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# Help me if you can: Evaluating the effectiveness of interpersonal compared to intrapersonal emotion regulation in reducing distress

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## ABSTRACT

*Background and Objectives*

Although humans have developed abundant strategies to down regulate their own negative emotions, at times of distress they frequently turn to significant others to seek comfort. In the present study we use a novel performance-based paradigm to evaluate the effectiveness of this interaction.

*Methods*

Forty-seven couples in a long-term relationship volunteered to participate in the study. In each couple the two partners were randomly assigned as either target or regulator. The target viewed pictures with negative valence. In response to each picture he/she was then instructed to choose and apply a regulatory strategy (i.e., intrapersonal emotion regulation) or to apply a regulatory strategy chosen by his/her partner, the regulator (i.e., interpersonal emotion regulation).

*Results*

We found that the outside perspective of the regulator helped reducing distress more effectively than intrapersonal emotion regulation. Moreover, the cognitive, but not the emotional, empathy of the regulator predicted the added value of interpersonal emotion regulation. Specifically, regulators with a better ability to understand their partners' point of view, selected regulatory strategies that reduced levels of distress more effectively.

*Limitations*

While the present study examined possible effects of depression, anxiety and the ability to identify and describe feelings, a larger sample is needed in order to optimally address their potential moderating effect.

*Conclusions*

The results illuminate the value of non-professional interventions and the importance of cognitive empathy in reducing distress. The study has significant clinical implications, providing a simple behavioral tool that can be used to decrease and prevent psychopathology.

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## 1. Introduction

When Lennon and McCartney cried out for help in their famous song of the same name, they expressed our very basic tendency to rely on others in order to reduce distress (Walen & Lachman, 2000). However, it is not yet clear whether this tendency actually reflects an elevated value of interpersonal interaction in reducing distress. To date, empirical studies have focused mainly on intrapersonal emotion regulation, which refers to the way individuals choose and apply regulatory strategies so as to down regulate their own emotions. Interpersonal emotion regulation, which refers to the way a person (i.e., the target) applies strategies chosen by another person (i.e., the regulator), has been subject to limited investigation (Zaki & Williams, 2013). This is especially surprising due to the important implications of such investigation to the understanding and treatment of various psychopathologies, which involve impaired intrapersonal emotion

regulation (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Marroquin & Nolen-Hoeksema, 2015).

The major aim of the present study was to empirically investigate the effectiveness of interpersonal emotion regulation, defined as the difference between levels of baseline distress and levels of distress after intrapersonal and interpersonal emotion regulation (Schmeichel, Volokhov, & Demaree, 2008; for a meta-analysis see Webb, Miles, & Sheeran, 2012). The secondary aim of the study was to test the possible contribution of the regulator's cognitive and emotional empathy to the added value of interpersonal emotion regulation. As will become evident below, we based our investigation on a recent approach to emotion regulation, which suggests that the effectiveness of different regulatory strategies depends on the context in which they are used (Troy, Shallcross, & Mauss, 2013).

The traditional approach in the field of emotion regulation tends to define certain strategies that involve engagement with emotional information processing such as reappraisal as inherently effective and other strategies that involve disengagement from emotional information processing, such as distraction, as inherently ineffective (for a relevant discussion and possible differences between long and short term effects see Coifman, Bonanno, Ray, & Gross, 2007; for reviews see Aldao et al., 2010; Bonanno, 2013; Park, 2010). However, a more

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recent approach suggests that the effectiveness of different regulatory strategies is not absolute and depends on various contextual conditions including the intensity of the aversive event (Sheppes et al., 2014), the controllability of the stressor (Troy et al., 2013) and the personality traits of the target (Xia, Gao, Wang, & Hollon, 2014).

Hence, a regulatory strategy that proves effective for one person in a specific context (e.g., reappraisal in low aversive conditions) can prove ineffective for another person, or for the same person in a different context (e.g., reappraisal in high intensity conditions). This approach highlights the importance of selecting the most appropriate regulatory strategy in response to a given context so as to effectively reduce the levels of experienced distress that may follow aversive events (Aldao, 2013; Bonanno & Burton, 2013; Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Gross, 2014; Sheppes et al., 2014; Troy & Mauss, 2011).

Studies of intrapersonal emotion regulation have shown that appropriate selection between reappraisal and distraction strategies decreases levels of distress in aversive situations (for reviews, see Gross, 2014; Sheppes, Suri, & Gross, 2015). However, it is not clear whether interpersonal emotion regulation, in which the regulator chooses the regulatory strategy for the target, can at times be more effective and valuable than intrapersonal emotion regulation. Possible support for the added value of interpersonal emotion regulation relates to the regulator's outside perspective (for review, see Bishop et al., 2004). Specifically, since in interpersonal emotion regulation conditions the regulators are not directly involved with the aversive situation, they can better select highly adaptive and effective regulatory strategies. On the other hand, in conditions of intrapersonal emotion regulation direct emotional involvement may dilute the available cognitive resources that are required in order to select the most adaptive regulatory strategies (Opitz, Lee, Gross, & Urry, 2014). Therefore, we predicted an overall advantage of interpersonal, compared to intrapersonal, emotion regulation in reducing distress.

