

Affect Labelling, Autogenic Training, and reducing Emotional Distress

“Putting feelings into words has long been thought to be one of the best ways to manage negative emotions.....”

“Affect Labelling¹ Disrupts Amygdala Activity in Response to Affective Stimuli.”

Liebermann 2007 p 421

1. Introduction

Recent research indicates that if we are shown and simply observe an angry face, that will have a negative effect on our physiology. If, on the other hand, we are shown the same face and then label it in words (e.g. Anger), this will reduce the negative effect on our physiology (Creswell et al 2007; Lieberman et al 2007; Siegel 2007 pp 238-240; 303).

Such affect labelling of negative and / or distressing emotional states may have clinical and personal implications. This paper discusses the research, and then looks at possible applications of these research findings in day to day life.

2. Three examples of our FEAR circuits (Panksepp 1998) being activated

i. Activation of the flight and / or fight response in the case of a:
bear / snake / or external threat

If we see a bear or a snake², for example, this will be processed by the visual thalamus which relays the message “bear” or “snake” direct to the amygdala, and this sets in motion the fight or flight response before we are consciously aware of what is happening (see also B1 and B10). This is depicted in simplified form in Figure 1 in response to our finding that we are sharing our bath with a bear!



Figure 1
The Basic Flight / Fight response is initially mediated by unconscious processes via the amygdala

¹ The term “Affect Labelling” is somewhat technical, and as indicated in the two quotes from Liebermann it involves “putting feelings into word”. The term is retained in this paper to emphasise that we are dealing with a specifically researched approach to disturbing emotions which is much more effective in the context of on-going Mental Training.

² The bear or snake is here acting as the “primary inducer” (or Unconditional Stimulus – US) that sets off the fear response (Unconditional Response).

We feel uncomfortable because the FEAR circuits change the physiology of our whole body-mind-state. If we are subjected to certain conscious or unconscious stimuli frequently, this can lead to a state of hyper-vigilance and is related to body-mind distress – and is part of the domain of the complexities of “Medically Unexplained Symptoms” – MUS (see B10).

ii. Observing an angry face will also activate the amygdala and fear circuits

If we see an angry (human) face, that will also set in motion our FEAR circuits (again via the visual thalamus and amygdala), and this will induce a change in our physiology; we will probably feel uncomfortable (see also B10) – see Figure 2.

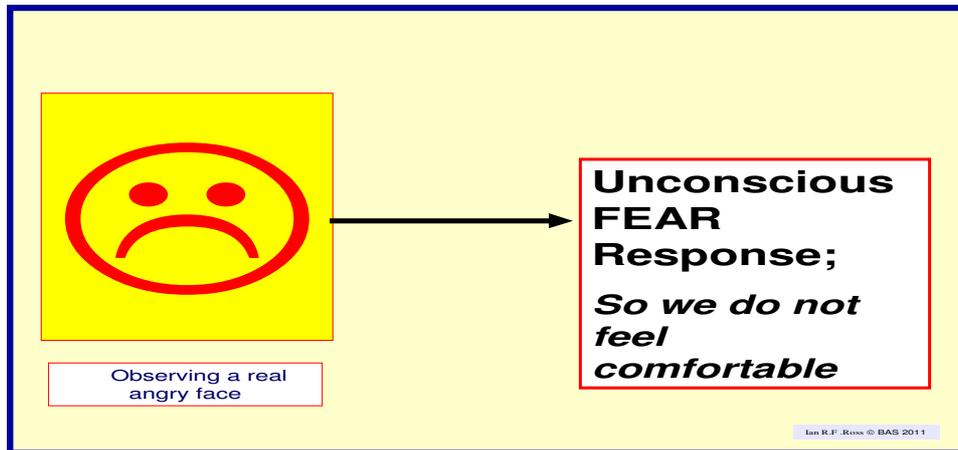


Figure 2

Observing an angry face will set off an unconscious FEAR (Panksepp 1998) response, again mediated through the amygdala

Note: the yellow background indicates that this is a real angry person we are confronted with. This, like the bear above, is a primary inducer (US).

iii. Observing the image / picture of an angry face will also activate the fear circuits

Simply observing the picture of an angry face can set in motion these FEAR circuits, as depicted in Figure 3.

