

Provocation workshop 2a

If brainstorms don't work...

The creative process is thought to have a number of stages. There are a number of different proposals about exactly what those stages are but commonly they include:

- Preparation - immersion in the subject/problem
- Incubation - when ideas churn below the threshold of consciousness
- Insight - the aha moment, or series of incremental moments
- Evaluation - critical judgement and testing of the ideas
- Elaboration - making ideas happen

Csikszentmihalyi, Mihaly *Creativity: Flow and the psychology of discovery and invention*, New York: HarperPerrenial,1996.

Different proponents/theorists suggest different names for each stage and some suggest there are less or more stages involved but essentially these stages are generally accepted.

Much effort in workplace creativity is focused on the moment of inspiration and the generation of ideas stage (sometimes in the belief that this is the entire creative process). One of the most common techniques for ideas generation in the workplace is the 'brainstorm', yet an essay on the biological bases of creativity (Martindale, *Handbook of Creativity*, (1999)) seems to undermine its use in the inspirational stages of the creative process (the incubation and insight stages as outlined above).

Using evidence drawn from a wide range of sources, about biological comparisons between 'creative' and 'uncreative' people Martindale argues that:

- Creative people are more able to move between primary process cognition (found in normal states such as dreaming, fantasy and reverie as well as abnormal states such as hypnosis and psychosis) and secondary process cognition (found in waking consciousness). This is important because primary process facilitates free, associative, non judgemental thinking that will lead to new connections being made whilst the secondary process facilitates the focus required to develop and elaborate
- Creative people have a broader focus of attention than uncreative people - 'the greater the attentional capacity, the more likely the combinational leap which is generally described as the hallmark of creativity' (Mendelsohn, 1976)
- Creative people have flatter associative hierarchies and uncreative people have steeper associative hierarchies. A flat associative hierarchy allows more associations to a given stimulus (as in word association for example) whereas the steep hierarchy means the

subject has strong but very few mental associations with that stimulus (Mednick, 1962).

So, this suggests that creativity requires a move between primary process and secondary process cognition, wide attentional focus and flat associative hierarchies.

In achieving these states creative people are shown to demonstrate a low level of cortical arousal.

Arousal is viewed as a continuum, ranging from sleep through alert wakefulness to states of emotional tension. It is related to learning and performance in an inverted-u-shaped manner, with optimal performance at medium levels of arousal (Hebb, 1955, Yerkes and Dodson, 1908). As task complexity increases the optimal level of arousal decreases. Simple tasks are performed most efficiently at relatively high levels of arousal, whereas more complex tasks require lower levels of arousal

Martindale, *Handbook of Creativity*, place and publisher, 1999.

Lindsley (1960) suggests that this relates to primary and secondary process cognition and that medium levels of activation are required for secondary process whilst low and high levels should co-occur with primary process states.

Martindale also outlines Hull's (1943) behavioural law which suggests that increases in the general level of arousal makes a subject's behaviour more stereotypical whereas decreases make it more variable.

Essentially, the proposition is that stress or over stimulation encourages people to behave in ways they always behave; it steepens rather than flattens their associative hierarchies; it focuses rather than defocuses their attention and it makes accessing the primary process cognition state more difficult. A number of studies have demonstrated that stress reliably decreases creativity and originality (Coren and Shulman, 1971; Horton, Marlowe and Crowne 1963; Dentler and Mackler, 1964; Krop, Alagre and Williams, 1969).

In this vein brainstorming techniques have been shown to decrease creativity (e.g. Lindgren and Lindgren, 1965).

Leaving aside the issue of whether 'creative' and 'uncreative' subjects have a natural predisposition to achieving low levels of cortical arousal for given tasks, or whether they are a result of learned behaviour (or of course both), if brainstorms increase arousal and have negative impacts on levels of creativity, what other options do we have for facilitating creativity in the workplace?