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## Neuroscience can contribute to change management: STREAP-Be model

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**ABSTRACT:** In our world of volatile, uncertain, complex, and ambiguous (VUCA), a capacity for change and adaptation is vital. However, changing successfully has been a challenging task for both individuals and organizations. Taking into account the insights of neuroscience, this chapter introduces a framework of change management called STREAP-Be. The acronym represents seven factors that could significantly influence the effect of change: safety, trigger, reward, emotion, alignment, people, and behavior.

### 1 CHANGE MODELS AND OBSTACLES IN THE CHANGE PROCESS

#### 1.1 *Change Management Model*

Change management refers to approaches that respond to external and internal forces (Moran & Brightman, 2001). Many change models have been developed along with two broad categories. Firstly, there are models that aim at institutional change (e.g., Kotter, 1996; Lewin, 1947; Waterman, Peters, & Phillips, 1980). Secondly, there are models that support both individuals and organizational change processes (e.g., Duhigg, 2012; Kübler-Ross, 1969; Nguyen-Phuong-Mai, 2019; Thaler & Sunstein, 2009).

This chapter introduces the STREAP-Be model – a framework that incorporates insights from studies in social neuroscience, psychology, health behavioral change, and cognitive behavioral therapy. It's argued that such an interdisciplinary approach can provide new insight, hybrid solutions, and highlight areas where future research may focus on.

#### 1.2 *Obstacles to change process*

Change is challenging. Only 25% of change initiatives are successful in the long term (Emerman, 2013). From the evolutionary neuroscience's point of view, the obstacles to change may come from three characteristics: the human brain tends to (1) save energy, (2) avoid uncertainty, and (3) imitate others.

Firstly, converting activities into habits saves energy. Doing something effortlessly can (1) free up the processing power for the brain's prefrontal cortex for complex tasks and (2) turn vital reactions into automatic routines that help us to stay alive. However, strong neural patterns also mean that once the brain sees a familiar signpost, it may revert to the old way because it's easier to follow an old route. This happens even when the habit is harmful (Seligman, 1972). Because change costs energy, it means past investment is lost (Kahneman & Tversky, 1992) and a switch cost has to occur to suppress the old and make way for the new neural pathway (Loose, Wisniewski, Rusconi, Goschke, & Haynes, 2017). This all costs energy. And thus, no pain no change, no pain no gain.

Secondly, avoiding uncertainty helps humans to survive. Safety means status quo and ambiguity implies potential dangers. Humans experience more stress when we don't know than when we know for sure that bad things will happen (de Berker, 2016). When we speculate with fear, we tend to imagine the worst, making ambiguity even more stressful.

Finally, imitation is an essential part of social learning, which is vital for survival. In the brain, mirror neurons fire in both situations: when we act and when we see someone else acting (Ramachandran, 2012). These neurons help us to pick up behaviors and emotions, to communicate, and learn from each other. This also means change has to win over the tendency of mirroring old habits.

To conclude, change can be challenging because the brain tends to save energy by routines, prioritizes certainty, and is wired for imitation. The next section introduces a change model that takes these roadblocks for change into account. STREAP-Be stands for: Safety, Trigger, Reward, Emotion, Alignment, People, and Behavior.

## 2 STREAP-BE CHANGE MODEL

### 2.1 *The “S” of STREAP-Be: Safety*

Both interest and fear trigger change. However, due to survival purposes, the brain prioritizes fear to the extent that it may register it before consciousness (Burra et al., 2013). Fear is a powerful driver of change as it increases vigilance to avoid danger (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). But it also impairs proactive and enhances reactive control (Yang, Miskovich, & Larson, 2018). In the long run, threatening messages may not lead to sustainable change (Ruiter et al., 2014), and change is more likely when people have the ability to respond (Peters et al., 2013).

This insight suggests that it is vital to identify fear issues and create a safe environment. A potential candidate to address this issue comes from the field of neuro-leadership: the SCARF model by Rock (2008). In general, there are five primary concerns that tap into the brain’s emotional system: (1) Status: position in a hierarchy; (2) certainty: ability to predict future; (3) autonomy: sense of control; (4) relatedness: sense of attachment with other; and (5) fairness: perception of fair exchange.

An indication from this framework is that safety strategies may include clarity, which promotes one’s “certainty” about the future. In fact, workforce engagement improves when supervisors have frequent communication with direct reports (Gallup, 2015). Similarly, the ability to make a choice is associated with “autonomy”, a sense of being in charge, and hence, safety. Nearly half of employees would give up a 20% raise for greater control over how they work (Feintzeig, 2014).

Creating a safe environment for change also involves building trust. The brain subconsciously picks up mistrust signals without us knowing it (Freeman, Stolier, Ingbretsen, & Hehman, 2014). “Trust” and “change success” are closely associated (Vosse & Aliyu, 2018). A critical prerequisite for trust is fairness. The famous ultimatum game suggests that when a change is perceived as unfair, people can sabotage to punish, even if that means their own loss. However, by administering intranasal oxytocin – a hormone associated with both trust and distrust – the right social context could trigger people to become more generous and offered 80% more compared to placebo (ikolajczak et al., 2010; Zak, Stanton, & Ahmadi., 2007).

