Other Supplemental Analyses and Figures

Here, we include three sets of supplementary analyses and figures: within- and between-person correlation matrices for both studies, negative emotion multiverse analyses, and figures plotting standardized coefficients.

Correlation Matrices

Below are the between- (Table S1) and within-person (Table S2) correlations for each wave for Study 1, and between- and within-person correlations for Study 2 (Table S3). Correlations were calculated using the psych package in R (Revelle, 2017). Between-person correlations are correlations between a participant's mean on a pair of variables, weighted by the number of completed surveys for that participant at that wave. Within-person correlations represent the correlation between a participant's temporal deviations on a pair of variables, averaged across participants (Curran & Bauer, 2011).

Table S1.

Between- Group Correlations Between Study 1 Variables for Each Wave

			1	2	3	4	5	6	7
1.	Emotion differentiation	Wave 1	-						
		Wave 2	-						
		Wave 3	-						
2.	Rumination	Wave 1	-.32***	-					
		Wave 2	-.29***	-					
		Wave 3	-.39***	-					
3.	Distraction	Wave 1	-.23***	.48***	-				
		Wave 2	-.19*	.62***	-				
		Wave 3	-.29***	.65***	-				
4.	Cognitive reappraisal	Wave 1	-.41***	.59***	.49***	-			
		Wave 2	-.29***	.63***	.57***	-			
		Wave 3	-.28***	.67***	.57***	-			
5.	Expressive suppression	Wave 1	-.24***	.48***	.80***	.45***	-		
		Wave 2	-.16*	.66***	.84***	.63***	-		
		Wave 3	-.29***	.63***	.78***	.64***	-		
6.	Social sharing	Wave 1	-.35***	.46***	.35***	.71***	.29***	-	
		Wave 2	-.30***	.59***	.46***	.72***	.47***	-	
		Wave 3	-.24***	.62***	.51***	.75***	.51***	-	
7.	Negative emotion	Wave 1	-.43***	.72***	.48***	.62***	.49***	.42***	-
		Wave 2	-.42***	.77***	.58***	.68***	.61***	.52***	-
		Wave 3	-.48***	.74***	.57***	.70***	.57***	.54***	-

Notes. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table S2.

Within-Group Correlations Between Study 1 Variables for Each Wave

			1	2	3	4	5	6
1.	Rumination	Wave 1	-					
		Wave 2	-					
		Wave 3	-					
2.	Distraction	Wave 1	.15***	-				
		Wave 2	.20***	-				
		Wave 3	.19***	-				
3.	Cognitive reappraisal	Wave 1	.18***	.13***	-			
		Wave 2	.23***	.15***	-			
		Wave 3	.23***	.16***	-			
4.	Expressive suppression	Wave 1	.23***	.30***	.11***	-		
		Wave 2	.25***	.31***	.18***	-		
		Wave 3	.26***	.34***	.19***	-		
5.	Social sharing	Wave 1	.17***	.04***	.25***	.01	-	
		Wave 2	.23***	.08***	.31***	.07***	-	
		Wave 3	.24***	.10***	.32***	.08***	-	
6.	Negative emotion	Wave 1	.33***	.09***	.12***	.22***	.11***	-
		Wave 2	.37***	.16***	.14***	.23***	.14***	-
		Wave 3	.32***	.15***	.14***	.25***	.12***	-

Notes. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table S3.

Correlations Between Study 2 Variables

		1	2	3	4	5	6	7	8	9
1.	Emotion differentiation	-	-	-	-	-	-	-	-	-
2.	Percentage passed	.17	-	-	-	-	-	-	-	-
3.	Rumination	-.26**	-.33***	-	.18***	.39***	-.09***	.28***	.51***	.32***
4.	Distraction	.03	-.13	.45***	-	.22***	.09***	.29***	.16***	.06***
5.	Cognitive reappraisal	-.14	-.23*	.70***	.66***	-	.06***	.24***	.41***	.09***
6.	Acceptance	.16	.21*	-.31***	.04	-.11	-	.03**	-.01	-.14***
7.	Expressive suppression	-.25**	-.25**	.75***	.50***	.60***	-.18	-	.22***	.17***
8.	Social sharing	-.20*	-.01	.77***	.49***	.61***	-.13	.68***	-	.18***
9.	Negative emotion	-.11	-.62***	.53***	.13	.29***	-.47***	.43***	.25**	-

Notes. *** $p < .001$. ** $p < .01$. * $p < .05$. Correlations below the diagonal are between-person correlations, and above the diagonal are within-person correlations. Only between-person correlations are provided for person-level variables (emotion differentiation and percentage passed).

Negative Emotion Multiverse Analyses

Theoretically, emotion differentiation should be robust across many different negative emotions, as each emotion provides different information. To determine whether our effects were robust across multiple specifications of emotion differentiation and negative emotion, we conducted a multiverse analysis (Steegen, Tuerlinckx, Gelman, & Vanpaemel, 2016). This analysis allows us to determine whether our results are robust to the omission of different emotion terms, and not driven by one particular emotion.

To create our multiverse, we computed a series of 6 different emotion differentiation and negative emotion indices. Each of these new indices was based on five of the six different emotions assessed in each study, leaving out the sixth emotion. We did this for all combinations of five emotions in each of the two studies. We then ran Model 1 and Model 2 for Study 1 and Study 2 (as specified in the manuscript). Across this set of models, we inspected our key effects (the main effect of emotion differentiation in Model 1, and the emotion differentiation x emotion regulation strategy interaction in Model 2). Below, we include 8 figures representing the multiverse of results. For each model, there is two figures: one outlining the multiverse of p-values, and one outlining the multiverse of coefficients and standard errors.

Study 1. For Model 1 (Figures S1 and S2), we find that the results of all models replicate the results of the full model reported in the manuscript. For Model 2 (Figures S3 S4), we that all models replicate the full model.

Study 2. For Model 1 (Figures S5 and S6), in the full model we find significant associations between emotion differentiation and rumination, suppression, and social sharing. In the multiverse, the emotion differentiation-rumination relationship is significant in 83.3% of models, the emotion differentiation-suppression relationship is significant in 66.7% of

models, and the emotion differentiation-social sharing relationship is significant in 50% of models.

