Vicarious Fear Learning depends on Empathic Appraisals and Trait Empathy

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Abstract

Vicarious learning of fear and empathy are increasingly understood as individual phenomena, but the interaction between the two remains poorly understood. We investigated how social (vicarious) fear learning is affected by empathic appraisals by asking participants to either enhance or decrease empathic responses to another individual (demonstrator), who received electric shocks paired with predictive conditioned stimuli (CS). A third group received no appraisal instructions and responded naturally to the demonstrator. Participants enhancing their empathy evinced strongest vicarious fear learning as measured by skin conductance responses to the CS in the absence of the demonstrator during later test. Moreover, this effect was augmented in observers high in trait empathy. Our results suggest that a demonstrator's expression can serve as a 'social' unconditioned stimulus (US), similar to a personally experienced US in Pavlovian fear conditioning, and that learning from a social US depends on both empathic appraisals and the observers' stable traits.

Word count: 150

Key words: observational aversive learning, social conditioning, skin conductance, emotions, expressions

Introduction

In a social species like our own, expressions of fear and distress are extremely salient cues that have rapid and strong impact on observers (Adolphs, 2013). This profound impact stems from the important survival value of learning about potential threats in the environment, and to quickly understanding the intentions, thoughts and feelings, of others. Remarkably, it is unknown how learning about threats by observing others is modulated by understanding and sharing their emotional experiences ('empathy'). This is especially surprising in light of the fact that the processes underlying social learning and empathy are likely to be intimately interconnected in real life where we, from early development (Klinnert, Campos & Source, 1983) throughout adulthood (Blair, 2003; Olsson & Ochsner, 2008), habitually interpret the meaning of others' emotional expressions to better understand and learn about our environment. Indeed, research on social fear learning in humans and other species has shown that the mere sight of a conspecific's (demonstrator's) distress can serve as a potent proxy for the individual's own, direct, experience, thereby offering a more safe and efficient route to learning as compared to individual trial and error (Askew & Field, 2008; Bandura et al., 1965; Goubert et al., 2012; Olsson & Phelps, 2007; Rachman, 1979).

How is then empathy affecting social fear learning? Previous research provides support for two alternative predictions. The first poses that learning to fear a stimulus by observing a demonstrator's fear reactions should, similarly to direct (Pavlovian) fear conditioning, be insensitive to cognitive manipulations, such as perspective taking. Support for this prediction comes from findings of strong and automatic observational fear learning across species, from rodents to humans, supported by a neural system, including the amygdala that partially overlaps with Pavlovian fear conditioning (Debiec & Sullivan, 2014; Hooker, Germine, Knight, & Desposito, 2006; Olsson, Nearing & Phelps, 2007). Additional support comes from research showing that vicariously transmitted fear, similar to Pavlovian conditioning, is expressed in the absence of awareness of the conditioned stimulus (Olsson & Phelps, 2004).

The second prediction suggests that attributions of mental states to the demonstrator should affect the strength of learning by means of modifying the value of the demonstrator's emotional expressions. This prediction receives tentative support from earlier studies showing that knowledge about the demonstrator's aversive experiences interact with perceptual information to instigate an aversive response in the observer (Berger, 1962; Hygge & Ohman, 1978). Yet, no study has experimentally manipulated attributions of mental states to the demonstrator to directly examine the causal impact of empathy on learning. Research outside the learning field provides additional support for the second prediction by establishing close links between self and other experienced emotions. For example, empathic responses are supported partly by the same mechanisms as self-experienced distress and pain (Singer et al, 2004; Lamm, Decety, & Singer, 2011), together with attributions of mental states to the other (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009; Wagner, Kelley, & Heatherton, 2011; Zaki & Ochsner, 2012). Importantly, empathic responses depend on attributions of mental states and traits to the target persons in predicted ways. For example, observers who believe that social targets are competitive or untrustworthy exhibit inhibited spontaneous empathic responses (Lanzetta & Englis, 1989; Singer et al., 2006; Cikara, Bruneau, & Saxe, 2011), whereas perceiving the target as a cooperator (Lanzetta & Englis, 1989) or attending to his or her painful experiences (Lamm, Batson, & Decety, 2007), enhances empathic responses. In fact, many perspective-taking manipulations strongly alter individuals' empathic experience and social behavior across a variety of contexts (Batson et al., 2003; Galinsky & Moskowitz, 2000). These studies, taken together with an imaging study (Olsson, Nearing, & Phelps, 2007) showing that activity in empathy related brain regions during observation of a demonstrator's pain predicted the strength of the learning when later tested, support the conjecture that empathic appraisals directly affect vicarious fear learning. The impact of empathy on learning might be possible because the demonstrator's expression of fear and pain serves as a "social" unconditioned stimulus, US, similar to a personally experienced US. Accordingly, the quality of the social US might determine the outcome of vicarious learning similarly to how the quality of a directly experienced, tactile, US, such as a mild electric shock, determines the outcome of Pavlovian conditioning. Based on this associative model of social fear learning, we predicted that deliberate attempts to alter ('turning up' and 'turning down') empathic appraisals to a demonstrator's emotional responses should produce differences in vicarious fear learning along the corresponding gradients.

