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Facing others' misfortune: Personal distress mediates the association between maladaptive emotion regulation and social avoidance

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26 Abstract

27 Previous research has linked the use of certain emotion regulation strategies to the vicarious
28 experience of personal distress (PD) and empathic concern (EC). However, it has not been
29 tested yet whether (1) vicarious PD is positively associated with maladaptive emotion
30 regulation strategies, (2) vicarious EC is positively associated with adaptive emotion regulation
31 strategies and whether (3) PD and EC mediate the link between emotion regulation and reports
32 of approach/avoidance in response to a person in distress. To that aim, we assessed people's
33 reports of PD (i.e., anxious, troubled, and upset) and EC (i.e., concerned, sympathetic, and
34 soft-hearted) in response to a video depicting a person in a threatening situation ($n = 78$).
35 Afterwards, we assessed participants' reports of avoidance and approach in regards to the
36 character and their disposition to use maladaptive and adaptive emotion regulation strategies.
37 Results showed that PD as well as EC were positively related to maladaptive strategies and
38 negatively related to adaptive strategies, and that the association between maladaptive
39 regulation strategies (i.e., rumination) and the willingness to avoid the person in distress was
40 mediated by greater reports of PD. This study thus expands previous evidence on the
41 relationship between maladaptive regulation strategies and affective empathy and provides
42 novel insights about the main role that personal distress played in the association between
43 maladaptive strategies and social avoidance.

44

45 *Keywords:* Emotion Regulation Strategies; Personal Distress; Empathic Concern; Avoidance;
46 Approach; Rumination

47

48 **1. Introduction**

49 In the field of emotion regulation, most research has focused on its intrapersonal
50 outcomes. As a result, the interpersonal domain has been neglected so far. The present
51 research thus aims to fill this gap by examining the association between emotion regulation
52 strategies, either adaptive or maladaptive, affective empathy and social behaviors.

53 ***1.1. Emotion regulation and intrapersonal outcomes***

54 Emotion regulation corresponds to a set of processes by which individuals assess and
55 influence their own emotions, when they experience them, and how they express them [1].
56 According to the main theoretical model of emotion regulation (i.e., Gross' Process Model of
57 Emotion Regulation), strategies can be differentiated in terms of the moment they are
58 implemented, either prior or after the full elicitation of the emotional response [1]. Besides this
59 model, it has been proposed that emotion regulation strategies may also be classified into
60 either more adaptive or maladaptive strategies[2–4]. Previous research indeed showed that
61 emotion regulation strategies may have beneficial or detrimental effects on individuals'
62 functioning, in terms of affect, behavior, and cognition, and their relationships to mental and
63 physical health [1,5–7]. Putatively adaptive emotion regulation strategies such as cognitive
64 reappraisal, acceptance, and problem solving have been associated with adaptive outcomes,
65 including reduced experience of negative affect [8] and diminished cardiac reactivity[9]. On the
66 other hand, putatively less adaptive emotion regulation strategies such as the suppression of
67 the emotional experience or rumination have been associated with negative outcomes,
68 including memory difficulties [10], increases in sympathetic activation [11], depression [2] and
69 anxiety disorders [12].

70

71 ***1.2. Emotion regulation and interpersonal outcomes***

72 Even though these previous findings emphasize the main role of emotion regulation on
73 intrapersonal outcomes, there is limited evidence in favor of interpersonal outcomes of emotion
74 regulation. So far, most research indeed focused on the intrapersonal effect of relying on
75 certain emotion regulation strategies. Only a limited amount of studies focused on how emotion

76 regulation strategies modulate interpersonal functioning despite the relevance of this research
77 question in terms of the protective role of satisfactory social relationships. For instance, low
78 empathic individuals report less satisfactory relationships [13], more loneliness [14] and less
79 social support [15], which are known to deteriorate health condition and to increase the
80 likelihood of mortality [16–18]. When focusing on the relation between emotion regulation and
81 social functioning, certain regulation strategies have shown to impact social support, social
82 cognition and the quality of social interactions[19,20]. For instance, frequent use of reappraisal
83 is associated with high peer-rating of likeability [19] whereas suppressing the expression of
84 one's own emotions during social interaction leads to higher physiological arousal in the
85 partner [10]. Surprisingly, when looking at the relationship between adaptive vs maladaptive
86 emotion regulation strategies, empathy and social behaviors, research is sparse. The present
87 research has thus the objective to better understand the interpersonal consequences of
88 emotion regulation in terms of affective empathy and social behaviors.