For Model 2 (Figures S7 and S8), in the full model we four significant interactions between differentiation and emotion regulation strategies in predicting negative emotion, with the strategies rumination, distraction, acceptance, and social sharing. In the multiverse, the interaction with rumination is significant in 16.7% of models, with distraction in 83.3% of models, with acceptance in 100% of models, and with social sharing in 100% of models.

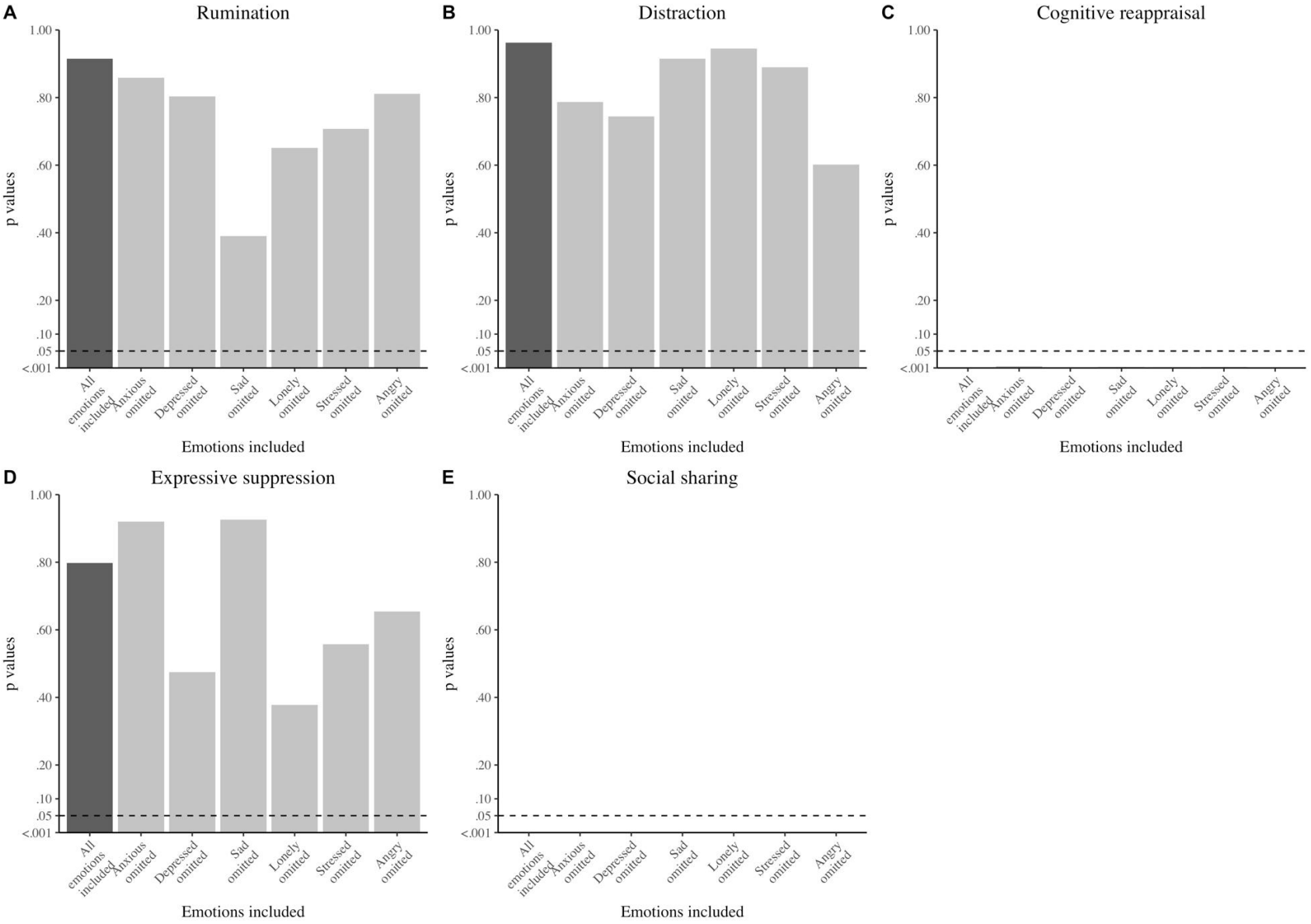
A
Rumination
B
Distraction
C
Cognitive reappraisal
D
Expressive suppression
E
Social sharing
p values
1.00
.80
.60
.40
.20
.10
.05
<.001
All emotions included
Anxious omitted
Depressed omitted
Sad omitted
Lonely omitted
Stressed omitted
Angry omitted
Emotions included

Figure S1. Study 1 *p* values for the effect of emotion differentiation on emotion regulation (in Model 1) in the emotion multiverse. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out. The dashed horizontal line represents our critical alpha cut-off ($p<.05$). Note that for Panels C and E, all p-values are very small (<.001) and so cannot be seen on the graphs.