In addition to situational factors, such as appraisals, individuals vary strongly in their abilities to decode and resonate with others' emotions. Indeed, past research has documented considerable inter-individual difference in empathic ability as measured by self-reports (Davis, 1983; Mehrabian, 1996), physiological concurrence over time (Levenson & Ruef, 1992), accurate understanding of others' emotions (Zaki, Bolger, & Ochsner, 2008; Mayer, Salovey, & Caruso, 2008), and activity in brain regions implicated in empathic processes, such as the medial prefrontal, insular and temporal cortices (e.g., Singer et al., 2004; Zaki & Ochsner, 2012). Finally, individual differences and contextual factors often interact to produce empathy. For instance, individuals high, versus low, in empathy may differ from each other with respect to pro-sociality or the accuracy of their social inferences, but only when targets' group membership or expressivity provides an opportunity for individual differences to manifest themselves (Sturmer et al., 2006; Zaki, Bolger & Ochsner, 2008). Following this, we expected that individual differences in trait-like empathic ability might affect the learning outcome, possibly by interacting with state-level manipulations to enhance the effect of the empathic appraisals.

Another potentially important aspect of vicarious fear learning is the relevance of the demonstrator's distress to the observer's own current or future situation. For example, learning to fear a dog by observing another individual's reactions to a it, might be more efficient if you expect to encounter the dog yourself in the near future. An alternative prediction relies on the assumption that the disadvantage of not encoding life-dependent information, such as what causes pain to others, outweighs the extra effort of learning 'false positives'. The existence of such a 'better-safe-than-sorry' learning strategy predicts that there would be no, or little, differences in learning outcome as a function of whether or not the learner expects to be in the same situation as the demonstrator.

The present study

The primary goal of the current study was to examine the role of empathy in social fear learning. To this end, we combined nomothetic and ideographic approaches (Chronbach, 1957; Kosslyn et al., 2002) by measuring both the general effect of manipulating empathy appraisals, and the impact of individual variability in trait empathy. The effect of empathy appraisals was examined by giving participants standard instructions to either enhance or decrease empathy, or by giving no empathy related instructions, before they underwent a vicarious fear learning procedure. Individual variability was assessed through the Balanced Emotional Empathy Scale (Mehrabian, 1996). The secondary goal was to examine the role of self-relevance of the demonstrator's distress. To this end, each participant was submitted to two observational learning procedures in a counterbalanced order, manipulating whether or not the participants expected to undergo the same learning procedure as the demonstrator at a later time.

Method

Participants

Participants were recruited in the Columbia University community through flyers and recruitment notices and compensated with $15 or 2 course credits for their participation. Members of Columbia University over the age of 18 and with no previous experience with shocks were eligible. One hundred twenty-nine participants completed the study. This sample size is similar to those in previous studies of vicarious fear learning, and was established before data collection began. Nineteen participants (12 men) that reported after the experiment that they did not believe they would receive shocks as they were instructed were excluded from the analyses. In addition, 9 participants (4 men) that showed no measurable SCRs ('non-responders') and one outlier in the low empathy group (using a criterion of +/- 2.5 SD) were excluded from the analyses, resulting in a final sample of 47 men and 53 women, ages 18-35 (High empathy: $n = 35$; No instruction: $n = 31$; Low empathy: $n = 34$).