While the effectiveness of intrapersonal emotion regulation is strongly and exclusively related to the skills of the individual who has experienced the aversive event, in conditions of interpersonal emotion regulation, the skills of the regulator are also highly relevant. One such skill is the ability of the regulator to feel empathy. Empathy is a broad concept that refers to the reactions of one individual to the observed experiences of another (Shamay-Tsoory, 2011), and has evolved so as to promote helping behaviors in social animals (de Waal, 2007). Therefore, it is reasonable to assume that in conditions of interpersonal emotion regulation, greater levels of empathy would contribute to the selection of the most appropriate regulatory strategy and subsequently aid in reducing the distress experienced by the affected individual. However, as will be evident below we claim that this effect will be selective to cognitive, but not to emotional, empathy.

Recent studies have distinguished between two types of empathy that involve different behavioral and brain related mechanisms: Emotional empathy relates to the ability to experience affective reactions to the observed experience of another and involves emotional connotation, emotion recognition, as well as shared pain. Cognitive empathy, on the other hand, is the capacity to engage in a cognitive process of adopting another's point of view; this includes Theory of Mind (ToM), which is the ability to understand and predict the behavior of another by attributing mental states and knowledge (Decety & Jackson, 2004; for meta-analyses, see; Eres, Decety, Louis, & Molenberghs, 2015; Fan, Duncan, de Greck, & Northoff, 2011). The proposed dissociation between these two empathy systems is supported by neuroimaging, neurochemical, psychiatric and developmental studies (Gonzalez-Liencrees, Shamay-Tsoory, & Brüne, 2013).

We predicted that in conditions of interpersonal emotion regulation, cognitive but not emotional, empathy would have a significant contribution in reducing distress. Hence, the regulator's cognitive empathy would result in a better understanding of the emotional situation experienced by the target and in this way improve his or her selection between different regulatory strategies. Concurrently, the ability to feel the distress experienced by the target does not provide a practical tool to improve regulation. Moreover, it may have a differential effect on behavior; In some individuals it may lead to egocentrically biased judgments (e.g., Silani et al., 2013), and hence may impair interpersonal emotion regulation, while in others it may contribute to pro-social tendencies (e.g., Lockwood, Seara-Cardoso & Viding, 2014), which may improve interpersonal emotion regulation.

While many studies in the field of emotion regulation have used intrapersonal report questionnaires (e.g., d'Acremont & Van der Linden, 2007; Dragan, 2015; Gross & John, 2003) that are prone to multiple biases, in the current study we applied a novel, performance-based, emotion regulation paradigm. In this paradigm participants are required to choose between different regulatory strategies so as to down regulate negative emotions. This paradigm allows for the assessment of the interactive effects of the regulator's choices as well as his or her empathy on the levels of distress experienced by the target.

Since this is a pioneer study that evaluates the effectiveness of interpersonal emotion regulation, it was important to focus on people with a well-established relationship of at least one year. Therefore, in line with other related studies, we chose to focus on romantically involved couples (e.g., Ben-Naim, Hirschberger, Ein-Dor, & Mikulincer, 2013; Parkinson, Simons, & Niven, 2016; Richards, Butler, & Gross, 2003), under the assumption that other types of relationships might be more varied and add more confounds to the study.

Each partner was randomly assigned as either target or regulator. The targets were asked to choose and implement a regulatory strategy (i.e., intrapersonal emotion regulation) or to implement a strategy that the regulator selected for them (i.e., interpersonal emotion regulation). Perceived levels of distress in both the intrapersonal and the interpersonal conditions were measured and compared to baseline feelings of distress. As stated above, we predicted that interpersonal emotion regulation would significantly lower the target's distress levels when compared to intrapersonal regulation. Furthermore, we hypothesized that the cognitive empathy of the regulator would predict the effectiveness of interpersonal emotion regulation.