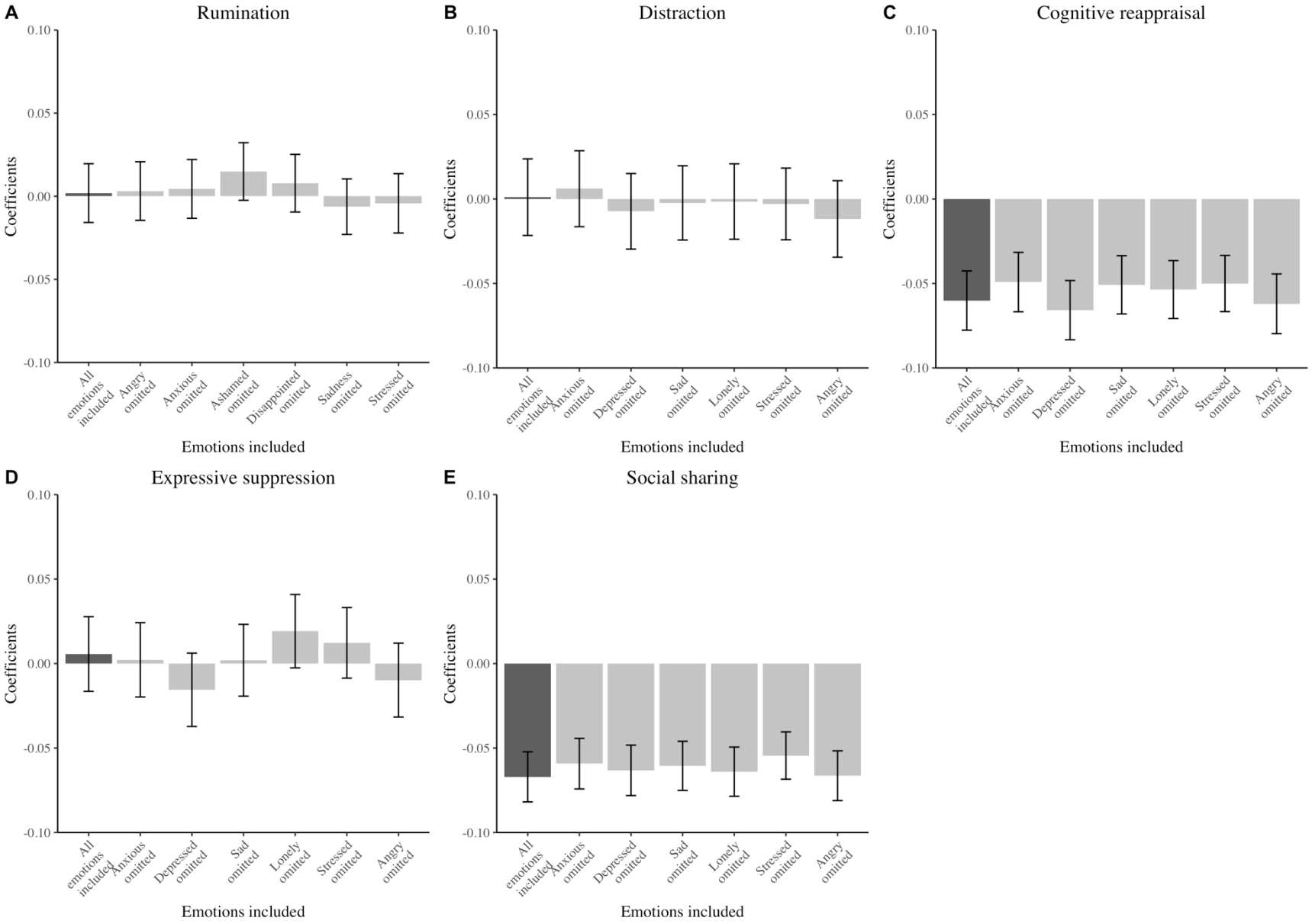

Figure S2. Study 1 coefficients for the effect of emotion differentiation on emotion regulation (in Model 1) in the emotion multiverse. Error bars represent standard errors. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out.

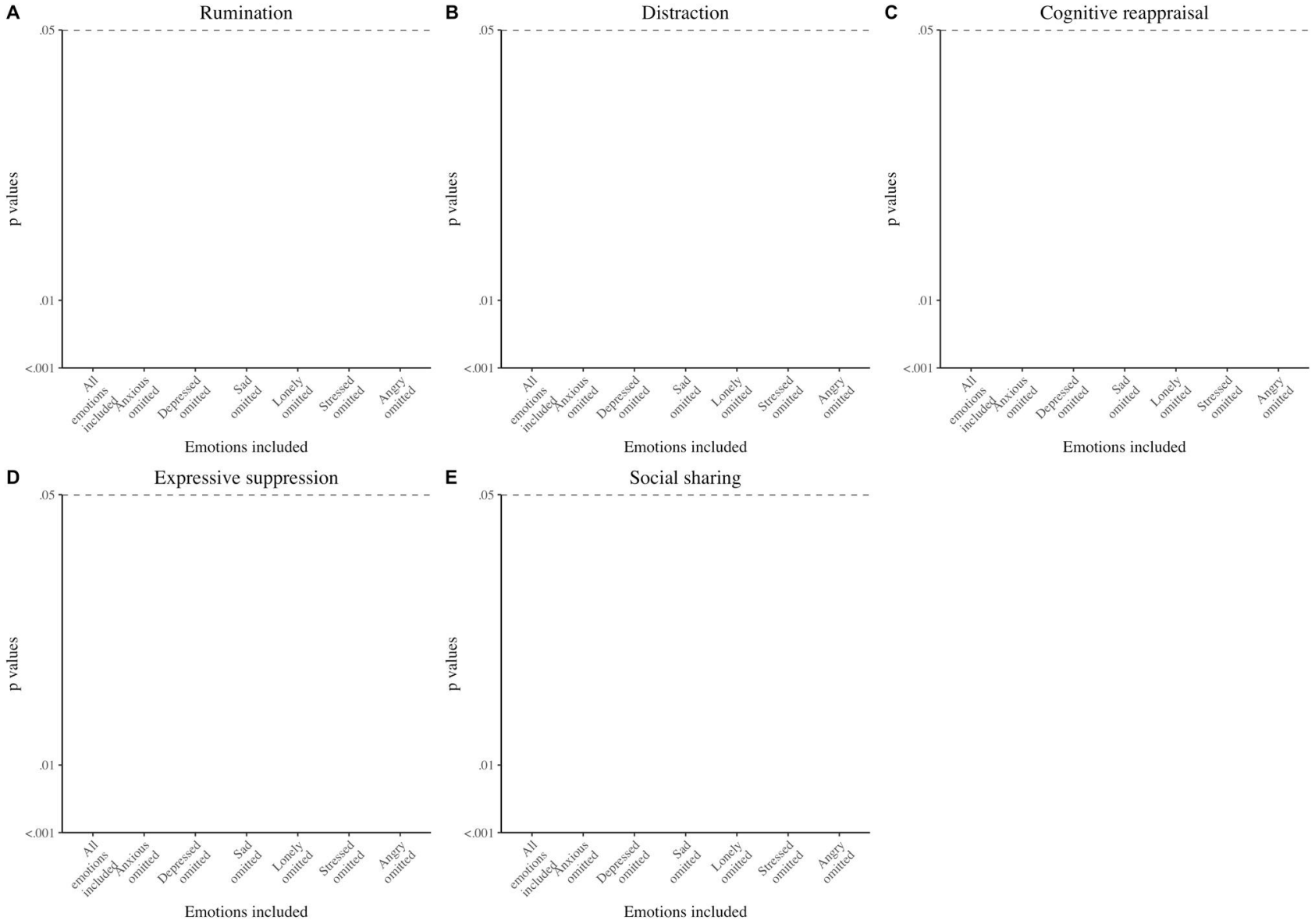

Figure S3. Study 1 *p* values for the effect of the emotion differentiation by emotion regulation interaction on negative emotion (in Model 2) in the emotion multiverse. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out. The dashed horizontal line represents our critical alpha cut-off (p<.05). Note that all the p values are very small (<.001) and so do not show up on these graphs.

