

From Empathy to Compassion in a Neuroscience Laboratory

CHAPTER I.IV OF “ALTRUISM: THE POWER OF COMPASSION TO CHANGE YOURSELF AND THE WORLD”, LITTLE, BROWN AND COMPANY (2015)

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IN 2007, ALONG WITH TANIA SINGER, I was in Rainer Goebel’s neuroscience laboratory in Maastricht, as a collaborator and guinea pig in a research program on empathy. Tania would ask me to give rise to a powerful feeling of empathy by imagining people affected by great suffering. Tania was using a new fMRI (functional magnetic resonance imaging) technique used by Goebel. It has the advantage of following the changes of activity of the brain in real time (fMRI-rt), whereas data usually cannot be analyzed until later on. According to the protocol of this kind of experiment, the meditator, myself in this case, must alternate twenty or so times between periods when he or she engenders a particular mental state, here empathy, with moments when he relaxes his mind in a neutral state, without thinking of anything in particular or applying any method of meditation.

During a pause, after a first series of periods of meditation, Tania asked me: “What are you doing? It doesn’t look at all like what we usually observe when people feel empathy for someone else’s suffering.” I explained that I had meditated on unconditional compassion, trying to feel a powerful feeling of love and kindness for people who were suffering, but also for all sentient beings.

In fact, complete analysis of the data, carried out subsequently, confirmed that the cerebral networks activated by meditation on compassion were very different from those linked to empathy, which Tania had been studying for years. In the previous studies, people who were not trained in meditation observed a person who was seated near the scanner and received painful electric shocks in the hand. These researchers noted that a part of the brain associated with pain is activated in subjects who observe someone suffering. They suffer when they see another’s suffering. More precisely, two areas of the brain, the anterior insula and the cingulate cortex, are strongly activated during that empathic reaction, and their activity correlates to a negative affective experience of pain.¹

When I engaged in meditation on altruistic love and compassion, Tania noted that the cerebral networks activated were very different. In particular, the network linked to negative emotions and distress was not activated during meditation on compassion, while certain cerebral areas traditionally associated with positive emotions, with the feeling of affiliation and maternal love, for instance, were.²

Only Empathy Gets Fatigued, Not Compassion

From this initial experiment was conceived the project to explore these differences in order to distinguish more clearly between empathic resonance with another’s pain and compassion experienced for that suffering. We also knew that empathic resonance with pain can lead, when it is repeated many times, to emotional exhaustion and distress. It affects people who emotionally collapse when the worry, stress, or pressure they have to face in their professional lives affect them so much that they become unable to continue their activities. Burnout affects people confronted daily with others’ sufferings, especially health care and social workers. In the United States, a study has shown that 60% of the medical profession suffers or has suffered from burnout, and that a third has been affected to the point of having to suspend their activities temporarily.³

Over the course of discussions with Tania and her collaborators, we noted that compassion and altruistic love were associated with positive emotions. So we arrived at the idea that burnout was in fact a kind of “empathy fatigue” and not “compassion fatigue.” The latter, in fact, far from leading to distress and discouragement, reinforces our strength of mind, our inner balance, and our courageous, loving determination to help those who suffer. In essence, from our point of view, love and compassion do not get exhausted and do not make us weary or worn out, but on the contrary help us surmount fatigue and rectify it when it occurs.⁴

When a Buddhist meditator trains in compassion, she or he begins by reflecting on the sufferings that afflict living beings and on the causes of these sufferings. To do this, the meditator imagines these different forms of distress as realistically as possible, until they become unbearable. This empathic approach has the aim of engendering a profound aspiration to remedy these sufferings. But since this simple desire is not enough, one must cultivate the determination to put everything to work to relieve them. The meditator is led to reflect on the profound causes of suffering, such as ignorance, which distorts one’s perception of reality, or the mental poisons, which are hatred, attachment-desire, and jealousy, which constantly engender more suffering. The process then leads to an increased readiness and desire to act for the good of others.