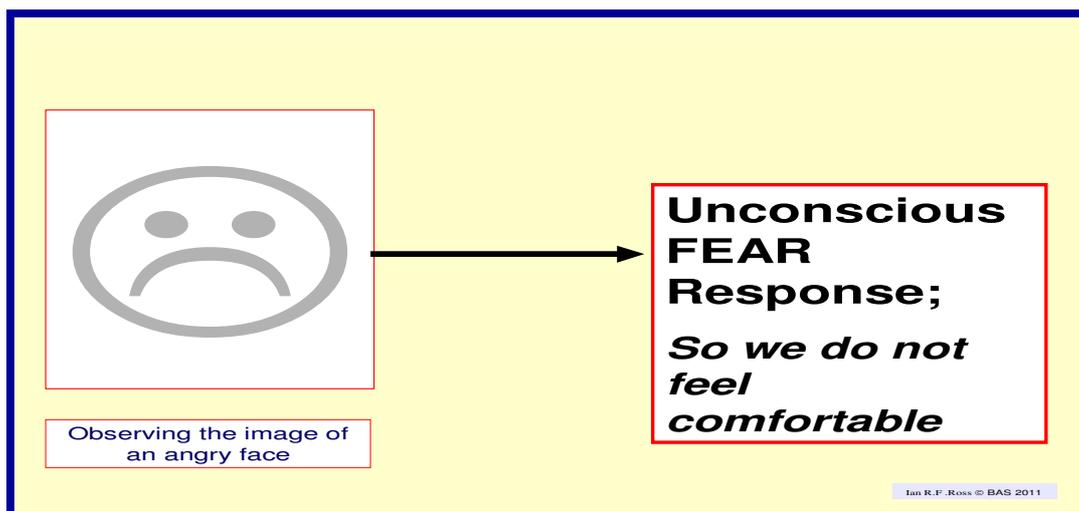


Figure 3

Observing the image of an angry face can set off an unconscious FEAR response

Note: the grey silhouette of the face indicates the *image* of an angry face. As with Figure 1 & 2, the response is a whole body-mind-state-change; and so will be felt by every cell in the body. [The image of the face can be taken as a secondary inducer or Conditional Stimulus producing the Conditional Response].

3. Affect Labelling: Research by Lieberman et al 2007

If we are shown an angry face, as schematically shown in Figure 3, and we simply observe it, then this will result in a change in our whole mind-body-physiology, as discussed above.

Now Lieberman and his colleagues did some most interesting research on “Affect Labelling”. The details of the research are quite complex as they had to be sure that the effects they revealed were true effects. From the point of view of the present discussion, we can look at just the essence of the research.

Observing faces depicting different “negative” emotional states (e.g. anger; sadness; fear)

The researchers showed the subjects pictures of various faces, including angry faces, and asked the subjects to simply observe the face. At the same time, the researchers monitored the neuro-physiological effects on the subjects, including amygdala activity. As expected, amygdala activity increased.

Putting into words the different emotional states depicted in the images (Affect Labelling)

Subjects were also asked, in another part of the test, to label the emotion that they felt most fitted the picture (e.g. angry, scared, happy, surprised, sad). When they came to analyse the results, they found that such affect labelling significantly reduced amygdala activity in the case of e.g. the angry or fearful faces. The implications of this are that putting into words the feelings we are having can, in the case of negative feelings, reduce their negative physiological effects. This is shown schematically in Figure 4.

