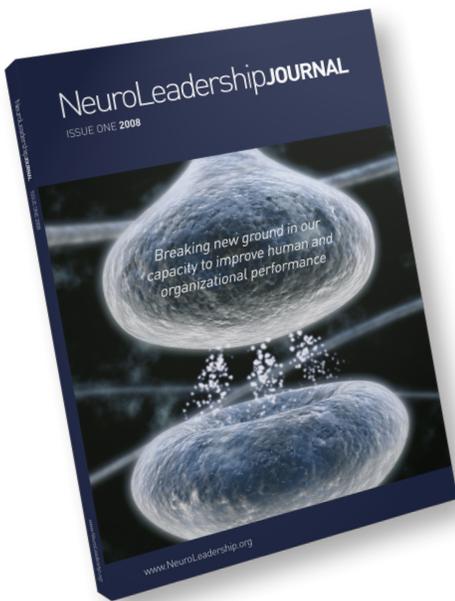


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Using human brain dynamics to enhance workplace team dynamics: evidence from two applied case studies

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Introduction

This paper will describe the approach and results of an 18 month, team building program applied to 2 workplace teams in the finance industry. The cross-disciplinary program was informed by organisational behaviour, positive psychology, adult learning, appreciative inquiry and neuroscience. The application of human brain dynamics was used as a lynch-pin around which to present the separate inputs from each of the above disciplines in a way that best facilitated synergistic gains. By understanding the way in which the human brain responds to change, I was able to use the research and techniques from each of the above disciplines to best achieve successful team learning

This paper will outline the team dynamic program framed within three important building blocks of neuroscience: awareness, vision and focus (Rock & Schwartz, 2007). I will outline the initiatives that were used to promote the three neural building blocks. This will be followed by evidence that demonstrates the success of the program. I will finish by reflecting on some of the advantages and disadvantages I faced when delivering the program using brain-based principles.

Background information and aims of the program

The two teams worked within the one large, multinational, investment firm. My role was that of an external organisational consultant. My work with team 1 commenced in December, 2005, and my work with team 2 started in June 2006. Both teams worked in funds management. Team 1 had 7 members and approached me to assist them

in enhancing team resilience and assisting them to push the boundaries of peak performance. Team 2 had 10 members and approached me because they had recently lost 3 team members and gained 3 team members. The leader wanted assistance in establishing a collaborative team culture in this quasi-new team. Both were pro-active change initiatives in that the leaders were not recruiting my assistance to react to, or fix, major team problems but, rather, were seeking new ways to assist in continual improvement.

Both teams covered the same suite of learning topics (self awareness, learning, communication, conflict resolution, and decision making), however, the content of the workshops was tailored to suit the unique character and developmental stage of these two different teams. As an example, whilst Gersick's Punctuated Equilibrium theory (1988, 1989) was the framework used by team 1, team 2 applied Kozlowski, Gully, Nason and Smith's (1999) Team Formation Theory.

The formal aims of the program for both teams were to 1) assist in building interpersonal skills in order to 2) foster the development of peak performance team mental maps. The team building program was designed to promote individual-level changes in perceptions, understanding, expectations, attitudes, and behaviours. These individual-level changes were intended to facilitate team-level changes in culture, cooperative capability and knowledge transfer. A major goal for me in designing and implementing this program was to show the team members (via their own insights) how the effort required to change is rewarded along neural, emotional, social and performance axes (Armenakis & Bedeian, 1999; Eby, 2000; Tabibnia & Lieberman, 2007). The next section details how I structured the 18 month program into three building blocks.

Building block 1: creating awareness through a formal, 3-step, team diagnostic

The purpose of building block 1 was to raise awareness for the need for change. In order to best raise awareness, research from the organisational change literature (Bare, 1986; Eby, 2000) suggests that individual's must come to their own realisation of the need for change. Authors adopting a brain-based perspective to change posit that "the way to get past the prefrontal cortex's defences (against change) is to help people come to their own resolution regarding concepts causing their prefrontal cortex to bristle" (Koch, 2006; p 2). A recognition of the need for change may come about through moments of insight defined as "the sort of sudden illumination that enables one to solve a difficult problem or reinterpret a situation in new light" (Kounios, Frymiare, Bwden, Fleck, Subramaniam, Parrish & Jung-Beeman, 2006; p. 882).

Thus, insight plays an important role in raising change awareness by allowing people to re-interpret their status quo and see how the situation could be different. According to Kounios et al., (2006) brain states associated with insight show greater neural activity across the midfrontal cortex, the anterior cingulate cortex and the bilateral temporal cortex. Amongst other functions, these areas help the brain to focus on a topic/task when facing competing neural responses and processes. Hence, insight may raise awareness by directing and focusing one's neural resources to the need for change. Koch (2006) also suggests that moments of insight, re-appraisal or resolution "appear to be soothing to the pre-frontal cortex" (p.2), thus increasing receptiveness to change.

