

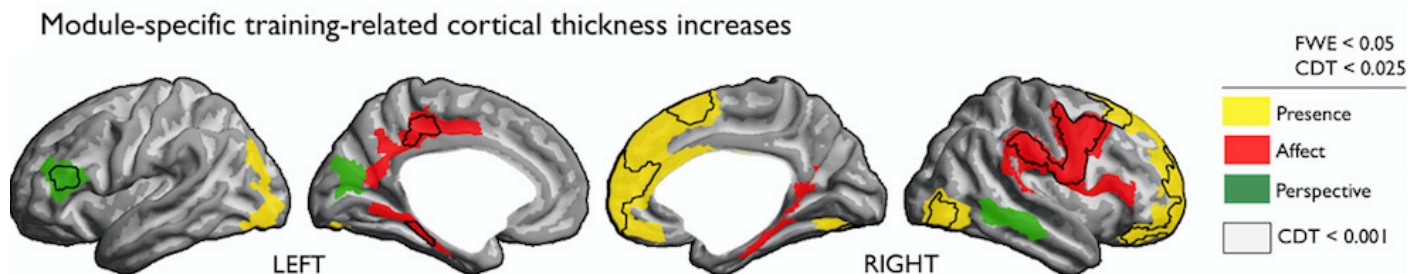
the paired emotion-sharing exercise: powerful training in emotional intelligence

what is the 'affect dyad'? The paired emotion-sharing exercise or 'affect dyad' is a simple and powerful tool for training key aspects of emotional intelligence. For five minutes one partner practises empathic listening while the other practises identification, description and tolerance of both negative/unpleasant and positive/pleasant emotional states. For the second five minutes the partners swap roles. Usually the exercise then ends without further discussion. This 'affect dyad' was one of two core practices in the three-month 'affect module' of the major ground-breaking *ReSource Project* (see diagrams below). The affect training module produced key changes in emotional intelligence, cortisol-linked stress reduction, social connectedness and (like going to the gym for the mind) also resulted in specific anatomical changes in participants' brains.

why practise the dyad – the ReSource Project findings: This rather wonderful research project on mental training induced neural plasticity was headed by Professor Tania Singer of the Max Planck Institute in Leipzig. It ran from 2012 to 2016 and involved well over 300 participants. The three 3-month training modules were *Presence* (mindfulness training), *Perspective* (socio-cognitive training), and *Affect* (compassion & dealing with difficult emotions):



The results were very encouraging. The diagram below shows the brain changes produced:



As Trautwein et al wrote (see over) "It is unclear ... if different types of (mental training) practice have the same or specific effects on mental functioning. Here we tested three consecutive three-month training modules aimed at cultivating either attention, socio-affective qualities (such as compassion), or socio-cognitive skills (such as theory of mind), in three training cohorts and a retest control cohort (N = 332). While attention performance improved across the training modules, compassion increased most strongly after socio-affective training and theory of mind showed selective improvements after socio-cognitive training. These results show that specific mental training practices are needed to induce plasticity in different domains of mental functioning, providing a foundation for evidence-based development of more targeted interventions adapted to the needs of different education, labor, and health settings."

I have also included a number of research abstracts below giving more details of ReSource Project results. Valk reports on structural brain changes, Trautwein looks at behavioural improvements, Engert discusses the extra stress-reduction benefits of the compassion/affect training over simple mindfulness practices, and Kok shows that the dyad exercises encouraged social connection better than the solo meditation training did.

why practise the dyad – the protective effect of being able to identify and differentiate different emotions: The ReSource Project findings are not at all the only reason for thinking the affect dyad exercises are likely to be helpful. Demiralp showed that difficulty differentiating different aspects of negative/unpleasant emotions is associated with increased risk of depression, while Pond demonstrated that improved emotional differentiation reduced anger-associated aggression, and Kashdan highlighted that poor differentiation of different negative emotions links to increased social anxiety risk. These studies are listed below.

