

A Suggested Technique for Coupling Breathing Awareness with Imagery and Word-Thought Production

Dan Gollub

Pawnee Mental Health Services, Manhattan, KS 66502, USA

*Correspondence to: Dan Gollub, M.A., Pawnee Mental Health Services, Manhattan, KS 66502, USA. Email: dangollub@aol.com

Abstract

Breathing awareness involves a number of separate brain regions. It is hypothesized that the mental exercise of producing an image with each breath can involve the brain more fully with producing images than would the production of an equivalent number of images which aren't coupled to one's breaths. It is similarly hypothesized that the mental exercise of producing a word or group of words with each breath, with the goal of creating a purposeful narrative, can involve the brain more fully with word-thought production than would the production of an equivalent number of words intended to create a purposeful narrative which aren't coupled to one's breaths.

Introduction

Can focusing on breathing have beneficial effects on our thinking and emotions? Studies suggest this is so.

Several brain regions linked to emotion, attention, and body awareness are activated when we pay attention to our breath (Herrero, et al., 2018). When participants in a study accurately tracked their breath, the insula and the anterior cingulate cortex were active. This combined region is involved in part in moment-to-moment awareness. When participants intentionally paced their breathing, the posterior insula was activated. This region is involved in part in awareness of bodily states. The relevance of higher brain circuitry to respiration-locked oscillations is highlighted by their sensitivity to cognitive factors such as volitional and attentive breathing. The authors also noted that attention to breath increases respiration-locked oscillations in the premotor cortex, which play a role in processing moment-to-moment awareness.

Melnichuk MC, et al. (2018) found that the locus coeruleus (LC) functions in both attention and respiration, and good attentional performance requires optimal levels of tonic LC activity. The LC is involved with levels of a chemical messenger in the brain called noradrenaline, and this chemical messenger is released when people are challenged, curious, exercised, focused, or emotionally involved. If produced at the right levels, it helps the brain grow new connections.

What other mental activity beyond a focus on breathing might help with brain regulation?

Mental imagery is a promising tool and mechanism of psychological interventions (Skottnik and Linden, 2019).

A principal category of such research involves repeated mental imagery with positive valence. Repeated positive imagery has been shown to increase the tendency to interpret ambiguous situations as more positive and to induce positive moods in healthy participants (Holmes EA, Coughtrey AE, and Connor A.; 2008).

Murphy SE, et al. (2015) found that the vividness of prospective positive imagery is associated with mood and optimism.

Correlations between imagery ability and depression have been investigated. High-dysphoric individuals have demonstrated a poorer ability to vividly imagine positive future events (Holmes EA, et al.; 2008).

The effect of words and word thoughts on the brain has also been investigated. The use of language has been shown to affect learned fear (Davey GCL, 1992).

According to Tabibnia G, Lieberman MD, and Craske MG (2008), cognitive strategies to reduce negative response to distressing stimuli may involve some form of internal verbal thought.

The use of positive mindset trigger words in a pre-performance routine has been shown to improve expressive performance in junior high age singers (Broomhead P, et al.; 2012).

According to Newberg A, and Waldman MR (2013), holding a positive and optimistic word in the mind can stimulate frontal lobe activity, and the longer one concentrates on positive words, the more other areas of the brain are affected.

Conjectures

1. Visualizing an image intended to be positive with each breath, for perhaps 30 seconds or so, can enhance the ability to create positive images and a related ability to make those images more vivid. It is hypothesized that the vividness of positive images can have a pervasive, beneficial effect on the visualizer's moods and imagination.
2. Producing a word or sequence of words in one's mind with each breath, for perhaps 30 seconds or so, with a "positive valence" for each breath's associated word or words can diminish mental distress and enhance constructive, insightful thinking and related behavior. Producing words with a positive valence doesn't necessarily involve the use of pleasant words. Analytical words in pursuit of a constructive goal or personal narrative words similarly pursuing a constructive purpose can possess an underlying positive nature.
3. The coupling of images with consecutive breaths and the coupling of word thoughts with consecutive breaths can involve the brain more fully in imagery production and word thought production than if one attempted to produce images and word thoughts without a simultaneous focus on one's breathing. It is assumed that the timing of some breaths will be slightly altered in the attempt to couple images or words with the breaths, and these modifications will increase the brain's involvement in the overall process.
4. The attempt to produce an image or word/sequence of words with each consecutive breath will likely have some inherent difficulties.