Stimuli

The basic experiment involved an E-Prime program that displayed colored squares one at a time against a black background on the computer screen. Two sets of colors served as conditioned stimuli, CS; red/green and yellow/blue. The two sets were assigned to the two observational learning conditions (High and Low self-relevance) in a counterbalanced fashion. In the red/green set, the red square served as the conditioned stimulus (CS+) and was associated with a shock to the demonstrator, and the green square served as control stimulus (CS-) and was never associated with a shock. In the blue/yellow set, the yellow and blue served as the CS+ and CS-, respectively.

For the Observation stage, movies were recorded of demonstrators participating in a differential Pavlovian fear conditioning experiment using the CS described above (see Fig.

1A). Previous research has shown that watching a movie of a demonstrator reacting to a CS+ can be as effective in transmitting fear as watching the event live (Cook and Mineka, 1990; Olsson & Phelps, 2004). Four movies were made so that each of the two color set was matched with a male and female demonstrator, respectively. The movies showed a demonstrator seated in front of a PC monitor with shock electrodes attached to his/her wrist. Five CS+ and five CS- were presented to the demonstrators for 10 seconds each in a pseudorandomized order and interleaved with an inter stimulus interval (ITI) of 12 +/- 2 seconds. In each movie, three of the CS+ co-terminated with a shock administered to the demonstrator's wrist, and none of the CS- presentations were paired with a shock. The demonstrator briefly expressed discomfort by frowning and jerking the arm when receiving a shock.

For the Test stage of the study, participants were presented with the same CS that they just watched the demonstrator being presented to in the movie (see Fig. 1B). Importantly, to ensure that the only source of contingency learning was social, indirect, in nature, no electric shocks were delivered to the participants. The conditioned fear response was assessed through the skin conductance response, SCR, measured through disposable Ag-AgCl electrodes attached to the distal phalanges of the second and third digits of the left hand. The SCR signal was amplified and recorded with a BIOPAC 150 System SRC module connected to a PC and continuously recorded at a rate of 200 samples per second. Off-line analysis of the analogue SCR waveforms was conducted with AcqKnowledge software (BIOPAC Systems Inc., CA).

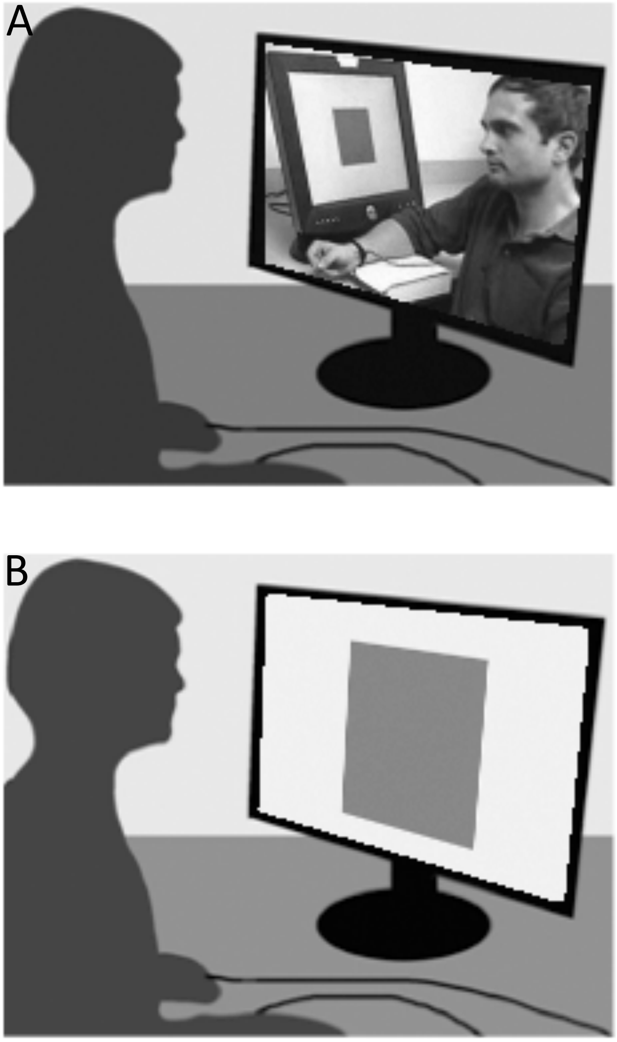

Figure 1. **The vicarious fear learning paradigm**. Each condition consisted of two subsequent stages: In the Observation stage (A), the participants watched a movie of another person ('demonstrator') receiving shocks paired with one of two colored squares (conditioned stimuli, CS). The demonstrator occasionally received shocks paired with one of the colors (CS+), but never with the other color (CS-). During the Test stage (B), participants were presented with the same colored squares displayed on the screen. Although they expected to receive shocks during this stage, they never did ensuring that learning of the CS-shock contingencies remained indirect (social) in nature.