why practise the dyad – the importance of acceptance/tolerance, the ability to express our feelings & overall emotional intelligence: Schäfer showed the central protective effect against anxiety & depression of being better at tolerance/acceptance of negative emotions rather than rushing off into avoidance or rumination. The ReSource Project findings are not at all the only reason for thinking the affect dyad exercises are likely to be helpful. Cameron highlighted that *"when individuals were more emotionally expressive during daily interactions, they experienced interpersonal benefits such as greater acceptance from others, greater relatedness and relationship satisfaction, and less distancing by others. Greater emotional expression in daily life also predicted increases in self-esteem and relationship satisfaction across time."* And Mikolajczak showed that emotional competence (EC) – also known as emotional intelligence – which *"refers to individual differences in the identification, understanding, expression, regulation, and use of one's emotions and those of others, has been found to be an important predictor of individuals' adaptation to their environment. Higher EC is associated with greater happiness, better mental health, more satisfying social and marital relationships, and greater occupational success ... and is a significant predictor of (physical) health that has incremental predictive power over & above other predictors."* What's not to like?!

Valk, S. L., et al. (2017). "Structural plasticity of the social brain: Differential change after socio-affective and cognitive mental training." *Science Advances* **3**(10). Although neuroscientific research has revealed experience-dependent brain changes across the life span in sensory, motor, and cognitive domains, plasticity relating to social capacities remains largely unknown. To investigate whether the targeted mental training of different cognitive and social skills can induce specific changes in brain morphology, we collected longitudinal magnetic resonance imaging (MRI) data throughout a 9-month mental training intervention from a large sample of adults between 20 and 55 years of age. By means of various daily mental exercises and weekly instructed group sessions, training protocols specifically addressed three functional domains: (i) mindfulness-based attention and interoception, (ii) socio-affective skills (compassion, dealing with difficult emotions, and prosocial motivation), and (iii) socio-cognitive skills (cognitive perspective-taking on self and others and metacognition). MRI-based cortical thickness analyses, contrasting the different training modules against each other, indicated spatially diverging changes in cortical morphology. Training of present-moment focused attention mostly led to increases in cortical thickness in prefrontal regions, socio-affective training induced plasticity in frontoinsula regions, and socio-cognitive training included change in inferior frontal and lateral temporal cortices. Module-specific structural brain changes correlated with training-induced behavioral improvements in the same individuals in domain-specific measures of attention, compassion, and cognitive perspective-taking, respectively, and overlapped with task-relevant functional networks. Our longitudinal findings indicate structural plasticity in well-known socio-affective and socio-cognitive brain networks in healthy adults based on targeted short daily mental practices. These findings could promote the development of evidence-based mental training interventions in clinical, educational, and corporate settings aimed at cultivating social intelligence, prosocial motivation, and cooperation.

Trautwein, F.-M., et al. (2017). "Differential benefits of mental training types for attention, compassion, and theory of mind. ." Retrieved from osf.io/x9s2h. (Preprint, not yet peer-reviewed - available in free full text) Description: Mindfulness- and, more generally, meditation-based interventions increasingly gain popularity, effectively promoting cognitive, affective, and social capacities. It is unclear, however, if different types of practice have the same or specific effects on mental functioning. Here we tested three consecutive three-month training modules aimed at cultivating either attention, socio-affective qualities (such as compassion), or socio-cognitive skills (such as theory of mind), in three training cohorts and a retest control cohort (N = 332). While attention performance improved across the training modules, compassion increased most strongly after socio-affective

training and theory of mind showed selective improvements after socio-cognitive training. These results show that specific mental training practices are needed to induce plasticity in different domains of mental functioning, providing a foundation for evidence-based development of more targeted interventions adapted to the needs of different education, labor, and health settings.