This training in compassion goes hand in hand with training in altruistic love. To cultivate this love, the meditator begins by imagining someone close to him or her, toward whom he or she feels limitless kindness. The meditator then tries little by little to extend this same kindness to all beings, like a shining sun that illuminates without distinction everything in its path.

These three dimensions—love of the other, empathy (which is resonance with another’s suffering), and compassion—are naturally linked. When altruistic love encounters suffering it manifests as compassion. This transformation is triggered by empathy, which alerts us to the fact that the other is suffering. One may say that when altruistic love passes through the prism of empathy, it becomes compassion.

The Meditator’s Point of View

Let’s return to the experiment: the first session the next morning was devoted to empathy. This involved engendering as intensely as possible a feeling of empathy for the suffering of another person, a close relative for instance. The idea was to concentrate exclusively on empathy, without making altruistic love or compassion come into play, and to keep them from manifesting spontaneously. By isolating empathy in this way, we hoped to distinguish it more clearly from compassion and identify more precisely the specific areas of the brain it activates.

During the meditation, I concentrated the best I could in order to engender the chosen mental state—empathy—to make it as clear, stable, and intense as possible. I would revive it if it weakened, and give rise to it again if a distraction had temporarily dissipated it. During the session, which lasted about an hour and a half, the periods of meditation, which lasted around a minute, alternated with thirty-second periods of rest.

On that day, the subject of meditation on empathy had been provided for me by a disturbing BBC documentary I had seen the night before. It was about the living conditions of physically and mentally handicapped children in a Romanian hospital; although the children were fed and washed daily, they were practically abandoned to their fate. Most of them were horribly thin. One was so frail he had broken his leg just by walking. The nurse’s aides were content to attach a makeshift splint to his leg and left him on his pallet. When the children were washed, most of them groaned in pain. Another child, also skeletal, was sitting on the ground in the corner of a bare room, vaguely nodding his head, his eyes empty. They all seemed so lost in their powerless resignation that they didn’t even raise their eyes to the aides when they came toward them. Every month, several children died.

I also imagined a person close to me who had been terribly injured in a car accident, lying in his blood by the side of a road at night, far from help; disgust at this bloody spectacle became mingled with my distress.

So, for almost an hour, alternating with brief neutral periods, I pictured as intensely as possible these nameless sufferings. Entering into resonance with this pain soon became intolerable. In my mind, I did not know how to engage with these children and felt rather powerless. Merely an hour of intense feeling of empathy dissociated from love and compassion had led me to burnout.

I then heard Tania say to me in the earphones that if I was ready to do one more session in the scanner, we could move right away onto meditation on compassion, which had been scheduled for the afternoon.

I agreed enthusiastically, so intensely did I feel how much love and compassion were lacking from empathy experienced on its own. Scarcely had I shifted the orientation of my meditation to love and compassion before my mental landscape transformed completely. The images of the children's suffering were still just as present and strong, but instead of creating in me a feeling of distress and powerlessness that was hard to bear, I now felt a profound, heart-warming courage linked to limitless love for these children.

Meditating now on compassion, I felt like I had opened a gate loosing floods of love that permeated the suffering of these children. Each atom of suffering was replaced by an atom of love. The distance that separated me from them was erased. Instead of not knowing how to approach the fragile child groaning at the slightest contact, or that blood-soaked person, I now mentally took them in my arms, bathing them with tenderness and affection. And I was convinced that, in a real life situation, I could have surrounded these children with a tenderness that couldn't fail to bring them comfort.