## 2. Methods and materials

### 2.1. Participants

We tested forty-eight heterosexual couples who were involved in a romantic relationship for at least one year (Mean years in relationship = 8.07;  $SD = 7.18$ , 39 of the couples were married) and volunteered to participate in this study. Two couples did not complete the full testing battery due to technical problems. Therefore, the final sample included forty-five couples (Mean age = 32.76 years;  $SD = 9.82$ ; Mean years of education = 15.63;  $SD = 2.32$ ). All study participants completed The Short ENRICH Scale (Fowers & Olson, 1993), a 10-item Likert type scale assessing the respondent's perceived quality of his or her romantic relationship. The questionnaire has been reported to have good reliability on estimates of scale, as well as high concurrent and predictive validity to ensure satisfying relationship and no major conflict or crisis at the time of testing. Based on the norms of the questionnaire, a sufficient satisfaction score for study participation was set as  $> 31$  (Fowers & Olson, 1993). All participants reported average-to-high levels of relationship satisfaction,

and reached a score that was above the cut-off point ( $M = 57.50$ ;  $SD = 7.80$ ; Range 40–67; Internal consistency  $\alpha = 0.86$ ). Therefore, no one was excluded from the study based on the scores in this questionnaire. A possible explanation for these findings is that couples with less satisfying relationships do not tend to participate in studies, particularly when no compensation is offered in return for participation. Additional participant exclusion criteria was current or past diagnoses of psychiatric disorders; risk of suicidal/homicidal ideation; any substance dependence or abuse within the past six months; a history of concussion or other clinically significant head injury including loss of consciousness for over ten minutes or a history of neurological disorders such as epilepsy, multiple sclerosis, stroke or encephalitis. The study was carried out in accordance with the Declaration of Helsinki and was approved by the university ethics board. All participants provided written informed consent prior to beginning the experiment.

## 2.2. Measures and procedure

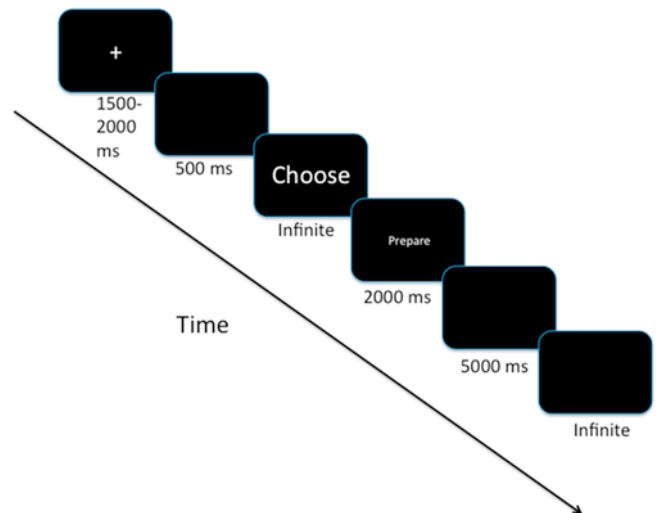
The experimenter explained the aim and the general procedure of the experiment to the couples. Specifically, couples were told that they would see aversive pictures and apply a regulatory strategy that either they or their partner selected as the most effective way to down regulate possible emerging distress. In each couple the experimenter randomly assigned each partner to be the target or the regulator (resulting in 25 female and 21 male targets). These roles were consistent throughout the entire experiment. It is important to note that the terms 'target' and 'regulator' were chosen in order to distinguish between the partners. However, the terms do not precisely represent the roles and requirements across all the experimental conditions (e.g., in the intrapersonal regulation conditions the target is required to regulate his or her own emotions). Both participants were present in the room during all testing sessions. The target and the regulator sat next to each other, and were asked to avoid any communication or eye contact throughout the experiment. Visual stimuli were presented simultaneously on two computer screens, one for the target and the other for the regulator. In the intrapersonal condition the target viewed the presented stimuli and completed the task while the regulator viewed a blank screen. In the interpersonal condition both partners viewed the experimental pictures. The regulator chose the regulatory strategy while the target implemented it (more details are provided below).

The emotion regulation paradigm (Fig. 1) is based on an existing, well-validated, emotion regulation task (Levy-Gigi et al., 2016; Sheppes, Scheibe, Suri, & Gross, 2011; Sheppes et al., 2014).

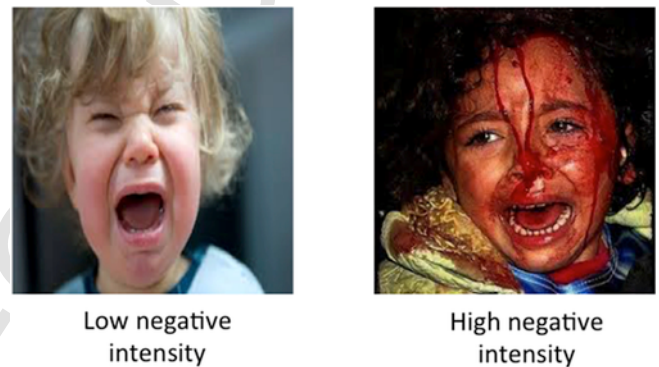
In this task participants undergo an initial training in employing and choosing between distraction and reappraisal regulatory strategies. All participants stated that they understood the manner in which to employ both strategies.