Some or most of the images one produces might out of necessity lack specifics. It is hoped that the nonspecific images one creates can nevertheless seem to have a positive quality. Some of the words one produces in this breathing-coupled exercise might be repetitions of a prior word or words used. It is hoped that key words used, even if they are repetitions, will be helpful in enabling or evoking new purposeful words with an attached positive valence.

Author Note:

Dan Gollub works as a psychologist for Pawnee Mental Health Services. He's published articles about an original approach of his to dream interpretation, and also has published articles about the potential role of imagery in purposeful thought, a potential means of enhancing emotional intelligence, and the potential value of volitional muscle movements to enhance thinking.

B. Grace Bullock provided a helpful suggestion for a reference for this article.

References

1. Broomhead, P., Skidmore, J.B., Eggett, D.L., & Mills, M.M. (2012). The effects of a positive mindset trigger word pre-performance routine on the expressive performance of junior high age singers. *Journal of Research in Music Education* (60(1)): 62-80. <https://doi.org/10.1177/0022429411435363>
2. Davey, G. C. L. (1992). Classical conditioning and the acquisition of human fears and phobias: A review and synthesis of the literature. *Advances in Behavior Research and Therapy* (14): 29-66.
3. Herrero, J.L., Khuvis, S., Yeagle, E., Cerf, M., & Mehta, A.D. (2018). Breathing about the brain stem: volitional control and attentional modulation in humans. *Journal of Neurophysiology* (119): 145-159. <https://doi.org/10.1152/jn.00551.2017>
4. Holmes, E.A., Coughtree, A.E., & Connor, A. (2008). Looking at or through rose-tinted glasses? Imagery perspective and positive mood. *Emotion* (8(6)): 875-879.
5. Holmes, E.A., Lang, T.J., Moulds, M.L., & Steele, A.M. (2008). Prospective and positive mental imagery deficits in dysphoria. *Behav. Res. Therapy* (46(8)): 976-981.
6. Melnychuk, M.C., Dockree, P.M., O'Connell, R. G., Murphy, P.R., Balsters, J.H., & Robertson, I.H. (2018). Coupling of respiration and attention via the locus coeruleus: Effects of meditation and pranayama. *Psychophysiology* (55(9)). <https://doi.org/10.1111/psyp.13091>
7. Murphy, S.E., O'Donoghue, M.C., Drazich, E.H.S., Blackwell, S.E., Nobre, A.C., & Holmes, E.A. (2015). Imagining a brighter future: The effect of positive imagery training on mood, prospective mental imagery and emotional bias in older adults. *Psychiatry Res.* (230(1)): 36-43. [doi:10.1016/j.psychres.2015.07.059](https://doi.org/10.1016/j.psychres.2015.07.059)
8. Newberg, A. & Waldman, M.R. (2013). *Words can change your brain*. New York: Penguin Random House.
9. Skottnik, L & Linden, D.E.J. (2019). Mental imagery and brain regulation—New links between psychotherapy and neuroscience. *Front. Psychiatry* (10): 779. [doi:10.3389/fpsy.2019.00779](https://doi.org/10.3389/fpsy.2019.00779)
10. Tabibnia, G., Lieberman, M.D., & Craske, M.G. (2008). The lasting effect of words on feelings: Words may facilitate exposure effects to threatening images. *Emotion* (8(3)): 307-317. [doi:10.1037/1528-3542.8.3.307](https://doi.org/10.1037/1528-3542.8.3.307)