<br>(100%)        | 1 (1%)              | 0                    | 0                  | 121 (100%)               | 0                  |

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

## Ethnic identity/

## Cultural background

|                                |    |    |    |               |              |    |               |               |            |            |
|--------------------------------|----|----|----|---------------|--------------|----|---------------|---------------|------------|------------|
| Jewish                         | 44 | 0  | 0  | -             | -            | 0  | -             | -             | -          | -          |
| Arab                           | 28 | 0  | 1  | -             | -            | 0  | -             | -             | -          | -          |
| White/ European                | 0  | 66 | 0  | -             | -            | 67 | -             | -             | -          | -          |
| Asian                          | 0  | 2  | 0  | -             | -            | 26 | -             | -             | -          | -          |
| Black                          | 0  | 2  | 0  | -             | -            | 0  | -             | -             | -          | -          |
| Turkish                        | 4  | 1  | 47 | -             | -            | 0  | -             | -             | -          | -          |
| Native American/<br>Indigenous | 0  | 0  | 0  | -             | -            | 0  | -             | -             | -          | -          |
| Middle-Eastern/<br>African     | 0  | 0  | 0  | -             | -            | 6  | -             | -             | -          | -          |
| Hispanic                       | 0  | 0  | 0  | -             | -            | 2  | -             | -             | -          | -          |
| other                          | 0  | 0  | 2  | -             | -            | 1  | -             | -             | -          | -          |
| missing (%)                    | 0  | 0  | 0  | 268<br>(100%) | 71<br>(100%) | 0  | 108<br>(100%) | 109<br>(100%) | 121 (100%) | 125 (100%) |

## Religious

## Affiliation

|             |    |    |    |     |    |               |    |    |            |            |
|-------------|----|----|----|-----|----|---------------|----|----|------------|------------|
| Jewish      | 36 | 3  | 1  | 0   | 0  | -             | 0  | 0  | -          | -          |
| Christian   | 8  | 61 | 0  | 141 | 64 | -             | 71 | 2  | -          | -          |
| Muslim      | 24 | 0  | 44 | 1   | 0  | -             | 2  | 15 | -          | -          |
| Hindu       | 0  | 0  | 0  | 0   | 0  | -             | 0  | 88 | -          | -          |
| Buddhist    | 0  | 0  | 0  | 6   | 0  | -             | 0  | 0  | -          | -          |
| other       | 0  | 2  | 1  | 2   | 1  | -             | 5  | 0  | -          | -          |
| none        | 8  | 5  | 4  | 118 | 6  | -             | 30 | 4  | -          | -          |
| Missing (%) | 0  | 0  | 0  | 0   | 0  | 103<br>(100%) | 0  | 0  | 121 (100%) | 125 (100%) |

## Retirement Status

|             |    |    |    |     |    |    |    |    |     |     |
|-------------|----|----|----|-----|----|----|----|----|-----|-----|
| retired     | 39 | 53 | 28 | 164 | 23 | 77 | 50 | 33 | 102 | 119 |
| not retired | 37 | 18 | 22 | 104 | 36 | 26 | 58 | 38 | 19  | 5   |

Note. - indicates the corresponding category was not assessed.

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Table 2***Study 1: Descriptive Statistics and Correlations for Main Variables.*

| Multi-Country Integrated Analysis (Person $N = 974$ ) |                    |                                                 |         |      |        |
|-------------------------------------------------------|--------------------|-------------------------------------------------|---------|------|--------|
|                                                       | $M (SD)$           | ICC                                             | 1       | 2    | 3      |
| 1. Memory Failures                                    | 0.83 (1.14)        | Between country: 0.086<br>Between-person: 0.596 | -       | .006 | .052** |
| 2. Subjective Age                                     | -9.06%<br>(14.00%) | Between country: 0.016<br>Between-person: 0.743 | .059    | -    | .015   |
| 3. Ageist Attitudes                                   | 1.05 (0.98)        | Between country: 0.125<br>Between-person: 0.678 | .268*** | .086 | -      |