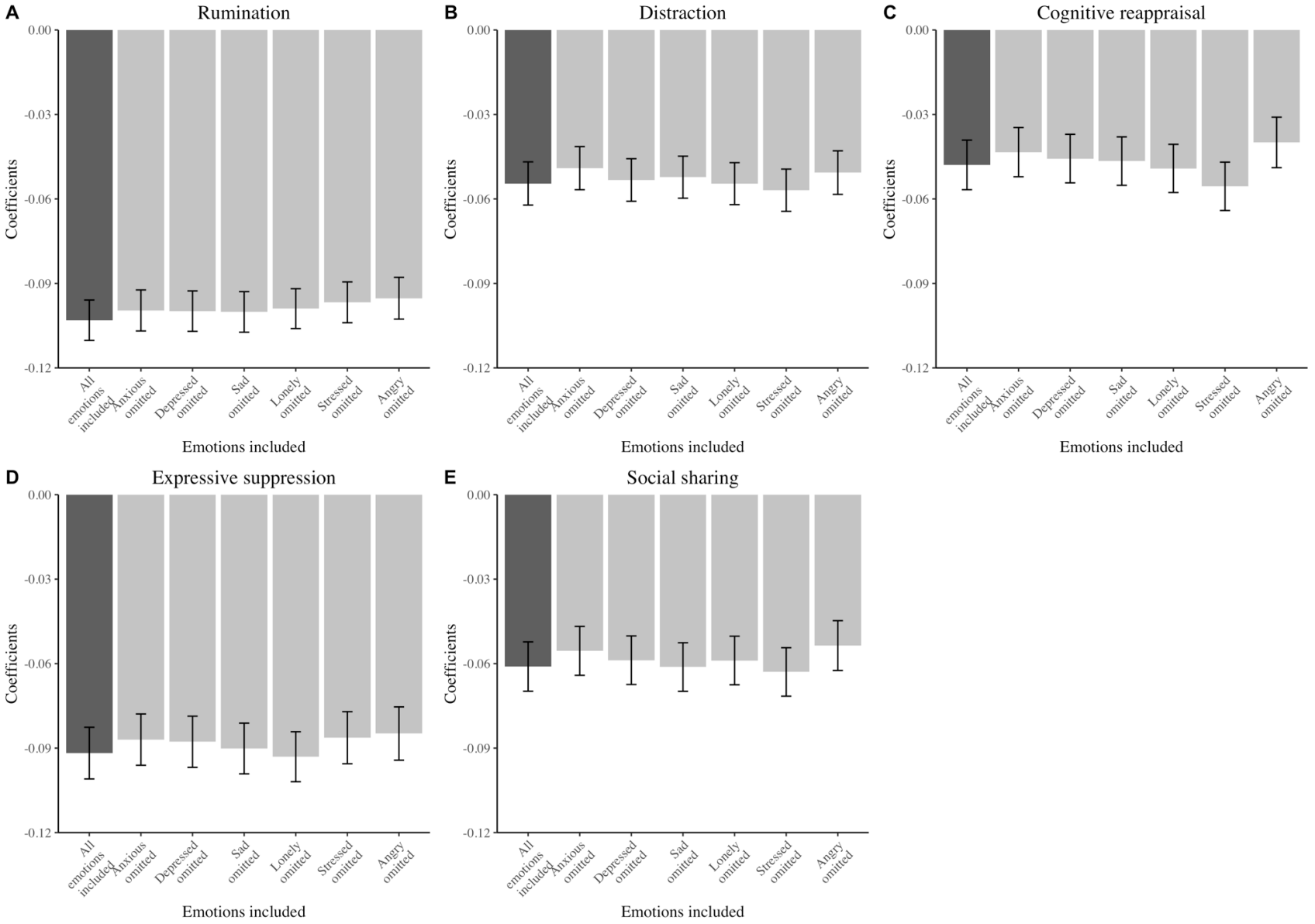
A
Rumination
B
Distraction
C
Cognitive reappraisal
D
Expressive suppression
E
Social sharing
Coefficients
0.00
-0.03
-0.06
-0.09
-0.12
All emotions included
Anxious omitted
Depressed omitted
Sad omitted
Lonely omitted
Stressed omitted
Angry omitted
Emotions included

Figure S4. Study 1 coefficients for the effect of the emotion differentiation by emotion regulation interaction on negative emotion (in Model 2) in the emotion multiverse. Error bars represent standard errors. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out.