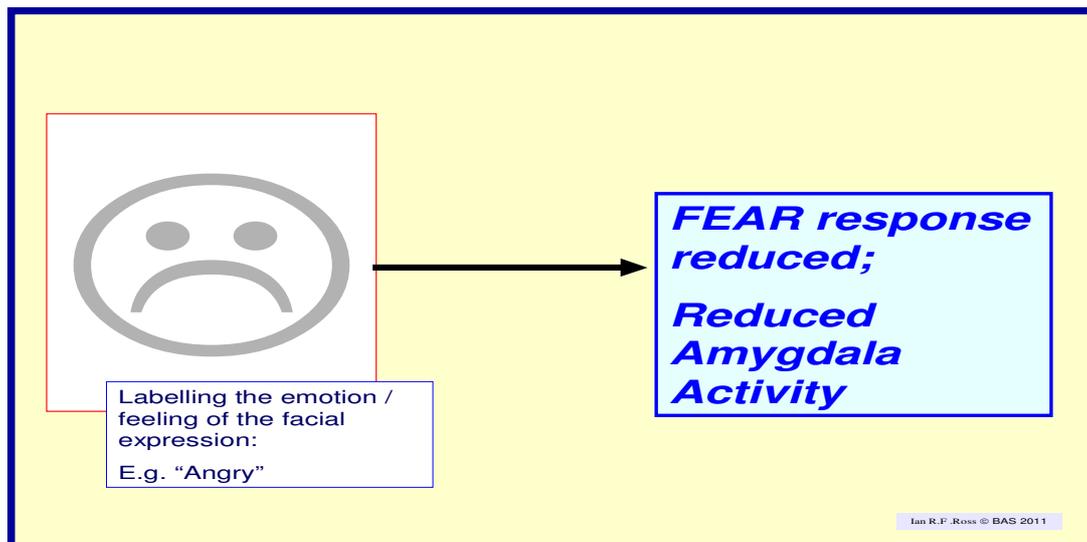


Figure 4

“Affect Labelling” the emotion expressed in the facial image reduces the emotional response to the image

If we put the feeling into words, we are in one sense distancing ourselves from the raw emotion. This overlaps with the concept of placing feelings / thoughts on the ‘rim of a wheel’, away from our own central hub of being (Siegel 2007; 2010; and also see C4). It also relates to the Experiential Modality discussed in B10 and particularly in B11.

The Effect of ‘Affect Labelling’, compared to ‘Observing’, on Amygdala Activity

Affect Labelling had a significant effect in reducing amygdala activity compared with simply observing the facial image. This is shown graphically in Figure 5.

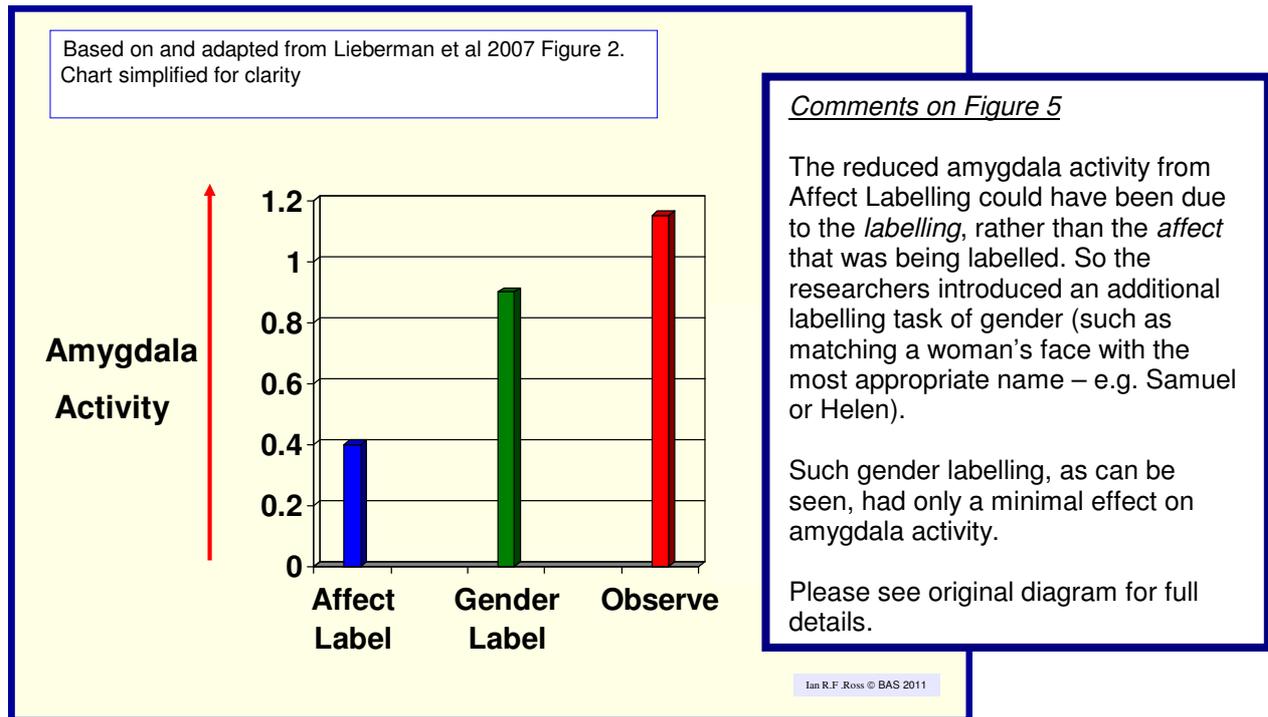


Figure 5

The effect of Affect Labelling, Gender Labelling, and simply Observing various images of human faces on Amygdala Activity

Note: Amygdala activity here simply shows relative activity when observing compared to Affect or Gender Labelling.