89 ***1.2.1. Emotion regulation, affective empathy and social behaviors***

90 Before presenting the relevance to consider how emotion regulation is associated with
91 affective empathy and social behaviors, it is worth defining these concepts. Empathy is a
92 multidimensional construct that involves both affective and cognitive components [21,22]. The
93 cognitive component is defined as the ability to take the perspective of others in order to
94 understand and predict their mental states [23,24]. In respect to affective empathy, personal
95 distress (PD) and empathic concern (EC) are generally considered as the two main possible
96 vicarious emotional responses to others' misfortune [25].Whereas EC is defined as other-
97 oriented and comprises feelings of warmth and sympathy, PD is defined as self-oriented and
98 comprises feelings of discomfort and anxiety when facing another in need [25,26]. According
99 to Batson's research [26], these two dimensions correspond to distinct latent factors which
100 show either no correlation [27] or small to moderate correlations [28].The measure of these
101 two vicarious emotional responses is based on either dispositional (e.g., Interpersonal
102 Reactivity Index [21]), or situational affective responses to someone in distress. At a situational
103 level, EC and PD are generally measured with emotion terms describing the current emotional

104 experience of the participants. PD scores are derived from adjectives such as alarmed,
105 grieved, upset, worried, disturbed, or troubled whereas EC scores are derived from adjectives
106 such as sympathetic, compassionate, moved, or tender [26]. In order to better understand the
107 role of emotion regulation in affective empathy, we will focus on situational EC and PD. This
108 will enable the evaluation of transitory and actual measure of affective empathy, thus reducing
109 the impact of self-representation or memory bias.

110 In respect to the examination of associations between emotion regulation, EC and PD,
111 Eisenberg and collaborators have suggested that the way in which people regulate their own
112 emotional experience may play a significant role in an individual's vicarious emotional
113 response (e.g.,[29]).They found that greater abilities to control emotional responses are
114 associated with greater reports of EC and lower reports of PD [30]. These results have been
115 supported by more recent findings that individuals who generally experience EC tend to
116 regulate more actively their emotional responses to pictures of people in pain whereas those
117 who generally experience PD do not tend to regulate actively their emotional responses
118 [31].Moreover, the relationship between emotion regulation and affective empathy has been
119 recently supported by significant correlations between dispositional measures of regulation
120 and PD (i.e.,[32,33]).

121 Nonetheless, although these studies have been a good first step in the study of emotion
122 regulation and affective empathy, they either rely on dispositional measures of EC and PD
123 (rather than situational contextualized emotional responses) or have used an index of emotion
124 regulation that gather several regulation strategies considered as adaptive (i.e., attention shift,
125 distracting) and maladaptive (i.e., emotional suppression). In order to overcome these
126 limitations, a recent study showed that participants under rumination instructions experienced
127 higher levels of PD in response to someone's distress than participants using a more adaptive
128 strategy (i.e., reappraisal) whom experienced greater EC [34]. More precisely, authors
129 manipulate the emotion regulation strategies (with experimental instructions and a priming
130 procedure) in response to a picture depicting a sick child in a hospital bed with a facial
131 expression of pain. They showed that participants reported higher **EC** in the reappraisal

132 condition compared to the rumination condition whereas they reported higher PD in the
133 rumination condition compared to the reappraisal condition.

134 Nevertheless, these studies have overlooked the link between other forms of
135 maladaptive and adaptive emotion regulation and PD and EC, preventing to suggest that
136 reappraisal and rumination may not be the only strategies that affect PD and EC. For instance,
137 a recent meta-analysis showed that accepting the emotion or taking a detached perspective
138 from the stimulus have positive effect on emotional responses [35].

139 Furthermore, to the best of our knowledge, no previous research has explored whether
140 affective empathy accounts for the association between emotion regulation and the behavioral
141 correlates of empathy (approaching/avoiding the person in need). Several studies indeed
142 showed that the tendency to feel compassion motivates us to improve the well-being of others
143 in an altruistic way (i.e., aiming to help others diminish their distress independently of the
144 advantages we can gain from the situation) and is associated with less antisocial behaviors,
145 whereas the tendency to feel distressed reduces supporting behaviors [36–38].

146 These behavioral correlates are essential in human relationships as prosocial
147 behaviors (e.g., volunteering) allow for social cohesion [39] and are associated with better
148 personal health outcomes [40]; whereas avoidance behaviors may have a detrimental impact
149 at a social level. For instance, research suggest that socially avoidant women (i.e., avoiding
150 gaze) are perceived as less agreeable and conscientious than women who have a direct gaze
151 [41]. Similarly, selfish behaviors (i.e., unfair behaviors in a monetary game) have been shown
152 to reduce empathic responses from other players [42], supporting the main role of
153 approach/avoidance behaviors to promote social relationships.