In the actual strategy selection phase of the experiment, participants viewed 40 pictures from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008) with different levels of negative intensity, ranging from low negative intensity (mean arousal = 5.1; mean valence = 2.8) to high negative intensity (mean arousal = 6.4; mean valence = 1.81) (For a detailed report on the internal consistency, see Levy-Gigi et al., 2016). The general content of the low and high intensity pictures is roughly matched (see Fig. 2).

As described by Sheppes et al. (2011), in the emotion-regulation choice paradigm an experimental trial involves viewing a brief (500 ms) preview of each picture followed by an instruction screen (which differs based on the experimental condition). Thereafter, the picture reappears for an extended duration (5000 ms), and the partici-



**Fig. 1.** An illustration of the emotion regulation task where participants were either instructed to: (a) choose between different frames and simply view a series of distressing pictures or (b) choose and apply different regulatory strategies (i.e., distraction or reappraisal).



**Fig. 2.** Illustration of online database pictures presenting different levels of negative intensity. Note that these pictures are only example images. The actual experimental pictures were taken from the IAPS and are not presented above.

pants follow the instructions that they are given or have selected, depending on his or her experimental condition. At the end of each trial, participants are asked to rate their level of distress on a 9-point Likert scale (with higher numbers indicating greater distress).

The study included two main conditions: instruction type (look vs. regulatory strategies) and regulation type (intrapersonal vs. interpersonal) - in a within-participant design, leading to a total of four testing sessions per participant. In the regulation conditions participants briefly viewed a preview of each emotional picture (500 ms) and had to choose between two cognitive strategies, reappraisal and distraction, by pressing right (the letter Z) or left (the letter M) on a standard qwerty keyboard. The location of each strategy (right/left) was counterbalanced across trials (Sheppes et al., 2011; 2014). After the participants made their selection, the picture was presented on the screen for an extended duration (5000 ms) and participants implemented their chosen strategy. As with previously conducted studies (Levy-Gigi et al., 2016; Sheppes et al., 2011), to confirm that participants implemented their chosen regulatory strategy, half of the participants were asked to type one sentence, which described how they implemented each strategy following every third trial. A judge who was blind to participants' choices (i.e., participants' selected response

style) coded the sentences as either reappraisal or distraction. As expected, levels of agreement were very high (99.75%) in both intrapersonal and interpersonal conditions. The remaining two **look** sessions were aimed at measuring baseline level of distress. Similar to the other experimental conditions in these sessions participants saw the picture briefly and were asked to choose between different frame colors (green or blue). After making their selection, the picture was presented once again for an extended duration (5000 ms) together with a frame in their selected color. Participants were instructed to simply view the picture and respond to it naturally without any effort at interpretation. Each of the regulatory strategies was tested under two conditions. Under the condition of **intrapersonal emotion regulation**, participants made their own choices regarding different cognitive strategies/frame colors. In the **interpersonal emotion regulation** condition, the regulating partner made the decision for the target partner. In this condition, the selected strategy/frame was highlighted on the target's computer screen. The target was asked to implement the chosen strategy or to view the picture with the selected frame naturally without any effort towards interpretation. The order of the four sessions was counterbalanced across participants. Preliminary analyses revealed no main-effect of the sessions' order, or interaction between the sessions' order and the other variables (all *F*s < 1). The average level of distress was calculated individually for each of the four sessions.

2.2.1. Assessment of empathy

In order to assess the empathic abilities of the regulator, we used the Interpersonal Reactivity Index (IRI; Davis, 1980), which tests empathic abilities using four subscales: Perspective Taking, Fantasy, Empathic Concern and Personal Distress (Internal consistency in the current study  $\alpha = 0.83$ ). Previous findings have shown that the Perspective Taking and Fantasy subscales are more related to cognitive empathy, while the Empathic Concern and Personal Distress scales are more related to emotional empathy (Shamay-Tsoory, Tomer, Goldsher, Berger, & Aharon-Peretz, 2004).

2.2.2. Self-report questionnaires

In order to control for possible confounds that may effect the ability to benefit from intrapersonal and interpersonal emotion regulation, the targets completed the following self-report questionnaires: (a) The Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), a 21-item instrument that assesses symptoms of depression (Internal consistency in the current study  $\alpha = 0.87$ ); (b) The State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, & Vagg, 2010), a 40-item questionnaire that measures symptoms of anxiety (Internal consistency in the current study  $\alpha = 0.91$ ) and (c) The Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor,

1994), a 20-item instrument that assesses difficulty to identify and describe feelings (Internal consistency in the current study  $\alpha = 0.84$ ). Previous studies have indicated that the ability to benefit from emotion regulation may be impaired due to depression and/or anxiety symptoms (Erickson & Newman, 2007; Hofmann, 2014), as well as difficulties to describe and identify feelings (Bonnet, Bréjard, & Pedinielli, 2013; Spitzer, Siebel-Jurges, Barnow, Grabe, & Freyberger, 2005). Controlling for these variables will ensure that the results of the current study are above and beyond such possible effects.

