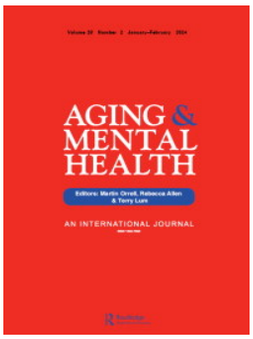

Aging & Mental Health

ISSN: 1360-7863 (Print) 1364-6915 (Online) Journal homepage: www.tandfonline.com/journals/camh20

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To cite this article: Patrick Whitmoyer, Megan E. Fisher, Elizabeth J. Duraney, Charles Manzler, Derek M. Isaacowitz, Rebecca Andridge & Ruchika Shaurya Prakash (2024) Age differences in emotion regulation strategy use and flexibility in daily life, Aging & Mental Health, 28:2, 330-343, DOI: 10.1080/13607863.2023.2256245

To link to this article: https://doi.org/10.1080/13607863.2023.2256245

AGING & MENTAL HEALTH
2024, VOL. 28, NO. 2, 330–343
https://doi.org/10.1080/13607863.2023.2256245

Age differences in emotion regulation strategy use and flexibility in daily life

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ABSTRACT

Objectives: Age-related shifts in emotion regulation patterns are important for explaining preserved emotional well-being in late adulthood amidst declines in physical and cognitive health. Although several studies have examined age-related shifts in emotion regulation strategy use, age differences in how specific strategies are flexibly adapted to shifting contexts in daily life and the adaptiveness of such shifts remains poorly understood.

Methods: 130 younger adults (ages 22–35) and 130 older adults (ages 65–85) completed a modified Day Reconstruction Method Assessment and self-report questionnaires to examine age differences in emotion regulation strategy use and one aspect of emotion regulation flexibility (responsiveness) in daily life, and the adaptive implications of these differences.

Results: Older adults exhibited more frequent acceptance use, less frequent distraction use, and less flexibility in the responsiveness of strategies with varying negative affect. Across age groups, the use of expressive suppression and distraction was associated with less adaptive outcomes, whereas higher acceptance responsiveness, positive reappraisal responsiveness, and situation selection responsiveness were associated with more adaptive outcomes. Age-group moderated the associations between adaptiveness metrics with the use and flexibility of several emotion regulation strategies.

Conclusion: The current findings provide early evidence of age-related decreases in emotion regulation flexibility as well as age-related shifts in the adaptiveness of emotion regulation patterns.

ARTICLE HISTORY
Received 3 April 2023
Accepted 31 August 2023

KEYWORDS
Aging; context; emotion regulation; emotional well-being; flexibility

Introduction

Amidst age-related declines in physical and cognitive functioning (Verhaeghen, 2011; Verhaeghen & Salthouse, 1997), an abundant literature suggests that emotional well-being—referring to a state of good mental health and adaptive experience of both positive and negative affect—remains stable and may even improve with age (Charles et al., 2001; Kessler & Staudinger, 2009). This appears to be related in large part to age-related shifts in emotion regulation processes—strategies implemented to modulate the intensity, valence, or frequency of the emotional response.

Specifically, the aging literature indicates that age-related shifts in cognitive resources may drive older adults to increasingly rely upon what are considered less cognitively-demanding and antecedent-focused strategies (e.g. Allen & Windsor, 2019; Blanchard-Fields et al., 2004). These strategies include situation selection, distraction, acceptance, and positive reappraisal. Situation selection involves choosing situations likely to elicit positive emotions while avoiding those likely to elicit negative emotions, such as avoiding going to an anxiety-provoking, doctors' appointment (Eldesouky & English, 2018). Relatedly, distraction pertains to redirecting attention away from the emotional information towards unrelated information, such as opting to watch TV instead of attending to the anxiety-provoking appointment (Scheibe et al., 2015). Another less cognitively demanding strategy that is frequently employed by older adults is acceptance—the acknowledgment of one's feelings in response to an emotionally evocative situation (Allen & Windsor, 2019). And finally, positive reappraisal refers to a honing in on the positive aspects and outcomes of a situation. For example, positive reappraisal of an anxiety-provoking appointment can involve focusing on the long-term health benefits of maintaining doctors' appointment for good health (Shiota & Levenson, 2009).

In contrast, older adults may place lesser reliance on more cognitively-demanding strategies, such as detached reappraisal and expressive suppression (e.g. Liang et al., 2017; Scheibe et al., 2015). Detached reappraisal entails reinterpreting situations from an unemotional and distanced standpoint, such as reassuring oneself that a scary movie is purely fictional and not based in reality (Shiota & Levenson, 2009). Similarly, in comparison to young adults, older adults rely less on expressive suppression. This response-focused strategy is typically employed subsequent to the generation of emotion (Blanchard-Fields et al., 2004) and involves hiding the outward expression of emotions (Phillips et al., 2008).

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/13607863.2023.2256245.
Data for the current study has also been disseminated at first author's dissertation defense to dissertation committee members at The Ohio State University on 6/1/2020 and secondary analyses using this dataset have recently been accepted for publication in Mindfulness. Data and analysis code for this manuscript have been made publicly available on the Open Science Framework (https://osf.io/tbk4d/). This study's design and its analysis were not pre-registered.

Although there is some evidence that such age-related shifts in strategy use may overall be adaptive for older adults (e.g. Shiota & Levenson, 2009; Smoski et al., 2014), contemporary theories of emotion regulation additionally emphasize that strategies are not inherently adaptive, but rather their adaptiveness depends on the contexts in which they are implemented (Cole et al., 2017; Pruessner et al., 2020). Adaptive emotion regulation may thus be better reflected by the ability to flexibly implement strategies in response to shifts in contextual demands to meet one's emotion regulation goals. Across the literature, emotion regulation flexibility has been conceptualized as involving several different components, including general variation in strategy use across different contexts (e.g. Bonanno et al., 2004), systematically synchronizing strategy use with specific contextual features (Aldao et al., 2015), and adjusting use of particular strategies in response to shifts in affective intensity and based on whether emotion regulation goals have been achieved (Alkoby et al., 2019; Sheppes et al., 2011).

Unfortunately, there is a relative dearth of literature examining how age impacts the flexible implementation of strategies across contexts. Additionally, even fewer studies have empirically investigated the downstream consequences of emotion regulation flexibility for overall emotional well-being in older adults. Based on prominent theories of aging, such as the Socioemotional Selectivity Theory (Carstensen et al., 2003) and the Selection, Optimization, and Compensation framework (Urry & Gross, 2010), older adults may be more motivated to regulate emotions due to increased salience of emotion regulation goals and adaptively adjust/optimize strategy use to account for shifts in resources. However, the scarce empirical studies directly examining relationships between age and emotion regulation flexibility in daily life paint a different picture. The only empirical study published at the time of the conceptualization of the current study (Eldesouky & English, 2018) found age-related reductions in strategy variability, which is another proposed index of flexibility, in the use of six strategies (situation selection, situation modification, distraction, positive reappraisal, detached reappraisal, and expressive suppression). Similarly, findings from two more recent studies examining age-related differences in how strategies covaried across relational and emotional contexts (Benson et al., 2019), and in response to different domains of daily hassles (Bellingtier et al., 2022), suggested that flexibility either decreases (Benson et al., 2019) or remains constant (Bellingtier et al., 2022) with increasing age. However, across these two studies, findings varied by strategy type and context. For example, Benson et al. (2019) identified age differences in expressive suppression but not in cognitive reappraisal flexibility. Additionally, in the Bellingtier et al., 2022 study, emotion regulation flexibility was not associated with lower hassle reactivity casting doubt on the adaptive nature of flexibility. Overall, the limited number of studies suggest that older adults may exhibit reduced or similar emotion regulation flexibility as young adults, depending on the type of strategy and context being examined, whereas the adaptiveness of flexibility across age groups remains uncertain.

The purpose of the present study was two-fold. First, our primary aim was to better understand age differences in emotion strategy use, including a facet of emotion regulation flexibility—within-strategy responsiveness—in daily life. Secondly, to directly examine the adaptiveness of strategy use and flexibility, we investigated their correlations with two indicators of emotional well-being: emotion dysregulation and affect balance. Employing a modified version of the Day Reconstruction Method (DRM; Kahneman et al., 2004), measures of emotion regulation strategy use and negative affect were collected within multiple idiographic emotional episodes on a single day. In this study, we examined a specific aspect of emotion regulation flexibility, namely the synchronized fluctuation in the utilization of strategies in response to varying levels of negative affect. Consistent with previous literature (Fisher et al., 2022), we refer to this as within-strategy responsiveness. In doing so, we hope to better characterize how individuals shift their strategy use based on changes in negative affect intensity across everyday life situations. The assessment of emotional well-being included administration of two self-report measures. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a comprehensive measure assessing the challenges experienced by an individual in being able to regulate their emotions. Additionally, the Scale of Positive and Negative Experience (SPANE; Diener et al., 2010) was employed to quantify the ratio of positive feeling states to negative feeling states. In these analyses, we also controlled for demand characteristics, by administering and covarying the social desirability scores from the Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe, 1960).

Based on the prior literature, we predicted that relative to young adults, older adults would exhibit increased reliance on less cognitively demanding, antecedent-focused strategies. For example, the majority of evidence suggests that preference for distraction either increases (Ricarte Trives et al., 2016; Scheibe et al., 2015) or remains constant (Eldesouky & English, 2018; Hofer et al., 2015) with advancing age. Similarly, the use of acceptance (Allen & Windsor, 2019; Schirda et al., 2016), positive reappraisal (Garnefski & Kraaij, 2006; Lohani & Isaacowitz, 2014; Shiota & Levenson, 2009), and situation selection (English & Carstensen, 2014; Löckenhoff & Carstensen, 2007; Stawski et al., 2008) also increases with age. Additionally, we hypothesized that older adults would exhibit reduced reliance on more cognitively-demanding (detached reappraisal), and response-focused strategies (expressive suppression). Extant literature suggests that the use of both detached reappraisal (Shiota & Levenson, 2009) and expressive suppression (Lohani & Isaacowitz, 2014) decreases with age.

To evaluate the adaptiveness of strategy utilization and strategy flexibility, we correlated these scores with indicators of emotional health. Based on prior studies suggesting the putative adaptiveness of acceptance, distraction, and situation selection strategies for older adults (Aldao et al., 2010; Smoski et al., 2014; Webb et al., 2018), we hypothesized that the use of these strategies would be associated with more positive affect balance and lower levels of emotion dysregulation. In contrast, based on prior findings showing a negative association between the use of expressive suppression and psychopathology (Nolen-Hoeksema & Aldao, 2011; Orgeta, 2011), we hypothesized that expressive suppression use would be negatively associated with affect balance and higher levels of emotion dysregulation. Although there is mixed evidence on changes in emotion regulation flexibility with advancing age, we hypothesized that older adults would demonstrate greater within-strategy responsiveness. That is, older adults would show greater variability in the use of strategies in response to changing negative affect. This within-strategy responsiveness would be positively associated with affect balance and negatively associated with emotion dysregulation across age groups. And, finally, we also performed exploratory analyses examining how age group would moderate the associations between strategy use/responsiveness and affect balance and emotion dysregulation.

