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Additional Control Variables (Emotions, Mindfulness, and Involvement in Organized Religion)

At the beginning of the lab session and before receiving the treatment, participants completed the *modified Differential Emotions Scale* (Fredrickson, 2013) to express the greatest degree they felt each of the ten positive and the ten negative emotions over the past 24 hours on a 5-point Likert-type scale (0 = not at all, 4 = extremely). They also completed a measure of dispositional mindfulness, *The Carolina Empirically Derived Mindfulness Inventory* (Coffey, Hartman, & Fredrickson, 2010), composed of 21 items that participants rate on a 5-point Likert-type scale (1 = never or very rarely true, 5 = very often or always true). There were no significant differences between participants in the OT and in the placebo conditions on baseline positive emotions ($F(1,81) = 1.41$, $p = .238$), baseline negative emotions ($F(1,81) = 1.75$, $p = .190$), and trait mindfulness ($F(1,81) = 0.44$, $p = > .250$). These analyses confirm that both groups were similar on key variables for this Study. We also tested all models presented in Table 1 controlling separately for baseline positive emotions, baseline

negative emotions, and dispositional mindfulness. Adding these additional covariates did not change the pattern of results. The effect of OT on all spirituality measures, implicit positive emotions, and self-transcendent positive emotions was significant in all models. The effect of OT on explicit positive emotions remained marginally significant (*ps* between .06 and .07).

Using the variable regarding involvement in a religious organization (described in the Method section of the main paper), analyses revealed that participants in the OT and in the placebo condition did not differ from each other on this variable, χ^2 (1, N = 79) = 1.02, $p > .250$. Still, whether one is involved in organized religion is an important confounding variable for spirituality. Indeed, those who are, tend to score higher on spirituality or describe themselves as both religious and spiritual, whereas very few identify as being religious but not spiritual (see for a review Marler & Hadaway, 2002). In the present study, separate analyses revealed that the variable of whether participants are involved in organized religion significantly predicts scores on the different measures of spirituality (Spiritual Transcendence scale: B = -0.75, *SE* = 0.20, $p < .01$, 1 item spirituality at lab session: B = -2.66, *SE* = 0.44, $p < .01$, 1 item spirituality at one week follow-up: B = -2.95, *SE* = 0.42, $p < .01$). However, a majority of scientists and lay-people think of spirituality and religiousness as overlapping but distinct constructs (Zinnbauer et al., 1997). In addition, there is a significant and growing percentage of the population that identifies as spiritual but not religious (Marler & Hadaway, 2002). Given that the focus here was on spirituality and not religiousness, we controlled for this confounding variable by adding it as a covariate in the models testing spirituality-related outcomes as dependent variables. Assumptions for running ANCOVAs were met:

assumptions of independence of the covariate and condition effect, and homogeneity of regression slopes tested by the Levene's test (all *ps* > .250).

Although the means were in the same direction, analyses of the effect of condition on the Spiritual Transcendence scale, the 1 item spirituality at lab session, and 1 item spirituality at the one-week follow-up, without including this covariate were not significant (for main effect of condition: respectively, $p = .120, .194, .162$).

We also tested whether religious affiliation was moderating the effects of OT on spirituality. The interaction test was significant only for the 1-item measure of spirituality at one-week follow-up ($F(3,73) = 4.79$, $p = .032$, $\eta_p^2 = 0.3$) but not for the other measures of spirituality taken at lab (p values between .07 and .14). For the interested reader, we note that when splitting the sample on this variable (religiously affiliated or not), the effects of OT are present only among the non-religiously affiliated participants (see Table below). This is in line with other research showing that only low religious individuals, when induced with self-transcendent emotions, show a subsequent increase in spirituality (Van Cappellen et al., 2013). A ceiling effect may be responsible for the lack of significant findings among the religiously affiliated individuals.