Engert, V., et al. (2017). "Specific reduction in cortisol stress reactivity after social but not attention-based mental training." *Sci Adv* **3**(10): e1700495. (Published online 7th October) Psychosocial stress is a public health burden in modern societies. Chronic stress-induced disease processes are, in large part, mediated via the activation of the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic-adrenal-medullary system. We asked whether the contemplative mental training of different practice types targeting attentional, socio-affective (for example, compassion), or socio-cognitive abilities (for example, perspective-taking) in the context of a 9-month longitudinal training study offers an effective means for psychosocial stress reduction. Using a multimethod approach including subjective, endocrine, autonomic, and immune markers and testing 313 participants in a standardized psychosocial laboratory stressor, we show that all three practice types markedly reduced self-reported stress reactivity in healthy participants. However, only the training of intersubjective skills via socio-affective and socio-cognitive routes attenuated the physiological stress response, specifically the secretion of the HPA axis end-product cortisol, by up to 51%. The assessed autonomic and innate immune markers were not influenced by any practice type. Mental training focused on present-moment attention and interoceptive awareness as implemented in many mindfulness-based intervention programs was thus limited to stress reduction on the level of self-report. However, its effectiveness was equal to that of intersubjective practice types in boosting the association between subjective and endocrine stress markers. Our results reveal a broadly accessible low-cost approach to acquiring psychosocial stress resilience. Short daily intersubjective practice may be a promising method for minimizing the incidence of chronic social stress-related disease, thereby reducing individual suffering and relieving a substantial financial burden on society.

Kok, B. E. and T. Singer (2017). "Effects of contemplative dyads on engagement and perceived social connectedness over 9 months of mental training: A randomized clinical trial." *JAMA Psychiatry* **74**(2): 126-134. Importance Loneliness is a risk factor for depression and other illnesses and may be caused and reinforced by maladaptive social cognition. Secularized classical meditation training programs address social cognition, but practice typically occurs alone. Little is known about the effectiveness of contemplative practice performed in dyads. Objective To introduce and assess the effectiveness of contemplative dyadic practices relative to classical-solitary meditation with regard to engagement and perceived social connectedness. Design, Setting, and Participants The ReSource Project was a 9-month open-label efficacy trial of three, 3-month secularized mental training modules. Replacement randomization was used to assign 362 healthy participants in Leipzig and Berlin, Germany. Eligible participants were recruited between November 11, 2012, and February 13, 2013, and between November 13, 2013, and April 30, 2014. Intention-to-treat analyses were conducted. Interventions Breathing meditation and body scan (the presence module), loving-kindness meditation and affect dyad (the affect module), and observing-thoughts meditation and perspective dyad (the perspective module). Main Outcomes and Measures Primary outcomes were self-disclosure and social closeness. Engagement measures included compliance (ie, the mean [95% margin of error] number of meditation sessions that a participant engaged in per week), liking, and motivation to practice. Results Thirty participants dropped out after assignment to 3 experimental groups; 90 participants were assigned to a retest control that did not complete the main outcome measures; 16 participants provided no state-change data for the affect and perspective modules (226 remaining participants; mean age of 41.15 years; 59.3% female). Results are aggregated across training cohorts. Compliance was similar across the modules: loving-kindness meditation (3.78 [0.18] sessions), affect dyad (3.59 [0.14] sessions), observing-thoughts meditation (3.63 [0.20] sessions), and perspective dyad (3.24 [0.18] sessions). Motivation was higher for meditation (11.20 [0.40] sessions) than the dyads (9.26 [0.43] sessions) and was higher for the affect dyad (10.11 [0.46] sessions) than the perspective dyad (8.41 [0.46] sessions). Social closeness increased during a session for the affect dyad (1.49 [0.12] sessions) and the perspective dyad (1.06 [0.12] sessions) and increased over time for the affect dyad (slope of 0.016 [0.003]) and the perspective dyad (slope of 0.012 [0.003]). Self-disclosure increased over time for the affect dyad (slope of 0.023 [0.004]) and the perspective dyad (slope of 0.006 [0.005]), increasing more steeply for the affect dyad ($P < .001$). Conclusions and Relevance Contemplative dyads elicited engagement similar to classical contemplative practices and increased perceived social connectedness. Contemplative dyads represent a new type of intervention targeting social connectedness and intersubjective capacities deficient in participants who experience loneliness and in many psychopathologies.