Information on additional analyses including additional descriptive statistics and age differences in within-strategy variability and between-strategy variability that were not directly related to the current manuscript's focus on within-strategy responsiveness can be found in Supplemental Materials.

Method

Participants

A total of 130 older adults (ages 65–85) and 130 sex- and education-matched young adults (ages 22–35) were recruited from across the United States via Research Match and online advertisements to participate in our cross-sectional study. Our targeted sample size was determined based on an *a priori* power analysis using data from Eldesouky and English (2018) which examined age differences in emotion regulation variation—another component of flexibility.

Given the limited studies examining age differences in emotion regulation flexibility and the challenge of determining sufficient power for models with multiple levels, we chose to power our study based on the primary main effect of interest, specifically, the effect of age on emotion regulation responsiveness, a component of emotion regulation flexibility. The only study examining age differences in emotion regulation flexibility at the time of the development of our study operationalized emotion regulation flexibility as strategy variability (Eldesouky & English, 2018) and examined the effects of age as a continuous variable in several multilevel models, revealing significant age differences in within-strategy variability for six different emotion regulation strategies with effect sizes (R^2) ranging from 0.055 to 0.109. To be conservative, we conducted the current power analysis, using G Power 3.1, with the lowest effect size ($R^2 = 0.055$). Additionally, a Bonferroni correction of 0.008 was applied to analyses examining six different emotion regulation strategies in six separate models to account for the number of planned statistical models (as described further in Statistical Analyses section below). Utilizing an alpha level of 0.008 (two-tailed test), a total sample size of 214 participants would be required to yield an estimated power of at least 0.80.

All participants were also required to meet the following eligibility criteria: 1) normal or corrected to normal vision; 2) completion of high school or equivalent (e.g. GED); 3) absence of self-reported diagnosed neurological disorders or other diseases that may significantly impair cognitive abilities; 4) no history of self-reported mania or psychosis; 5) no history of substance use problems within the past 2 years; 6) no current treatment with electroconvulsive therapy; 7) absence of regular use of medications that significantly alter cognitive function including sedatives and chemotherapy treatments; 8) fluent English speaker; and 9) not living in institutional settings such as a hospital or retirement home. Older adult participants also needed to demonstrate adequate performance on the modified Telephone Interview for Cognitive Status (TICS-M; Welsh et al., 1993) as evidenced by a score >31. Please refer to Table 1 for a description of our participant sample.

Table 1. Descriptive statistics for demographics, primary measures, and covariates.

	Young adults ($n = 127$)	Older adults ($n = 126$)
	Number/% or mean (*SD*)	Number/% or mean (*SD*)
Age	28.59 (3.91)	70.69 (4.32)
% Female	50.4%	50.8%
Education	17.19 (2.39)	17.48 (2.59)
MCSD	15.43 (5.22)	18.70 (5.45)
DRM episodes	12.11 (5.11)	10.92 (4.32)
Negative affect	2.20 (1.35)	1.65 (1.42)
Emotion dysregulation (DERS)	77.00 (20.95)	64.05 (17.65)
Affect balance (SPANE)	7.93 (8.38)	11.55 (7.72)
Strategy use		
Acceptance	1.69 (.84)	2.27 (.73)
Positive reappraisal	0.93 (.75)	1.01 (.81)
Detached reappraisal	0.65 (.58)	0.74 (.68)
Expressive suppression	0.57 (.49)	0.42 (.49)
Distraction	0.75 (.61)	0.36 (.40)
Situation selection	0.53 (.63)	0.41 (.58)
Strategy responsiveness		
Acceptance	−.03 (.43)	−.09 (.45)
Positive reappraisal	.23 (.41)	.17 (.45)
Detached reappraisal	.32 (.34)	.21 (.40)
Expressive suppression	.37 (.33)	.25 (.39)
Distraction	.26 (.36)	.15 (.37)
Situation selection	−.02 (.34)	−.01 (.32)

Note. MCSD = Marlowe–Crowne Social Desirability Scale; DRM = day reconstruction method. For variables with values at each timepoint (i.e. each episode), SD values reflect SD in all available data (i.e. values for each episode) aggregated at group level.

Procedure

Participants were recruited via ResearchMatch and online advertisements. Potential participants initially completed an online consent form, after which they were presented with an online screening survey designed to collect essential eligibility information using REDCap (Harris et al., 2009). Next, participants who met the eligibility criteria then completed a brief phone interview to gather additional demographic and clinical information, and older adults were also administered the TICS-M to ensure an adequate level of overall cognitive functioning. Once deemed eligible for the study, participants were sent a Qualtrics survey (Qualtrics, Provo, UT) to complete a battery of self-report assessments. Participants approximately took 10–15 mins. to complete the surveys. After questionnaires were completed, participants were sent another Qualtrics link 2 days later to complete a modified version of the Day Reconstruction Method (DRM; Kahneman et al., 2004). The DRM was used to assess the daily affective experience based on the preceding day. On average, participants' time commitment ranged from 1.25 to 1.5 hrs. for the DRM survey. Participants were compensated with $10 Amazon gift certificates for completing each set of surveys, totaling $20 in Amazon gift cards. All participants provided informed consent and ethical approval was obtained from The Ohio State University Institutional Review Board (IRB# 2018B0146).

Measures

Emotion dysregulation

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item self-report global measure of emotion dysregulation that has demonstrated good internal reliability and adequate construct validity (Gratz & Roemer, 2004). Respondents were asked to indicate how often each item applies to them on a 5-point scale from 'almost never' (1) to 'almost always' (5). The total summed score (ranging from 36 to 180) provides an overall measure of emotion dysregulation, with higher scores reflecting greater levels of emotion dysregulation. For the current study, Omega's coefficient was 0.93 for older adults and 0.93 for young adults.

Affect balance

The Scale of Positive and Negative Experience (SPANE) is a 12-item questionnaire assessing affective well-being (Diener et al., 2010). The questionnaire consists of two subscales: one measuring positive feelings (positive, good, pleasant, happy, joyful, contented) and one measuring negative feelings (negative, bad, unpleasant, sad, afraid, angry). Participants were asked to indicate how much they have experienced each of the 12 feelings over the past four weeks on a 5-point scale from 'very rarely or never' (1) to 'very often or always' (5). To assess the frequency with which a person experiences positive relative to negative emotions, an affect balance score was derived by summing the scores within the positive feelings and negative feelings subscales separately and then subtracting the negative feelings score from the positive feelings score. This affect balance score can range from −24 (unhappiest possible) to 24 (highest, most positive affect possible), with higher, more positive scores reflecting a more positive affect balance (believed to be indicative of greater emotional well-being). Omega's coefficients for both the subscales indicated good reliability ($positive_{young}$ = 0.89, $positive_{older}$ = 0.93; $negative_{young}$ = 0.88, $negative_{older}$ = 0.88).

Social desirability bias

The Marlowe–Crowne Social Desirability Scale (MCSD; Crowne & Marlowe, 1960) is a 33-item scale designed to assess trait-like social desirability bias. Respondents indicated whether each item is 'True' or 'False' which was then totaled using a scoring key. This measure was selected as a covariate given findings that social desirability plays a critical role in predicting affect and emotional well-being (e.g. Fastame & Penna, 2012). For the current study, Omega's coefficient was 0.78 for older adults and 0.75 for young adults.

Day reconstruction method assessment (DRM)

The DRM assessment used in our study was developed by combining elements of the DRM assessment by Kahneman et al. (2004) which assesses daily emotional experience, and the Contextual Emotion Regulation Assessment developed by Aldao and Nolen-Hoeksema (2012) that assesses the frequency with which various types of emotion regulation strategies are used across different emotional contexts. The current DRM assessment was implemented using Qualtrics and participants were asked to complete the assessment for one weekday. Participants were asked to reconstruct the day prior into a series of episodes, give each episode a name, identify the start and end time of each episode, and provide a brief note about what they felt during each episode. Participants were instructed to report on episodes from the morning, afternoon, and evening of the preceding day. The number of episodes reported was permitted to vary across participants. On average, older adults reported 10.92 (SD = 4.32) episodes and young adults reported 12.11 (SD = 5.11) episodes. Next, participants completed a brief training in which they reviewed educational materials on emotions and emotion regulation, including detailed explanations of each of the six strategies assessed in this study, and then were tested on their comprehension. Participants who correctly answered each comprehension question were instructed to answer a series of more detailed questions about each episode they reconstructed. For each episode, participants were asked about contextual features of the episode, their affective experience during the episode, and the degree to which they used several different emotion regulation strategies.

Affect intensity. Participants reported on their experience of negative affect in each DRM episode by rating the extent to which they experienced negative feelings on a scale from 0 ('not at all') to 10 ('very much'). In order to examine age differences in daily negative affect, average negative affect across episodes was calculated for each participant. Additional data on positive affect and affect variability can be found in Supplemental Materials.

Emotion regulation strategy use. Participants reported the extent to which they used six different emotion regulation strategies within each DRM episode: acceptance ('allow or accept your feelings'), positive reappraisal ('focus on the positive aspects and outcomes of a situation'), detached reappraisal ('adopt an unemotional and detached attitude, focusing on non-emotional aspects of the situation'), expressive suppression ('try to not let your feelings show'), distraction ('think about something else'), and situation selection ('seek out people or situations you expected to put you in a good mood or avoid people or situations you expected to put you in a bad mood'). Participants rated the degree to which they implemented each strategy on a 4-point scale from 0 ('not at all') to 3 ('a lot').

Within-strategy responsiveness. Scores were calculated in line with general recommendations put forth by Aldao et al. (2015). For each participant, scores were calculated by correlating within-persons the time series of strategy use frequency (the degree to which strategy was used within episodes on a 0–3 scale) with negative affect intensity across episodes. This process was repeated for each strategy type such that each participant had a total of six within-strategy responsiveness scores. Larger Pearson coefficients indicate a stronger correlation between strategy use and negative affect intensity across episodes and thus reflect greater emotion regulation responsiveness. We chose to examine shifts in strategy use in response to changes in negative affect intensity given experimental findings suggesting that the emotional intensity is an important feature for which strategy use may differ between younger and older adults (Scheibe et al., 2015; Schirda et al., 2016), and there are clear expectations about daily life strategy use covarying with the intensity of negative affect (e.g. Birk & Bonanno, 2016). See Supplemental Materials for more on how these scores were calculated.