With this in mind, the diagnostic was set up as an 'awareness-raising and insight-generating' exercise that was owned by the team rather than a situation where the external consultant identifies team problems and provides expert-based solutions. A three-phase diagnostic process was used. In phase A, a detailed, multi-level data collection and analysis of the team was conducted. This involved each team member completing a team culture survey, a team social network survey and participating in an in-depth interview. In addition, relevant company documents were reviewed. In step 1, I adopted both an appreciative enquiry and a problem-focused approach so I would learn what was working in the team and what was not. My approach for the remaining 18-month program was largely solutions-focused.

Phase B involved the team interpreting the results of the data analysis. When providing the team with my report I deliberately withheld a proportion of my own interpretation of the results. Instead I explained in the report what I had done, the approach I had taken, the statistical results, the content analysis of the interview data and some broad, potential, ways to move forward. In order to raise awareness, I felt it

was critically important to ensure that the team generated their own explanations for the results. As such, I set them the task of interpreting the results of the report, highlighting the key areas they felt required attention.

In phase C, I set each individual a series of questions to answer and send back to me. These questions encouraged reflection about the role that each individual played in results of the team diagnostic. The reflective questions facilitated many individual epiphanies and I witnessed a number of significant insights, or 'aha' moments, where individual team members suddenly recognised the way in which they had contributed to (or sometimes been the sole cause of) a particular team dynamic. For instance, one team member wrote "It is literally as if the light bulb was turned on. I had not seen things so clearly until I read your report." According to Koch (2006), these moments of insight serve to increase receptiveness to change by creating a pleasurable effect and by building our neural capacity for change.

The results interpretation was a successful way to raise individual member awareness and collective-level team awareness about the areas of team functioning that could be improved. By asking each team member to analyse the results and think of relevant, concrete team examples to elucidate the results, their attention was brought more quickly and more vividly to the need for change than if I had of given them my interpretation. Given that this exercise asked team members to actively generate reasons for their team results rather than simply being on the receiving end of a consultant's presentation, the diagnostic had a strong impact. According to Koch (2006) "doing the thinking for employees takes their brains out of the action. And when disengaged, they will not invest the energy necessary to make the new connections required to change behaviours" (p. 3). Thus, my approach, to invite team member's to interpret their own team results which served to generate insights and allowed members to see new interconnections between and across team issues. This enhanced their mental resources and capacity to deal with the changes they were about to undertake.

Building block 2: enhancing vision through visioning and goal setting exercises

According to authors such as Cooperider (2001) and Busch and Kassam (2005) expectations shape reality. The image-action nexus is well supported in fields such as quantum physics, medicine, psychology and sports. In support of this, Rock (2006) posits that "what we expect is what we experience" (p.6 from reprint www.workplacecoaching.com). Arguments such as these form the idea behind visioning exercises used in team building exercises. Under my program the team generated a new vision via three practices: 1) creating a visual poster that represented their

future ideal, 2) establishing team goals using the S.M.A.R.T¹ formula and 3) generating a team charter that outlined the team's self governance ideas. Whilst the later two visioning exercises were verbally based, the visual poster tapped into visual, auditory and kinaesthetic thinking (Poon & Fatt, 2000). My aim was to reinforce the vision by igniting multiple brain areas. These vision exercises were designed to create new mental maps about the future team culture and success.

Whilst we reviewed numerous change theories in the subsequent workshops, two that are worthy of brief mention here are 1) Lewin's (1997) force field analysis of change 1 S.M.A.R.T = Specific, Measureable, Attainable, Realistic and Time-bound. (Bare, 1986; Burnes, 2004) and 2) Carnall's (1995) model on the effect of change upon self-esteem. These 2 theories were presented in the first workshop to open a dialogue that change can be unsettling, difficult and effortful, that it is normal to feel resistance to change and that this resistance will ebb and flow over time. As a result of this, it was important that I directed the team's attention to the changes as intensely and as frequently as possible. We set out the aim of repeating the new behaviours (e.g., active listening) until they became habit. In Lewin's terms, we were seeking to re-freeze the new behaviours. In neuroscience terms, we were seeking to create the actual physical changes in the brain that support the new behaviours thereby making them routine through the process of self-directed neuroplasticity (Schwartz & Begley, 2002; Schwartz, Stapp, & Beauregard, 2004). The behaviour becomes routine when the effort of the new behaviour is taken away from our working memory and pre-frontal cortex and re-located in the basal ganglia.