3. Results

We used SPSS (version 22) software (SPSS Inc., IL, USA) to analyze the data. All data was checked for normality of distribution using Kolmogorov-Smirnov tests.

3.1. Preliminary analyses

Table 1 depicts zero-order correlations between levels of distress in the four experimental conditions (base-line intrapersonal, base-line interpersonal, cognitive strategies – intrapersonal and cognitive strategies - interpersonal). Significant positive correlations are present between all measures of distress. This may suggest a strong connection between the way individuals react in different aversive conditions. In addition, there is a significant positive correlation between baseline distress in intrapersonal regulation conditions and level of depressive symptoms, suggesting that individuals with more depressive symptoms experience higher distress when no regulatory strategy is applied.

In addition, significant positive correlations between levels of distress can be seen when applying cognitive strategies both in intrapersonal and interpersonal conditions, as well as level of anxiety symptoms and difficulty to identify feelings. These results indicate that in both intrapersonal and interpersonal emotion regulation conditions, higher anxiety and greater difficulty to describe feelings are associated with higher levels of distress.

3.2. The effectiveness of interpersonal compared to intrapersonal emotion regulation

To examine our main prediction regarding the effectiveness of intrapersonal and interpersonal emotion regulation in reducing the target's levels of distress we conducted an Instruction type (look vs. regulatory strategies) X Regulation Type (intrapersonal vs. interpersonal) repeated measure analysis. The results are depicted in Fig. 3.

Table 1

Zero-order correlations between levels of distress in the different experimental conditions (intrapersonal/interpersonal baseline, intrapersonal/interpersonal cognitive strategies), depression, anxiety, and difficulty to describe and identify feelings.

	Intrapersonal baseline	Interpersonal baseline	Intrapersonal cognitive	Interpersonal cognitive	Depression	Anxiety	Difficulty to describe feelings	Difficulty to identify feelings
Intrapersonal baseline	1							
Interpersonal baseline	0.71***	1						
Intrapersonal cognitive	0.70***	0.59***	1					
Interpersonal cognitive	0.73***	0.63***	0.91***	1				
Depression	0.28	0.14	0.30*	0.22	1			
Anxiety	0.41**	0.16	0.37*	0.35*	0.72***	1		
Difficulty to describe feelings	0.07	0.02	0.13	0.08	0.43**	0.44**	1	
Difficulty to identify feelings	0.25	0.04	0.37*	0.31*	0.46**	0.66***	0.54***	1

\**p* < .05; \*\**p* < .005; \*\*\**p* < 0.001.

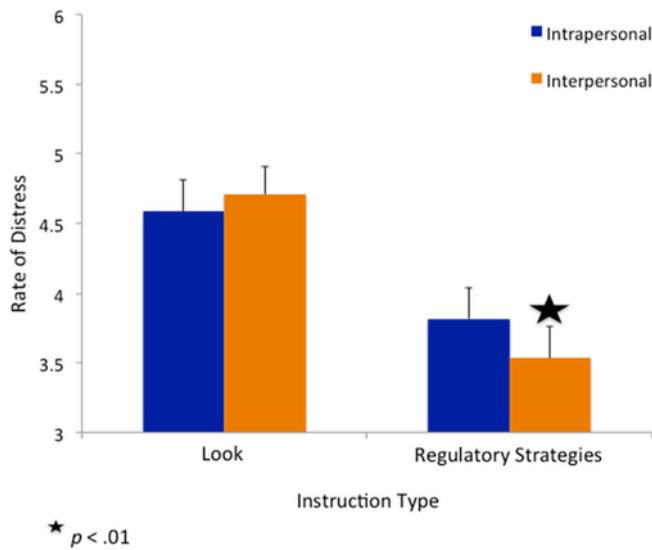


Fig. 3. Level of distress as a function of instruction (look vs. regulatory strategies) and type of regulation (intrapersonal vs. interpersonal).

We found a significant main effect of strategy ( $F(1,45) = 39.69$ ,  $p < 0.001$ ,  $\eta^2_p = 0.47$ ), indicating that if the participants applied cognitive emotion regulation strategy while viewing negative pictures, their level of distress was significantly lower when compared to their level of distress when simply viewing the pictures. There was no significant main effect of Regulation Type ( $F(1,45) = 0.65$ ,  $p > 0.05$ ), indicating that level of distress was similar when participants performed the task in the presence or in the absence of their partner. Most importantly, there was a significant interaction between Regulation Type and Strategy ( $F(1,45) = 4.79$ ,  $p < 0.05$ ,  $\eta^2_p = 0.10$ ).