Table S1

Effects of Conditions on Spirituality Measures For Religiously Affiliated Participants or Not

	Conditions				
	Placebo	OT			
Variables	*M* (*SD*)	*M* (*SD*)	η^2	*F*	*p*
Spiritual Transcendence Scale					
Participants Religiously Affiliated	5.14 (0.7)	5.33 (0.8)	.02	(1, 44) = 0.79	.38
Agnostics and Atheists	4.04 (0.8)	4.80 (1.1)	.15	(1, 30) = 5.11*	.03
Spirituality – 1 item – Lab Session					
Participants Religiously Affiliated	4.50 (1.9)	4.80 (1.8)	.01	(1, 44) = 0.30	.59
Agnostics and Atheists	0.93 (0.9)	2.78 (2.3)	.21	(1, 30) = 8.08**	.008
Spirituality – 1 item – 1 Week Follow-up					
Participants Religiously Affiliated	4.68 (1.9)	5.00 (1.3)	.01	(1, 43) = 0.42	.52
Agnostics and Atheists	0.71 (1.0)	2.78 (2.2)	.26	(1, 30) = 10.48**	.003

Given that this variable does not predict scores of emotions as a result of or during meditation (all *ps* > .174), it was not included as a covariate in those models. However, including it does not change the pattern of results.

Correlation Matrix (Dependent Variables)

Table S2
Correlation Matrix

	Spiritual Transcendence Scale	Spirituality – 1 item – Lab	Spirituality – 1 item – 1 Week Follow-up	Implicit Positive Emotions e	Explicit Positive Emotions	Explicit Self-transcendent Positive Emotions	Implicit Negative Emotions
Spiritual Transcendence Scale	1						
Spirituality – 1 item – Lab	.750**	1					
Spirituality – 1 item – 1 Week Follow-up	.657**	.857**	1				
Implicit Positive Emotions	.268*	.327**	.233*	1			
Explicit Positive Emotions	.342**	.327**	.274*	.454**	1		
Explicit Self-transcendent Positive Emotions	.389**	.383**	.281*	.435**	.924**	1	
Implicit Negative Emotions	-.012	.086	.079	.077	.138	.194	1
Explicit Negative Emotions	-.146	-.122	-.158	.138	-.040	.103	.116

False Discovery Rate

Table S3

Benjamini-Hochberg Procedure for False Discovery Rate of .05

Variables	*p*	i	q	m	False Discovery Rate
Explicit Self-transcendent Positive Emotions	.010	1	.05	8	.006
Spirituality – 1 item – 1 Week Follow-up	.011	2	.05	8	.013
Implicit Positive Emotions	.015	3	.05	8	.019
Spiritual Transcendence Scale	.028	4	.05	8	.025
Spirituality – 1 item – Lab[1]	**.030**	**5**	.05	8	**.031**
Explicit Positive Emotions	.066	6	.05	8	.038
Explicit Negative Emotions	.165	7	.05	8	.044
Implicit Negative Emotions	.866	8	.05	8	.05

Note: [1] Starting from the bottom, this is the first line where the false discovery rate is higher than the p-value, this line and everything above it is considered significant.

Genotype Distribution by Condition

Table S4

Genotype Distribution by Condition

		Placebo	OT
CD38 rs3796863	AC/AA	20	20
	CC	22	21
CD38 rs6449182	CC	24	22
	GC	14	15

	GG	3	3
OXTR rs53576	GG	21	16
	GA/AA	20	24

CD38 rs6449182

The preponderance of evidence indicates that *CD38* rs6649182 expression is allele-dependent, which led to the coding of alleles used in the manuscript (Jamroziak et al., 2009; Polzonetti et al., 2012; Saborit-Villarroya et al., 2011). If *CD38* rs6449182 is coded in a dominant way (CC = 1, GC/GG = 2), the interaction between this SNP and condition becomes marginally significant for the 1 item measure during lab (p = .089) and non significant for the Spiritual Transcendence Scale and at 1 week follow up (respectively, p = .166, p = .172).

Additional References

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Saborit-Villarroya, I., Vaisitti, T., Rossi, D., D'Arena, G., Gaidano, G., Malavasi, F., & Deaglio, S. (2011). E2A is a transcriptional regulator of CD38 expression in chronic lymphocytic leukemia. *Leukemia*, *25*(3), 479–488.