154 In summary, emotion regulation has been so far mainly examined through its
155 intrapersonal outcomes whereas its impact on interpersonal dimensions such as affective
156 empathy and social behaviors has been poorly investigated. As previously suggested,
157 because adaptive emotion regulation strategies have positive intrapersonal outcomes (e.g.,
158 mental and physical health) and negative strategies are associated with poor mental and
159 physical outcomes (e.g., [5–7]), we aim to better understand whether they also influence core

160 interpersonal functions, namely affective empathy (EC and PD) and social behaviors
161 (approach and avoidance).

162 **1.2.2. The present research**

163 The main aim of the study was to provide a deeper understanding of the role of
164 dispositional adaptive and maladaptive regulation strategies (1)in the experience of PD and
165 EC when facing someone in distress and (2) in the willingness to avoid or approach this person.
166 In order to determine the deleterious and beneficial emotion regulations strategies for the
167 interpersonal functioning, we have tested various adaptive and maladaptive strategies. The
168 secondary aim of the study was to test whether affective empathy mediated the association
169 between emotion regulation and avoidance/approach. We hypothesized that maladaptive
170 regulation strategies would be positively associated with PD, and that adaptive strategies
171 would be positively associated with EC (e.g., [31,34]). Furthermore, because EC is associated
172 with altruistic motivation and helping behaviors [25], we expected a positive correlation
173 between EC and approach behaviors. On the other hand, because PD is associated with
174 egoistic motivation and less helping behaviors (e.g., if escaping is easy [25]), we expected a
175 positive correlation between PD and avoidance. Finally, we expected that maladaptive
176 regulation strategies would be related to higher avoidance/lower approach, through greater
177 reports of PD. This hypothesis emerged from findings showing that frequent use of
178 maladaptive regulation strategies (i.e., suppression) is associated with reports of lower
179 prosocial tendency [43]. However, because previous findings revealed no association between
180 greater prosocial tendency with neither reappraisal training or frequent use of reappraisal
181 [43,44], we did not expect any adaptive regulation strategies to be related to lower
182 avoidance/higher approach, through greater reports of EC.

183 **2. Method**

184 **2.1. Participants**

185 In this study 81 participants (57 females) aged between 18 and 67 years ($M = 25.68$;
186 $SD = 10.88$) participated in exchange of a credit or a monetary reward of £4. Participants were
187 university student and people from the public recruited through the paid participation pool

188 systems at one of the authors' institution. Inclusion criterion was to be above 18 years old. The
189 number of participants was determined based on expected medium correlations ($r = .30$) at a
190 significance level of $\alpha = .05$ and a power of $1 - \beta = .085$. Three participants were removed from
191 analyses because they were outliers ($+3SD$) in terms of age. This was the only exclusion
192 criterion. The statistical analyses were thus performed among the remaining 78 participants
193 (55 females) aged between 18 and 57 years ($M = 24.28$; $SD = 8.32$).

194 **2.2. Material**

195 **2.2.1. Video.** Participants watched a 2-minute video clip taken from Barraza and Zak [45]. The
196 video shows a father describing his experience with his 2-year-old son who suffers from a
197 terminal brain cancer. This video has been chosen because of its effect on affective responses
198 and oxytocin production [45].

199 **2.2.2. Situational personal distress** (based on [26]) required from participants to indicate on
200 a scale ranging from 1 (strongly disagree) to 7 (strongly agree) whether they felt alarmed,
201 troubled, and upset (PD; $\alpha = .80$) and concerned, sympathetic, and soft-hearted (EC; $\alpha = .64$)
202 while watching the video.

203 **2.2.3. Avoidance Response 3-item Questionnaire** [46] required participants to indicate on a
204 scale ranging from 1 (strongly disagree) to 7 (strongly agree) to what extent (1) they "wanted
205 to be completely unassociated with the child", (2) they "*wanted to disappear from the situation*",
206 and (3) they "*did not want to be associated in any way with the child*".

207 **2.2.4. Approach Response:** participants were asked whether they wished to receive more
208 information about Ben (the child). If their response was positive they had to indicate their email
209 address to receive further updates, this was considered as an objective measure of approach.

210 **2.2.5. Short Cognitive Emotion Regulation Questionnaire** (CERQ-short [3]) is an 18-item
211 scale designed to evaluate the conscious cognitive aspects of emotion regulation. Participants
212 were instructed to evaluate on a Likert scale (from 1=almost never to 5=almost always) the
213 frequency they use each regulation strategy. Nine emotion regulation strategies are measured
214 and can be grouped into adaptive (acceptance, positive refocusing, planning, reappraisal, and
215 putting into perspective) and maladaptive (self-blame, other-blame, rumination, and