Design and Procedure

Each participant was assigned to one of the 3 appraisal groups; High empathic appraisal, Low empathic appraisal, or the No empathic appraisal (no empathy related instruction) treatment. All participants were submitted to two self-relevance conditions that manipulated whether or not the participants believed that they themselves would be participating in the same experiment as the demonstrator at a later time; High self-relevance, and vs. Low self-relevance, respectively.

After signing the informed consent, the SCR and shock electrodes were attached, and participants were informed that they would receive shocks that were uncomfortable, but not painful. All participants were told that the experiment would begin with an "Observation stage," in which they would watch a movie of another person receiving shocks associated with one out of two colors followed by a "Test stage", in which participants would be presented with the same two colors. Participants were told they would go through the Observation and Test stages twice for the entire study.

Before each movie, participants were given information related to both empathic appraisals and the particular self-relevance of the video that they were about to watch (for a verbatim version of the instructions, see Supplemental Material available online). In the *High empathy* group, participants were informed that the person displayed in the movie rated the shocks as painful, and they were asked to pay attention to the demonstrator's discomfort. In the Low empathy condition, participants were told that the person in the movie acted as if the -- hardly noticeable -- shocks were painful. This group was asked to pay attention to the actor's expressions, but only as cues to understand the relationship between the colors on the screen and the shocks. In the *No instruction* condition, participants were given no information about the demonstrator's experiences, and no instructions regarding empathic appraisals.

The self-relevance instructions were given to each participant directly after the empathic appraisal instructions. In the *High self-relevance* condition, participants were told that the experiment they were about to watch would be the same as the one that they were to participate in themselves after the movie. In the *Low self-relevance* condition, participants were instead told that they would later be asked to compare the content of the movie with another movie. Each participant participated in one High self-relevance, and one Low self-relevance, condition in a counterbalanced order. After the Observation stage, and just before each the Test stage began, all participants were told that they were now going to participate in the same experiment as the person that they just watched in the movie.

The Test stage that followed displayed five CS+ and five CS- using the same parameters as in the movie they watched. Importantly, participants did not receive shocks during any of the Test stages. After the first Test stage, participants were told they did not receive shocks because they had been allotted to a control experiment with no shocks for the first part of the study. These instructions were designed to maintain the anticipation of receiving the shocks when they were presented with the Test stage the second time. After two Observation and Test stages, electrodes were removed, and participants completed the self-report questionnaires.

SCR parameters and data analysis

Following standard procedure (Lykken and Venables, 1971; Olsson, Nearing & Phelps, 2007), SCR was measured for each trial as the base-to-peak amplitude difference in skin conductance to the largest response (in microSiemens, mS) during two time intervals: As the response to the CS during Test, we used .5-4.5 seconds interval after the onset of the CS, and as the response to the social US during the Observation stage, we used .5-4.5 seconds interval after onset of the shock to the demonstrator and the corresponding interval during CS-presentations to the demonstrator (when no shock was presented). The minimal response criterion was 0.02mS. Responses that did not pass this criterion were scored as ‘0’. The SCR data were low pass filtered and smoothed and square-root transformed to normalize the distributions. To minimize variance of no psychological interest, such as that due to individual differences in sweat gland properties, each SCR response was divided by the individual participant’s maximal response separately for the Test and Observational stages (Lykken and Venables, 1971).

Data were analyzed separately for the Observation and the Test stages and for the empathic appraisal and self-relevance conditions. The main measures of interest were the conditioned fear response (SCR to the CS+ minus the CS- during Test, see Table S1 in the Supplementary Material for SCRs separated for CS+ and CS- during the Test stage), and the social unconditioned stimulus (SCR to watching shock minus watching no-shock to the demonstrator). The first CS+ and CS- trials were excluded from the calculation of the conditioned response, because the SCR on the first trial following a contextual shift (from Observation to Test stage) was expected to be larger than the SCR on subsequent trials, and of little psychological interest in the current learning paradigm.