Statistical analyses

First, questionnaire entries were checked for missing values and errors. Participants with fewer than five reported episodes during the DRM were excluded to ensure more reliable, accurate data and is in line with prior work (Livingstone & Srivastava, 2012; Wilhelm & Grossman, 2010). Three young adults and four older adults reported fewer than five DRM episodes. Thus, the current analyses are based on a final sample of 127 young adults and 126 older adults. Questionnaire data was outlier-corrected and checked for normality (see Supplemental Material for more information). Then, descriptive statistics were calculated and the degree to which age groups differed on key variables was examined. For descriptive comparisons between age groups, nonparametric versions of tests that do not assume normality were conducted to assess age differences when data was not normally distributed. For each analysis below separate models were constructed to examine six strategies and a Bonferroni

correction of 0.008 was applied. Additionally, sex and social desirability bias were included as covariates across analyses given prior research showing age differences in social desirability impacts responses on emotional well-being measures (e.g. Fastame & Penna, 2012) and sex confounding age differences in emotion regulation strategy use (Nolen-Hoeksema & Aldao, 2011; Schirda et al., 2016).

First, age differences in emotion regulation strategy use and within-strategy responsiveness were explored. To examine age differences in strategy use, an omnibus multilevel model with three levels (strategy use within episodes nested within strategy type within persons) was conducted to test how age group and strategy type predict strategy use. Then given significant age group × strategy type interaction in omnibus model, 6 separate multilevel models with two levels (strategy use within episodes nested within persons) were conducted to test how age predicts use of each individual emotion regulation strategy (acceptance, positive reappraisal, detached reappraisal, expressive suppression, distraction, and situation selection). Finally, an omnibus multilevel model with two levels (responsiveness within strategy type nested within persons) was conducted to test how age group and strategy type predict within-strategy responsiveness. For all multilevel models, age group was treated as a fixed effect, a compound symmetry covariance structure was specified within subjects, age and social desirability were included as covariates, and restricted maximum likelihood (REML) estimation methods were used to account for unbalanced data due to participants reporting different numbers of episodes. To calculate effect sizes for predictors in each of these models, partial R^2 values recommended for multilevel modeling were computed (Edwards et al., 2008). Similar to R^2, partial R^2 values represent the proportion of variance accounted for by each predictor adjusted for the other predictors in the model.

To assess associations between strategy use and within-strategy responsiveness with adaptiveness metrics, and the extent to which these relationships vary with age, a series of hierarchical linear regression analyses were conducted. For each of these analyses, model 1 included age group and emotion regulation pattern (either use or within-strategy responsiveness) as predictors and metrics of adaptiveness (affect balance or emotion dysregulation) as the outcome variable with sex and social desirability bias included as covariates. Then, in model 2, the age group × strategy use interaction term was added. Significant improvements in model 2 indicate age group as a moderator.

Table 2. Results of omnibus multilevel model assessing main effects and interaction effects on strategy use.

Predictors	*Df*	*F*	*p*	Partial R^2
Intercept	1, 246.74	126.66	<.001	
Sex	1, 245.50	0.33	.565	.00
Social desirability bias	1, 246.64	4.14	.043	.02
Age group	1, 245.34	0.73	.395	.00
Strategy type	5, 17217.87	1106.85	<.001	.24
Age group × strategy type	5, 17217.87	75.19	<.001	.02

Results

Table 1 presents descriptive statistics including means and standard deviations. The average age of our older adult sample was 70.69 years ($SD = 4.32$) and the average age of our young adult sample was 28.59 years ($SD = 3.91$). Relative to young adults, older adults exhibited greater social desirability bias, $t(251) = 4.89$, $p < 0.001$, and lower negative affect, $U = 5{,}696.50$, $p < .001$. However, age groups did not significantly differ in terms of sex, education, or number of DRM episodes reported (all p value > 0.05). For additional demographic data and comparisons, see Supplemental Materials.

Age differences in strategy use and strategy responsiveness

Descriptive statistics for strategy use and strategy responsiveness can also be found in Table 1. Consistent with prior studies, there was both between- and within-person variance in these variables (see Supplemental Materials for additional information).

Strategy use

Controlling for sex and social desirability bias, results from our omnibus model suggested main effects of social desirability bias, $F(1, 246.64) = 4.14$, $p = 0.043$, and strategy type, $F(5, 17217.87) = 1106.85$, $p < .001$. A significant age group × strategy type interaction on strategy use, $F(5, 17217.87) = 75.19$, $p < 0.001$, suggested that the effects of age group on strategy use depend on the type of strategy being used (see Table 2 for more information). Thus, follow-up analyses were conducted to examine age differences in the use of the six specific strategies assessed in the current study. Compared to young adults, older adults reported more frequent use of acceptance, $F(1, 251.64) = 29.52$, $p < 0.001$, and less frequent use of distraction, $F(1, 239.24) = 23.29$, $p < 0.001$ (see Figure 1), when controlling for sex and social desirability bias. No significant age differences in use of positive reappraisal, detached reappraisal, expressive suppression, or situation selection were observed (all p value > 0.008; see Table 3 for more information).

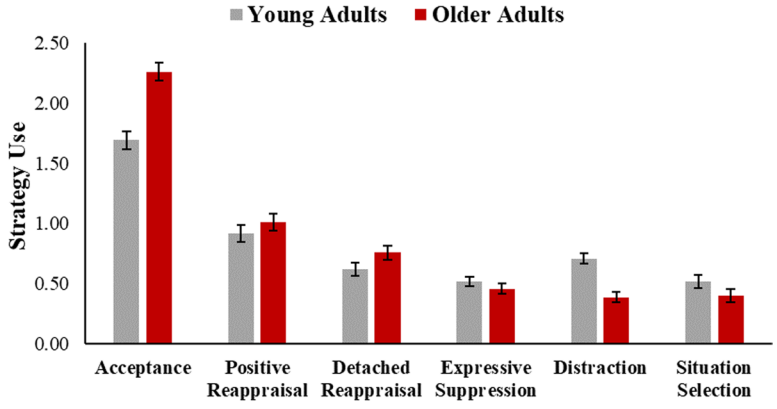

Figure 1. Age differences in emotion regulation strategy use. *Note.* Values reflect marginal means for use of each strategy controlling for sex and social desirability bias. Error bars reflect standard error of the mean. Asterisks denote significant age differences.

Table 3. Results of multilevel models assessing age differences in strategy use.

Dependent variable	Predictors	Estimate (*SE*)	*df*	*F*	*p*	Partial R^2
Acceptance						
	Intercept	2.28 (.19)	1, 254.18	134.17	<.001	
	Sex	−0.08 (.10)	1, 251.93	0.70	.403	.00
	Social desirability bias	0.00 (.01)	1, 253.99	0.01	.924	.00
	Age group	−0.57 (.10)	1, 251.64	29.52	<.001	.10
Positive reappraisal						
	Intercept	1.14 (.19)	1, 245.19	39.07	<.001	
	Sex	−0.14 (.10)	1, 242.93	2.08	.150	.01
	Social desirability bias	0.00 (.01)	1, 245.00	0.15	.694	.00
	Age group	−0.09 (.10)	1, 242.64	0.82	.367	.00
Detached reappraisal						
	Intercept	0.98 (.15)	1, 248.84	53.14	<.001	
	Sex	0.11 (.08)	1, 245.92	1.87	.172	.01
	Social desirability bias	−0.02 (.01)	1, 248.59	4.72	.031	.02
	Age group	−0.14 (.08)	1, 245.55	2.94	.088	.01
Expressive suppression						
	Intercept	0.88 (.12)	1, 245.68	79.58	<.001	
	Sex	−0.03 (.06)	1, 241.16	0.21	.649	.00
	Social desirability bias	−0.02 (.01)	1, 245.30	17.94	<.001	.07
	Age group	0.06 (.06)	1, 240.60	0.81	.368	.00
Distraction						
	Intercept	0.72 (.12)	1, 244.04	74.09	<.001	
	Sex	0.04 (.06)	1, 239.77	0.49	.487	.00
	Social desirability bias	−0.02 (.01)	1, 243.68	12.48	<.001	.05
	Age group	0.31 (.06)	1, 239.24	23.29	<.001	.09
Situation selection						
	Intercept	0.46 (.14)	1, 235.69	14.61	<.001	
	Sex	−0.08 (.07)	1, 233.20	1.24	.266	.01
	Social desirability bias	0.00 (.01)	1, 235.48	0.01	.905	.00
	Age group	0.12 (.08)	1, 232.88	2.26	.134	.01

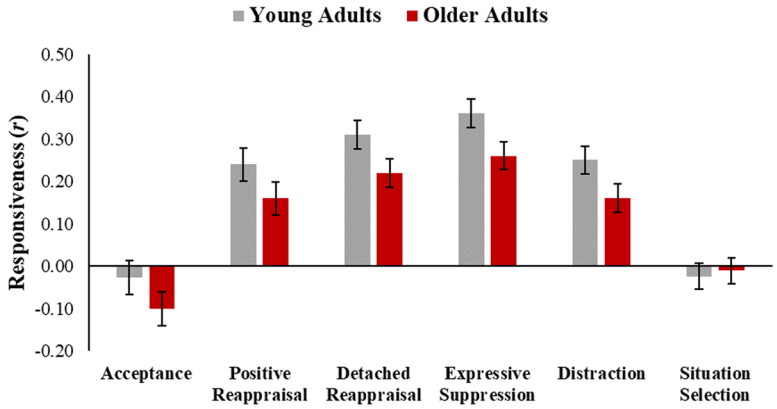

Figure 2. Age differences in within-strategy responsiveness. *Note.* Values reflect marginal means for within-strategy responsiveness controlling for sex and social desirability bias. Error bars reflect standard error of the mean.

Strategy responsiveness

Controlling for sex and social desirability bias, there were significant main effects of strategy type, $F(5,1255) = 45.53$, $p < 0.001$, and age group, $F(1,249) = 7.96$, $p = 0.005$, on within-strategy responsiveness, which suggested that within-strategy responsiveness differed across strategy types and that older adults exhibited generally lower within-strategy responsiveness scores. The age group × strategy type interaction on within-strategy responsiveness was not significant, $F(5,1255) = 1.14$, $p = 0.337$, suggesting that the effects of age group on within-strategy responsiveness did not differ by strategy type (see Figure 2; Table 4 for more information).

Table 4. Results of omnibus multilevel model assessing main effects and interaction effects on within-strategy responsiveness.