216 catastrophizing) strategies. *Acceptance* refers to thoughts of resigning oneself to what has
217 happened; *Positive Refocusing* assesses thinking about positive experiences instead of
218 thinking about the actual event; *Planning* evaluates thinking about what steps to take and how
219 to handle the negative event; *Reappraisal* measures thoughts of giving the event a positive
220 meaning in terms of personal growth and *Putting into Perspective* refers to downgrading the
221 importance of the event. Regarding maladaptive strategies, *Self-blame* evaluates thoughts of
222 putting the blame for what you have experienced on yourself; *Other-blame* assesses thoughts
223 of putting the blame of what one has experienced on the environment or on another person;
224 *Rumination* refers to thinking about the feelings and thoughts associated with the negative
225 event and *Catastrophizing* measures thoughts of explicitly emphasizing the terror of what one
226 has experienced. We also calculated an index of adaptive and maladaptive emotion regulation
227 strategies averaging the corresponding scales. The Cronbach alphas were respectively $\alpha=.91$
228 and $\alpha=.71$ in the present sample.

229 **2.3. Ethical statement**

230 Ethical approval: All procedures performed in studies involving human participants
231 were in accordance with the ethical standards of Plymouth University Research Ethics
232 Committee, Permit number FREC-PSY456-15 and with the 1964 Helsinki declaration and its
233 later amendments or comparable ethical standards. Informed consent was obtained from all
234 individual participants (i.e., written document mentioning their rights to withdraw from the study
235 at any time and that their data will remain anonymous).

236 **2.4. Procedure**

237 Participants were tested individually. Once they signed up the consent form, they were
238 informed they would watch a video about a random topic and then would be asked to complete
239 some questions about it. All participants then watched the 2-minute video clip and afterwards
240 completed the situational personal distress scale, the three-item scale to assess self-report
241 avoidance and the approach question. Finally, participants completed the CERQ. At the end,
242 participants were fully debriefed about the study. The whole study was computer-based and
243 lasted 30 minutes.

244 **2.5. Data analysis**

245 Statistical analyses were performed using the SPSS software package. The skewness and
246 kurtosis values were below 2 for all variables, suggesting that they were normally distributed.
247 There were outliers as Z scores in each variable were below +/- 3 SD. The association
248 between all variables was investigated with Pearson correlations, except for the measure of
249 approach (i.e., dichotomous variable), for which we used Kendall's tau-b. We corrected for
250 multiple comparisons by using the Benjamini–Hochberg procedure to hold the false discovery
251 rate at 5% for the 69 correlations. We thus only considered correlations that were significant
252 at $p < .017$. We also tested whether participants used some emotion regulation strategies more
253 frequently than others (9 variables) and whether participants reported more or less personal
254 distress than empathic concern (2 variables) with a Repeated Measures ANOVA with
255 regulation strategies and vicarious emotional responses a within-subject factors. Finally, we
256 examined whether affective empathy mediated the associations between emotion regulation
257 and the willingness to avoid or approach the person in distress by running Hierarchical Linear
258 Regressions. We entered affective empathy on the first step of the regression analysis and
259 emotion regulation strategy on the second step. Willingness to avoid or approach was the
260 outcome variable.

261 **3. Results**

262 **3.1. Descriptive data**

263 Means and standard deviation of all variables are presented in Table 1. A Repeated measures
264 ANOVA with Regulation strategies as within-subject factor showed a main effect of Regulation
265 strategies ($F(8, 616)=48.21$; $p < .001$; $Partial\ eta^2 = 0.39$) suggesting that participants used
266 strategies to a different extent. Contrast analyses revealed that whereas reappraisal was the
267 most frequently used strategy, blaming others was the least used. All other comparisons
268 between strategies are mentioned in Table 1 (i.e., superscripts next to the means). Regarding
269 affective empathy, a repeated measures ANOVA showed that participants reported more EC
270 than PD in response to the video ($F(1, 77) = 42.74$; $p < .001$; $Partial\ eta^2 = 0.36$).

271

273 Table 1. Correlations and *Descriptive statistics (Mean and SD) of affective empathy, Avoidance, Approach and Emotion Regulation Strategies*