Self-report measures

Participants completed the Balanced Emotional Empathy Scale (BEES; Mehrabian, 1996), which is designed to measure emotional empathy with 15 positively-worded items and 15 negatively worded items rated on a 9-point scale from -4 (very strong disagreement) to 4 (very strong agreement) with high internal consistency (alpha=.87). In addition, participants completed a demographics questionnaire, and were asked if they believed they would receive shocks throughout the experiment.

Results

Because there was no effect of self-relevance, $F(1,94) = 0.3$ (see Fig. S1 in the Supplementary Material available online), we collapsed the data across self-relevance conditions and focused subsequent analyses on the empathy manipulation. Next, a univariate ANOVA was conducted with the conditioned response during Test as the dependent variable and Empathic appraisal as well as Gender as between-subject factors. The analysis revealed a main effect of the empathic appraisal manipulation, $F(2,94) = 3.2$, $p = .042$, $\eta_p^2 = 0.063$, which was explained by larger conditioned responses in the High empathic appraisal group as compared to the two other groups, $t(97)=2.44$, $p = 0.02$, $d = 0.50$, indicating stronger learning following empathic appraisals (see Fig. 2). Consistent with this, a linear relationship was found between empathy groups; the conditioned response was largest in the High empathic appraisal group and lowest in the Low empathic appraisal group, with the No empathic appraisal group in-between, $t(97)=2.40$, $p = 0.02$, $d = 0.50$.

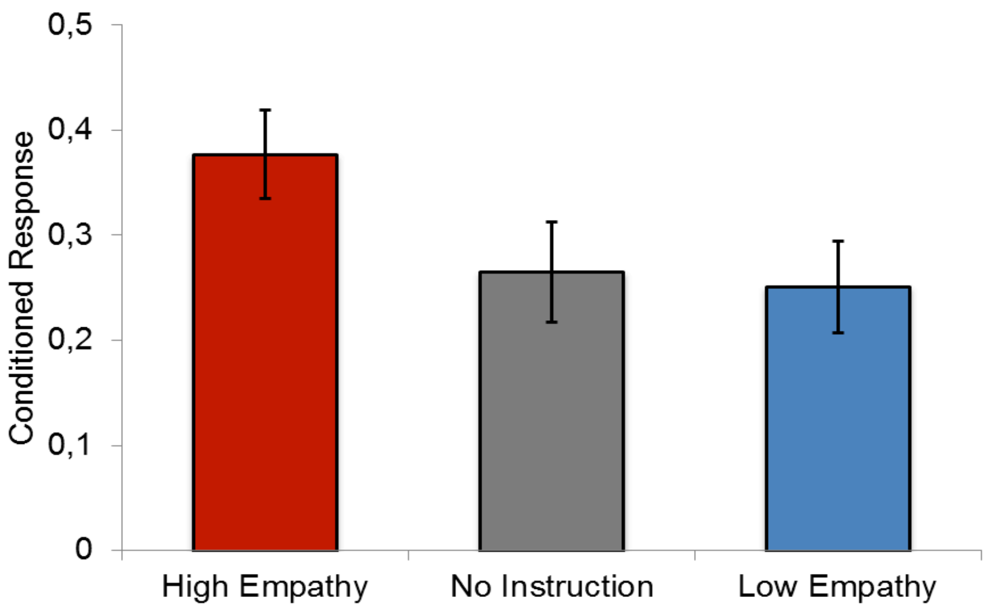

Figure 2. Conditioned responses (expression of learned fear) during the Test stage as a function of the empathic appraisal manipulation, collapsed across self-relevance conditions. Error bars represent standard error of the mean.

Next, we explored whether (i) the unconditioned response to the social US was predictive of learning (i.e., the conditioned response during later test) in the High empathic appraisal condition, and (ii) individual differences in empathy were related to individual differences in responses during Observation and Test stages. Table 1 provides a summary of the relationships between the social unconditioned and conditioned responses, BEES scores, as a function of empathy condition (see Fig. 3 for scatter plots). Although there were no reliable correlations between social unconditioned and conditioned responses in the No empathic appraisal and Low empathic appraisal conditions, social unconditioned and conditioned responses correlated positively in the High empathy condition (Spearman correlation: $r = .51$, $p < .05$). This was consistent with our expectation that induced empathic appraisals facilitate vicarious fear learning. Furthermore, trait empathy, as measured with BEES, modulated both the unconditioned response (Spearman correlation: $r = .41$, $p < .05$) and conditioned response (Spearman correlation: $r = .45$, $p < .05$) to a similar extent in the High empathy condition. Again, in the other two conditions, the correlations between BEES scores and the physiological responses were not significant ($p > .1$). Interestingly, after partialling out BEES scores, the relationship between social unconditioned and conditioned response was no longer reliable in the High empathy condition (Spearman correlation: $r = .18$, $p = .33$). Taken together, our results indicate that individuals with high empathy traits flexibly modulate their learning based on the level of experienced empathy varying across situations, suggesting that empathic appraisals and trait empathy interact to facilitate vicarious fear learning.