*Note.* Memory Failures were calculated as a frequency and could range from 0 to 5. Subjective Age was calculated as a proportional discrepancy score by subtracting chronological age from subjective age and then dividing by chronological age. Negative scores reflect the percent younger that one feels, whereas positive scores reflect the percent older that one feels. Values more extreme than 3SD from the sample mean were excluded from analysis. Ageist Attitudes were a composite of three items and could range from 0 (*completely disagree*) to 4 (*completely agree*). ICC = intraclass correlation coefficient. Values above the diagonal indicate within-person relations, and values below the diagonal indicate between-person relations.  $p$ -values were adjusted for multiple comparisons using the method proposed by Holm (1979). \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Table 3.**  
*Models Predicting Daily Memory Failures: Multi-Country Integrated Analysis*

| Fixed Effects                 | Model 1          |                   |                 | Model 2          |                   |                 |
|-------------------------------|------------------|-------------------|-----------------|------------------|-------------------|-----------------|
|                               | Estimate<br>(SE) | 95%<br>CI         | <i>p</i> -value | Estimate<br>(SE) | 95%<br>CI         | <i>p</i> -value |
| Intercept                     | -0.64<br>(0.05)  | [-0.71,<br>-0.56] | <.001           | -0.15<br>(0.11)  | [-0.32,<br>0.03]  | .181            |
| Day                           | -0.02<br>(0.002) | [-0.03,<br>-0.02] | <.001           | -0.02<br>(0.003) | [-0.02,<br>-0.01] | <.001           |
| Subjective age<br>(between)   | 0.23<br>(0.35)   | [-0.34, 0<br>.80] | .504            | -0.23<br>(0.34)  | [-0.78, 0<br>.32] | .494            |
| Subjective age<br>(within)    | 0.10<br>(0.13)   | [-0.11, 0<br>.32] | .426            | 0.10<br>(0.13)   | [-0.11, 0<br>.32] | .433            |
| Ageist attitudes<br>(between) | 0.30<br>(0.05)   | [0.22,<br>0.39]   | <.001           | 0.19<br>(0.05)   | [0.11,<br>0.27]   | <.001           |
| Ageist attitudes<br>(within)  | 0.09<br>(0.02)   | [0.05,<br>0.12]   | <.001           | 0.07<br>(0.02)   | [0.03,<br>0.11]   | .004            |
| Chronological<br>age          | -                | -                 |                 | 0.01<br>(0.01)   | [0.00,<br>0.02]   | .044            |
| Education                     | -                | -                 |                 | -0.15<br>(0.03)  | [-0.19,<br>-0.10] | <.001           |
| Health                        | -                | -                 |                 | -0.06<br>(0.05)  | [-0.15, 0<br>.02] | .236            |
| Illness                       | -                | -                 |                 | 0.10<br>(0.03)   | [0.06,<br>0.14]   | <.001           |
| Depression                    | -                | -                 |                 | 0.11<br>(0.02)   | [0.08,<br>0.13]   | <.001           |
| Neuroticism                   | -                | -                 |                 | 0.22<br>(0.07)   | [0.11,<br>0.34]   | .001            |

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DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

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Random Effects  
(Variance)

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|                                              |       |       |
|----------------------------------------------|-------|-------|
| Intercept                                    | 1.38  | 1.20  |
| Participant:<br>Ageist attitudes<br>(within) | 0.03  | 0.03  |
| Conditional R <sup>2</sup> :                 | 0.665 | 0.663 |
| Marginal R <sup>2</sup> :                    | 0.032 | 0.112 |

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Note. SE = standard errors; CI = confidence interval. Model 1 includes 10 studies with 974 participants across 9 countries (total observations = 12,261) and Model 2 includes 9 studies with 873 participants across 8 countries (total observations = 11,214).