Big sister comforts and embraces her little brother to alleviate fears and anxieties

Some people will object that there is nothing altruistic in all that and that the meditator is only benefiting himself by relieving his distress. My first reply to that would be that there is no harm in the meditator freeing himself from symptoms of distress, which can have a paralyzing effect and risk re-centering his concerns on himself, to the detriment of the attentive presence he could offer to the one suffering. Then, and this is the most important point, emotions and mental states undeniably have a contagious effect. If someone who is in the presence of a suffering person feels an overwhelming distress, that can only aggravate the mental discomfort of the person suffering. On the other hand, if the person who comes to help is radiating kindness and gives off a peaceful calm, and can be attentive to the other, there is no doubt that the patient will be comforted by this attitude. Finally, the person who feels compassion and kindness can develop the strength of mind and desire to come to the aid of the other. Compassion and altruistic love have a warm, loving, and positive aspect that "stand alone" empathy for the suffering of the other does not have.

To return to my personal experiment, while I observed that meditation on empathy came up against a limit, that of burnout, on the contrary it seemed to me that one could not tire of love or compassion. In fact, these states of mind both fed my courage instead of undermining it, and reinforced my determination to help others without increasing my distress. I continued to be confronted with suffering, but love and compassion conferred a constructive quality to my way of approaching others' sufferings, and amplified my inclination and determination to come to their aid. So it was clear, from my perspective, that if there was an "empathy fatigue" leading to the syndrome of emotional exhaustion, there was no fatigue of love and compassion.

Once the data were fully analyzed, Tania explained that the reversals in my experience were accompanied by significant modifications of activity in specific zones of my brain. These modifications had principally affected the anterior insula and the anterior cingulate cortex associated with empathy. The team saw in particular that when I moved on to compassion, certain regions of the brain usually stimulated by positive emotions were more activated than when I remained in empathy. These studies are continuing today and scientific publications are coming out.⁵

By combining a precise introspective investigation with an analysis of data provided by the scanner, the “first person” experience—the experience of the meditator—is joined instructively with the “third person” experience, that of the researcher. Here we can appreciate the benefits of such collaboration between seasoned meditators and scientists for research.

Tania Singer and her colleagues have since undertaken a longitudinal study,⁶ a project dubbed “ReSource,” which aims at training a group of novice volunteers over the course of a year in different cognitive and socio-affective faculties crucial for the development of prosocial motivation and compassion.⁷

Before engaging in such a far-reaching project, the researchers carried out a week-long training program with novice subjects who practiced meditations on altruistic love and on empathy. This preliminary study has already shown that, among most people, empathy felt when faced with another’s suffering is correlated with entirely negative feelings—pain, distress, anxiety, discouragement. The neural signature of empathy is similar to that of negative emotions. Generally, we know that the neural networks involved in empathy for another’s pain (the anterior insula and the cingulate cortex) are also activated when we ourselves feel pain.

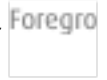
Tania Singer and her colleagues divided subjects into two groups. One meditated on love and compassion, while the other worked only on empathy. The first results showed that after a week of meditations oriented toward altruistic love and compassion, novice subjects perceived in a much more positive and benevolent way video clips showing suffering people. “Positive” does not in any way mean here that the observers regarded the suffering as acceptable, but that they reacted to it with constructive mental states, like courage, motherly love, determination to find a way to help, and not “negative” mental states, which instead engender distress, aversion, discouragement, and avoidance.⁸

Furthermore, empathy stops being systematically correlated with a negative and disturbing perception of others’ suffering. This change is attributed to the fact that these subjects were trained in feeling benevolence toward others in all situations. They were thus able to approach a difficult situation with love and compassion, and to show resilience when faced with others’ pain. Resilience is defined as the ability of a patient to live through and overcome a traumatic or challenging situation by summoning his or her inner resources. It is also the observer’s ability to overcome his or her initial feeling of distress and to substitute for it active benevolence and compassion. Data measuring the cerebral activity of these novice subjects also showed that the neural network of feelings of affiliation and compassion is activated, which is not the case in the group that meditated only on empathy.