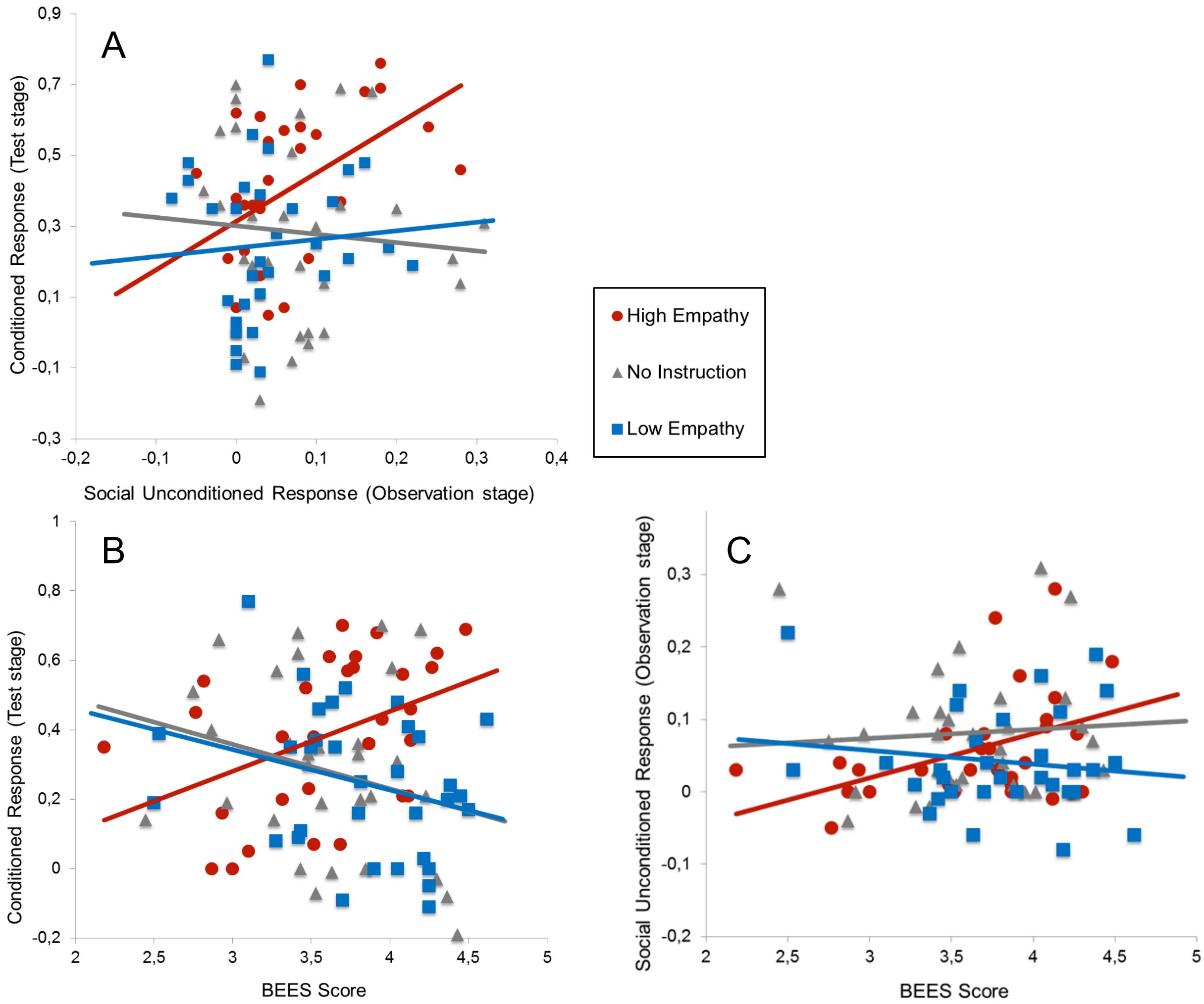

Figure 3. Panels A-C display correlations (as a function of the empathic appraisal manipulations) between (A) the social unconditioned response to the demonstrator's expressions of distress and the conditioned response during the later Test stage; (B) the conditioned response and BEES score; and (C) the social unconditioned response and BEES score The lines represent the best fit regression lines. The corresponding Spearman rank correlation coefficients are shown in Table 1.