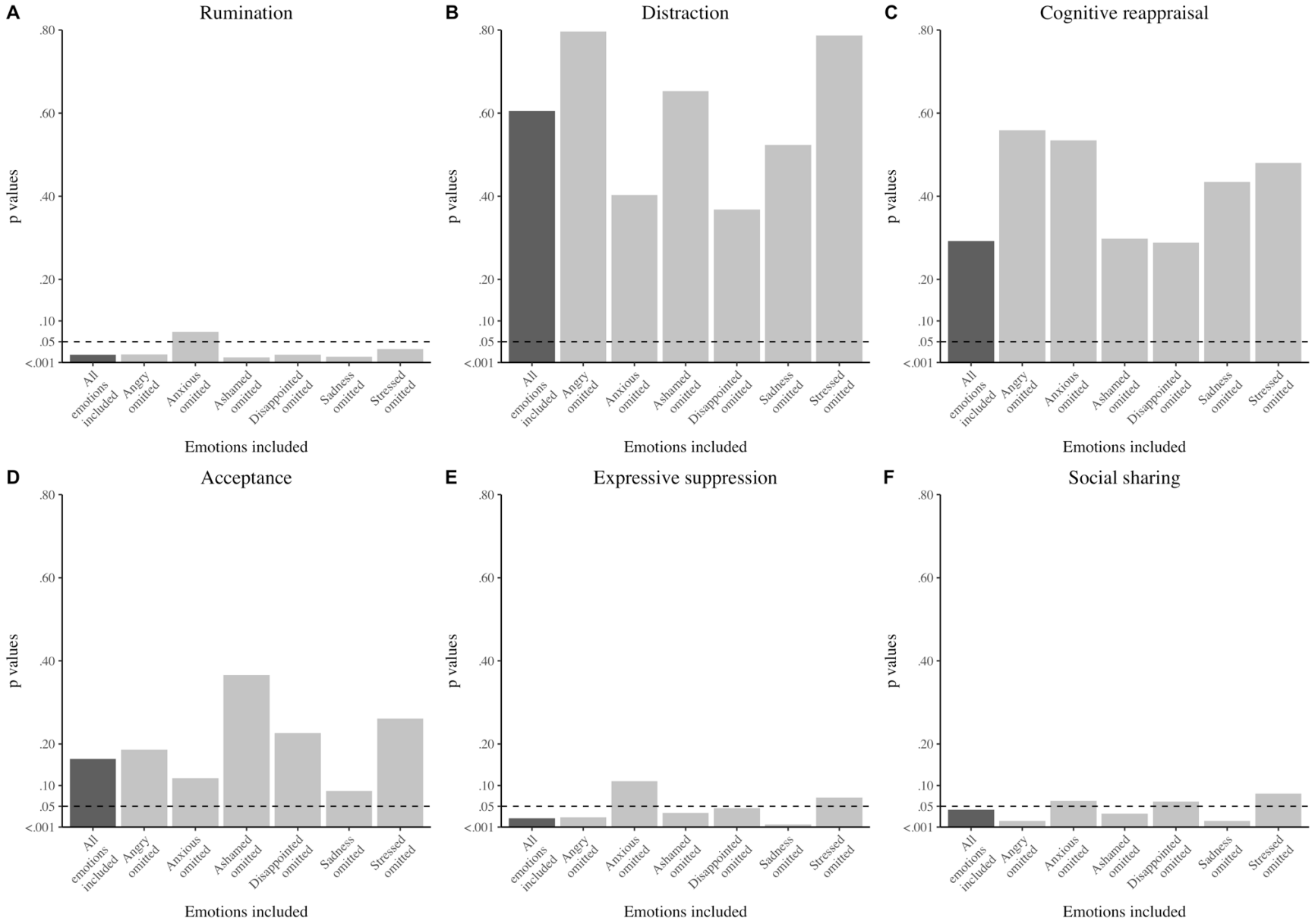

Figure S5. Study 2 *p* values for the effect of emotion differentiation on emotion regulation (in Model 1) in the emotion multiverse. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out. The dashed horizontal line represents our critical alpha cut-off (p<.05).

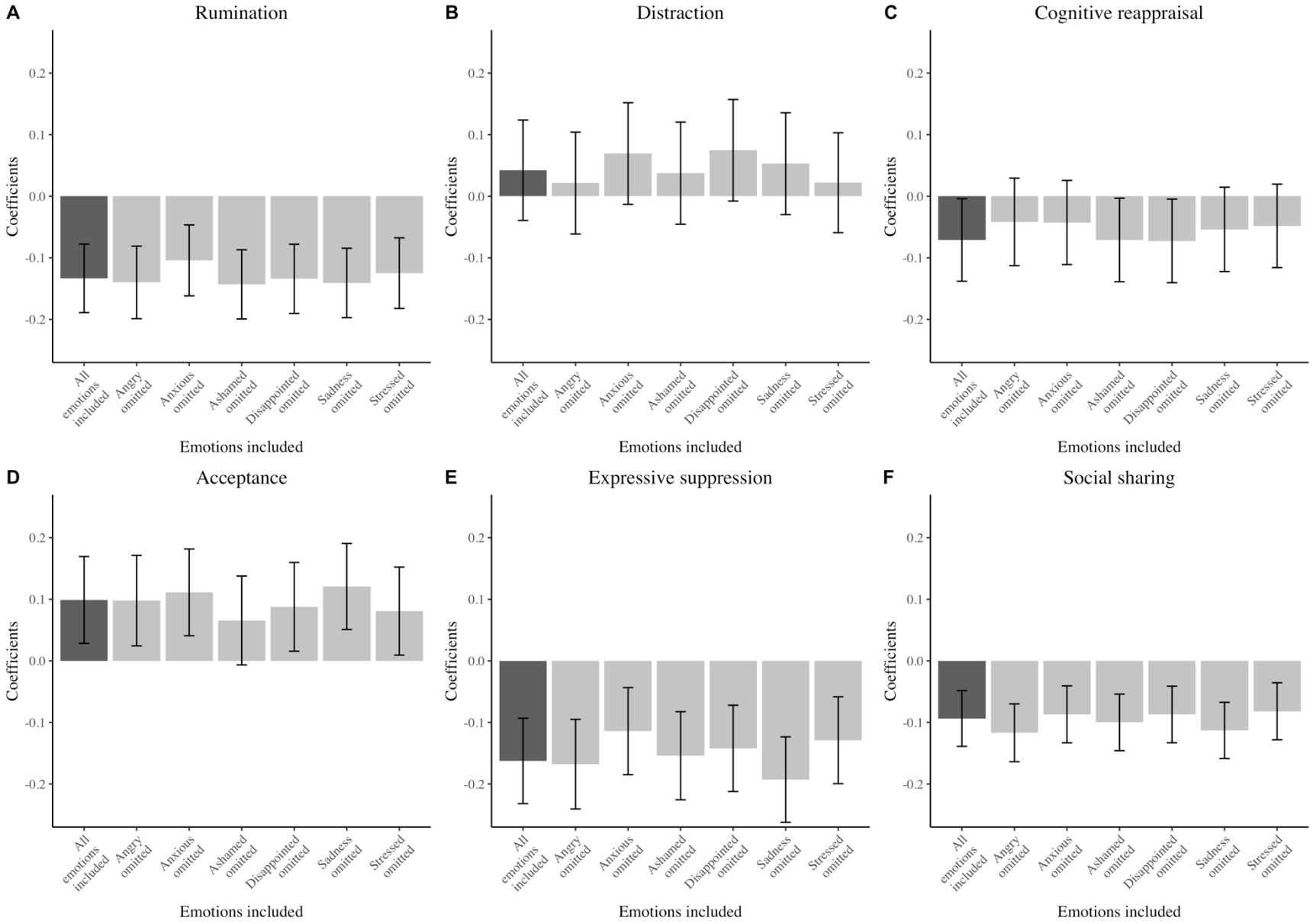

Figure S6. Study 2 coefficients for the effect of emotion differentiation on emotion regulation (in Model 1) in the emotion multiverse. Error bars represent standard errors. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out.