On the other hand, when subjects devoted a week to cultivating empathy alone, and entering into affective resonance with others’ sufferings, they continued to associate their empathic response with negative values, and showed an increased perception of their own suffering, sometimes to the point of not being able to control their emotions. For these subjects, negative effects increased when they watched videos showing scenes of suffering. This group of participants also experienced more negative feelings toward ordinary, everyday scenes, which shows that training in empathic resonance increases sensitivity to negative affect in ordinary situations. One of the participants disclosed that as she looked at the people around her when she took the train in the morning, she was beginning to see suffering everywhere.⁹

Aware of these destabilizing effects, Tania Singer and Olga Klimecki added a training in altruistic love (one hour a day) after the week devoted to empathy. They then observed that this addition counterbalanced the negative effects of training in empathy alone: negative affects fell back to their initial level and positive affects increased. Here too, these results were associated with corresponding changes in the cerebral

networks associated respectively with compassion, positive affects, and maternal love.¹⁰ Moreover, the researchers were able to demonstrate that a week of training in compassion increased prosocial behavior virtual ||me specially developed to measure the tendency to help others.¹¹



In Richard Davidson's neuroscience laboratory in Madison, Wisconsin, the French researcher Antoine Lutz and his colleagues have also studied this phenomenon. They have shown that among sixteen advanced meditators who engendered a state of compassion, the cerebral areas involved in maternal love and feelings of affiliation—like the medial insula (and not the anterior insula as in pain)—as well as areas linked to “theory of mind” (imagining others’ thoughts) are activated by listening to recordings of voices expressing distress, which is not the case among novice meditators.¹² These observations confirm the fact that experienced meditators are both more sensitive to and more concerned by others’ sufferings and that they react not by experiencing increased distress, but by feeling compassion, and that one can “train” in acquiring these states of mind.

Imbuing Empathy with Compassion

I was talking recently with a nurse; like most of her colleagues, she is constantly confronted with the sufferings and problems of the patients she cares for. She told me that in the new training that health care personnel undergo, accent is placed on the “necessity of keeping an emotional distance from the patients,” who are now often called “clients,” to avoid the infamous burnout which affects so many health care workers. This woman, who was very warm and whose mere presence is reassuring, then confided to me: “It's strange, I feel as if I'm gaining something when I take care of people who are suffering, but when I speak of this 'gain' to my colleagues, I feel a little guilty about feeling something positive.” I briefly described to her the differences that seem to exist between compassion and empathic distress. This difference agreed with her experience and proved that she had no reason to feel guilty. Contrary to empathic distress, love and compassion are positive states of mind, which reinforce one's inner ability to confront others' suffering and to care better for them. If a child is hospitalized, the presence of a loving mother at his side who holds his hand and comforts him with tender words will no doubt do him more good than the anxiety of a mother overwhelmed with empathic distress who, unable to bear the sight of her sick child, paces back and forth in the hallway. Reassured by my explanations, my nurse friend told me that despite qualms she occasionally had, this point of view agreed with her experience as a caregiver. Empathy is indeed needed to trigger the arising of compassion, but the space of that compassion should be vast enough so that empathy does not turn into uncontainable distress.

In light of this preliminary research, it would seem logical for those whose profession consists of attending to suffering people on a daily basis to be trained in altruistic love and compassion. Such a training would also help close relatives (parents, children, spouses) who take care of sick or handicapped people. Altruistic love creates in us a positive space that serves as an antidote to em-pathic distress, and prevents affective resonance from proliferating until it becomes paralyzing and engenders the emotional exhaustion characteristic of burnout. Without the support of love and compassion, empathy left to itself is like an electric pump through which no water circulates: it will quickly overheat and burn. So empathy should take place within the much vaster space of altruistic love. It is also important to consider the cognitive aspect of compassion, in other words understanding the different levels of suffering and its manifest or latent causes. We will be able thus to place ourselves in the service of others by helping them effectively while still preserving our inner strength, our kindness, and our inner peace. As the French psychologist Christophe Andre writes, “We need the gentleness and the strength of compassion. The more lucid we are about the world, the more we accept seeing it as it really is, the easier it is to accept that we cannot face all the suffering that is encountered in the course of our lives unless we have this strength and this gentleness.”¹³ ■

[1] For a summary of the 32 studies on empathy with regard to pain, see Lamm, C., Decety, J., & Singer, T. Meta-analytic evidence for common and distinct neural networks associated with directly experienced pain and empathy for pain. *Neuroimage*, 54(3), 2011, pp. 2492–2502.

