Supplementary material

Further information and pilot data on the film clips used in the mood induction

As previous research suggests that young and older adults react differently to emotional material (e.g., Keil & Freund, 2009; Schnitzspahn et al., 2014), we asked samples of young and older adults to rate the valence and arousal of partly different film clips in several pilot studies. In total, we conducted three pilot studies in young adults and three pilot studies in older adults until we felt confident that we identified a sufficient number of positive, neutral and negative film clips in each age group. For the present study, we selected the ones that were most effective in inducing the desired emotions (see Table 1 for their duration, valence and arousal ratings from piloting).

The film clips for the young adults were piloted in different samples of 85 participants (age range= 17 – 34, M_{age} = 20.29, *SD* = 2.44, 12 male, 73 female), 32 participants (age range = 19-28, M_{age} = 21.44, *SD* = 1.98, 23 female, 9 male) and 21 participants (age range = 18 -25, M_{age} = 19.14, *SD* = 1.85, 18 female, 3 male). In the older adults, we used three samples of 9 (age range= 64 – 74, M_{age} = 67.78, *SD* = 3.53, 3 male, 6 female), 8 (age range= 64– 79, M_{age} = 68.75, *SD* = 5.68, 4 male, 4 female) and 21 (age range= 59– 76, M_{age} = 67.42, *SD* = 4.94, 8 male, 11 female) participants, respectively.

Table 1.
Duration, Valence and Arousal Scores Obtained in the Pilot Work for the Film Clips Selected for the Main Study, for a) Young Adults and b) Older Adults
a)

Film clips	Condition	Duration	N	Valence (SD)	Arousal (SD)
1. Cyberbully[a]	Negative	03:36	85	7.3 (1.5)	5.3 (2.1)
2. The Green Mile[a]	Negative	03:46	85	7.4 (1.4)	5.7 (2.0)
3. The Champ[a]	Negative	02:45	85	7.1 (1.7)	6.0 (1.8)
4. Dancer in the Dark[a]	Negative	03:17	22	5.4 (1.1)	4.2 (0.9)
5. Beaver documentary[b]	Neutral	03:18	85	3.7 (1.4)	5.2 (1.8)
6. Beach images[b]	Neutral	02:20	32	3.3 (1.7)	6.9 (1.4)
7. Desert documentary[b]	Neutral	02:41	21	4.0 (1.5)	5.0 (1.0)
8. Satellite images[b]	Neutral	03:49	21	3.7 (1.3)	7.0 (0.9)
9. Hidden Camera (comedy)[b]	Positive	03:25	85	2.3 (1.4)	4.4 (1.8)
10. Friends[c]	Positive	02:46	32	2.7 (1.7)	5.8 (1.8)
11. Mr Bean[c]	Positive	02:49	32	2.6 (1.4)	6.2 (1.9)
12. Skydive images[b]	Positive	02:55	32	2.9 (1.6)	5.4 (1.9)

Note. Valence and arousal were assessed using a 9-point Likert scales. For valence, low values represent positive mood and high values negative mood. For arousal, low values represent high arousal and high values low arousal.
[a]Scene taken from the motion picture.
[b]Film clip found on You Tube.
[c]Scene taken from the comedy show.

b)

Film clips	Condition	Duration	N	Valence (SD)	Arousal (SD)
1. Away from Her[a]	Negative	03:28	9	7.9 (1.0)	6.3 (2.4)
2. Up[a]	Negative	03:31	9	7.8 (1.3)	6.8 (2.8)
3. The Green Mile[a]	Negative	03:33	9	8.7 (0.4)	4.6 (2.5)
4. Dancer in the Dark[a]	Negative	03:17	19	7.2 (1.7)	3.7 (2.8)
5. MSO Word tutorial[b]	Neutral	03:35	8	3.3 (1.7)	5.9 (1.9)
6. Boiler tutorial[b]	Neutral	03:09	8	3.4 (1.8)	7.1 (1.3)
7. Knitting tutorial[b]	Neutral	03:35	8	3.5 (1.6)	7.1 (1.9)
8. Leonardo Fibonacci documentary[b]	Neutral	03:07	8	4.4 (2.0)	7.1 (1.6)
9. Piper (Short Film)[b]	Positive	03:33	8	1.6 (0.8)	5.6 (1.9)
10. Bonobo documentary[b]	Positive	02:37	8	1.6 (0.9)	6.7 (2.2)
11. Fawlty Towers[c]	Positive	02:52	8	2.7 (2.5)	3.9 (2.4)
12. Love Actually[a]	Positive	03:39	8	1.7 (0.8)	5.9 (2.5)

Note. Valence and arousal were assessed using a 9-point Likert scales. For valence, low values represent positive mood and high values negative mood. For arousal, low values represent high arousal and high values low arousal.

[a]Scene taken from the motion picture.
[b]Film clip found on You Tube.
[c]Scene taken from the comedy show.

Additional data from the main study

Table 2.
Descriptive Statistics for Valence Scores as a Function of Mood Condition and Age Group.

	Young adults			Older adults		
	Negative (n = 34)	Neutral (n = 32)	Positive (n = 43)	Negative (n = 31)	Neutral (n = 35)	Positive (n = 37)
Before Induction	3.67 (1.04)	3.63 (1.39)	3.10 (1.02)	2.61 (1.21)	2.58 (1.40)	2.37 (1.38)
After Induction	5.78 (1.31)	3.50 (1.22)	2.72 (1.17)	5.73 (1.86)	3.13 (1.60)	2.09 (1.23)

Note. Mean scores with standard deviations in parentheses are displayed
Valence was assessed using 9-point Likert scale with low values representing a positive mood and high values standing for a negative mood.