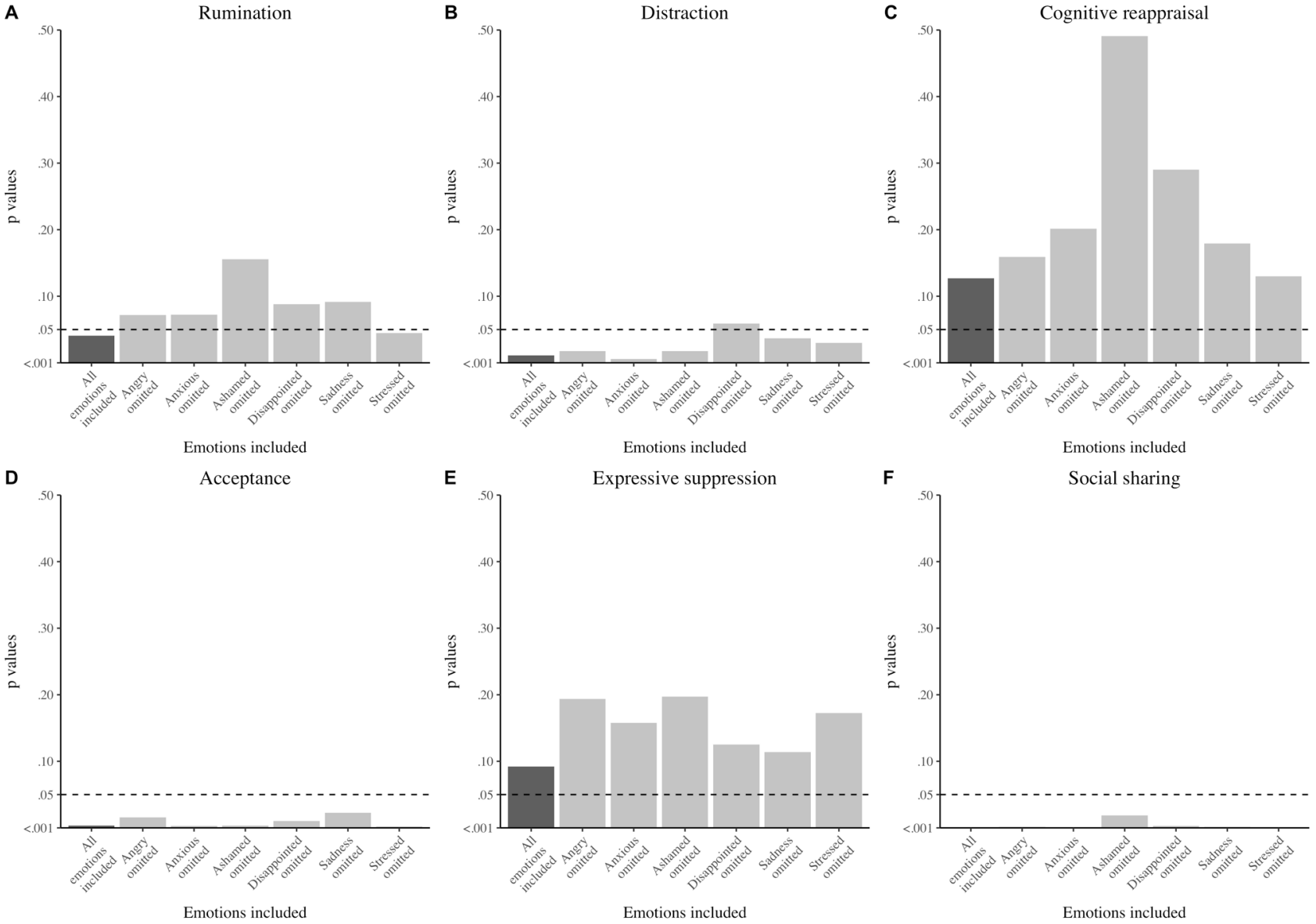

Figure S7. Study 2 *p* values for the effect of the emotion differentiation by emotion regulation interaction on negative emotion (in Model 2) in the emotion multiverse. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out. The dashed horizontal line represents our critical alpha cut-off (p<.05). Note that for Panels D and F, some p-values are very small (<.001) and so cannot be seen on the graphs.