Follow-up paired-sample analysis revealed that while in the Look conditions there was no significant difference between the target's level of distress as a function of the Regulation Type ( $F(1,45) = 0.58$ ,  $p > 0.05$ ), when the target participants applied cognitive strategies, their level of distress under conditions of interpersonal emotion regulation was significantly lower as compared to their level of distress in conditions of intrapersonal emotion regulation ( $F(1,45) = 8.88$ ,  $p < 0.01$ ,  $\eta^2_p = 0.17$ ).

### 3.3. The added value of interpersonal emotion regulation

In order to estimate the added value of interpersonal over intrapersonal emotion regulation, we calculated a new measure by subtracting the level of distress under conditions of interpersonal emotion regulation from the level of distress under conditions of intrapersonal emotion regulation (intrapersonal distress - interpersonal distress). Higher values indicate that distress in the interpersonal conditions was lower compared to distress in the intrapersonal regulation conditions and therefore indicates an added value of interpersonal emotion regulation over intrapersonal emotion regulation.

### 3.4. Individual level predictors of the added value of interpersonal emotion regulation

Correlations between the added value of interpersonal emotion regulation and the predictors of interest that were used in our study are reported in Table 2.

We found that the added value of interpersonal emotion regulation was significantly correlated with the regulator's (the target's partner, from now on "the partner") cognitive empathy. In addition, there was

Table 2

Correlations between the added value of Interpersonal Emotion regulation (ER), Partner's Cognitive Empathy and Partner's Emotional Empathy.

	Interpersonal ER Added Value	Partner's Cognitive Empathy	Partner's Emotional Empathy
Interpersonal ER Added Value	1		
Partner's Cognitive Empathy	0.37*	1	
Partner's Emotional Empathy	-0.01	0.54***	1

\* $p < .05$ ; \*\* $p < .005$ ; \*\*\* $p < 0.001$ .

a significant correlation between level of partner's cognitive and emotional empathy. However, there was no correlation between partner's emotional empathy and the added value of interpersonal emotion regulation.

To test which variables best predict the added value of interpersonal emotion regulation, we conducted a linear regression with two steps. In the first step we entered measures of the target's levels of depression, anxiety, and difficulty in describing and identifying feelings in order to detect and control for these variables possible effects. In the second step we entered the predictors of interest, which included the partner's cognitive and emotional empathy (see Table 3 for a complete report).

We found that the strongest predictor was the partner's cognitive empathy. This one-factor model accounts for an additional 26.7% of the variance, far exceeding the effect of other variables ( $F(3,38) = 6.26$ ,  $p = 0.001$ ). Depression, anxiety, difficulty to describe and identify feelings and the partner's emotional empathy did not contribute significantly in accounting for additional variance in the added value of interpersonal emotion regulation (all  $ps > 0.25$ ). To summarize, the findings of the current study suggest that strategies selected by romantic partners can better reduce distress when compared to strategies selected by the targets themselves. Moreover, the effectiveness of these strategies increases as a function of the partner's cognitive empathy.

These results suggest that in interpersonal emotion regulation the romantic partners make better choices of regulatory strategies compared to the choices made by the target in the intrapersonal conditions. In order to provide further evidence for this claim we compared the raw number of times in which the target used reappraisal in the intrapersonal and interpersonal conditions and found no significant correlation ( $r(46) = 0.09$ ,  $p > 0.05$ ) (Sheppes et al., 2014; Levy-Gigi

Table 3

Estimated coefficients, standard errors, t values and confidence interval for control variables and predictors of interest in predicting the added value of interpersonal emotion regulation.

Variable	B	S.E	t value	p value	95% Confidence interval	
					Low	High
<b>Control Variables</b>						
Depressive symptoms	0.04	0.03	1.49	0.15	-0.01	0.09
Anxiety symptoms	-0.01	0.01	-1.20	0.24	-0.03	0.01
Difficulty to describe feelings	0.001	0.02	0.06	0.95	-0.05	0.05
Difficulty to identify feelings	0.04	0.05	0.86	0.40	-0.06	0.14
<b>Predictors of interest</b>						
Emotional empathy	-0.02	0.01	-1.34	0.19	-0.05	0.01
Cognitive Empathy	0.04	0.01	3.48**	0.001	0.02	0.07

\* $p < 0.05$ ; \*\* $p < 0.005$ ; \*\*\* $p < 0.001$ .



et al., 2016). Furthermore, we tested the similarity between the specific strategies that were selected in the instructed intrapersonal and interpersonal emotion regulation conditions. The results revealed an average of only 61% ( $SD = 12\%$ ) of agreement between the selected strategies. These analyses suggest that the regulator used different and more effective strategies to down regulate distress compared to the target.