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Table 4***Study 2: Descriptive Statistics and Correlations for Main Variables.*

| Swiss Study (Person $N = 111$ ) |              |       |       |       |        |
|---------------------------------|--------------|-------|-------|-------|--------|
|                                 | $M (SD)$     | ICC   | 1     | 2     | 3      |
| 1. Memory Failures              | 0.64 (0.78)  | 0.427 |       | -0.09 | -0.001 |
| 2. Subjective Age               | -0.08 (0.10) | 0.779 | -0.03 |       | -0.05  |
| 3. Ageist Experiences           | 1.24 (0.67)  | 0.356 | 0.20  | -0.15 |        |

*Note.* ICC = intraclass correlation coefficient. Values above the diagonal indicate within-person relations, and values below the diagonal indicate between-person relations.  $p$ -values of all the correlations were  $> .05$ .

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Table 5.**  
*Models Predicting Daily Memory Failures: Switzerland*

| Fixed Effects                      | Model 1          |                   |                 | Model 2          |                   |                 |
|------------------------------------|------------------|-------------------|-----------------|------------------|-------------------|-----------------|
|                                    | Estimate<br>(SE) | 95%<br>CI         | <i>p</i> -value | Estimate<br>(SE) | 95%<br>CI         | <i>p</i> -value |
| Intercept                          | -0.51<br>(0.10)  | [-0.72,<br>-0.30] | < .001          | -0.51<br>(0.10)  | [-0.71,<br>-0.32] | < .001          |
| Day                                | -0.03<br>(0.01)  | [-0.05,<br>-0.02] | < .001          | -0.03<br>(0.01)  | [-0.05,<br>-0.02] | < .001          |
| Subjective age<br>(between)        | -0.16<br>(1.07)  | [-2.25,<br>1.93]  | .880            | -0.69<br>(1.04)  | [-2.73,<br>1.35]  | .508            |
| Subjective age<br>(within)         | -1.23<br>(0.89)  | [-2.98,<br>0.52]  | .167            | -1.18<br>(0.91)  | [-2.97,<br>0.61]  | .196            |
| Ageist<br>experiences<br>(between) | 0.30<br>(0.20)   | [-0.09,<br>0.70]  | .133            | 0.15<br>(0.20)   | [-0.24,<br>0.55]  | .453            |
| Ageist<br>experiences<br>(within)  | -0.03<br>(0.06)  | [-0.15,<br>0.09]  | .631            | -0.03<br>(0.06)  | [-0.15,<br>0.09]  | .626            |
| Chronological<br>age               | -                | -                 |                 | 0.04<br>(0.02)   | [0.00,<br>0.07]   | .027            |
| Education                          | -                | -                 |                 | -0.01<br>(0.04)  | [-0.09,<br>0.07]  | .780            |
| Health                             | -                | -                 |                 | 0.13<br>(0.10)   | [-0.08,<br>0.33]  | .220            |
| Illness                            | -                | -                 |                 | 0.19<br>(0.05)   | [0.08,<br>0.29]   | < .001          |



## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

|             |   |   |                 |                       |
|-------------|---|---|-----------------|-----------------------|
| Depression  | - | - | -0.22<br>(0.12) | [-0.46, .081<br>0.03] |
| Neuroticism | - | - | 0.22<br>(0.17)  | [-0.11, .183<br>0.55] |

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Random Effects  
(Variance)

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|                              |       |       |
|------------------------------|-------|-------|
| Intercept                    | 0.67  | 0.54  |
| Conditional R <sup>2</sup> : | 0.438 | 0.441 |
| Marginal R <sup>2</sup> :    | 0.024 | 0.106 |

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Note. SE = standard errors; CI = confidence interval. Each model includes 111 participants and 1,363 total observations.