Predictors	*df*	*F*	*P*	Partial R^2
Intercept	1, 249	14.16	<.001	
Sex	1, 249	0.17	.677	.00
Social desirability bias	1, 249	0.03	.865	.00
Age group	1, 249	7.96	.005	.03
Strategy type	5, 1255	45.53	<.001	.15
Age group × strategy type	5, 1255	1.14	.337	.00

Associations between emotion regulation patterns and emotion dysregulation and affect balance

Associations with emotion dysregulation

With regard to strategy use, expressive suppression use was positively associated with emotion dysregulation ($\beta = 0.32$, $t = 5.81$, $p < 0.001$), with age-group not being a significant moderator after controlling for sex and social desirability ($\beta = 0.06$, $t = 0.33$, $p = 0.745$, $\Delta R^2 = 0.00$). These results suggest that use of expressive suppression was associated with higher levels of emotion dysregulation across both older and young adults. Use of other strategies was not significantly associated with emotion dysregulation and age group did not significantly moderate any relationship between strategy use and emotion dysregulation (all *p* value > 0.008; see Table 5 for more information on associations between emotion regulation strategy use and emotion dysregulation).

Table 5. Results of hierarchical linear regression analyses examining effects of strategy use on emotion dysregulation.

		Model 1				Model 2			
Strategy type	Predictors	*B* (*SE*)	*β*	*t*	*p*	*B* (*SE*)	*β*	*t*	*p*
Acceptance									
	Constant	104.73 (5.85)		17.90	<.001	111.04 (10.21)		10.88	<.001
	Sex	0.71 (2.29)	0.02	0.31	.758	0.62 (2.29)	0.02	0.27	.789
	Social desirability bias	−1.32 (.22)	−0.36	−6.16	<.001	−1.32 (.22)	−0.36	−6.16	<.001
	Age group	−8.74 (2.53)	−0.22	−3.46	.001	−13.20 (6.43)	−0.32	−2.06	.041
	Strategy use	0.22 (1.45)	0.01	0.15	.880	−2.95 (4.45)	−0.12	−0.66	.507
	Age group × strategy use					2.22 (2.94)	0.20	0.76	.451
	Total R^2		.22						.22
	F for δ in R^2		17.61**						0.57
Positive reappraisal									
	Constant	103.84 (5.75)		18.05	<.001	112.49 (7.02)		16.03	<.001
	Sex	0.51 (2.29)	0.01	0.22	0.825	0.72 (2.27)	0.02	0.32	.751
	Social desirability bias	−1.32 (.21)	−0.36	−6.15	<.001	−1.31 (.21)	−0.36	−6.14	<.001
	Age group	−8.76 (2.39)	−0.22	−3.67	<.001	−14.78 (3.70)	−0.36	−4.00	<.001
	Strategy use	1.60 (1.47)	0.06	1.09	.277	−7.91 (4.71)	−0.30	−1.68	.095
	Age group × strategy use					6.18 (2.91)	0.42	2.12	.035
	Total R^2		.23				.24		
	F for δ in R^2		17.98**				4.50*		
Detached reappraisal									
	Constant	104.17 (5.92)		17.61	<.001	105.64 (6.89)		15.34	<.001
	Sex	0.81 (2.29)	0.02	0.35	.724	0.83 (2.29)	0.02	0.36	.718
	Social desirability bias	−1.31 (0.22)	−0.36	−6.04	<.001	−1.31 (0.22)	−0.35	−5.92	<.001
	Age group	−8.74 (2.40)	−0.22	−3.64	<.001	−9.84 (3.57)	−0.24	−2.75	.006
	Strategy use	0.84 (1.84)	0.03	0.46	.647	−1.59 (6.11)	−0.05	−0.26	.794
	Age group × strategy use					1.55 (3.71)	0.09	0.42	.676
	Total R^2			.22			.22		
	F for δ in R^2			17.67**			0.18		
Expressive suppression									
	Constant	92.37 (5.75)		16.07	<.001	93.27 (6.39)		14.61	<.001
	Sex	0.35 (2.14)	0.01	0.16	.872	0.44 (2.17)	0.01	0.20	.840
	Social desirability bias	−1.02 (.21)	−0.28	−4.90	<.001	−1.01 (0.21)	−0.28	−4.90	<.001
	Age group	−7.65 (2.25)	−0.19	−3.40	.001	−8.39 (3.20)	−0.21	−2.62	.009
	Strategy use	13.14 (2.26)	0.32	5.81	<.001	10.98 (7.01)	0.27	1.57	.119
	Age group × strategy use					1.45 (4.44)	0.06	0.33	.745
	Total R^2			.32			.32		
	F for δ in R^2			28.45**			0.11		
Distraction									
	Constant	97.79 (6.53)		14.97	<.001	102.02 (7.12)		14.32	<.001
	Sex	0.92 (2.26)	0.02	0.41	.685	1.06 (2.26)	0.03	0.47	.639
	Social desirability bias	−1.22 (0.22)	−0.33	−5.59	<.001	−1.18 (.22)	−0.32	−5.38	<.001
	Age group	−7.04 (2.48)	−0.17	−2.84	.005	−10.56 (3.44)	−0.26	−3.07	.002
	Strategy use	4.89 (2.27)	0.13	2.15	.032	−4.30 (6.65)	−0.12	−0.65	.518
	Age group × strategy use					7.14 (4.86)	0.25	1.47	.143
	Total R^2		.24				.24		
	F for δ in R^2		19.09**				2.16		
Situation selection									
	Constant	103.21 (5.73)		18.02	<.001	108.85 (6.20)		17.56	<.001
	Sex	0.45 (2.28)	0.01	0.20	0.845	0.89 (2.27)	0.02	0.39	.694
	Social desirability bias	−1.32 (.21)	−0.36	−6.20	<.001	−1.34 (.21)	−0.37	−6.33	<.001
	Age group	−8.22 (2.38)	−0.20	−3.45	.001	−12.15 (2.93)	−0.30	−4.15	<.001
	Strategy use	3.30 (1.89)	0.10	1.75	.081	−9.20 (5.82)	−0.27	−1.58	.115
	Age group × strategy use					8.54 (3.76)	0.40	2.27	.024
	Total R^2		.23				.25		
	F for δ in R^2		18.59**				5.16*		

*$p < 0.05$, **$p < 0.01$.

With regard to responsiveness indices, acceptance responsiveness and positive reappraisal responsiveness were both negatively associated with emotion dysregulation ($\beta = -0.15$, $t = -2.70$, $p = 0.007$; $\beta = -0.22$, $t = -4.04$, $p < 0.001$, respectively), with age-group not being a significant moderator of the observed effect of either acceptance responsiveness or positive reappraisal responsiveness after controlling for sex and social desirability ($\beta = 0.29$, $t = 1.63$, $p = 0.104$, $\Delta R^2 = 0.01$; $\beta = 0.03$, $t = 0.17$, $p = 0.865$, $\Delta R^2 = 0.00$, respectively). In contrast, the association between expressive suppression responsiveness and emotion dysregulation was moderated by age group ($\beta = -0.62$, $t = -3.30$, $p = 0.001$, $\Delta R^2 = 0.03$). Expressive suppression responsiveness was negatively associated with emotion dysregulation in older adults, $\beta = -0.21$, $t = -2.55$, $p = 0.012$, and positively associated with emotion dysregulation in young adults, $\beta = 0.17$, $t = 2.05$, $p = 0.043$, after controlling for sex and social desirability (see Figure 3). See Table 6 for more information on associations between within-strategy responsiveness and emotion dysregulation.

Associations with affect balance

There were no significant relationships observed between strategy use and affect balance (all p value > 0.008). Additionally, age group did not significantly moderate any relationship between strategy use and affect balance (all p value > 0.008; see Table 7 for further details on associations between strategy use and affect balance).

With regard to within-strategy responsiveness, positive reappraisal responsiveness and situation selection responsiveness

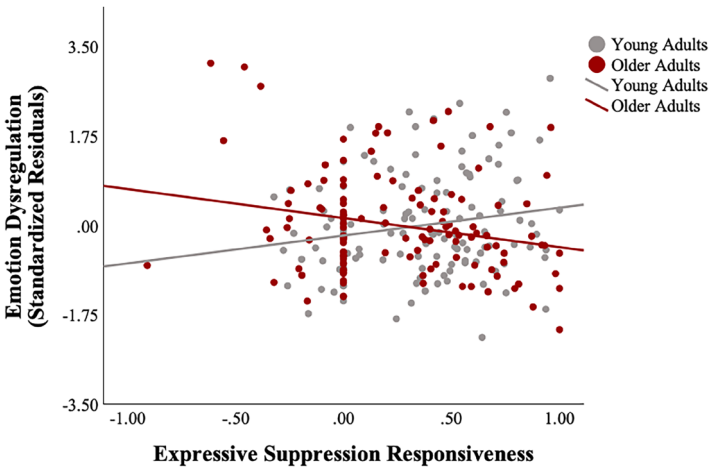

Figure 3. Age-group moderation of the association between expressive suppression responsiveness and emotion dysregulation. *Note.* Separate trendlines represent the relationship between expressive suppression responsiveness and emotion dysregulation (represented by standardized residuals from regression analysis in which sex and social desirability scores were regressed on emotion dysregulation scores) within the two age groups, with expressive suppression responsiveness negatively associated with emotion dysregulation in older adults and positively associated with emotion dysregulation in young adults.

Table 6. Results of hierarchical linear regression analyses examining effects of strategy flexibility on emotion dysregulation.