		Mean	SD	Range	Correlations					
					Personal Distress	Empathic Concern	Avoidance Question 1	Avoidance Question 2	Avoidance Question 3	Approach (Kendall's tau-b)
Personal Distress		4.73	1.25	2.67-7.00	-	.45***	.09	.34**	.03	.17
Empathic Concern		5.61	0.99	2.67-7.00	-	-	-.03	.11	.00	.16
Avoidance	Question 1	2.88	1.86	1.00-7.00	-	-	-	.70***	.93***	-.40***
	Question 2	2.71	1.52	1.00-7.00	-	-	-	-	.71***	-.33**
	Question 3	2.81	1.90	1.00-7.00	-	-	-	-	-	-.45***
Approach		43,6%								
CERQ-short	Self-blame	2.34 ^e	0.69	1.50-4.00	.23	.13	.05	.02	.05	-.31**
	Other-blame	2.10 ^f	0.68	1.00-4.50	.51***	.43***	.23	.32**	.17	.14
	Rumination	3.48 ^c	0.38	3.00-4.50	.46***	.36**	.13	.27*	.10	-.09
	Catastrophizing	2.77 ^{de}	1.01	1.00-4.00	.33**	.44***	.11	.19	.08	.29**
	Acceptance	3.82 ^b	0.75	2.50-5.00	-.56***	-.49***	.05	-.03	.08	-.11
	Positive Refocusing	2.93 ^d	1.07	1.00-5.00	-.52***	-.61***	.02	-.12	.03	-.10
	Planning	3.9 ^{ab}	0.80	2.50-5.00	-.27*	-.32**	-.01	-.15	.00	.00

	Reappraisal	4.03 ^a	0.76	2.50-5.00	-.30 ^{**}	-.25	.04	-.02	.04	-.04
	Putting into Perspective	3.50 ^c	1.12	2.00-5.00	-.52 ^{***}	-.11	.12	-.02	.17	.04

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275 * $p < .017$; ** $p < .01$; *** $p < .001$. ^{abcdef} Superscripts indicating significant difference between means of different strategies at a significant level of

276 $p < .05$.

277 **3.2. Affective empathy, emotion regulation and avoidance/approach**

278 As shown in Table 1, PD and EC were positively associated with maladaptive regulation
279 strategies and negatively with adaptive strategies. Moreover, there were positive correlations
280 between other-blame, rumination and participants' self-reported avoidance (i.e., Question 2,
281 the desire to disappear from the situation). Moreover, self-blame was negatively associated
282 with approach. Finally, PD was positively correlated to participants' self-reported avoidance
283 (i.e., Question 2). All other correlations between affective empathy on one hand and emotion
284 regulation and social avoidance/approach on the other hand were not significant.

285

286 **3.3. Mediation analyses (Figure 1)**

287 Mediation analyses were performed in order to examine whether PD mediates the associations
288 between rumination/other-blame and self-report avoidance measured by Question 2.
289 Regression analyses showed that after adding personal distress as a mediator nor rumination
290 neither other-blame predicted avoidance anymore (rumination, $\beta=.14$, $B=.56$, $SEB=.48$
291 $t(77)=1.17$, $p=.25$; $F(2, 77)=5.73$; $p=.005$; other blame, $\beta=.20$, $B=.37$, $SEB=.23$, $t(77)=1.59$,
292 $p=.12$; $F(2, 77)=6.39$; $p=.003$). Importantly, the association between PD and Avoidance
293 remained significant only when controlling for rumination ($\beta=.28$, $B=.34$, $SEB=.15$, $t(77)=2.27$,
294 $p=.026$). When controlling for other-blame, PD was not significantly associated with Avoidance
295 ($\beta=.24$, $B=.29$, $SEB=.42$, $t(77)=1.95$, $p=.06$), suggesting that Personal Distress fully mediated
296 the association between CERQ Rumination and Avoidance. It is worth mentioning that the
297 reverse mediation model with PD as the dependent variable, avoidance as the mediator, and
298 the CERQ-Rumination as the independent variable was not significant as rumination still
299 predicted PD after controlling for avoidance ($\beta=.40$, $B=1.30$, $SEB=.33$, $t(77)=3.88$, $p<.001$; $F(2,$
300 $77)=13.87$; $p<.001$). Importantly, because of the large range of age, we conducted additional
301 analyses controlling for age. Results showed no significant impact on p-values.

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313 **Figure 1. Mediation models: the effect of CERQ Rumination (Figure 1a) and CERQ**
314 **Other-blame (Figure 1b) on Avoidance (*“Desire to disappear from the situation”*)**
315 **through Personal Distress and the effect of CERQ Rumination (Figure 1a) on Personal**
316 **Distress through Avoidance (*“Desire to disappear from the situation”*) (Figure 1c).**