### 2.2 *The “T” of STREAP-Be: Trigger*

Triggers are cues that activate habits (Duhigg, 2012). Even when the habit is gone, a trigger (e.g., cigarette) can bring back the old routine (smoking). Triggers are also explicit drivers of change such as competitors, technology, efficiency, or policies (Dawson, 2002).

With regard to triggers as habit activators, Duhigg (2014) referred to the “habit loop” which consists of a trigger, a routine, and a reward. For example, a mobile phone (trigger) activates the urge to check social media (routine) because it feels great (reward). To change this habit, one needs to identify the trigger, then experiment with different rewards. In short, to get rid of a habit, we need to acquire new ones: “Keep the same triggers and rewards as before, and feed the craving by inserting a new routine.”

With regard to triggers as change drivers, new triggers can be created to promote change. For example, in bias management, people change their behaviors when their brain is primed with

counter-stereotypes. Priming Asian women to think about gender decreased their math performance, but priming them to think about race increased it (Gibson, Losee, & Vitiello, 2014). This malleability of identities is supported by both behavioral (see Cameron, Brown-Iannuzzi, & Payne, 2012 for a review) and neural studies (e.g., Chiao et al., 2010).

However, a trigger is just one element of the habit loop. A trigger is significant because it's cued for a reward – which is the focus of the next session.

### 2.3 *The “R” of STREAP-Be: Reward*

Seeking pleasure and avoiding pain are important for survival. The brain constantly maximizes reward and minimizes punishment (Leknes & Tracey, 2008). Rewards provide positive reinforcement and shape desired behaviors (Milkovich & Newman, 2002).

In the brain, the anterior cingulate cortex (ACC) is associated with detecting errors and conflict. But when we are in pain and do not focus on it, the ACC detects a conflict, gets activated, and due to this distraction, we feel less pain (Sprenger et al., 2012). On the other hand, focusing on reward through positive activity interventions such as writing gratitude journals could rewire the brain and even treat depression (Layous, Chancellor, Lyubomirsky, Wang, & Doraiswamy, 2011). Furthermore, brain studies suggested that humans seem to learn better from success than from failure (Histed et al., 2009). Making a mistake is only rewarding when people have a chance to review the mistakes and learn from them in a safe environment because the brain sees this learning opportunity as a reward (Palminteri, Khamassi, Joffily, & Coricelli, 2015).

This insight suggests that focusing on the positive side and reward can help the brain recode the meaning of failure. Furthermore, change should be recoded as an opportunity to master new skills rather than a threat of exposing a lack of skill. In the same vein, people should be encouraged to imagine, visualize, talk about, and discuss the desirable result of the change. It's good to imagine possible roadblocks too, and how to overcome them. Mental rehearsal is a technique that taps into the power of self-fulfilling prophecy. Imagination acts as a precursor to action. Both stimulate the same brain region, thus enhancing motivation to achieve it (Clark et al., 2014; Vasquez & Buehler, 2007).

Finally, some studies in neuroscience suggest that time of reward is essential. Dopamine is a neurotransmitter associated with attention and motivation. It spikes because we anticipate rewards, but not necessarily when we receive it (cited in Kumar & Meenakshi, 2009). This indicates that fixed ratio and fixed variable rewards such as salary is less interpreted as “reward” in the brain. On the contrary, a surprised prize, bonus, or compliment can be effective because people don't know what reward and when they will receive it. So they continue to show effort, just in case.

### 2.4 *The “E” of STREAP-Be: Emotion*

The Latin root of emotion is *movere* (to move). In essence, emotion is the basis of motivation and the very reason why we want to change (Cameron & Green, 2019). Rationality does not separate from emotion and needs input from emotion to reach the final destination (Damasio, 2005). Evolutionary speaking, the limbic system was developed millions of years before the cerebral cortex, so the latter relies heavily on the former to act effectively.

This insight supports strategies associated with storytelling. Data can persuade people, but it may not inspire them to act (Monarath, 2014). The brain activates the same region when people hear the story and experience the event themselves (Gonzales et al., 2006). For survival purposes, humans have evolved to remember experiences better than unrelated facts. Storytelling is powerful because it influences us the way our actual life experience does. Hence, change should be in the form of stories.

However, emotions in the wrong context or with the wrong intensity can backfire. This is why dealing with undesired emotion is as important as strategies of seeing emotion as a resource. For example, while empathy creates trust and mutual understanding (Head, 2012), it can also lead to empathy fatigue (Stebnicki, 2007), confuse others' feelings with own feelings, and distort clear

thinking (Galinsky, Maddux, Gilin, & White, 2008). For this reason, mindfulness is a strategic tool in emotion management, both at individual and organizational level.