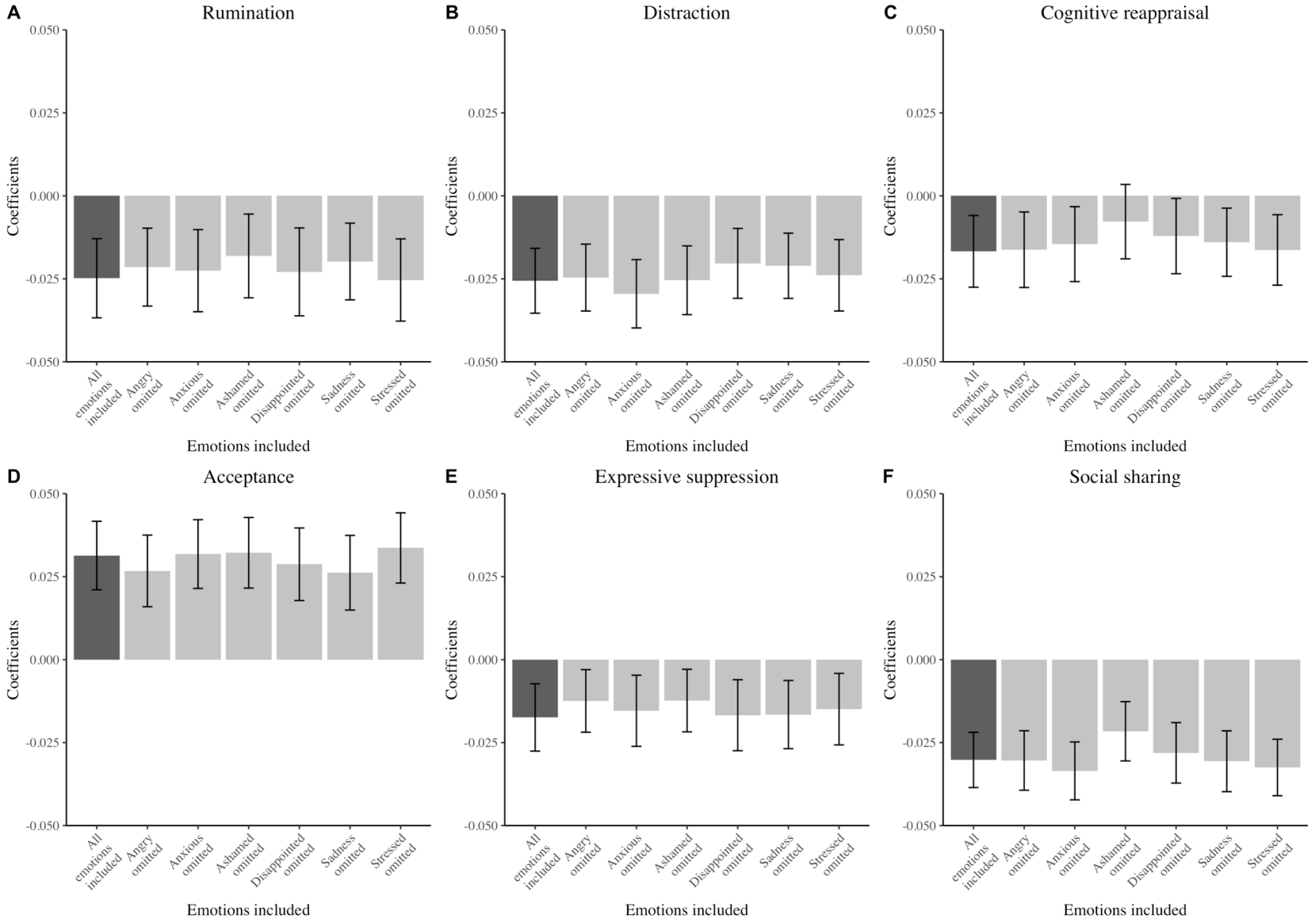

Figure S8. Study 2 coefficients for the effect of the emotion differentiation by emotion regulation interaction on negative emotion (in Model 2) in the emotion multiverse. Error bars represent standard errors. The dark grey bar is the result reported in the manuscript with all emotions included. The light grey bars are based on leaving one emotion out

Figures Using Standardized Coefficients

In the manuscript, our figures use unstandardized coefficients to allow for easier interpretation of effects in line with the scales used. Below, we graph our figures using standardized coefficients: these are the coefficients we use in our analyses, and allow easier comparison across our two studies (which use different measurement scales for emotion regulation). Figure S9 graphs the Study 1 simple slopes, replicating Figure 1 from the manuscript. Figure S10 graphs the Study 2 Simple slopes, replicating Figure 2 from the manuscript.