Demiralp, E., et al. (2012). "Feeling blue or turquoise? Emotional differentiation in major depressive disorder." *Psychol Sci* **23**(11): 1410-1416. Some individuals have very specific and differentiated emotional experiences, such as anger, shame, excitement, and happiness, whereas others have more general affective experiences of pleasure or discomfort that are not as highly differentiated. Considering that individuals with major depressive disorder (MDD) have cognitive deficits for negative information, we predicted that people with MDD would have less differentiated negative emotional experiences than would healthy people. To test this hypothesis, we assessed participants' emotional experiences using a 7-day experience-sampling protocol. Depression was assessed using structured clinical interviews and the Beck Depression Inventory-II. As predicted, individuals with MDD had less differentiated emotional experiences than did healthy participants, but only for negative emotions. These differences were above and beyond the effects of emotional intensity and variability.

Pond, R. S., Jr., et al. (2012). "Emotion differentiation moderates aggressive tendencies in angry people: A daily diary analysis." *Emotion* **12**(2): 326-337. Anger is commonly associated with aggression. Inefficient anger-coping strategies increase negative affect and deplete the regulatory resources needed to control aggressive impulses. Factors linked with better emotion regulation may then weaken the relationship between anger and aggression. The current work explored one factor associated with emotion regulation - differentiating one's emotions into discrete categories - that may buffer angry people from aggression. Three diary studies ($N = 628$) tested the hypothesis that emotion differentiation would weaken the relationship between anger and aggression. In Study 1, participants high in emotion differentiation reported less daily aggressive tendencies when angry, compared to low differentiators. In Study 2, compared to low differentiators, high differentiators reported less frequent provocation in daily life and less daily aggression in response to being provoked and feeling intense anger. Study 3 showed that high daily emotional control mediated the interactive effect of emotion differentiation and anger on aggression. These results highlight the importance of considering how angry people differentiate their emotions in predicting their aggressive responses to anger.

Kashdan, T. B. and A. S. Farmer (2014). "Differentiating emotions across contexts: Comparing adults with and without social anxiety disorder using random, social interaction, and daily experience sampling." *Emotion* **14**(3): 629-638. The ability to recognize and label emotional experiences has been associated with well-being and adaptive functioning. This skill is particularly important in social situations, as emotions provide information about the state of relationships and help guide interpersonal decisions, such as whether to disclose personal information. Given the interpersonal difficulties linked to social anxiety disorder (SAD), deficient negative emotion differentiation may contribute to impairment in this population. We hypothesized that people with SAD would exhibit less negative emotion differentiation in daily life, and these differences would translate to impairment in social functioning. We recruited 43 people diagnosed with generalized SAD and 43 healthy adults to describe the emotions they experienced over 14 days. Participants received palmtop computers for responding to random prompts and describing naturalistic social interactions; to complete end-of-day diary entries, they used a secure online website. We calculated intraclass correlation coefficients to capture the degree of differentiation of negative and positive emotions for each context (random moments, face-to-face social interactions, and end-of-day reflections). Compared to healthy controls, the SAD group exhibited less negative (but not positive) emotion differentiation during random prompts, social interactions, and (at trend level) end-of-day assessments. These differences could not be explained by emotion intensity or variability over the 14 days, or to comorbid depression or anxiety disorders. Our findings suggest that people with generalized SAD have deficits in clarifying specific negative emotions felt at a given point of time. These deficits may contribute to difficulties with effective emotion regulation and healthy social relationship functioning.