#### 4. Discussion

The present study applied a novel approach to test the added value of interpersonal emotion regulation compared to intrapersonal regulation and to evaluate the contribution of partner's cognitive and emotional empathy to this process. Previous studies on interpersonal emotion regulation mostly focused on identifying strategies that are used in specific circumstances (for a detailed discussion, see Niven, Totterdell, & Holman, 2009), detecting individual differences in strategy preference (e.g., Niven, Totterdell, Stride, & Holman, 2011) or measuring the effects of social context (e.g., Coan, Schaefer, & Davidson, 2006; Rimé, 2007; Zaki & Williams, 2013). While important, these studies did not measure the effectiveness of interpersonal emotion regulation compared to intrapersonal regulation and the added value of the contribution of interpersonal factors.

We predicted and found a significant advantage in the use of interpersonal as opposed to intrapersonal emotion regulation. Specifically, after participants viewed negatively valenced pictures, interpersonal emotion regulation was found to be more effective in reducing levels of distress as compared both to intrapersonal emotion regulation and to baseline distress. These results may suggest that partners of those in distress were better able to choose the most appropriate cognitive regulation strategy so as to reduce stress most effectively. The results are in line with other studies that emphasize the advantage of an outside perspective without a direct emotional involvement in reducing stress and improving emotion regulation (for review, see Bishop et al., 2004; Lutz et al., 2014).

Moreover, our results further support recent views in the field of emotion regulation, which claim that there is no one effective regulatory strategy. Rather, individuals select different regulatory strategies in response to a given situation, and a strategy that proves effective in one context may prove ineffective in another. In addition, a strategy's effectiveness in a given situation varies between individuals. This finding emphasizes the importance of both the person and the situation in predicting the effectiveness of different emotion regulation strategies (Sheppes et al., 2014; Troy et al., 2013) and supports a more flexible approach to emotion regulation. Specifically, when no strategy is inherently effective or ineffective the regulator needs to attend both to the person and the situation and carefully select the most appropriate strategy for each specific circumstance.

One might claim that the advantage of interpersonal emotion regulation may be related to variables other than the ability to choose the most adequate and effective strategy. However, as we elaborate below the experiment was designed to minimize or eliminate such effects. One possible claim is that merely looking at a picture of one's romantic partner diminishes negative emotions and feelings (Eisenberger et al., 2011; Master et al., 2009). Nonetheless, since in the current study individual's romantic partners were present both in the intrapersonal and interpersonal regulation conditions as well as during the control trials, the observed advantage of interpersonal emotion regulation cannot be attributed to her or his physical presence (Master et al., 2009).

Another possible claim relates to the fact that in the interpersonal conditions the target did not have to choose between different strate-

gies but rather to simply apply a strategy. Hence, the possible burden of selection was eliminated and resulted in improved regulation. However, since this factor is an inherent part of many interpersonal interactions, attempts to eliminate it may interfere with the basic nature of the interpersonal process. In order to minimize this effect in the present study we compared interpersonal emotion regulation not only to intrapersonal emotion regulation, but also to a baseline condition in which participants were asked to make an effortless choice between two different colored frames. The results show the advantage of interpersonal emotion regulation above and beyond the level of effort and cognitive load. To further explore the exact mechanisms of interpersonal emotion regulation future studies could seek to compare interpersonal emotion regulation to conditions of intrapersonal regulation in which the regulatory strategy is randomly determined in advance. In this case the target will not have to put any effort make any decision prior to the regulation process. However, it should be noted that this condition would not provide the regulator with the ability to choose the regulation strategy that might best serve the target.

Finally, since we tested romantically involved couples it is possible that the trust and intimacy between the couples led the target to believe that the strategy selected by the regulator was efficient, which may have contributed to its effectiveness. Future studies could aim at testing whether interpersonal regulators other than romantic partners can provide a similar regulatory advantage.

The added value of interpersonal emotion regulation was associated and best predicted by the regulating partner's cognitive empathy. Hence, good regulators had a higher ability to understand the target's point of view and his or her affective and cognitive mental states in each given situation. It is possible that such understanding enabled them to make empathic decisions on behalf of the targets, with the goal of choosing the optimal regulatory strategy that would maximize the target's well-being (Janowski, Camerer, & Rangel, 2013). These results may also indicate that a regulator with a greater ability to extract and understand the thoughts, intentions, emotions, and beliefs of others would be more successful in predicting their reactions in different situations (Amodio & Frith, 2006). Interestingly, the regulators' emotional empathy, which refers to the ability to share the bodily and emotional states of others, did not contribute to the effectiveness of interpersonal emotion regulation. This finding is in line with the mindfulness perspective, which emphasizes the advantage of a decentred point of view, rather than the ability to identify with others and share similar emotional states (Bishop et al., 2004).