Table 3.
Gender Distribution as a Function of Age Group and Mood Condition.

	Young Adults			Older adults		
Gender	Negative	Neutral	Positive	Negative	Neutral	Positive
Male	3	5	7	8	12	11
Female	30	27	36	23	23	26
Other	1	0	0	0	0	0

Table 4.
Descriptive Statistics for PM Performance as a Function of Mood Condition, Age Group, and Task Type.

	Young adults			Older adults		
	Negative (n = 34)	Neutral (n = 32)	Positive (n = 43)	Negative (n = 31)	Neutral (n = 35)	Positive (n = 37)
EBPM	0.62 (0.31)	0.71 (0.31)	0.74 (0.38)	0.58 (0.35)	0.56 (0.26)	0.70 (0.30)
TBPM	0.58 (0.33)	0.65 (0.34)	0.62 (0.35)	0.24 (0.31)	0.25 (0.31)	0.25 (0.30)

Note. Mean scores with standard deviations in parentheses are displayed
EBPM: Event-based prospective memory task.
TBPM: Time-based prospective memory task.

Table 5.
Changes in Valence as a Function of Age Group and Mood Condition.

	Young adults			Older adults		
	Negative (n = 34)	Neutral (n = 32)	Positive (n = 43)	Negative (n = 31)	Neutral (n = 35)	Positive (n = 37)
Valence changes	2.11 (1.12)	-0.13 (0.54)	-0.38 (0.83)	3.11 (1.90)	0.55 (1.08)	-0.29 (0.90)

Note. Numbers bigger than zero represent changes towards a more negative mood, while numbers smaller than zero represent changes toward a more positive mood. Means and standard deviations are shown.

Equation 3-level mixed logit model

In order to provide the equation for the 3-level mixed logit model presented in the article to analyze PM, we use the notation suggested by Bolger and Laurenceau (2013). The equation is the following:

$p(Y_{ikj}) = 1/(1+e^{-\eta_{ikj}})$

Level-1 model: $\eta_{ikj} = \beta_{0kj} + \beta_{1kj}(\text{ValenceChanges}_{ikj}) + \varepsilon_{ikj}$

Level-2 model: $\beta_{0kj} = \gamma_{00j} + \gamma_{01j}(\text{TaskType}_{kj})$

$\beta_{1kj} = \gamma_{10j} + \gamma_{11j}(\text{TaskType}_{kj})$

Level-3 model: $\gamma_{00j} = \delta_{000} + \delta_{001}(\text{AgeGroup}_j) + u_{0j}$

$\gamma_{10j} = \delta_{100} + \delta_{101}(\text{AgeGroup}_j) + u_{1j}$

$\gamma_{01j} = \delta_{010} + \delta_{011}(\text{AgeGroup}_j) + u_{2j}$

$\gamma_{11j} = \delta_{110} + \delta_{111}(\text{AgeGroup}_j) + u_{3j}$

To paraphrase the equation, the predicted probability of successful PM performance $p(Y_{ikj})$ is given by $1/(1+e^{-\eta_{ikj}})$, which is the logit transformation of coefficients that define the equation η_{ikj}. Equation η_{ikj} is defined in turn by terms interpreted in the natural log of the odds. At level 1, PM performance of person j on task type k on occasion i is predicted by person j's mean performance at task k (β_{0kj} coefficient), a component which represents ValenceChanges (β_{1kj}), and a residual deviation for participant j for task type k at occasion i (ε_{ikj}). The β_{0kj} coefficient is decomposed into intercept term (γ_{00j}), and an effect of the within-participants variable TaskType (γ_{01j}). Coefficients γ_{00j} and γ_{01j} are moderated by level-3 coefficients, which represent the person-level intercept δ_{000} and fixed effect of AgeGroup (δ_{001}), plus random effects, which represent person-level deviation from the fixed effects (u_{0j}). The level-1 fixed effect of ValenceChanges (β_{1kj}) is defined by fixed intercept (γ_{10j}) and slope γ_{11j} of the TaskType, which in turn are moderated by level-3 person-level intercepts (δ_{100}, δ_{110}) and person-level effects of AgeGroup (δ_{101}, δ_{111}). Random effects u_{0j}, $u_{1j,}$ u_{2j}, u_{3j} represent participants' deviation from the fixed effects.

The single-equation version, also called *mixed model* form, is the following:

$p(Y_{ikj}) = 1/(1+e^{-\eta_{ikj}})$

$\eta_{ikj} = \delta_{000} + \delta_{001}(\text{AgeGroup}_j) + \delta_{010}(\text{TaskType}_{kj}) + \delta_{001}(\text{AgeGroup}_j \text{ X } \text{TaskType}_{kj}) +$
$u_{2j}(\text{TaskType}_{kj}) + \delta_{100}(\text{ValenceChanges}_{ikj}) + \delta_{101}(\text{AgeGroup}_j \text{ X } \text{ValenceChanges}_{ikj}) +$
$u_{1j}(\text{ValenceChanges}_{ikj}) + \delta_{110}(\text{TaskType}_{kj} \text{ X } \text{ValenceChanges}_{ikj}) + \delta_{111}(\text{AgeGroup}_j \text{ X }$
$\text{TaskType}_{kj} \text{ X } \text{ValenceChanges}_{ikj}) + u_{3j}(\text{TaskType}_{kj} \text{ X } \text{ValenceChanges}_{ikj})$

Reference

Bolger, N., & Laurenceau, J. P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research.* Guilford Press.