		Model 1				Model 2			
Flexibility type	Predictors	*B* (*SE*)	*β*	*t*	*p*	*B* (*SE*)	*β*	*t*	*p*
Acceptance									
	Constant	105.16 (5.60)		18.79	<.001	105.33 (5.58)		18.88	<.001
	Sex	0.37 (2.25)	0.01	0.17	.869	−0.14 (2.27)	−0.003	−0.06	.950
	Social desirability bias	−1.29 (.21)	−0.35	−6.06	<.001	−1.29 (.21)	−0.35	−6.11	<.001
	Age group	−9.14 (2.36)	−0.22	−3.87	<.001	−8.59 (2.38)	−0.21	−3.61	<.001
	Strategy use	−6.97 (2.58)	−0.15	−2.70	.007	−19.77 (8.25)	−0.43	−2.40	.017
	Age group × strategy use					8.45 (5.18)	0.29	1.63	.104
	Total R^2		.24				.25		
	F for Δ in R^2		19.94**				2.66		
Positive reappraisal									
	Constant	107.63 (5.54)		19.43	<.001	107.96 (5.89)		18.33	<.001
	Sex	0.38 (2.21)	0.01	0.17	.864	0.36 (2.22)	0.01	0.16	.871
	Social desirability bias	−1.26 (.21)	−0.34	−6.01	<.001	−1.26 (.21)	−0.34	−6.00	<.001
	Age group	−9.45 (2.32)	−0.23	−4.07	<.001	−9.63 (2.54)	−0.24	3.79	<.001
	Strategy use	−10.53 (2.61)	−0.22	−4.04	<.001	−11.91 (8.51)	−0.25	−1.40	.163
	Age group × strategy use					0.89 (5.24)	0.03	0.17	.865
	Total R^2		.27				.27		
	F for Δ in R^2		22.83**				0.03		
Detached reappraisal									
	Constant	107.25 (5.80)		18.48	<.001	100.06 (6.33)		15.80	<.001
	Sex	0.85 (2.27)	0.02	0.37	.710	0.31 (2.25)	0.01	0.14	.892
	Social desirability bias	−1.34 (.21)	−0.37	−6.28	<.001	−1.31 (.21)	−0.36	−6.21	<.001
	Age group	−9.12 (2.39)	−0.22	−3.81	<.001	−4.65 (2.90)	−0.11	−1.60	.110
	Strategy use	−5.32 (3.10)	−0.10	−1.71	.088	21.04 (10.34)	0.38	2.03	.043
	Age group × strategy use					−16.64 (6.24)	−0.50	−2.67	.008
	Total R^2		.23				.25		
	F for Δ in R^2		18.55**				7.13**		
Expressive suppression									
	Constant	105.39 (5.87)		17.96	<.001	94.20 (6.68)		14.10	<.001
	Sex	0.77 (2.29)	0.02	0.34	.736	0.49 (2.25)	0.01	0.22	.827
	Social desirability bias	−1.33 (.22)	−0.36	−6.16	<.001	−1.29 (.21)	−0.35	−6.12	<.001
	Age group	−8.72 (2.41)	−0.21	−3.62	<.001	−2.16 (3.09)	−0.05	−0.70	.485
	Strategy use	−0.96 (3.19)	−0.02	−0.30	.763	32.29 (10.56)	0.58	3.06	.002
	Age group × strategy use					−20.90 (6.34)	−0.62	−3.30	<.001
	Total R^2		.22				.25		
	F for Δ in R^2		17.63**				10.86**		
Distraction									
	Constant	104.14 (5.82)		17.90	<.001	99.07 (6.14)		16.14	<.001
	Sex	0.70 (2.28)	0.02	0.31	.759	0.46 (2.26)	0.01	0.20	.839
	Social desirability bias	−1.31 (.22)	−0.36	−6.11	<.001	−1.29 (.21)	−0.35	−6.05	<.001
	Age group	−8.43 (2.41)	−0.21	−3.50	.001	−5.38 (2.70)	−0.13	−1.99	.047
	Strategy use	1.95 (3.17)	0.04	0.62	.539	24.87 (10.03)	0.45	2.48	.014
	Age group × strategy use					−15.10 (6.28)	−0.43	−2.41	.017
	Total R^2		.22				.24		
	F for Δ in R^2		17.72**				5.79*		
Situation selection									
	Constant	105.37 (5.66)		18.61	<.001	104.78 (5.61)		18.68	<.001
	Sex	0.39 (2.29)	0.01	0.17	.864	1.19 (2.29)	0.03	0.52	.604
	Social desirability bias	−1.33 (.21)	−0.36	−6.21	<.001	−1.34 (.21)	−0.37	−6.32	<.001
	Age group	−8.56 (2.38)	−0.21	−3.60	<.001	−8.82 (2.36)	−0.22	−3.74	<.001

(*Continued*)

Table 6. (Continued).

		Model 1				Model 2			
Flexibility type	Predictors	*B* (*SE*)	*β*	*t*	*p*	*B* (*SE*)	*β*	*t*	*p*
	Strategy use	−5.02 (3.48)	−0.08	−1.44	.151	20.24 (10.84)	0.33	1.87	.063
	Age group × strategy use					−17.05 (6.94)	−0.43	−2.46	.015
	Total R^2		.23				.25		
	F for Δ in R^2		18.27**				6.04*		

*$p < 0.05$, **$p < 0.01$.

Table 7. Results of hierarchical linear regression analyses examining effects of strategy use on affect balance.

		Model 1				Model 2			
Strategy type	Predictors	*B* (*SE*)	*β*	*t*	*p*	*B* (*SE*)	*β*	*t*	*p*
Acceptance									
	Constant	−1.45 (2.43)		−0.60	.552	−4.32 (4.24)		−1.02	.309
	Sex	−1.02 (.95)	−0.06	−1.07	.286	−0.98 (.95)	−0.06	−1.02	.307
	Social desirability bias	0.53 (.09)	0.36	5.94	<.001	0.53 (.09)	0.36	5.96	<.001
	Age group	1.47 (1.05)	0.09	1.40	.164	3.50 (2.67)	0.21	1.31	.191
	Strategy use	0.74 (.60)	0.08	1.23	.220	2.19 (1.85)	0.22	1.18	.237
	Age group × strategy use					−1.01 (1.22)	−0.23	−0.83	.409
	Total R^2		.18				.18		
	F for Δ in R^2		13.26**				0.69		
Positive reappraisal									
	Constant	−1.28 (2.40)		−0.54	.593	−4.69 (2.93)		−1.60	.110
	Sex	−1.06 (.95)	−0.07	−1.12	.266	−1.48 (.95)	−0.07	−1.21	.227
	Social desirability bias	0.53 (.09)	0.36	5.98	<.001	0.53 (0.09)	0.36	5.97	<.001
	Age group	1.82 (.99)	0.11	1.83	.068	4.19 (1.54)	0.26	2.72	.007
	Strategy use	0.81 (.61)	0.08	1.32	.187	4.56 (1.96)	0.43	2.32	.021
	Age group × strategy use					−2.44 (1.21)	−0.41	−2.01	.046
	Total R^2		.18				.19		
	F for Δ in R^2		13.34**				4.03*		
Detached reappraisal									
	Constant	−0.02 (2.46)		−0.01	.993	0.65 (2.87)		0.23	.821
	Sex	−1.03 (.95)	−0.06	−1.08	.280	−1.02 (.96)	−0.06	−1.07	0.285
	Social desirability bias	0.52 (.09)	0.35	5.75	<.001	0.53 (.09)	0.35	5.75	<.001
	Age group	2.00 (1.00)	0.12	2.00	.047	1.49 (1.49)	0.09	1.00	.318
	Strategy use	−0.77 (.76)	−0.06	−1.01	.315	−1.89 (2.54)	−0.14	−0.74	.458
	Age group × strategy use					0.71 (1.54)	0.10	0.46	.644
	Total R^2		.18				.18		
	F for Δ in R^2		13.11**				0.21		
Expressive suppression									
	Constant	1.45 (2.53)		0.58	.566	0.13 (2.80)		0.05	.962
	Sex	−0.89 (.94)	−0.05	−0.94	.348	−1.02 (.95)	−0.06	−1.08	.283
	Social desirability bias	0.48 (.09)	0.32	5.23	<.001	0.47 (.09)	0.32	5.10	<.001
	Age group	1.72 (.99)	0.10	1.74	.083	2.81 (1.40)	0.17	2.00	.046
	Strategy use	−2.28 (,99)	−0.14	−2.29	.023	0.90 (3.08)	0.05	0.29	.771
	Age group × strategy use					−2.12 (1.95)	−0.20	−1.09	.277
	Total R^2		.19				.19		
	F for Δ in R^2		14.39**				1.19		
Distraction									
	Constant	0.71 (2.74)		0.26	.795	−0.25 (3.00)		−0.08	.933
	Sex	−0.99 (.95)	−0.06	−1.04	.298	−1.02 (.95)	−0.06	−1.08	.283
	Social desirability bias	0.51 (.09)	0.35	5.58	<.001	0.50 (.09)	0.34	5.43	<.001
	Age group	1.57 (1.04)	0.10	1.51	.132	2.37 (1.45)	0.14	1.64	.103
	Strategy use	−0.98 (.95)	−0.07	−1.03	.303	1.11 (2.80)	0.07	0.40	.691
	Age group × strategy use					−1.63 (2.05)	−0.14	−0.80	.427
	Total R^2		.18				.18		
	F for Δ in R^2		13.13**				0.63		
Situation selection									
	Constant	−0.87 (2.40)		−0.36	.716	−2.90 (2.61)		−1.11	.267
	Sex	−0.98 (.95)	−0.06	−1.02	.307	−1.14 (.95)	−0.07	−1.19	.234
	Social desirability bias	0.53 (.09)	0.36	5.93	<.001	0.54 (.09)	0.36	6.04	<.001
	Age group	1.92 (1.00)	0.12	1.92	.056	3.33 (1.23)	0.20	2.71	.007
	Strategy use	0.28 (.79)	0.02	0.36	.720	4.77 (2.45)	0.35	1.95	.052
	Age group × strategy use					−3.06 (1.58)	−0.35	−1.94	.054
	Total R^2		.17				.18		
	F for Δ in R^2		12.85**				3.75		

*$p < 0.05$, **$p < 0.01$.

were both positively associated with affect balance ($\beta = 0.16$, $t = 2.74$, $p = 0.007$; $\beta = 0.18$, $t = 3.06$, $p = 0.002$, respectively). Although age-group was not a significant moderator of the observed effect of positive reappraisal responsiveness, $\beta = 0.21$, $t = 1.13$, $p = 0.258$, $\Delta R^2 = 0.00$, age-group did significantly moderate the effect of situation selection responsiveness, $\beta = 0.49$, $t = 2.75$, $p = 0.006$, $\Delta R^2 = 0.02$, after controlling for sex and social desirability. Controlling for sex and social desirability, situation selection responsiveness was positively associated with affect balance in older adults, $\beta = 0.35$, $t = 4.40$, $p < 0.001$, and not significantly associated with affect balance in young adults, $\beta = 0.01$, $t = 0.12$, $p = 0.908$ (see Figure 4). Additionally, the association

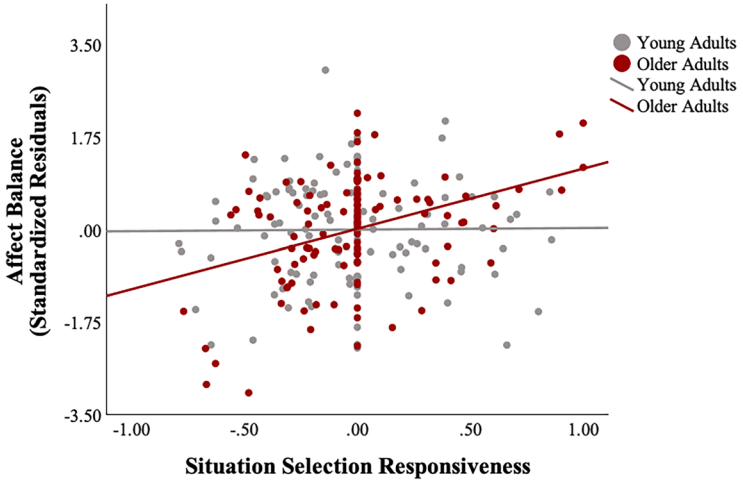

Figure 4. Age-group moderation of the association between situation selection responsiveness and affect balance. *Note.* Separate trendlines represent the relationship between situation selection responsiveness and affect balance (represented by standardized residuals from regression analysis in which sex and social desirability scores were regressed on affect balance scores) within the two age groups, with situation selection responsiveness positively associated with affect balance in older adults and not associated with affect balance in young adults.