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

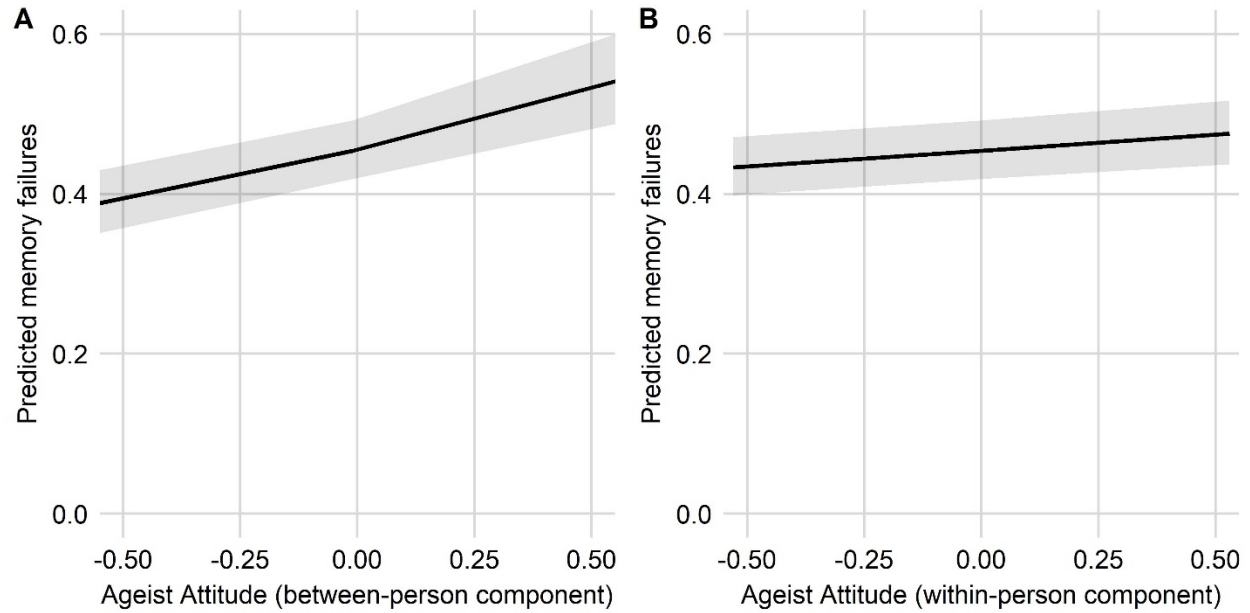


Figure 1. Within- and Between-Person Effects of Ageist Attitudes on Memory Failures. The figures were generated from the multi-country integrated analysis and are based on the models without covariates. Person N = 974

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

**Supplement A****Covariates***Study 1: Multi-Country Integrated Analysis*

Demographic covariates included age (years since birth) and highest level of education (1 = no formal education, 2 = elementary-middle school, 3 = some high school, 4 = completed high school, 5 = college degree, 6 = graduate degree). Physical health was assessed with an item “how would you describe your health”. Possible responses ranged from 1 (*not good at all*) to 5 (*excellent*). Illness was assessed with an item “has a medical doctor told you that you have or have had in recent years any health conditions” (Börsch-Supan & Jürges, 2005). Participants reported yes and no to a list of 15 health conditions (e.g., high blood pressure, Parkinson’s disease) and could additionally indicate a condition that was not in the list. The sum was calculated as the total number of reported illnesses. Depressive mood was assessed with an item “in the past 24 hours, I was so depressed nothing could cheer me up” with possible responses ranging from 1 (*all of the time*) to 5 (*none of the time*) (Mroczek & Kolarz, 1998). Neuroticism was assessed with 4 items from the Midlife Development Inventory (MIDI) personality scales (Lachman et al., 1997), indicating how well each of the words describe participants. Possible responses ranged from 1 (*not at all*) to 4 (*a lot*) (Mroczek & Kolarz, 1998). The words included moody, worrying, nervous, and calm (reverse coded).