Building block 3: achieving focus through psychological testing, workshops, homework, readings, buddy system and personal communication

Once insights and visions had been generated it was time to support the third building block in neural change, that of focus. According to Rock and Schwartz (2007) the brain makes connections where attention is focused. So a major goal for me in this phase of the program (which lasted approximately 15 months) was to keep team members focused. In order to create the greatest likelihood for change to occur, I relied on a model of distributed learning, using multiple initiatives. The program consisted of regular psychological testing, bi-monthly workshops, between-workshop homework (both reflective homework and active, practise-based homework), reading material, and regular, personalised contact with me (typically by phone or email). Throughout the program, I used my skills as a psychologist to create an atmosphere of psychological safety (Edmonson, 1999) so as to minimize the possibility of an amygdala hi-jack response (Goleman,

1996) to the error detection each individual's brain was likely to feel when being asked to change their ways.

The psychological testing was self administered (sometimes self-scored and other times psychologist-scored) prior to the workshops. We assessed personality (Big 5), learning styles, need for cognitive closure, conflict resolution style, active listening scores, communication habits, regulatory focus, risk tolerance and decision making style. The workshops were modelled on the action-learning cycle (Whyte, 1991). They were either located off-site or run in an upstairs meeting room as devoted time away from team members workstations. The voluntary homework tasks were designed to encourage team members to reflect on, or directly practise, the skills so as to increase the attention density focused towards the change. According to Rock (2006) "If you can get people to take tangible actions while the insight is close at hand, even just to commit to doing something later, this will be a big help to ensuring new ideas become reality" (p.12)

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It is, very important to note here that whilst these initiatives had a heavy bias towards the building block of 'focus', the three building blocks (insight, vision and focus) were all present and operating in an iterative exchange throughout the entire program. For instance, the scores and profiles people received on their psychological tests often served as data to awareness ("Gee, with these scores, I really do need to change my communication style!") and produce 'aha' moments of insight ("If we change the way we communicate as a team our decision-making process will be more successful"). The unfolding data that was generated through the workshop series also raised awareness for the need to change, beyond that identified by team members following the diagnostic. For example, team 2 did not initially nominate decision making as an area they wanted to improve. However, after the communication workshops there was a realisation that their decision making could be improved through recognising the perceptual biases they were prone to and the communication short falls that had just been identified.

This awareness was generated ¾'s of the way through the program attesting to my point that the three building blocks do not always proceed in a linear manner.

The workshops were run, on average, once every 2 months. The other 4 initiatives were all aimed at keeping people focused on the changes in between the workshops.

Specifically, I was aiming to "keep the relevant circuitry open and dynamically alive" (Rock & Schwartz, 2006, p 7). Whilst all team members attended the workshops, they varied in their uptake of the other initiatives. The majority of members participated in approximately 40% of the between workshop initiatives. On particular occasions, I would deliberately follow up with a specific team member based on their behaviour in the workshop. Where I determined that they were struggling with change I would encourage them to complete the homework, do the reading or converse with me. I was conscious that, during the daily, operational grind, their new mental maps might easily be lost to neural Darwinism (Edelman, 1987). I was training skilled professionals who were working in highly complex and demanding roles. Under these situations, despite the best of intentions to change, their mental resources are in high demand for other tasks and the new changes may take a back seat.

*If we change
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The major reason cited for why the initiatives were not utilised was the time required. This was a hurdle that I was constantly faced with when working with both teams. Many times I tried to re-orient this response to suggest that perhaps it was the effort required (to steer away from routine behaviours and use new behaviours requires effort from our working memory and pre-frontal cortex) rather than the time. Sometimes this helped a team member to make the shift – other times it did not. However, following the logic of Rock and Schwartz (2006), that pushing my point on this too strongly would most likely make the team members more resistant, I had to be content with sending this message in gentle ways and leaving it to the individual to see the merit in the idea.

Success and challenges of this program

Evaluations of organisational change programs are an important, yet difficult, exercise (Cacioppe, 1998; Golembiewski, 1998). My intention was to formally evaluate the program by re-administering the team culture and the social network surveys used in the original diagnostic. However, this was not possible for two reasons. First, team 1 underwent significant changes in team numbers and composition towards the end of the program (the program ended in May, 2007). Two members left the team to take up internal re-assignments, one existing member changed roles within the team, one member took an extended sabbatical and four new members were hired. These changes rendered a pre-program/post-program comparison meaningless. Second, team 1 and team 2 underwent a merger immediately following the end of my work with team 2 (September, 2007). Given that the focus was now on establishing a unified team identity, a survey asking members of the former team 2 to rate their previous team's culture would have been counterproductive to the merger agenda.