4. Neural pathways, suggested by research, that may be involved in Affect Labelling reducing Amygdala Activity

Affect labelling was associated with an increase in activity of the *right ventro-lateral* Pre-Frontal Cortex (*rvl*-PFC). Such activity did not occur in the gender labelling. Furthermore, when the activity of the *rvl*-PFC increased, the activity of the amygdala went down. In fact, the activities of these two areas were found to be inversely correlated.

In addition, the *medial* Pre-Frontal cortex (*m*-PFC) activity was also found to be inversely correlated with the activity of the amygdala. Previous research has demonstrated direct neural connections between the *m*-PFC and the amygdala.

The researchers suggest the affect labelling increases the activity of *rvl*-PFC, and that this then decreases amygdala activity by neural pathways that go via the *m*-PFC (see also for comparison Gross 2002; Delgado 2008; Ross 2010 p 211).

These pathways are shown schematically in Figure 6.

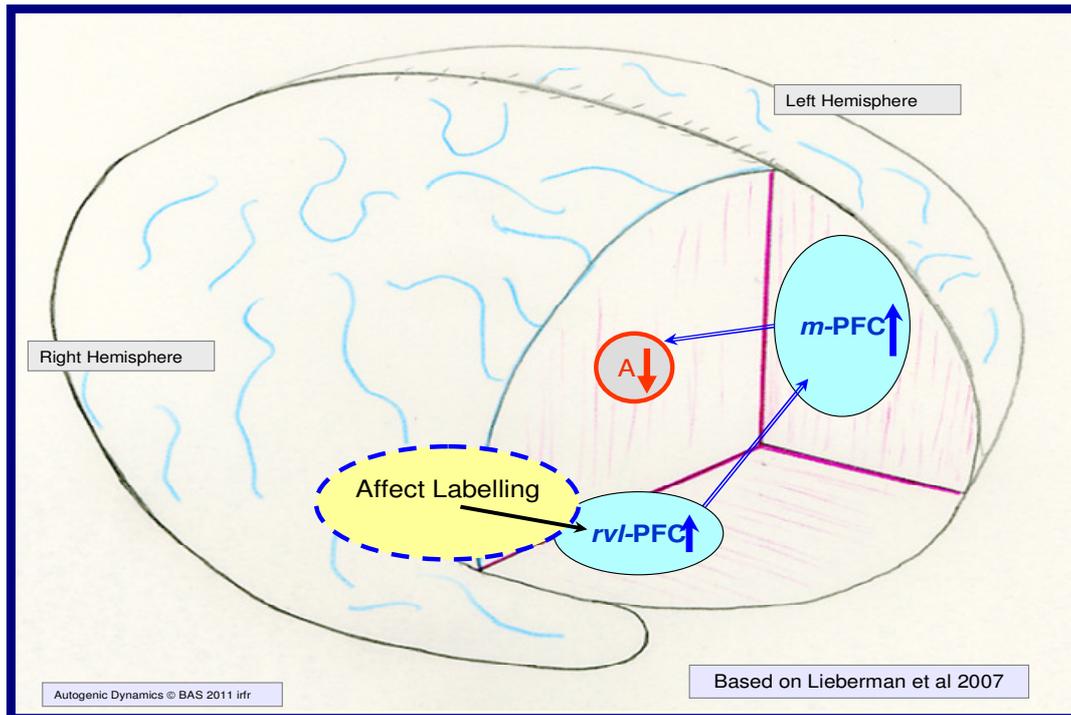


Figure 6
Possible neural pathways by which Affect Labelling can reduce
Amygdala Activity.
Based on Lieberman et al 2007

Comments on the highly schematic Figure 6

- i. Affect Labelling is associated with increased activity of the right *ventro lateral* Pre Frontal Cortex (*rvl-PFC*) notated by the upwards blue arrow.
- ii. Affect Labelling is also associated with reduced activity of the Amygdala (A).
- iii. There are no direct neural pathways between the *rvl-PFC* and the Amygdala (A).
- iv. However, during Affect Labelling there is also increased activity in the *medial* Pre Frontal Cortex (*m-PFC*), which does have direct connections with the Amygdala.
- v. There are also neural pathways between the *rvl-PFC* and the *m-PFC*, and so it is considered likely that this is the pathway by which Affect Labelling has an effect on reducing Amygdala activity.
- vi. Separate research has shown that increased *m-PFC* activity down-regulates/ reduces Amygdala activity – and hence FEAR, RAGE, and anxiety circuits (e.g. Siegel 2007; C2).