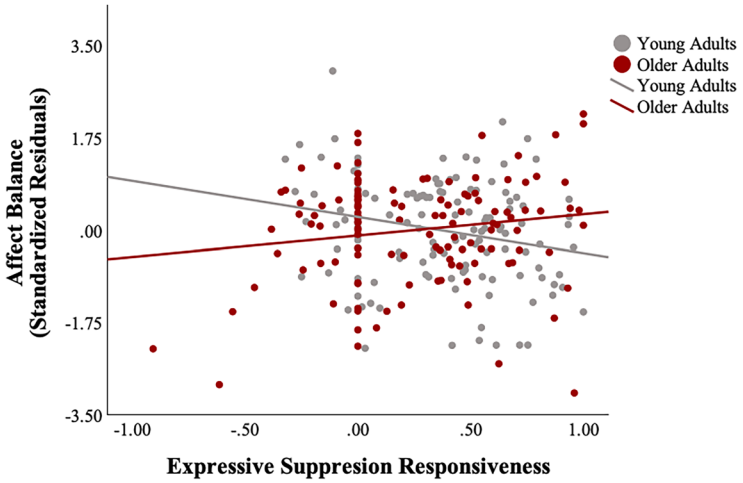

Figure 5. Age-group moderation of the association between expressive suppression responsiveness and affect balance. *Note.* Separate trendlines represent the relationship between expressive suppression responsiveness and affect balance (represented by standardized residuals from regression analysis in which sex and social desirability scores were regressed on affect balance scores) within the two age groups, with expressive suppression responsiveness not associated with affect balance in older adults and negatively associated with affect balance in young adults.

between expressive suppression responsiveness and affect balance was moderated by age-group ($\beta = 0.64$, $t = 3.31$, $p = 0.001$, $\Delta R^2 = 0.04$). Expressive suppression responsiveness was not significantly associated with affect balance in older adults ($\beta = 0.15$, $t = 1.79$, $p = 0.076$) and was negatively associated with affect balance in young adults ($\beta = -0.21$, $t = -2.60$, $p = 0.011$) after controlling for sex and social desirability (see Figure 5). See Table 8 for more information on associations between within-strategy responsiveness and affect balance.

Discussion

Utilizing a day reconstruction method, the present study examined age differences in average emotion regulation strategy use and within-strategy responsiveness, a component of emotion regulation flexibility. We additionally examined if strategy utilization, including within-strategy responsiveness, were related to two indicators of emotional well-being, namely emotion dysregulation and affect balance, and how age group moderated these relationships.

Our examination of age differences in strategy use revealed that older adults reported increased use of acceptance and decreased use of distraction compared to young adults. No significant age differences in positive reappraisal, detached reappraisal, expressive suppression, or situation selection were observed. The finding of increased acceptance use among older adults is in line with our hypotheses, and the findings of most previous studies (Allen & Windsor, 2019; Schirda et al., 2016). In contrast, findings of reduced distraction among older adults and no age differences in positive reappraisal, detached reappraisal, expressive suppression, and situation selection, were not in line with our hypotheses. Our finding that older adults employed distraction less frequently than young adults contrasts prior work suggesting that this strategy either increases (Ricarte Trives et al., 2016; Scheibe et al., 2015) or stays the same (Eldesouky & English, 2018; Hofer et al., 2015) with age. This discrepancy could be attributable to differences in design across studies as most of the past studies assessing age differences in distraction use were lab-based and/or relied on global self-report measures (e.g. Hofer et al., 2015; Ricarte Trives et al., 2016), whereas the current study assessed strategy use in daily life situations using a DRM design. Of note, the predominantly null age differences in strategy use observed in the current study are consistent with findings from a daily diary study (Eldesouky

Table 8. Results of hierarchical linear regression analyses examining effects of strategy flexibility on affect balance.

		Model 1				Model 2			
Flexibility type	Predictors	*B* (*SE*)	*β*	*t*	*p*	*B* (*SE*)	*β*	*t*	*p*
Acceptance									
	Constant	−0.79 (2.35)		−0.34	.736	−0.79 (2.35)		−0.34	.737
	Sex	−0.85 (.95)	−0.05	−0.89	.372	−0.85 (.96)	−0.05	−0.89	.375
	Social desirability bias	0.52 (.09)	0.35	5.84	<.001	0.52 (.09)	0.35	5.82	<.001
	Age group	2.05 (.99)	0.12	2.06	.040	2.05 (1.00)	0.13	2.05	.042
	Strategy use	2.11 (1.08)	0.11	1.95	.053	1.98 (3.48)	0.11	0.57	.570
	Age group × strategy use					0.08 (2.18)	0.01	0.04	.970
	Total R^2		.18				.18		
	F for Δ in R^2		13.95**				0.001		
Positive reappraisal									
	Constant	−1.53 (2.35)		−0.65	.516	−0.58 (2.49)		−0.24	.815
	Sex	−0.85 (.94)	−0.05	−0.91	.366	−0.90 (.94)	−0.05	−0.96	.341
	Social desirability bias	0.51 (.09)	0.35	5.78	<.001	0.51 (.09)	0.34	5.72	<.001
	Age group	2.14 (.98)	0.13	2.17	.031	1.65 (1.07)	0.10	1.54	.125
	Strategy use	3.14 (1.11)	0.16	2.84	.005	−0.74 (3.59)	−0.04	−0.21	.837
	Age group × strategy use					2.51 (2.21)	0.21	1.13	.258
	Total R^2		.20				.20		
	F for Δ in R^2		15.24**				1.29		
Detached reappraisal									
	Constant	−0.44 (2.43)		−0.18	.857	2.41 (2.66)		0.91	.365
	Sex	−0.94 (.95)	−0.06	−0.99	.326	−0.72 (.95)	−0.04	−0.76	.445
	Social desirability bias	0.53 (.09)	0.36	5.90	<.001	0.52 (.09)	0.35	5.83	<.001
	Age group	1.83 (1.00)	0.11	1.82	.070	0.05 (1.22)	0.003	0.04	.966
	Strategy use	−0.66 (1.30)	−0.03	−0.51	.613	−11.12 (4.34)	−0.50	−2.56	.011
	Age group × strategy use					6.60 (2.62)	0.49	2.52	.012
	Total R^2		.17				.19		
	F for Δ in R^2		12.89**				6.37*		
Expressive suppression									
	Constant	−0.50 (2.45)		−0.20	.839	4.19 (2.78)		1.51	.134
	Sex	−0.93 (.95)	−0.06	−0.97	.332	−0.81 (.94)	−0.05	−0.86	.388
	Social desirability bias	0.53 (.09)	0.36	5.89	<.001	0.52 (.09)	0.35	5.85	<.001
	Age group	1.84 (1.00)	0.11	1.83	.069	−0.91 (1.29)	−0.06	−0.71	.481
	Strategy use	−0.49 (1.33)	−0.02	−0.37	.712	−14.43 (4.40)	−0.64	−3.28	.001
	Age group × strategy use					8.76 (2.64)	0.64	3.31	.001
	Total R^2		.17				.21		
	F for Δ in R^2		12.85**				10.98**		
Distraction									
	Constant	−0.94 (2.43)		−0.39	.699	0.36 (2.58)		0.14	.890
	Sex	−0.96 (.95)	−0.06	−1.01	.315	−0.90 (.95)	−0.05	−0.94	.346
	Social desirability bias	0.53 (.09)	0.36	5.95	<.001	0.53 (.09)	0.36	5.89	<.001
	Age group	1.94 (1.00)	0.12	1.93	.054	1.16 (1.13)	0.07	1.02	.307
	Strategy use	0.52 (1.32)	0.02	0.39	.694	−5.34 (4.22)	−0.24	−1.27	.206
	Age group × strategy use					3.86 (2.64)	0.27	1.46	.144
	Total R^2		.17				.18		
	F for Δ in R^2		12.86*				2.14		
Situation selection									
	Constant	−1.11 (2.32)		−0.48	.633	−0.84 (2.30)		−0.37	.715
	Sex	0.66 (.94)	−0.04	−0.70	.486	−1.02 (.94)	−0.06	−1.10	.277
	Social desirability bias	0.54 (.09)	0.36	6.12	<.001	0.54 (.09)	0.37	6.25	<.001
	Age group	1.83 (.98)	0.11	1.88	.062	1.96 (.96)	0.12	2.03	.044
	Strategy use	4.51 (1.43)	0.18	3.16	.002	−7.08 (4.44)	−0.28	−1.59	.112
	Age group × strategy use					7.82 (2.84)	0.49	2.75	.006
	Total R^2		.20				.23		
	F for Δ in R^2		15.81**				7.59**		

*$p < 0.05$, **$p < 0.01$.

& English, 2018), and two experience sampling methods (ESM) studies examining strategy use in daily life (Benson et al., 2019; Livingstone & Isaacowitz, 2021). However, it is also possible that the low frequency of use of several strategies in our study, particularly situation selection and expressive suppression, could have contributed to the observed results. These contrasting findings warrant further investigation of age differences in consistent strategy use in real-world settings.

Our analysis of age differences in within-strategy responsiveness, representing synchronized co-fluctuations of strategy utilization with negative affect, revealed that older adults demonstrated lower within-strategy responsiveness than young adults, irrespective of strategy type. These findings suggest that older adults may be less likely than young adults to tailor their use of specific strategies to shifts in negative affect intensity. While contrary to our a priori hypotheses based largely on theories of socioemotional aging (e.g. Charles & Piazza, 2009; Urry & Gross, 2010), these findings are generally consistent with prior empirical evidence of age-related decreases in within-strategy variability/flexibility in daily life (e.g. Benson et al., 2019; Eldesouky & English, 2018 but also see Bellingtier et al., 2022). Yet, in contrast to such prior empirical findings (Bellingtier et al., 2022; Eldesouky & English, 2018), age differences in responsiveness were not moderated by strategy type. Overall, the current study contributes to the bulk of evidence to date suggesting that there may be age-related decreases in strategy flexibility in response to shifts in relational and affective context.

Examining relationships between strategy utilization and metrics of adaptiveness, we found that among both young and older adults, greater utilization of expressive suppression was

associated with higher levels of emotion dysregulation. Expressive suppression is a response modulation strategy that involves pushing thoughts and feelings out of one's mind. Although behavioral evidence consistently demonstrates the preservation of expressive suppression ability with age (Hofer et al., 2015; Lohani & Isaacowitz, 2014; Magai et al., 2006; Shiota & Levenson, 2009), self-report findings provide a more equivocal picture. These findings suggest that expressive suppression may be related to increased depressive symptoms and diminished well-being (Gross & John, 2003; Orgeta, 2011), or, paradoxically, to heightened affective well-being (Brummer et al., 2014; Peng et al., 2017). Our results, across both young and older adults, indicate that a higher frequency of employing this response modulation strategy involving active suppression of thoughts and feelings is associated with greater difficulties in regulating emotions. Moreover, the simultaneous variation of this strategy's usage with negative affect, or the within-strategy responsiveness was associated with reduced emotion dysregulation in older adults. In contrast, in young adults, those who demonstrated higher within-strategy responsiveness for expressive suppression had greater emotion dysregulation and lower affect balance. This implies that while the utilization of expressive suppression might be beneficial for older adults in certain contexts, it is associated with poorer indicators of emotional health for young adults. These results hold direct implications for training studies aimed at addressing these transdiagnostic factors of emotion dysregulation and affect balance, to reduce symptoms of mood and anxiety disorders in both young and older adults.