Figure 1a

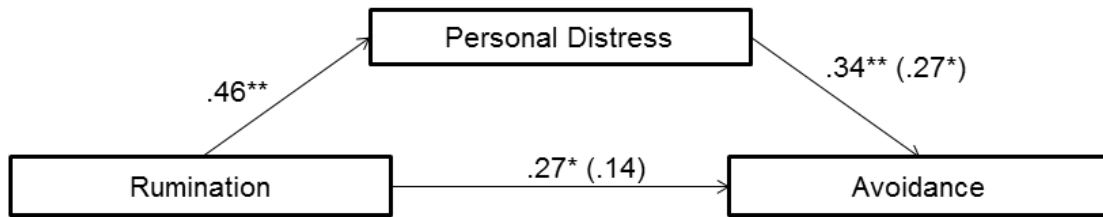


Figure 1b

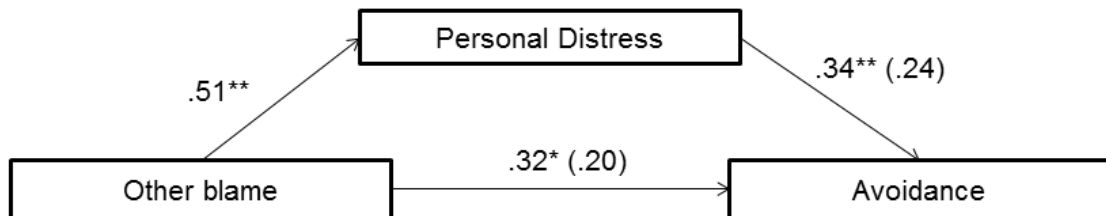
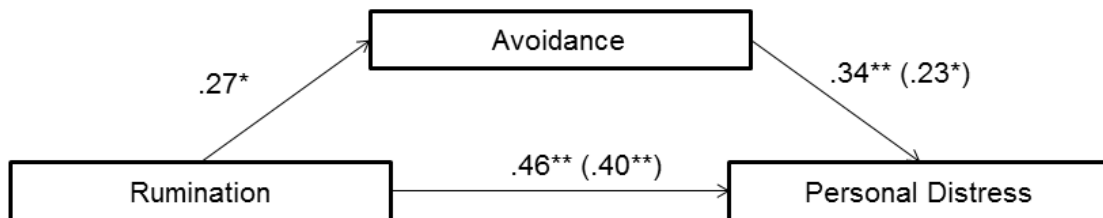


Figure 1c



* $p < .05$; ** $p < .01$

317

318 4. Discussion

319 The present study examined the links between adaptive and maladaptive regulation
 320 strategies, affective empathy and avoidance/approach tendencies. Specifically, we aimed to
 321 examine whether frequent use of maladaptive emotion regulation strategies was associated
 322 with avoidance behaviors through greater report of personal distress. To this aim, participants
 323 were instructed to rate their feelings (i.e., personal distress and empathic concern) in response
 324 to a person in distress. Afterwards, participants had to evaluate their willingness to avoid or
 325 approach the distressful situation. Emotion regulation strategies were assessed by a self-
 326 report questionnaire that examine the frequency at which individuals use various adaptive and
 327 maladaptive strategies.

328 4.1. Emotion regulation and affective empathy

329 Results revealed that participants often used acceptance, planning and reappraisal to
330 regulate their emotions. On the other hand, participants relied only sometimes on blaming
331 others to regulate their own emotions. This is in line with previous findings showing that
332 individuals rely more on adaptive than on maladaptive strategies [3]. This also supports that
333 emotion regulation strategies may also be divided into either more adaptive or maladaptive
334 strategies in terms of their beneficial or detrimental impact on mental and physical health [1–
335 3,5–7]. Putatively adaptive emotion regulation strategies such as cognitive reappraisal,
336 acceptance, and problem solving have been associated with adaptive outcomes, including
337 reduced experience of negative affect [8] and diminished cardiac reactivity [9].

338 In respect to affective empathy, participants reported more EC than PD in response to
339 the video, suggesting that the video was not too overwhelming for participants. Concerning the
340 links between emotion regulation and affective empathy, the results have supported our
341 hypothesis that PD was positively related to the frequent use of maladaptive emotion regulation
342 strategies and negatively to adaptive emotion regulation strategies. More precisely, we showed
343 that participants who reported greater PD in response to the person depicted in the video also
344 reported frequent use of rumination, other-blame, catastrophizing and less frequent use of
345 acceptance, positive refocusing, planning, reappraisal and putting things into perspective. The
346 positive association between PD and rumination supports previous findings showing that the
347 tendency to ruminate (measured by the Rumination-Reflection Questionnaire, e.g., *“I tend to*
348 *ruminate or dwell over things that happen to me for a really long time afterward”*) was
349 associated with greater report of Personal Distress (based on the IRI, [21]) [47]. The present
350 findings is also in line with López-Pérez and Ambrona’s findings that the induction of rumination
351 thoughts (i.e., *“think repetitively about the experienced feelings and thoughts related to those*
352 *feelings, by focusing the attention on one’s own emotions”*) leads to greater report of PD than
353 EC [34]. These findings and the present ones suggest that focusing on the broad experience
354 of a negative emotion, its causes and consequences may also intensify one’s own negative
355 mood [2]. It has indeed been shown that rumination prospectively predicts symptoms and

356 diagnoses of anxiety and depression [2], supporting the deleterious effect of rumination on
357 negative affect. Therefore, one can assume that participants who tend to ruminate may
358 experience more overwhelming negative feelings, irrespective of their social dimension.