### 2.5 *The “A” of STREAP-Be: Alignment*

In change management, goal alignment is a critical approach because conscious goals affect actions (Locke & Latham, 2002). Humans are motivated to achieve three main goals: “communion”, “meaning” and “agency” (Talevich, Read, Walsh, Iyer, & Chopra, 2017). Alignment refers to the first goal, indicating the way people instinctively want to align with an in-group (Brewer, 1979). The brain is highly sensitive to ingroup-outgroup boundaries, to the extent that it could react automatically and subconsciously (van Bavel, Packer, & Cunningham, 2008). However, in-group boundary is “soft-wired”. It takes a flip of a coin to prime the human’s mind to feel belong to a new in-group (Tajfel, Billig, Bundy, & Flament, 1971), and it takes only a few minutes to deflate the tendency to categorize others by race built in a life’s time (Kurzban, Tooby, & Cosmides, 2001).

Aligning with an in-group can be (re)created through a process called “reategorization” (see a review by Gaertner & Dovidio, 2005). Some neural studies reported that sharing a common ground help people to compete with other outgroups, influence their empathy (Han, 2015) and interactions (White, Abu-Rayya, & Weitzel, 2014). Creating alignment with an in-group can be based on many kinds of social connections: backgrounds, work benefits, hobbies, interests, emotions, values, and so forth. Habermacher (2011) even suggested an external competitor or threat as a common enemy in order to unite people.

### 2.6 *The “P” of STREAP-Be: People*

A critical aspect of change management focuses on people as “change agents” (Ulrich & Brockbank, 2005). These people are pro-active, goal-aligning, and action-oriented. They have skills, tools, and purpose to promote the transformation and rally forces for change (;artunek, 2014; Lunenburg, 2010).

The insight from studies on mirror neurons suggests a neural basis for the adage “walk the talk”. People naturally look up to role models and modify their thoughts and behaviors as change agents demonstrate desired behaviors and lead the change by examples, they prime and trigger the imitation from others in the organization. This indicates that choosing the right change leaders and change agents is vital. Many organizations tend to appoint HR manager for the task. But by regarding the change as an HR project, this approach may involve the wrong change leaders and risk the lack change agents coming from both the top positions and the rank and file (Want, 2006). Other candidates for change agents are up-and-coming managers who see changes as opportunities to reach their ambition and career development.

### 2.7 *The “Be” of STREAP-Be: Behavior*

Studies in cognitive psychology suggested that once making a behavioral choice, people are more likely to associate their attitudes and behaviors with that choice (Nakamura & Kawabata, 2013; Harmon-Jones et al., 2015). The underlying concept for this is the brain’s tendency to avoid cognitive dissonance, i.e., a conflict between thoughts and behaviors. A tactic in marketing called “foot-in-the-door” tells us that once people agree to go with the first step, they would feel an inner need to go all the way through, making their attitude consistent with their behavior (Harmon-Jones & Mills, 1999).

In mental health research, the power of strategic actions has a rich history under the term “behavioral activation”. The theory underlying this approach is that rewarding activities is powerful for change (see Forbes, 2020 for a review in a clinical context). Change management can benefit from a vast resource of strategies associated with this approach, with concrete structures such as activity monitoring, assessment of goals and values, activity planning, skills training contingency

management, and many other processes aiming at (non)verbal behaviors (see a review by Kanter et al., 2010).

Some specific strategies that involve the power of behaviors include: (1) short-term wins in which a goal is split up into smaller tasks, micro-deadlines, and mini rewards (Amabile & Kramer, 2017); (2) Intentionally break the pattern and act “as-if” one has achieved the desired aspect of oneself, therefore, opening up possibilities that one didn’t know existed (Puett & Gross-Loh, 2016). In other words, fake it until you become it; (3) Identify desired behaviors and reward them consistently until they become a habit (Power, 2014); (4) Make “good enough” and not necessarily “perfect” decision can help to bring about control, calm the brain’s region associated with emotion and engage the region associated with rationality (Korb, 2015), thus, focus on progress, not perfection; and (5) Use action oriented approach with a clear plan of what to do can help us see the choice we made more favourably, which in turn, will help us to follow through the decision easier (Harmon-Jones, Harmon-Jones, Fearn, Sigelman, & Johnson, 2008). In short, the mind leads the action, but action can change the mind as well. We are what we repeatedly do - Aristotle.

To conclude, this chapter has incorporated insights from neuroscience and briefly discussed the challenges in change management. It introduced the STREAP-Be model, which consists of 7 fundamental aspects of change and strategies that could be considered in a change process. This model can be applied at both individual and organizational level. Collective culture is similar to a person’s habit in the sense that culture and habits are both persistent and evolving. Humans may find it difficult to change, but we are built to adapt, and we are the only the species that can do so deliberately.

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