5. Mindfulness seems to increase the positive effects of Affect Labelling

(Creswell et al 2007)

Some background reflections

The concept of Affect Labelling is not new. It was considered an effective way of dealing with negative feelings and emotions millennia ago.

The skilful use of labelling during satipatthana (mindful) contemplation can help to strengthen clear recognition and understanding. At the same time, labelling introduces a healthy degree of inner detachment, since the act of apostrophizing one's moods and emotions diminishes one's identification with them.

Analayo, from Satipatthana.

Quoted by Creswell et al 2007

The mindful contemplation mentioned in the quote above goes back to some of the original teaching of Sakyamuni – and is sometimes discussed in terms of “The Four Foundations of Mindfulness” (see for example Hanh 1993). Mindfulness is to do with “Paying attention, in a particular way, on purpose, in the present moment, and non-judgmentally” (Kabat Zinn 2004 p 4). Affect Labelling of negative emotions / feelings is thus a form of mindfulness – for example, we are doing it in the present moment and non-judgementally.

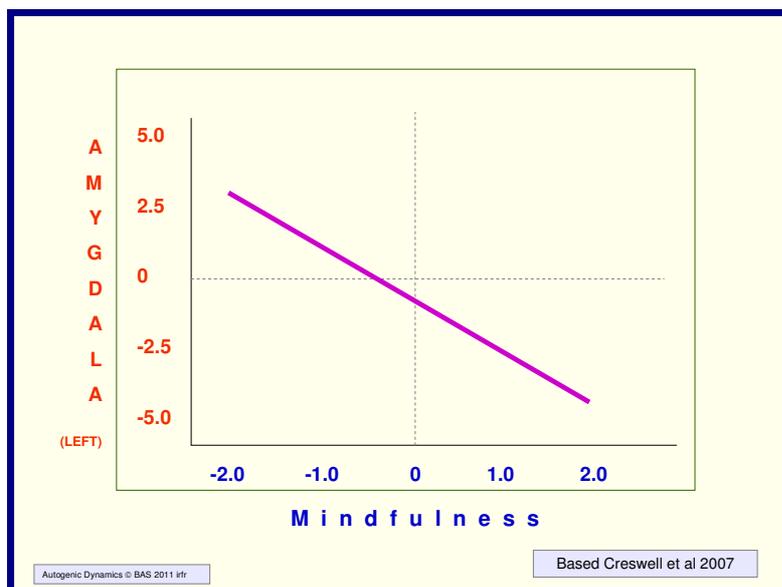
Creswell et al (2007) worked in conjunction with Lieberman on the paper already discussed (Lieberman et al 2007). Creswell was particularly interested to see if those who had higher levels of “Dispositional Mindfulness”, as measured by the Mindfulness Attention Awareness Scale (MAAS), are more effective at reducing amygdala activity when affect labelling (Brown & Ryan 2003). This is indeed what their research found.

A brief summary of Creswell's research paper (2007)

During Affect Labelling, high levels of Dispositional Mindfulness were associated with:

- i. Increased activity of the *rvl*-PFC, *m*-PFC, and the *ventro-medial* PFC compared with people with lower levels of Dispositional Mindfulness.
- ii. Reduced amygdala activity.

These findings mirror those of the Lieberman study already discussed. They add to that study by suggesting that *increased mindfulness* enables us have a *more powerful effect* on reducing amygdala activity when we affect label a negative feeling that we are having. If we plot the effect of Affect Labelling – in the context of Mindfulness – against amygdala activity, we get a graph that shows that as our Mindfulness increases, amygdala activity decreases.



Comments on Figure 7

- The mindfulness axis goes from minus 2.0 units to (plus) 2.0 units.
- The amygdala (left) activity goes from little activity (-5.0) to significant activity (+2.5).
- It will be seen that as our mindfulness increases, so the Affect Labelling has a greater effect in reducing Amygdala activity.