Contrary to our initial hypotheses, the average use of acceptance, positive reappraisal, detached reappraisal, distraction, and situation selection were not significantly related to emotional well-being. Furthermore, age group was not a significant moderator in any of the associations between strategy use and emotional well-being. One possible explanation for this discrepancy is that while the overall use of these strategies is not inherently adaptive, the flexible implementation of these strategies in appropriate contexts is adaptive. In line with this perspective and our hypotheses, we observed a correlation between responsiveness in several strategies—namely acceptance, positive reappraisal, and situation selection—and our indicators of emotional well-being.

Specifically, we found that among young and older adults, flexibility in the use of positive reappraisal and acceptance individually correlated with emotion dysregulation. Relatedly, flexibility in the utilization of positive reappraisal and situation selection was associated with affect balance. Although cognitive reappraisal is one of the most frequently studied regulation strategies, it has only recently been differentiated into detached reappraisal (reinterpreting situations from an unemotional and distanced perspective) and positive reappraisal (reinterpretation of situations to emphasize positive outcomes). Existing studies on age-related differences in the use of positive reappraisal indicate that the use and effectiveness of positive reappraisal increases with age (Garnefski & Kraaij, 2006; Lohani & Isaacowitz, 2014; Shiota & Levenson, 2009; but also see Eldesouky & English, 2018). Positive reappraisal appears to be a more effective strategy to regulate negative emotions than suppression or attention deployment (Lohani & Isaacowitz, 2014) and is associated with wide-ranging benefits, including enhanced mental health and overall well-being (Kraaij et al., 2002; Nowlan et al., 2015, 2016). Expanding upon the existing literature, our findings suggest that the flexibility in employing the positive reappraisal strategy in response to varying levels of negative affect is associated with reduced emotion dysregulation and a better balance between positive and negative emotions.

We also found a correlation between higher responsiveness of the acceptance strategy and reduced emotion dysregulation in both young and older adults. Acceptance is an integral part of several third-wave therapeutic approaches, including acceptance and commitment therapy and mindfulness-based therapies. Notably, older adults tend to show greater reliance on acceptance-based strategies compared with young adults (Allen & Windsor, 2019; Schirda et al., 2016; Shallcross et al., 2013). However, our results indicate that it is the variability in the use of acceptance strategies, rather than an overall higher usage of acceptance, that is linked to reduced emotion dysregulation. Similarly, the flexible use of situation selection in older adults, as opposed to general use of this strategy, was associated with improved affective balance. Such findings align with prior findings indicating that adults more selectively prune their social networks to increase the proportion of close relatives in comparison to peripheral acquaintances, which in turn is associated with increased experience of positive emotions (English & Carstensen, 2014). Building upon prior research, our results underscore the adaptive nature of situation selection, particularly in its synchronized implementation with varying levels of negative affect among older adults. Overall, our findings highlight the importance of contextual factors for understanding age-related shifts in emotion regulation and call for future investigations.

Limitations and future directions

Our study should be considered in the context of several limitations. First, due to the cross-sectional, correlational design, definitive inferences about directionality or causation cannot be made for any of the analyses conducted. Second, our study focused on volitional emotion regulation processes by assessing a limited set of emotion regulation strategies of particular relevance in the aging literature. Relatedly, the definition and operationalization of some of these strategies is highly variable across studies, thus potentially conflating study results. Additional strategies and avolitional (i.e. implicit) processes may also play an important role in emotion regulation (Gross, 2015; Gyurak et al., 2011) and warrant direct investigation in future studies.

Third, our conceptualization of flexibility only focused on the degree to which variability in strategy use covaried with negative affect intensity. However, negative affect intensity represents only one of numerous possible dimensions across which flexibility could be measured. For example, strategy use may be synchronized with other relevant situational/contextual changes such as social context, positive affect intensity, or arousal. Additionally, there are other ways of conceptualizing flexibility, such as examining variability in strategy use alone or shifts in response to emotion regulation failure vs. success, that warrant further exploration.

Fourth, the current study utilized idiographic, retrospective self-report measures. Despite efforts to control for social desirability bias, such self-report measures are still prone to recall bias, and as a result, recollection of past experiences may be inaccurate or incomplete. It is also possible that this retrospective, episode-specific approach may have been less likely to pick up on effective antecedent strategies used to modify anticipated future emotional experiences. Additionally, we were further limited by the number of episodes reported. On average, older adults reported 10.92 ($SD = 4.32$) episodes, and younger adults reported an average of 12.11 ($SD = 5.11$) episodes. Future studies may benefit from the use of experience sampling methods measures to reduce error and bias related to retrospective reporting.

Finally, there were some limits to generalizability imposed by the screening and sampling approaches employed in the current study. Our older adult sample was not ethnoracially diverse, and was relatively high-functioning in terms of cognitive abilities (e.g. relatively high level of education, scored below cutoff for impairment on a cognitive screener, and had no neurological disorders). Future studies may benefit from using different recruitment strategies to target more diverse samples that more adequately represent the racial, physical, and cognitive characteristics of older adults.

Conclusion

Despite these limitations, the current study represents one of the first efforts to examine age-related shifts in emotion regulation strategy utilization and flexibility and its adaptiveness. Focusing on six different emotion regulation strategies of particular relevance in the aging literature, our DRM analysis provided evidence for age differences in strategy use and a metric of flexibility, specifically within-strategy responsiveness, as well as age-related variation in the adaptiveness of these emotion regulation patterns. Based on these findings, interventions for older and young adults may benefit from targeting emotion regulation flexibility, which is emphasized in newer transdiagnostic treatment approaches such as Acceptance and Commitment Therapy (Hayes et al., 2006) and the Unified Protocol (Barlow et al., 2011), as well as reducing the expressive suppression of emotions. These initial findings warrant further replication and clarification. Future studies would benefit from employing experience sampling methods spanning multiple days, utilizing longitudinal designs to make more definitive claims about directionality and causation, and examining how age affects emotion regulation flexibility across a broader array of relevant contexts and strategies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research was supported by the National Institute of Aging of the National Institutes of Health under award number R01AG054427(RSP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Health. This material is also based upon work supported by the National Science Foundation Graduate Research Fellowship Program under grant number 1840280 (awarded to MEF). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Data availability statement

Data were analyzed using SPSS, version 26.0 (IBM SPSS Statistics, 2019). Data and analysis code for this manuscript have been made publicly available on the Open Science Framework (https://osf.io/tbk4d/).

References

Aldao, A., & Nolen-Hoeksema, S. (2012). The influence of context on the implementation of adaptive emotion regulation strategies. *Behaviour Research & Therapy*, *50*(7–8), 493–501. https://doi.org/10.1016/j.brat.2012.04.004

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*(2), 217–237. https://doi.org/10.1016/j.cpr.2009.11.004

Aldao, A., Sheppes, G., & Gross, J. J. (2015). Emotion regulation flexibility. *Cognitive Therapy & Research*, *39*(3), 263–278. https://doi.org/10.1007/s10608-014-9662-4

Alkoby, A., Pliskin, R., Halperin, E., & Levit-Binnun, N. (2019). An eight-week mindfulness-based stress reduction (MBSR) workshop increases regulatory choice flexibility. *Emotion (Washington, DC)*, *19*(4), 593–604. https://doi.org/10.1037/emo0000461

Allen, V. C., & Windsor, T. D. (2019). Age differences in the use of emotion regulation strategies derived from the process model of emotion regulation: A systematic review. *Aging & Mental Health*, *23*(1), 1–14. https://doi.org/10.1080/13607863.2017.1396575

Barlow, D. H., Farchione, T. J., Fairholme, C. P., Ellard, K. K., Boisseau, C. L., Allen, L. B., & Ehrenreich-May, J. (2011). *Unified protocol for transdiagnostic treatment of emotional disorders: Therapist guide* (pp. xii–159). Oxford University Press.

Bellingtier, J. A., Luong, G., Wrzus, C., Wagner, G. G., & Riediger, M. (2022). A domain-differentiated approach to everyday emotion regulation from adolescence to older age. *Psychology & Aging*, *37*(3), 338–349. https://doi.org/10.1037/pag0000677

Benson, L., English, T., Conroy, D. E., Pincus, A. L., Gerstorf, D., & Ram, N. (2019). Age differences in emotion regulation strategy use, variability, and flexibility: An experience sampling approach. *Developmental Psychology*, *55*(9), 1951–1964. https://doi.org/10.1037/dev0000727

Birk, J. L., & Bonanno, G. A. (2016). When to throw the switch: The adaptiveness of modifying emotion regulation strategies based on affective and physiological feedback. *Emotion (Washington, DC)*, *16*(5), 657–670. https://doi.org/10.1037/emo0000157

Blanchard-Fields, F., Stein, R., & Watson, T. L. (2004). Age differences in emotion-regulation strategies in handling everyday problems. *The Journals of Gerontology: Series B, Psychological Sciences & Social Sciences*, *59*(6), P261–P269. https://doi.org/10.1093/geronb/59.6.P261

Bonanno, G. A., Papa, A., Lalande, K., Westphal, M., & Coifman, K. (2004). The importance of being flexible: The ability to both enhance and suppress emotional expression predicts long-term adjustment. *Psychological Science*, *15*(7), 482–487. https://doi.org/10.1111/j.0956-7976.2004.00705.x

Bonanno, G. A., Pat-Horenczyk, R., & Noll, J. (2011). Coping flexibility and trauma: The Perceived Ability to Cope With Trauma (PACT) scale. *Psychological Trauma: Theory, Research, Practice, & Policy*, *3*(2), 117–129. https://doi.org/10.1037/a0020921

Brummer, L., Stopa, L., & Bucks, R. (2014). The influence of age on emotion regulation strategies and psychological distress. *Behavioural & Cognitive Psychotherapy*, *42*(6), 668–681. https://doi.org/10.1017/S1352465813000453

Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation & Emotion*, *27*(2), 103–123. https://doi.org/10.1023/A:1024569803230

Charles, S. T., & Piazza, J. R. (2009). Age differences in affective well-being: Context matters: Aging and effect. *Social & Personality Psychology Compass*, *3*(5), 711–724. https://doi.org/10.1111/j.1751-9004.2009.00202.x

Charles, S. T., Reynolds, C. A., & Gatz, M. (2001). Age-related differences and change in positive and negative affect over 23 years. *Journal of Personality & Social Psychology*, *80*(1), 136–151. https://doi.org/10.1037/0022-3514.80.1.136

Cole, P. M., Hall, S. E., & Hajal, N. J. (2017). Emotion dysregulation as a risk factor for psychopathology, 3rd ed. In T. P. Beauchaine & S. P. Hinshaw (Eds.), *Child and adolescent psychopathology* (pp. 346–386). Wiley.