The results of this study may have important implications for clinical populations. Previous studies reported strong associations between impaired emotion regulation and the diagnosis and severity of various psychopathologies (e.g., Aldao et al., 2010; Kring, 2008; Levy-Gigi et al., 2016), including post-traumatic stress disorder (PTSD), affective disorders and schizophrenia. Interpersonal emotion regulation may be especially important for these clinical populations, and may affect not only the experienced level of distress, but the diagnosis and severity of the disorder as well. Our findings may suggest that successful interpersonal emotion regulation can be applied not only in a clinical setting with a mental health professional, but also within a patient's immediate social environment such as with family members or significant others. This assumption is in line with numerous studies that have repeatedly shown that social support provided by significant others is an important factor in the development and treatment of different psychopathologies (e.g., Kilpatrick et al., 2007; Pietrzak et al., 2010; for meta analyses, see; Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003).

The current study has several limitations. First, it is possible that the advantage of interpersonal regulation not only depends on the

characteristics of the regulator but is also connected to individual differences in the characteristics, expectations and beliefs of the target (e.g., Bar-Kalifa & Rafaeli, 2014). Although in the present study we examined possible effects of depression, anxiety and difficulty to identify and describe feelings, a larger sample is needed in order to optimally address these factors potential moderating effect. Future studies using a larger subject pool or a more specific population are needed to address the possible effects of individual differences more directly.

Additionally, it can be argued that the advantage of interpersonal emotion regulation over intrapersonal emotion regulation is not due to the regulating partner's ability to choose the best regulatory strategy for the target, but due to demand characteristics manifested by the expectations or the desire of the targets to please their partners and exhibit that the regulator's choices were effective. This might result in the target's reporting lower levels of distress in the interpersonal as compared to the intrapersonal regulation conditions. However, in a similar way, it is possible that some partners are motivated to express their independence by showing that they can choose the most effective regulatory strategies to reduce distress on their own. While it is unclear whether these opposite motivations might work concurrently and in the same magnitude, they are both probable and their effects might attenuate each other. Moreover, the fact that the target and the regulator used different strategies to down regulate distress further supports the direct effect of different regulatory strategies and the interpersonal interaction rather than the effect of demand characteristics. A replication of our findings with other samples including strangers may help reduce such effects and contribute to an increased understanding of the added value of interpersonal emotion regulation.

Another limitation relates to the fact that in the interpersonal emotion regulation condition, target participants may feel supported by their partners' attempt to help, rather than by the regulatory strategy that he or she chose. However, it is not possible to define the limits of such effects. For example, it may also occur when the two partners are present in the same room and engaged in a simple unrelated task. The current study was designed to minimize such effects by comparing instructed emotion regulation conditions to uninstructed conditions, in which the regulator was also part of the experiment but rather than choosing regulatory strategy, he or she engaged in a simple task that included choosing the color of the frame that enclosed pictures viewed by the target. In addition, we showed that the target and the regulator tended to choose different strategies to down regulate distress. Therefore it is more reasonable to assume that the added value of interpersonal emotion regulation relates to the effectiveness of the regulatory strategies themselves rather than in response to other variables, such as the relationship between the couple, which is not directly related to the regulatory process itself. Future studies may aim to further control for such possible effects by testing the regulator's intrapersonal emotion regulation and assessing whether there are differences in the way that they selected strategies for themselves and for other people.

Finally, many emotion regulation experiments conducted in lab settings may have limited ecological validity. However our performance-based paradigm captures the essence of interpersonal emotion regulation, since the regulator has an opportunity to take part in the target's regulation process in real time. Though in day-to-day life people communicate their reactions and suggestions differently, and likely will not tell one another which regulatory strategies to engage in, it is reasonable to assume that a person might suggest engaging in a distracting activity ("let's go out and forget about it") or distracting thoughts ("maybe we should talk about something else"). Alternatively,

one might attempt to reappraise the situation in order to reduce another's negative feelings ("she will calm down soon. You know her, she does not really mean what she said"). In this study we tried to isolate these mechanisms, but in real-life these mechanisms are intertwined during both intrapersonal and interpersonal emotion regulation.

It is important to note that in this study we focused on comparing baseline distress (no emotion regulation is used) to conditions of emotion regulation in intrapersonal and interpersonal situations. As with similar studies in this field (e.g., Birk & Bonanno, 2016; Martins, Sheppes, Gross, & Mather, 2016) we used distraction and reappraisal as representative examples of regulatory strategies that involve different levels of engagement. While the specific effect of each strategy was beyond the scope of the study, future studies may aim to test the effectiveness of reappraisal and distraction to assess whether they have similar regulatory value in intrapersonal and interpersonal conditions.

In conclusion, the present study applied the novel concept of interpersonal emotion regulation and provided new tools for evaluating its unique value. On a theoretical level, our investigation allowed for the establishment of a model of interpersonal emotion regulation while elucidating the relationship between the regulator and the target. On the clinical level it may suggest that significant others hold the key to improving the effectiveness of emotion regulation and may pave the way for developing effective cognitive intervention conducted by significant others in one's immediate environment.

#### Conflict of interest

The authors report no conflicts of interest.

#### Uncited references

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