There are similar, if slightly less pronounced, effects on the right amygdala.

Redrawn from Creswell et al
2007 p 564

Figure 7

Left amygdala activity related to Mindfulness when labelling an experienced negative affect

6. Mindfulness training, the middle Prefrontal cortex, and Affect Labelling

Daniel Siegel reviews the research that indicates that meditative-type practices will increase our mindfulness (Siegel 2007; 2010³). This will be associated with increased *middle* Pre Frontal Cortex (*m*-PFC) activity and the associated nine crucial functions for well-being of the *m*-

³ Note that Mindfulness overlaps with Siegel's concept of Mindsight.
page 6 of eight

PFC (C2). This implies that such training will increase our score in Dispositional Mindfulness, and in the Mindful Attention Awareness Scale mentioned in Section 5.

So the research suggests that practices such as Positive Mental Training, Meditation, and Autogenic Training can all increase Dispositional Mindfulness, and enhance our ability to reduce the disturbing effects of negative feelings / emotions when using Affect Labelling.

In effect, Affect Labelling distances ourselves from the raw emotion – and, by almost instantaneously reducing amygdala activity, this will significantly reduce feelings of fear, anxiety, and / or anger. Feelings of fear, anxiety, and anger are actually the result of various whole body physiological states that are mediated through the amygdala: so by incapacitating the amygdala during affect labelling, we are actually abolishing (or significantly reducing) these distressing “whole-body-physiological-states.”

Note: It is suggested that Affect Labelling is only used in the context of some on-going form of mental training (e.g. Meditation, Yoga, Positive Mental Training, Tai Chi, Autogenic Training). If we are not already beginning to change the dynamics of the m-PFC, then Affect Labelling is unlikely to be particularly effective (see for example Figure 7).

The following would be examples of affect labelling when we have the associated feeling / emotion:

Emotion / Feeling	Comments re Affect Labelling	
	Some examples of effective types of Affect Labelling (Any labelling that helps to distance ourselves from the raw experience is helpful)	Avoid any labelling in which we are identifying with the feeling / emotion and / or making a value judgement, such as
Anger / ill will towards others	<ul style="list-style-type: none"> • Anger • Anger is here. • Anger is arising within me. • Hatred is arising in me.... • Hallo anger; you back again! 	I am angry I hate you
Anxiety / Fear	<ul style="list-style-type: none"> • Anxiety • Hallo fear; you are back again! • I note anxiety is arising in me. 	I am afraid I am anxious
Loss / sadness	<ul style="list-style-type: none"> • A sense of sadness is arising • Sad feelings are here. • Hallo sadness... 	I am sad

Figure 8
Some examples of Affect Labelling

So as we become aware of a negative or distressing emotion or feeling arising within us, we can gently label the feeling along the lines discussed above⁴. It is humbling to recall that Rumi’s poem, “The Guest House”, was essentially talking about the concept of Affect Labelling (Rumi 1207-1273 p 109; and Ross 2010 p 212).

⁴ Affect Labelling is a distinct practice from the Autogenic Off-Loading Exercises of Luthe, and should not be confused with them. The two involve different neuro-circuits. In addition, Affect Labelling can be practised during Meditative type practices (see also B13).

Siegel's practice of 'placing' thoughts, ideas, feelings and bodily sensation on the periphery of an imaginary wheel, while our inner being stays safe and secure at the inner hub, can be a helpful way of visualising these matters (Siegel 2007; 2010; and also see C4).