[2] The increase of a positive reaction through compassion is associated with an activation of a cerebral network that includes the areas of the median orbitofrontal cortex, the ventral striatum, the ventral tegmental section, the nuclei of the brainstem, the nucleus accumbens, the median insula, the pallidum and putamen, all areas of the brain that were previously associated with love (especially maternal love), feelings of belonging and gratification. In the case of empathy, the areas are the anterior insula and the median cingulate cortex. Klimecki, O. M., et al. (2012), *op. cit.*; Klimecki, O., Ricard, M., & Singer, T. (2013), *op. cit.*

[3] Felton, J. S. Burnout as a clinical entity—its importance in health care workers. *Occupational Medicine*, 48(4), 1998, pp. 237–250.

[4] For a neural distinction between compassion and empathy fatigue, see Klimecki, O., & Singer, T., “Empathic distress fatigue rather than compassion fatigue? Integrating findings from empathy research in psychology and social neuroscience.” In Oakley, B., Knafo, A., Madhavan, G., & Wilson, D. S., *Pathological Altruism*, Oxford University Press, 2011, pp. 368–383.

[5] Singer, T., & Bolz, M. (eds.) (2013), *op. cit.*; Klimecki, O., Ricard, M., & Singer, T. (2013), *op. cit.* The most recent publication is Klimecki, O., Leiberg, S., Ricard, M., & Singer, T. Differential Pattern of Functional Brain Plasticity after Compassion and Empathy Training. *Social Cognitive and Affective Neuroscience*, 2013.

[6] This expression designates a study that observes over a course of months, or even years, the evolution of subjects.

[7] Bornemann B., & Singer, T., “The resource study training protocol.” In Singer, T., & Bolz, M. (eds.), *Compassion: Bridging Practice and Science*, 2013, a multimedia book [e-book].

[8] Klimecki, O. M., et al. (2012). *Op. cit.*

[9] At the neural level, the researchers observed that training in empathic resonance increased activity in a network that is involved both in empathy for another’s pain and in one’s own experience of pain. This network includes the anterior insula and the anterior medial cingulate cortex (MCC). Singer, T., & Bolz, M. (eds.) (2013), *op. cit.*

[10] More precisely, these regions include the orbitofrontal cortex, the ventral striatum, and the anterior cingulate cortex. As to the training, our participants received courses on the notion of metta, a word that means “altruistic love” in Pali. The instructions the participants received were mostly concentrated on the aspect of kindness and benevolent wishes (“May you be happy, in good health, etc.”). The training included one entire day spent with a teacher, followed by daily group practices, one hour every evening. The participants were also encouraged to practice at home.

[11] Klimecki, O. M., et al. (2012), *op. cit.*

[12] Lutz, A., Brefczynski-Lewis, J., Johnstone, T., & Davidson, R. J. Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS One*, 3(3), 2008, e1897.

[13] Christophe André, *Feelings and Moods*, Polity Press, 2012, p. 250.

“Although empathy is crucial for successful social interactions, excessive sharing of others negative emotions may be maladaptive and constitute a source of burnout. ... In contrast, subsequent compassion training could reverse the increase in negative effect and, in contrast, augment self-reports of positive affect. ... We conclude that training compassion may reflect a new coping strategy to overcome empathic distress and strengthen resilience.”
— Quote from *Differential pattern of functional brain plasticity after compassion and empathy training*