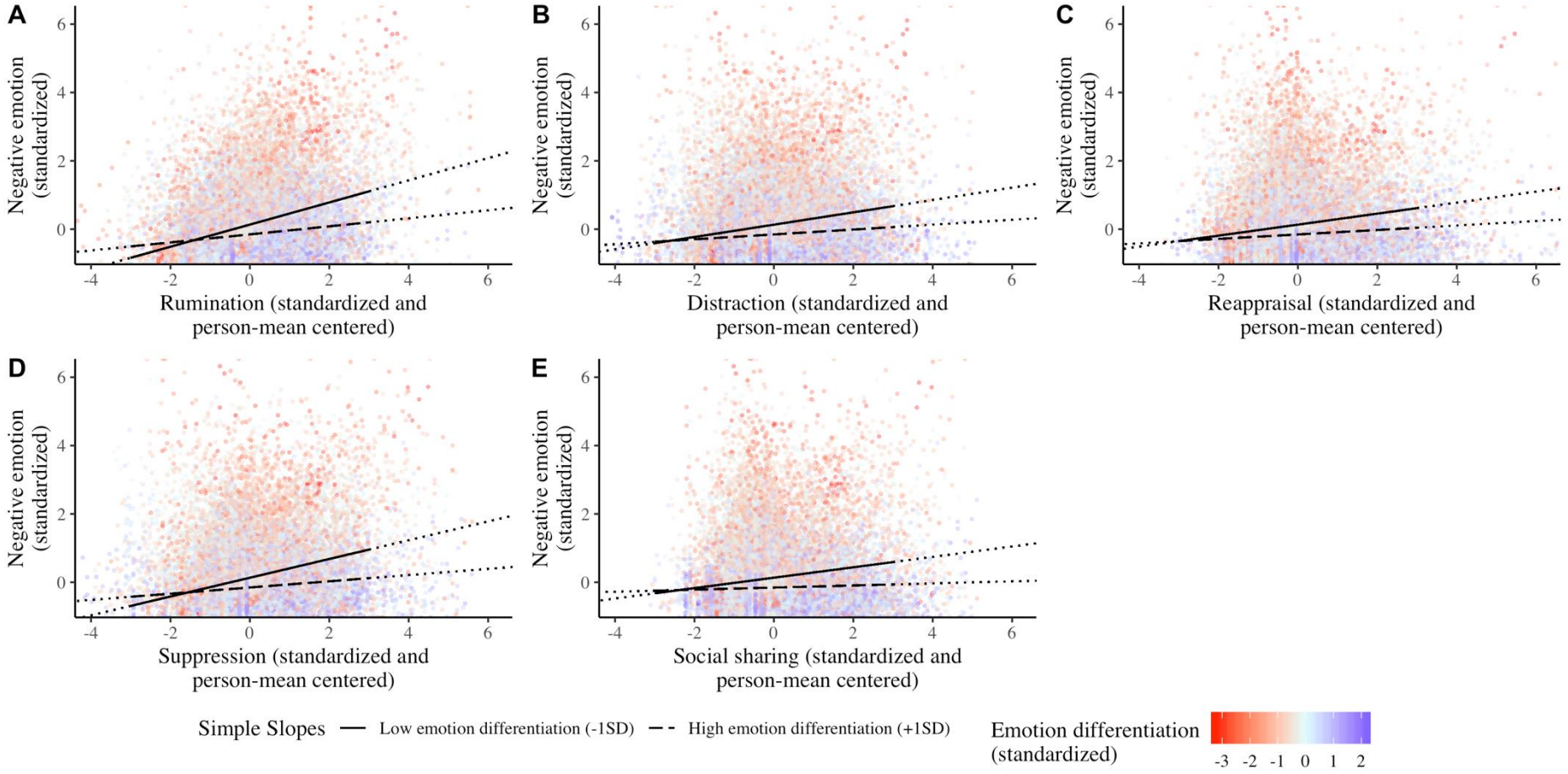

Figure S9. Graphs of the significant emotion regulation strategy x emotion differentiation interactions on the change in negative emotion in Study 1: Rumination (Panel A), Distraction (Panel B), Reappraisal (Panel C), Suppression (Panel D), and Social sharing (Panel E). These graphs replicate Figure 1 in the manuscript, but use standardized coefficients. Scatterplot points represent each momentary observation colored by person-level emotion differentiation (red = low differentiation, blue = high differentiation; note that emotion differentiation is Fisher-Z transformed). Dotted lines are used when the estimated simple slopes are +/- 3 standard deviations from the mean of the predictor (emotion regulation strategies) to represent the uncertainty in these estimates given relatively few observations. Emotion regulation strategies are person-mean centered within wave, so we examine deviations around each individual's mean strategy intensity within that wave.

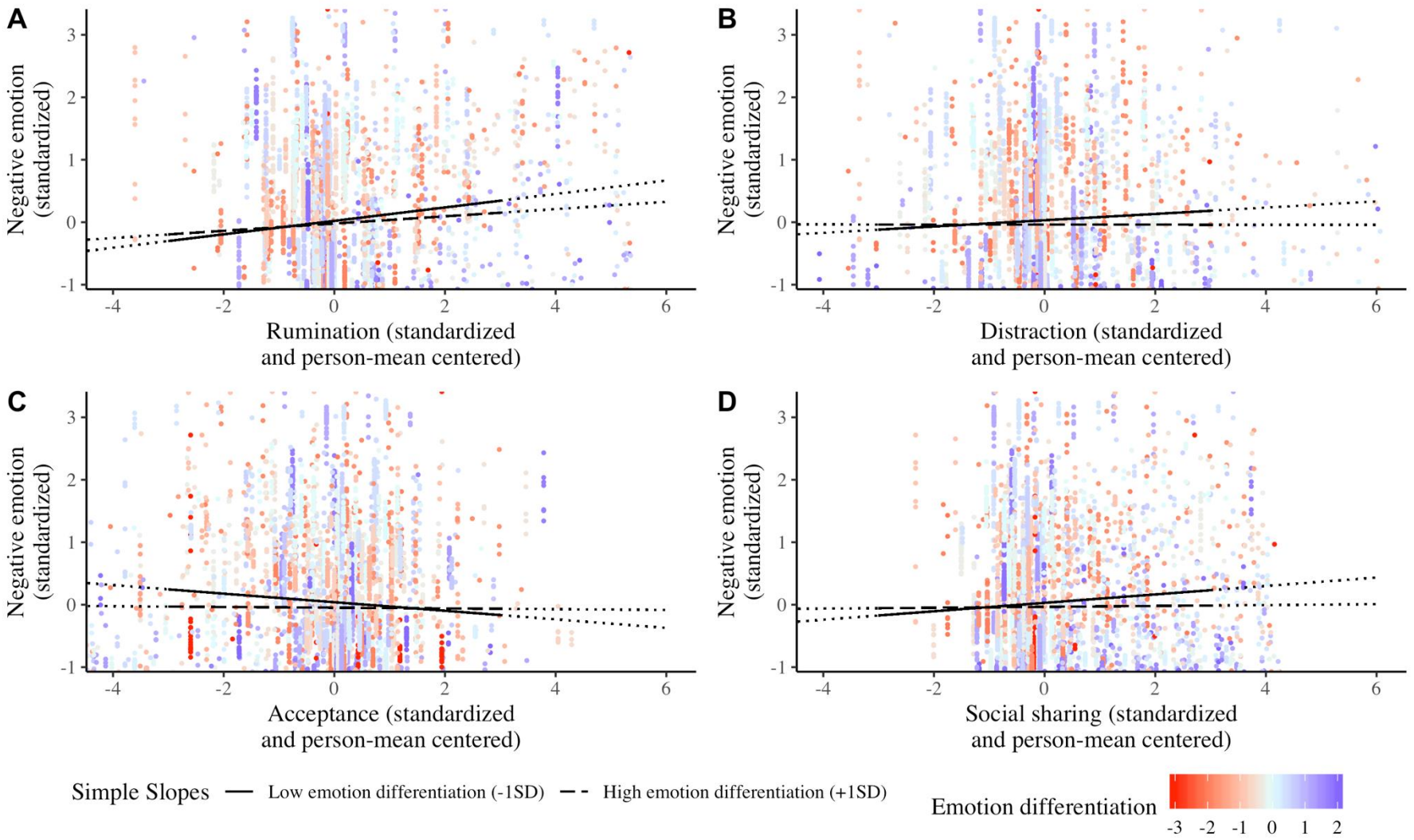

Figure S10. Graphs depicting the significant emotion regulation strategy x emotion differentiation interactions on the change in negative emotion in Study 1: Rumination (Panel A), Distraction (Panel B), Acceptance (Panel C), and Social sharing (Panel D). These graphs replicate Figure 2 in the manuscript, but use standardized coefficients. Scatterplot points represent each momentary observation colored by person-level emotion differentiation (red = low differentiation, blue = high differentiation; note that emotion differentiation is Fisher-Z transformed). Dotted lines are used when the estimated simple slopes are +/- 3 standard

deviations from the mean of the predictor (emotion regulation strategies) to represent the uncertainty in these estimates given relatively few observations. Emotion regulation strategies are person-mean centered, so we examine deviations around each individual's mean strategy intensity.

References

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual Review of Psychology, 62*, 583-619. doi:10.1146/annurev.psych.093008.100356

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Steegen, S., Tuerlinckx, F., Gelman, A., & Vanpaemel, W. (2016). Increasing Transparency Through a Multiverse Analysis. *Perspectives on Psychological Science, 11*(5), 702-712. doi:10.1177/1745691616658637