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, *24*(4), 349–354. https://doi.org/10.1037/h0047358

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, *97*(2), 143–156. https://doi.org/10.1007/s11205-009-9493-y

Edwards, L. J., Muller, K. E., Wolfinger, R. D., Qaqish, B. F., & Schabenberger, O. (2008). An R^2 statistic for fixed effects in the linear mixed model. *Statistics in Medicine*, *27*(29), 6137–6157. https://doi.org/10.1002/sim.3429

Eldesouky, L., & English, T. (2018). Another year older, another year wiser? Emotion regulation strategy selection and flexibility across adulthood. *Psychology & Aging*, *33*(4), 572–585. https://doi.org/10.1037/pag0000251

English, T., & Carstensen, L. L. (2014). Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *International Journal of Behavioral Development*, *38*(2), 195–202. https://doi.org/10.1177/0165025413515404

Fastame, M. C., & Penna, M. P. (2012). Does social desirability confound the assessment of self-reported measures of well-being and metacognitive

efficiency in young and older adults? *Clinical Gerontologist*, *35*(3), 239–256. https://doi.org/10.1080/07317115.2012.660411

Fisher, M. E., Duraney, E., Friess, K., Whitmoyer, P., Andridge, R., & Prakash, R. S. (2022). Trait mindfulness and emotion regulation responsiveness to negative affect in daily life. *Mindfulness*, *13*(11), 2796–2811. https://doi.org/10.1007/s12671-022-01996-3

Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality & Individual Differences*, *40*(8), 1659–1669. https://doi.org/10.1016/j.paid.2005.12.009

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology & Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Gross, J. J. (2015). The extended process model of emotion regulation: Elaborations, applications, and future directions. *Psychological Inquiry*, *26*(1), 130–137. https://doi.org/10.1080/1047840X.2015.989751

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality & Social Psychology*, *85*(2), 348–362. https://doi.org/10.1037/0022-3514.85.2.348

Gyurak, A., Gross, J. J., & Etkin, A. (2011). Explicit and implicit emotion regulation: A dual-process framework. *Cognition & Emotion*, *25*(3), 400–412. https://doi.org/10.1080/02699931.2010.544160

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, *42*(2), 377–381. https://doi.org/10.1016/j.jbi.2008.08.010

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research & Therapy*, *44*(1), 1–25. https://doi.org/10.1016/j.brat.2005.06.006

Hofer, M., Burkhard, L., & Allemand, M. (2015). Age differences in emotion regulation during a distressing film scene. *Journal of Media Psychology*, *27*(2), 47–52. https://doi.org/10.1027/1864-1105/a000134

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science (New York, NY)*, *306*(5702), 1776–1780. https://doi.org/10.1126/science.1103572

Kessler, E.-M., & Staudinger, U. M. (2009). Affective experience in adulthood and old age: The role of affective arousal and perceived affect regulation. *Psychology & Aging*, *24*(2), 349–362. https://doi.org/10.1037/a0015352

Kraaij, V., Pruymboom, E., & Garnefski, N. (2002). Cognitive coping and depressive symptoms in the elderly: A longitudinal study. *Aging & Mental Health*, *6*(3), 275–281. https://doi.org/10.1080/13607860220142387

Liang, Y., Huo, M., Kennison, R., & Zhou, R. (2017). The role of cognitive control in older adult cognitive reappraisal: Detached and positive reappraisal. *Frontiers in Behavioral Neuroscience*, *11*, 27. https://doi.org/10.3389/fnbeh.2017.00027

Livingstone, K. M., & Isaacowitz, D. M. (2021). Age and emotion regulation in daily life: Frequency, strategies, tactics, and effectiveness. *Emotion (Washington, DC)*, *21*(1), 39–51. https://doi.org/10.1037/emo0000672

Livingstone, K. M., & Srivastava, S. (2012). Up-regulating positive emotions in everyday life: Strategies, individual differences, and associations with positive emotion and well-being. *Journal of Research in Personality*, *46*(5), 504–516. https://doi.org/10.1016/j.jrp.2012.05.009

Löckenhoff, C. E., & Carstensen, L. L. (2007). Aging, emotion, and health-related decision strategies: Motivational manipulations can reduce age differences. *Psychology & Aging*, *22*(1), 134–146. https://doi.org/10.1037/0882-7974.22.1.134

Lohani, M., & Isaacowitz, D. M. (2014). Age differences in managing response to sadness elicitors using attentional deployment, positive reappraisal and suppression. *Cognition & Emotion*, *28*(4), 678–697. https://doi.org/10.1080/02699931.2013.853648

Magai, C., Consedine, N. S., Krivoshekova, Y. S., Kudadjie-Gyamfi, E., & McPherson, R. (2006). Emotion experience and expression across the adult life span: Insights from a multimodal assessment study. *Psychology & Aging*, *21*(2), 303–317. https://doi.org/10.1037/0882-7974.21.2.303

Nolen-Hoeksema, S., & Aldao, A. (2011). Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality & Individual Differences*, *51*(6), 704–708. https://doi.org/10.1016/j.paid.2011.06.012

Nowlan, J. S., Wuthrich, V. M., & Rapee, R. M. (2015). Positive reappraisal in older adults: A systematic literature review. *Aging & Mental Health*, *19*(6), 475–484. https://doi.org/10.1080/13607863.2014.954528

Nowlan, J. S., Wuthrich, V. M., & Rapee, R. M. (2016). The impact of positive reappraisal on positive (and negative) emotion among older adults. *International Psychogeriatrics*, *28*(4), 681–693. https://doi.org/10.1017/S1041610215002057

Orgeta, V. (2011). Regulation of affect in late adulthood: Effects of mild depressive symptoms. *Aging & Mental Health*, *15*(7), 866–872. https://doi.org/10.1080/13607863.2011.569484

Peng, Y., Tian, B., Jex, S. M., & Chen, Y. (2017). Employees' age moderates relationships of emotional suppression with health and well-being. *Work, Aging & Retirement*, *3*(1), 89–101. https://doi.org/10.1093/workar/waw030

Phillips, L. H., Henry, J. D., Hosie, J. A., & Milne, A. B. (2008). Effective regulation of the experience and expression of negative affect in old age. *The Journals of Gerontology. Series B, Psychological Sciences & Social Sciences*, *63*(3), P138–P145. https://doi.org/10.1093/geronb/63.3.P138

Pruessner, L., Barnow, S., Holt, D. V., Joormann, J., & Schulze, K. (2020). A cognitive control framework for understanding emotion regulation flexibility. *Emotion (Washington, DC)*, *20*(1), 21–29. https://doi.org/10.1037/emo0000658

Ricarte Trives, J. J., Navarro Bravo, B., Latorre Postigo, J. M., Ros Segura, L., & Watkins, E. (2016). Age and gender differences in emotion regulation strategies: Autobiographical memory, rumination, problem solving and distraction. *The Spanish Journal of Psychology*, *19*, E43. https://doi.org/10.1017/sjp.2016.46

Scheibe, S., Sheppes, G., & Staudinger, U. M. (2015). Distract or reappraise? Age-related differences in emotion-regulation choice. *Emotion (Washington, DC)*, *15*(6), 677–681. https://doi.org/10.1037/a0039246

Schirda, B., Valentine, T. R., Aldao, A., & Prakash, R. S. (2016). Age-related differences in emotion regulation strategies: Examining the role of contextual factors. *Developmental Psychology*, *52*(9), 1370–1380. https://doi.org/10.1037/dev0000194

Shallcross, A. J., Ford, B. Q., Floerke, V. A., & Mauss, I. B. (2013). Getting better with age: The relationship between age, acceptance, and negative affect. *Journal of Personality & Social Psychology*, *104*(4), 734–749. https://doi.org/10.1037/a0031180

Sheppes, G., Scheibe, S., Suri, G., & Gross, J. J. (2011). Emotion-regulation choice. *Psychological Science*, *22*(11), 1391–1396. https://doi.org/10.1177/0956797611418350

Shiota, M. N., & Levenson, R. W. (2009). Effects of aging on experimentally instructed detached reappraisal, positive reappraisal, and emotional behavior suppression. *Psychology & Aging*, *24*(4), 890–900. https://doi.org/10.1037/a0017896

Smoski, M. J., LaBar, K. S., & Steffens, D. C. (2014). Relative effectiveness of reappraisal and distraction in regulating emotion in late-life depression. *The American Journal of Geriatric Psychiatry: Official Journal of the American Association for Geriatric Psychiatry*, *22*(9), 898–907. https://doi.org/10.1016/j.jagp.2013.01.070

Stawski, R. S., Sliwinski, M. J., Almeida, D. M., & Smyth, J. M. (2008). Reported exposure and emotional reactivity to daily stressors: The roles of adult age and global perceived stress. *Psychology & Aging*, *23*(1), 52–61. https://doi.org/10.1037/0882-7974.23.1.52

Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science*, *19*(6), 352–357. https://doi.org/10.1177/0963721410388395

Verhaeghen, P. (2011). Aging and executive control: Reports of a demise greatly exaggerated. *Current Directions in Psychological Science*, *20*(3), 174–180. https://doi.org/10.1177/0963721411408772

Verhaeghen, P., & Salthouse, T. A. (1997). Meta-analyses of age–cognition relations in adulthood: Estimates of linear and nonlinear age effects and structural models. *Psychological Bulletin*, *122*(3), 231–249. https://doi.org/10.1037/0033-2909.122.3.231

Webb, T. L., Lindquist, K. A., Jones, K., Avishai, A., & Sheeran, P. (2018). Situation selection is a particularly effective emotion regulation strategy for people who need help regulating their emotions. *Cognition & Emotion*, *32*(2), 231–248. https://doi.org/10.1080/02699931.2017.1295922

Welsh, K. A., Breitner, J. C., & Magruder-Habib, K. M. (1993). Detection of dementia in the elderly using telephone screening of cognitive status. *Neuropsychiatry, Neuropsychology, & Behavioral Neurology*, *6*(2), 103–110.

Wilhelm, F. H., & Grossman, P. (2010). Emotions beyond the laboratory: Theoretical fundaments, study design, and analytic strategies for advanced ambulatory assessment. *Biological Psychology*, *84*(3), 552–569. https://doi.org/10.1016/j.biopsycho.2010.01.017