*Study 2: Swiss Study*

Demographic covariates included age (years since birth) and the highest level of education, including (1) no education or training, (2) primary school, (3) compulsory school (secondary / real / district school or lower grammar school), (4) apprenticeship or full-time vocational school, (5) matura, (6) higher technical or vocational training (master's diploma,

## DAILY AGEISM, SUBJECTIVE AGE, AND MEMORY FAILURES

advanced technical examination), (7) higher technical college, (8) university of applied sciences, and (9) university. Physical health was assessed with an item “how would you describe your health”. Possible responses ranged from 1 (*not good at all*) to 5 (*excellent*). Illness was assessed with an item “Have you suffered or have been treated for during the past 2 years as a result of the following illnesses / symptoms?” Participants reported yes or no to a list of 23 health conditions. Outcome is calculated as the total number of reported health conditions. Depression was assessed with the German version of the Big 5 inventory (Danner et al., 2016), asking participants to choose a number to indicate the extent to which they agree with 60 statements. One item asked “I tend to feel depressed, blue.” Possible responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Neuroticism was assessed with the German version of the Big 5 inventory (Danner et al., 2016), asking participants to choose a number to indicate the extent to which they agree with 60 statements. Possible responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Comparable statements included “*I am moody, have mood swings*”, “*I worry a lot*”, “*I rarely feel nervous and insecure*” (reverse coded), “*I am quite calm*” (reverse coded).

### Translation Procedures

#### *Study 1: Multi-Country Integrated Data Analysis*

**Germany and Austria.** When there were established German translations of the questionnaires, we used those. If not, a research assistant fluent in both languages translated the English version into German, and a second researcher, also fluent in both languages, double-checked and they resolved issues together.

**Ukraine.** All study materials including the informed consent, instructions, and questionnaires for both daily and baseline assessments were independently translated from English into Ukrainian by two native Ukrainian speakers fluent in English (one holding a PhD in

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Psychology and the other a third-year bachelor's student in Psychology). The resulting translations were then integrated into a single draft version. Discrepancies in wording were reviewed by an independent expert holding a PhD in Psychology and fluent in both Ukrainian and English.

**India.** All study materials, including consent, instructions, question items, and response items, were translated from English into Bengali, the primary language spoken in West Bengal, India, to ensure linguistic and cultural appropriateness. The translation from English to Bengali was carried out by a middle school teacher from Kolkata, West Bengal, who holds a master's degree in English Literature and is fluent in both English and Bengali. The translator was compensated ₹3,000 for her work, and the amount is roughly equivalent to about 10 modest meals in urban West Bengal. To ensure accuracy and conceptual equivalence, the translated version was subsequently back-translated into English and compared with the original items by Shalini Mukherjee.

**China.** All study materials were translated from English to Chinese following the standard back-translation procedure by two bilingual research assistants with proficiency in both languages. The first research assistant translated the materials from English to Chinese, and the second assistant translated the Chinese materials back to English. The PI of the Chinese data collection compared the back-translated and the original content and resolved the discrepancies through discussion with the two translators.

**Israel.** All study materials were translated from English into Hebrew. For this purpose, we used previously published Hebrew translations (Bergman et al., 2020; Bodner et al., 2021; Palgi et al., 2017; Shrira et al., 2017). In all other cases, we use the back-translation method to translate our measures. Two translators, fluent in both English and Hebrew, were involved in the

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process. One translated the scales into Hebrew, while the other translated the Hebrew version back into English. Both reviewers then examined the back-translated English to ensure the content was accurate and retained the original meaning. Any discrepancies in wording were discussed, and a consensus was reached.

**Türkiye.** All study materials were translated from English into Turkish. We used the double translation method-back-translation method (McGorry, 2000) to translate our measures. Two translators, fluent in both English and Turkish, a doctoral student who came to the US for their Ph.D. and another graduate student who is a Turkish-American completed the double translation process. A third translator, a Turkish doctoral student in UCLA, reviewed the work to ensure that the translated content was culturally appropriate and retained the same intended meaning.

### *Study 2: Switzerland*

The same procedure as described for Germany and Austria was followed in the Swiss study. An additional layer of quality control included instructions for research assistants to be alerted to potential subtle differences between standard German and Swiss German for some of the items, so that research assistants were prepared to address possible questions by the Swiss participants.