359 Furthermore, we showed that PD was linked to all other maladaptive regulation
360 strategies, namely catastrophizing, self-blame and other-blame. This is in line with previous
361 research on the role of catastrophizing thoughts in PD feelings in response to others' pain[48].
362 Regarding self-blame, the result is coherent with previous research which has linked self-
363 criticism, that is, people's tendency make negative self-evaluative comments, to PD[26].
364 Finally, concerning the association between other-blame and PD, this may be related to
365 previous research which linked PD and a belief in a just world that leads to a lack of helping
366 (i.e., a cognitive bias which consists on blaming people for their own problems regardless of
367 what the situation is) [50].

368 Whereas the present research supports multiple findings about PD and maladaptive
369 strategies, it is to our knowledge the first study to reveal that PD is negatively associated to
370 various adaptive strategies of reappraisal, acceptance, positive refocusing, and putting things
371 into perspective. Specifically, although the design was correlational, the study extend the
372 results of López-Pérez and Ambrona [34] by showing that the frequent use of other adaptive
373 regulation strategies might reduce PD. In other words, being able to accept the situation as it
374 is (*acceptance*), to think about it differently either by focusing on positive aspects (i.e.,
375 *reappraisal*) or by downgrading its importance (i.e., *putting things into perspective*) or to not
376 focus on the situation itself (*positive refocusing*, thinking about other positive experiences;
377 *Planning*, thinking about how to handle the negative event) is associated with lower distress in
378 response to others' misfortune. These results thus support that more adaptive (maladaptive)
379 regulation strategies have beneficial (detrimental) effects. There are indeed multiple evidence
380 that at an intrapersonal level, maladaptive strategies are positively associated with depression,
381 anxiety and to greater distress responses to unpleasant situations (e.g., [51–53]). The present
382 study thus extends these findings by showing their significant associations with interpersonal

383 factors. Further studies should thus compare the affective responses at both intra and
384 interpersonal levels to provide an in-depth understanding of the specificity of empathic
385 responses.

386 Surprisingly and in contradiction with our hypotheses, EC showed the exact same
387 pattern of results found between PD and emotion regulation. The present results are thus in
388 contradiction with previous data that showed that under reappraisal instructions individuals
389 report greater EC than under rumination instructions [34] and that disposition EC is associated
390 disposition regulation control [54]. Different arguments can be made to explain the present
391 pattern of results. First, measuring situational EC as a core specificity of affective empathy
392 (e.g., sympathy and warm feelings as well as concern for the other) may be more difficult than
393 targeting situational PD (as indicated by its low internal consistency). For instance, Lamm and
394 colleagues [55] showed that reappraisal influences the subjective report of PD but not EC. In
395 their study, participants were instructed to observe facial expressions of pain. They were all
396 told that the pain administered to the person they observed on the video was part of a medical
397 treatment. Half of the sample was informed that the treatment was effective, while the other
398 half was told that it was not. The effect of reappraisal was thus measured by manipulating
399 treatment's effectiveness. Results showed that participants from the "non-effective" group
400 reported higher distress than those from "effective" group. However, there was no effect of
401 reappraisal on the subjective reports of empathic concern. Other factors may also account for
402 the counterintuitive association between EC and emotion regulation. For instance, the video
403 may have induced intense emotions, which has led participants to report strong emotional
404 responses in general. Finally, EC and PD may measure a common latent factor such as
405 emotional reactivity (as indicated by the moderate correlation between EC and PD) and may
406 thus share more features that theoretically argued and empirically demonstrated (e.g., [45]). It
407 is finally worth mentioning that not all studies found a relationship between disposition EC and
408 any measure of emotion regulation [32,56] and that some studies even found a negative
409 association between situational EC and emotion regulation [56]. These elements (i.e., arousing

410 video, common latent factor, and weak EC internal consistency) may also account for the
411 absence of correlations between EC and both avoidance and approach behaviors. Another
412 explanation may lie in the content of the first and the third Avoidance questions. These two
413 questions indeed referred to the child, while the character depicted in the video was the father
414 talking about his son. Therefore, EC and PD were most probably experienced in response to
415 the father (and not the child), accounting for the non-significant associations between EC, PD
416 and questions 1 and 3.