Schäfer, J. Ö., et al. (2017). "Emotion regulation strategies in depressive and anxiety symptoms in youth: a meta-analytic review." *Journal of Youth and Adolescence* **46**(2): 261-276. The role of emotion regulation in subclinical symptoms of mental disorders in adolescence is not yet well understood. This meta-analytic review examines the relationship between the habitual use of prominent adaptive emotion regulation strategies (cognitive reappraisal, problem solving, and acceptance) and maladaptive emotion regulation strategies (avoidance, suppression, and rumination) with depressive and anxiety symptoms in adolescence. Analyzing 68 effect sizes from 35 studies, we calculated overall outcomes across depressive and anxiety symptoms as well as psychopathology-specific outcomes. Age was examined as a continuous moderator via meta-regression models. The results from random effects analyses revealed that the habitual use of all emotion regulation strategies was significantly related to depressive and anxiety symptoms overall, with the adaptive emotion regulation strategies showing negative associations (i.e., less symptoms) with depressive and anxiety symptoms whereas the maladaptive emotion regulation strategies showed positive associations (i.e., more symptoms). A less frequent use of adaptive and a more frequent use of maladaptive emotion regulation strategies were associated with depressive and anxiety symptoms comparably in the respective directions. Regarding the psychopathology-specific outcomes, depressive and anxiety symptoms displayed similar patterns across emotion regulation strategies showing the strongest negative associations with acceptance, and strongest positive associations with avoidance and rumination. The findings underscore the relevance of adaptive and also maladaptive emotion regulation strategies in depressive and anxiety symptoms in youth, and highlight the need to further investigate the patterns of emotion regulation as a potential transdiagnostic factor.

Cameron, L. D. and N. C. Overall (2017). "Suppression and expression as distinct emotion-regulation processes in daily interactions: longitudinal and meta-analyses." *Emotion*. (Published online 1st June). Emotional suppression and expression both occur frequently in daily social interactions, yet research examining these emotion regulation processes simultaneously in naturalistic contexts remains limited. Although theory and research tend to reflect an implicit assumption that suppression and expression represent opposite sides of the same construct, they are likely to occur independently and exert different influences on intrapersonal and interpersonal experiences. In 4 experience-sampling and longitudinal studies, we assessed the personal and interpersonal consequences of daily emotional suppression and expression within romantic and close relationships. Mixed-model analyses revealed that suppression and expression consistently predicted independent and distinct outcomes across the studies. When individuals suppressed their emotions, they experienced more intrapersonal costs such as greater depressed mood, greater fatigue, lower self-esteem, and lower life satisfaction. Interpersonally, they also felt less acceptance from others, more distancing by others, and less relationship satisfaction. Greater suppression in daily life also predicted increases in depressive symptoms and reductions in relationship satisfaction 3 months later. In contrast, when individuals were more emotionally expressive during daily interactions, they experienced interpersonal benefits such as greater acceptance from others, greater relatedness and relationship satisfaction, and less distancing by others. Greater emotional expression in daily life also predicted increases in self-esteem and relationship satisfaction across time. Meta-analyses of the 4 studies confirmed the reliability and significance of these relationships; $|r's| = .12-.33$. These studies demonstrate that suppression and expression are distinct processes used to manage emotions within social relationships and operate differently in shaping personal well-being and relationship functioning.

Mikolajczak, M., et al. (2015). "A nationally representative study of emotional competence and health." *Emotion* **15**(5): 653-667. Emotional competence (EC; also called "emotional intelligence"), which refers to individual differences in the identification, understanding, expression, regulation, and use of one's emotions and those of others, has been found to be an important predictor of individuals' adaptation to their environment. Higher EC is associated with greater happiness, better mental health, more satisfying social and marital relationships, and greater occupational success. Whereas a considerable amount of research has documented the significance of EC, 1 domain has been crucially under investigated: the relationship between EC and physical health. We examined the relationship between EC and objective health indicators in 2 studies ($N_1 = 1,310$; $N_2 = 9,616$) conducted in collaboration with the largest Mutual Benefit Society in Belgium. These studies allowed us (a) to compare the predictive power of EC with other well-known predictors of health such as age, sex, Body Mass Index, education level, health behaviors (diet, physical activity, smoking and drinking habits), positive and negative affect, and social support; (b) to clarify the relative weight of the various EC dimensions in predicting health; and (c) to determine to what extent EC moderates the effect of already known predictors on health. Results show that EC is a significant predictor of health that has incremental predictive power over and above other predictors. Findings also show that high EC significantly attenuates (and sometimes compensates for) the impact of other risk factors. Therefore, we argue that EC deserves greater interest and attention from health professionals and governments.