Table 1. Spearman correlation coefficients for the relationships among BEES, social unconditioned responses (UR), and conditioned responses (CR) in the two empathy (‘High’ and ‘Low’), and the control (No instruction) condition. * $p < .05$.

	BEES	UR	CR
	High empathy		
BEES	-	.41*	.45*
UR	-	-	.51*
	No instruction		
BEES	-	.15	-.24
UR	-	-	-.17
	Low empathy		
BEES	-	-.02	-.26
UR	-	-	.19

Discussion

Other peoples' expressions of fear and distress provide information about their internal states, as well as potential dangers in the environment. However, it has been unclear how our interpretation of others' emotional states interacts with the process of learning from their emotional expressions, and if that interaction differs among people with various empathic abilities. Here, we showed that both empathic appraisals and trait empathy significantly affect vicarious fear learning. When observing another individual's aversive experiences, participants instructed to actively appraise the thoughts and feelings of that distressed individual more effectively learned to fear a neutral stimulus than did participants who were not instructed to do so. Interestingly, this effect was mainly carried by those with high trait empathy, whose fear learning benefitted more from the explicit manipulation of empathic appraisals.

In keeping with previous research, our results show that social observation, like standard Pavlovian conditioning, can potently facilitate fear responses to previously neutral stimuli (Kavaliers & Choleris, 2011; Goubert, 2012; Olsson & Phelps, 2007). Importantly, social learning also involves processing a wide range of social information that can affect the quality and strength of learning. This conclusion resonates with previous studies on contextual appraisals of the meaning of others' expressions of distress and pain. This prior work demonstrates that such appraisals can profoundly affect the ensuing behavioral and neural responses in the observer. For example, believing that a suffering person is a competitor (Lanzetta & Englis, 1989) or cheater (Singer et al., 2006) downgrades empathic responses in the observer. In fact, such negative appraisals often invert the expression of empathy into 'schadenfreude' (Lanzetta & Englis, 1989; Cikara *et al*., 2011). In contrast, when the suffering other belongs to the observer's social group (Hein et al., 2010), is perceived as a future collaborator (Lanzetta & Englis, 1989), or observers focus attention onto targets' painful experiences (Batson et al., 2003; Lamm, Batson, & Decety, 2007), empathic responses and subsequent helping behavior are enhanced (Zaki, 2014). To the best of our knowledge, our study is the first to demonstrate that empathic appraisals of another individual's feelings enhance vicarious fear learning, even when the demonstrator is no longer present. These results support our working model of the mechanisms underlying associative learning, suggesting that the emotional expression of the demonstrator acts as a social unconditioned stimulus that, similar to a directly experienced unconditioned stimulus, affects the quality and strength of the ensuing fear memories. This conclusion dovetails with a previous study showing that the greater activity in brain regions related to empathy, such as the anterior insula and cingulate cortices, to the demonstrator's expression of distress, the stronger learning was later expressed during test in the absence of the demonstrator (Olsson, Nearing, & Phelps, 2007).

It is worth noting that our high empathic appraisal condition included a greater attentional focus on the demonstrator's internal states, as compared to the other two conditions. Although this difference is inherent to what we intended to investigate, it limits our conclusions about the effect being exclusively about empathy. This concern was, however, mitigated by our finding that empathic appraisals had the greatest influence in people with high trait empathy, strengthening the claim that the appraisal effect is indeed related to emotional sharing.

Our manipulation of self-relevance did not affect vicarious learning. Although we are reluctant to speculate about the reasons for a null effect, the lack of difference suggests that the underlying associative learning mechanisms operate, at least partly, independently of expectations about the relevance of the observed situation for the future self. This would be consistent with the hypothesis that the fear learning system automatically registers contingencies predictive of potential threat.