417 Finally, it is worth mentioning that avoidance and approach behaviors were not
418 predicted by any adaptive regulation strategies. Specifically, the absence of significant
419 correlations between these behaviors and reappraisal or putting into perspective were
420 surprising considering the positive effect of these strategies on emotional responses [35]. To
421 our knowledge, few studies have examined the links between emotion regulation strategies
422 and prosocial behaviors and the available results are mixed. For instance, a study showed that
423 reappraisal is not associated with prosocial behaviors, whereas it moderates the extent to
424 which these behaviors are predicted by affective empathy [43]. Among children or teenagers,
425 some data indicate that higher regulation strategies are associated with self-reported prosocial
426 behaviour but not with teacher's reports of prosocial behaviors [57]. Based on parents' reports,
427 there are significant associations between emotion regulation abilities and prosocial behaviors
428 [58]. Finally, a research suggests that negative affect induction moderates the effect of emotion
429 regulation on prosocial behaviors [59]. Therefore, further studies are needed to understand
430 whether the effect of emotion regulation strategies on prosocial behaviors is significant for
431 some strategies only and/or they rather act as a moderator.

432 In sum, further studies should better apprehend empathic concern as a distinct
433 dimension of affective empathy and to determine more adequate ways to measure differentiate
434 EC and PD based on subjective self-reports, physiological indices such as sympathetic (skin
435 conductance) and parasympathetic activity (vagal activity) or facial expressions.

436 **4.2. Emotion regulation, affective empathy and social avoidance/approach**

437 With respect to avoidance, results showed that the maladaptive strategy of blaming
438 others was associated with the tendency to avoid the situation in which a person is in distress.
439 Holding people responsible for what they experience may strengthen individuals' willingness
440 to put a distance with others' problems at both affective and behavioral levels. On the other
441 hand, it is possible that people who distance themselves from other people (i.e., leading them
442 to avoid a person in distress) naturally hold other people more accountable for their actions.
443 Finally, another hypothesis is that believing in a just world may cause people to distance
444 themselves from others and hold them accountable for what they experience. In this regard,
445 previous literature has shown less avoidance (i.e., more helping) when victims were described
446 as not responsible from their own problems (e.g.,[50]).

447 Regarding rumination, the present study revealed that individuals who frequently used
448 rumination as a strategy to regulate their emotion reported greater willingness to avoid the
449 person in distress, due to greater reports of PD. Recent studies have supported the association
450 between rumination and avoidance. For instance, higher levels of grief-related rumination are
451 associated with a strong implicit loss avoidance (i.e., pushing a joystick away from oneself in
452 response to a picture of the deceased relative presented together with a loss-related word)
453 and to less overall time spent looking at this picture-word combination [60,61]. Moreover,
454 rumination has been associated with reports of frequent behavioral avoidance [62], supporting
455 that rumination is an important predictor of social avoidance. Importantly, we showed for the
456 first time that situational PD may account for this effect. To our knowledge, only two studies
457 have looked at the role of empathy in the effect of emotion regulation on either prosocial
458 behavior [57] or hostility [32] but presented some shortcomings such as the use of dispositional
459 measures, and a global score of empathy and/or difficulties in emotion regulation. The present
460 study is thus the first to suggest that participants who are frequently preoccupied by their
461 feelings and thoughts associated with a negative event might have actually focused on their
462 responses to the distressed person depicted in the video, which may have afterwards led them

463 to experience greater distress. This distress may have consequently increased their
464 willingness to avoid the situation in order to cope with it.

465 **4.3. Limitations**

466 One particular limitation should be acknowledged and refers to the cross sectional design and
467 the causality inference. This study does not indeed allow for examining that the causality is
468 unidirectional between emotion regulation and affective empathy. This is particularly important
469 as it has been shown that even if emotion regulation strategies may modulate vicarious
470 emotional responses [34] they may also be modulated by them [63]. In this present study,
471 although participants were not instructed to use specific regulation strategies while watching
472 the video our findings suggest that frequent use of maladaptive strategies may have harmful
473 interpersonal effects. Based on previous results which support the links between dispositional
474 and situational measures of catastrophizing [64] or emotional competences [65], one can
475 hypothesize that dispositional measures of regulation may predict the situational use of these
476 strategies. Further studies should also test more participants (and more male individuals) and
477 use objective measures of avoidance and approach, which have been mainly limited to self-
478 report in the present study,

479 **5. Conclusion**

480 In conclusion, we showed that maladaptive emotion regulation strategies not only have
481 an impact on PD but also on avoidance behavior when facing a person in need. Therefore, this
482 study provides new research avenues that will allow examining the mechanisms that account
483 for one's own ability to efficiently cope with others' suffering. It also suggests that by
484 understanding better the link between emotion regulation, affective empathy, and possible
485 responses to others' distress we might be able to prevent possible responses such as
486 "compassion burnout" which is quite likely to happen in professionals dealing with others'
487 suffering in a daily basis such as nursing professionals.

488

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