However, even without a systematic pre-program/post-program evaluation, there is strong evidence for the success of the program. For instance, I used Kirkpatrick's (1998) four levels of learning to evaluate each of the workshops for the 2 teams. On average, the teams scored the workshops at 4.13 for reaction, 4.21 for learning, 4.05 for behaviour, and 4.27 for results.

Over the duration of this program both teams (2005-2007) also demonstrated external indices of success. For instance, both teams achieved greater success in the stock market over the course of the 18 month program. Team 1 also secured several new major clients during the program and received an industry award eight months after the program was completed. There are a multiplicity of factors which contribute to market performance and, thus, whilst these measures of external success cannot be directly correlated with the team building program both leaders have attested that the change within the teams served to enhance team functioning and, hence team, performance.

A final, indirect, indicator of the success of my approach is that I have been asked to stay on and assist with the merger of the two teams. I will be using a similar brainbased approach to this change initiative. One difference between the new initiative and the former team building program is that the team leaders have invited me to come in on a more frequent basis to engage in face to face dialogue. These regular conversations will support the third building block – maintaining focus and promoting attention density for change.

As mentioned earlier in this paper, the two teams I was engaged to work with were both pursuing pro-active change.

Given that the change was not reactive in nature, and there was nothing that was dramatically 'broken' within each team, I may have faced resistance to change and attitude akin to "If it's not broke, then why fix it?" (Bovey & Hede, 2001). It may easily have been the case that team members did not want use the energy and resources required to engage in change that they did not see as necessary. However, the brain based approach, by creating genuine awareness within team members for the need for change, was well suited to proactive change. In addition, by self-generating a new vision the teams were able to see that engaging in change was a beneficial way forward.

This program, however, was not without its faults and challenges. Whilst I found it quite easy to promote awareness and vision, a major challenge for me was how to keep people focused on the change when I was not physically present to direct their attention and reinforce the new neural connections that were made during moments of insight. I believe that neural pruning was occurring post each workshop. I tried to minimize this with between-workshop contact but this does not meet the requirement for constant, daily reinforcement (Rock & Schwartz, 2007). Despite this, the positive results do suggest that team members were able to focus their attention sufficiently enough to achieve change.

I discovered with team 1 that I did not provide sufficient scaffolding for the team diagnostic interpretation exercise. For team 1, I set the interpretive questions but asked the team to engage in this exercise without me. I did this because I was trying to engender a sense of ownership over the process. However, I found that, by not giving enough guidance, their interpretations lacked depth in some areas. This may have limited their awareness for the need for change in these areas. To avoid this outcome with the second team, I facilitated the team's interpretation via a workshop where I explained in detail the nature of the data set, the statistical tests I had used and some techniques for interpreting and questioning the results. The team was then divided into smaller groups and set about making their interpretations within the workshop where I could facilitate if required. The smaller teams then came together to share their interpretations which generated a mutual understanding of the teams results.

Finally, I am still unsure as to what degree I should have disclosed the neuroscience underpinnings of the program. Whilst neuroscience added credibility, the program was multi-disciplinary in focus and I did not want to detract from the other contributors (e.g. positive psychology, appreciative inquiry) nor overwhelm participants with too much science. My approach was characterised more as one whereby I used my own knowledge of adult neuroplasticity (Schwartz & Begley, 2002) to facilitate change rather than directly teaching the team about the brain. Others may prefer a method that directly teaches their participants about brain-based change.

Conclusions

I believe that the brain-based approach I took when designing and delivering this program was key to its success. With the exception of a few individuals, the team building program had high buy-in from the very start because awareness and insight were team-generated within a supportive framework. Team members responded well to the theory, research and evidence presented throughout the program. The neuroscience appealed to the team and added legitimacy and credibility to the program, therefore making team members more receptive to the ideas behind change.

...the principles of NeuroLeadership can be used to achieve significant improvements upon traditional change programs.

The team diagnostic, psychology testing, workshops and between workshop learning tools (e.g., homework, reading etc..) clearly served to promote awareness, build new visions and sustain directed attention towards the change. Team members successfully changed their attitudes, altered their behaviours and developed their interpersonal skills. Importantly, this was achieved with minimal resistance and, on the whole, team members found the program to be enjoyable and rewarding.

When reviewing the individual elements that made up this organisational change program I would be the first to say that nothing dramatically new was delivered. However, by shaping the program around the neural building blocks of awareness, vision and focus, I was able to deliver a high quality, innovative and successful change program. The transformational results generated with these two teams allows me to be confident in my conclusion that the principles of NeuroLeadership can be used to achieve significant improvements upon traditional change programs.

According to Rock (2006) change "requires ongoing attention and significant effort of will" (p. 3). As such, I would like to conclude this paper by offering my sincere gratitude and admiration to the two teams who showed the mental willpower to work through this program.

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