In sum, we show that empathic appraisals can enhance the strength of vicarious fear learning as expressed through autonomic responses (SCR) to the conditioned stimuli at a later time in the absence of the demonstrator. We also show that during empathic appraisals, the relationship between the SCR elicited by watching the demonstrator receiving shocks and later expressed learning was strengthened in participants high in trait empathy. Our results support an associative model of vicarious fear learning in which a demonstrator's emotional expression serves as a 'social' unconditioned stimulus analogous to a personally experienced unconditioned stimulus in Pavlovian conditioning, and that the quality of vicarious fear learning depends on appraisals of the social unconditioned stimulus.

Author Contributions

A. Olsson and K. N. Ochsner developed the experimental concept. A. Olsson, J. Zaki, N, Bolger, and K.N. Ochsner contributed to the design. Data were collected by K. McMahon and G. Papenberg, and analyzed by G. Papenberg, K. McMahon, and A. Olsson. All authors wrote and approved the final version of the manuscript for submission.

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Supplementary Material

Vicarious Fear Learning depends on Empathic Appraisals and Trait Empathy

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Instructions to Participants:

Before watching the movie (Observation stage), each participants was given information related to both empathy appraisals and the particular self-relevance of the video that they were about to watch. In the *High empathy* condition, participants were given the following instructions:

"This person rated the shocks as "painful" after his experiment. Please, pay close attention to the discomfort he experiences as he anticipates and receives the painful shocks. Do your best to imagine what the person is thinking and how he is feeling as he waits to receive these shocks as well."

In the *Low empathy* condition, participants were given the following instructions:

"The person in this movie received shocks that were hardly noticeable. He was told to act as though they were painful, for instructional purposes. Please, pay attention to the actor's expressions, but only as a cue to help you understand the relationship between colors on the screen and shocks."

In the *No instruction* condition, participants were not given additional information about the demonstrator's state and no instructions regarding empathy appraisals.

The self-relevance instructions were given directly after the empathy appraisal instructions. In the *High self-relevance* condition, participants were told the following:

"The experiment you will be watching is the same one you'll be participating in after watching the movie, so pay attention to which color is paired with a shock."

In the *Low self-relevance* condition, subjects were told:

"Please, pay attention to which color is paired with a shock, because you will be asked to compare this movie with another one you will be watching later."

Each participant participated in one High self-relevance condition and one Low self-relevance condition in a counterbalanced randomized order.

Before the Test phase began, each participant was told the following:

"You will now participate in the same experiment as the person in the movie. Importantly, you will receive shocks only with the same color as the person in the movie. You may remember that the person in the movie received 3 shocks. You'll receive anywhere from 1 to3 shocks, at least 1 and at most 3 shocks, paired with the same color in the movie."

Table S1. Skin Conductance Responses (SCRs) in the Test stage for the Conditioned Stimulus (CS+) and Control Stimulus (CS-) as Function of Trial, Empathy, and Self-Relevance Condition.

			Trial				
Empathy Condition	Self-Relevance Condition		1	2	3	4	5
High empathy (M±SD), n = 31	Low	CS+	.82 (.51)	.66 (.39)	.61 (.36)	.48 (.43)	.42 (.44)
		CS-	.48 (.47)	.17 (.31)	.13 (.25)	.07 (.25)	.16 (.29)
	High	CS+	.76 (.36)	.58 (.39)	.46 (.40)	.38 (.35)	.43 (.42)
		CS-	.42 (.39)	.23 (.35)	.10 (.24)	.06 (.19)	.09 (.23)
No instruction (M±SD), n = 34	Low	CS+	.72 (.44)	.55 (.44)	.52 (.43)	.42 (.42)	.50 (.39)
		CS-	.45 (.61)	.24 (.37)	.17 (.31)	.12 (.28)	.17 (.32)
	High	CS+	.72 (.38)	.48 (.43)	.38 (.44)	.40 (.40)	.42 (.40)
		CS-	.35 (.39)	.22 (.35)	.15 (.31)	.25 (.39)	.18 (.32)
Low empathy (M±SD), n = 35	Low	CS+	.74 (.60)	.50 (.42)	.32 (.44)	.38 (.41)	.27 (.36)
		CS-	.38 (.59)	.20 (.32)	.16 (.29)	.16 (.32)	.09 (.22)
	High	CS+	.69 (.42)	.54 (.39)	.38 (.42)	.32 (.39)	.38 (.42)
		CS-	.43 (.47)	.16 (.33)	.09 (.30)	.07 (.24)	.15 (.36)