Reference / sources

Analayo. Satipathana: the direct path to realisation. 2003. Birmingham, UK: Windhorse Publications.
Brown, K.W.; & Ryan, R.M.: 2003. The benefits of being present: mindfulness and its role on psychological well-being. <i>Journal of Personality and Social Psychology</i> , 2003, 84: 822-848)
Creswell, J. David; Way, Baldwin M.; Eisenberger, Naomi I.; Lieberman, Matthew D. 2007 Neural Correlates of Dispositional Mindfulness During Affect Labelling – <i>Psychosomatic Medicine</i> 69:560–565
Davidson, R.J.; Ekman, P.; Senulius, S.; Friesen, W.: 1990. Emotional Expression and Brain Physiology I: Approach / Withdrawal and Cerebral Asymmetry. <i>Journal of Personality and Social Psychology</i> 58; 1990; 330 - 341.
Ekman, Paul; 2003. IN: Destructive Emotions: a dialogue with The Dalai Lama narrated by Daniel Goleman; ISBN 0-7475-6182-6
Ekman, Paul; Davidson, Richard J.; Ricard, Matthieu; and Wallace, B.Alan: 2005. Buddhist and Psychological Perspectives on Emotions and Well-Being. April 2005; <i>Current Directions in Psychological Science</i> : Vol. 14; 2; page 59 - 63
Delgado, Mauricio R.; Nearing, Katherine I.; LeDoux, Joseph E; and Phelps, Elizabeth. 2008. Neural Circuitry Underlying the Regulation of Conditioned Fear and its Relation to Extinction. <i>Neuron</i> 59, 829-838 (11.09.2008)
Ekman, Paul: 2007 (second edition; first edition 2003). <i>Emotions Revealed</i> . ISBN 13-13-978-0-8050-8339-2
Epel, Elissa; Daubenmier, Jennifer; Moskowitz, Judith Tedlie; Folkman, Susan; and Blackburn, Elizabeth. 2009. Can Meditation Slow Rate of Cellular Aging? <i>Cognitive Stress, Mindfulness, and Telomeres</i> . Longevity, Regeneration, and Optimal Health: <i>Ann. N.Y. Acad. Sci.</i> 1172: 34–53 (2009). Also: doi: 10.1111/j.1749-6632.2009.04414.x C _2009 New York Academy of Sciences
Gilbert, Paul. 2009. <i>The Compassionate Mind. How to use compassion to develop happiness, self-acceptance and well-being.</i> ISBN 978-1-84901-098-6
Gilbert, Paul. 2010. <i>Compassion Focused Therapy</i> ISBN 978-0-415-44807-9
Gross, J.J. 2002. Emotion regulation: Affect, cognitive, and social consequences. <i>Psychophysiology</i> , 39: 281-291
Hanh ;Thich Nhat: 1993; <i>Transformation and Healing – On the four establishments of mindfulness;</i> Rider; ISBN 0-7126-5732-0
Kabat-Zinn, Jon: 1994 / 2004. <i>Wherever you go, there you are: Mindfulness Meditation for everyday life.</i> ISBN 0-7499-2548-5
Lieberman, Matthew D.; Eisenberger, Naomi I.; Crockett, Molly J.; Tom, Sabrina M.; Pfeifer, Jennifer H.; and Way, Baldwin M. 2007. Putting Feelings into Words – <i>Affect Labelling Disrupts Amygdala Activity in Response to Affective Stimuli</i> . <i>Psychological Science</i> : 2007; Volume 18; Number 5: 421 – 428)
Ross, Ian R.F.; 2005. Flowing with our healing molecules: <i>Autogenic Therapy in the new age of Affective Neuro-science</i> . Essay based on the Schultz and Luthe Memorial Lecture 2005 given to the British Autogenic Society on 05.11.2005.
Ross, Ian R.F. 2010. <i>Autogenic Dynamics – Stress, Affect Regulation and Autogenic Therapy.</i> ISBN 978-0-9563993-0-4
Rumi, The Essential: Translators Coleman Barks & John Moyne (et al): 1995. page 109. Harper, San Francisco. ISBN 0-06-250959-4
Siegel, Daniel J. 2007. <i>The Mindful Brain – Reflections on Attunement in the Cultivation of Well-Being</i> ISBN 10: 0-393-70470-X

Linked themes in this Autogenic Dynamics section

B1	Bears, Imagination, and Well-Being
B3	Emotional Operating Neuro Circuits – a brief introduction to Panksepp's model
B4	Emotional Triggers and the Refractory Period
B10	Snakes, Conditional Stimuli, and Equanimity – Approaches to treating mind-body disturbances
B11	Distressing Mind-Body-States – from Negative Ruminations towards Well-Being
B13	Facial Expressions, Off Loading Exercises, and Affective Neuro Science - One therapist's perspective
C2	Mindsight – our seventh sense – and associated middle pre-frontal cortex functions new replacement
C4	The Hub of Mindsight
C7	Being in touch with our feelings – Hemispheric Integration

Thanks to Annie Sturgeon and Michael Ross for their helpful comments and proof reading.

October 2011