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Change on the Brain? The Neuroscience of Organizational Transformation

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ABSTRACT

True transformations aim to change the core identity of an organization, are often disruptive, and rarely result in their intended outcomes. The objective of this paper is to propose a theoretical approach for more effective transformations via the syntheses of emerging findings in managerial science, organizational psychology, and social cognitive neuroscience. The authored conducted a literature review of traditional methods and the application of neuroscience to organizational transformation, proposing that consideration to leader and employee neuroanatomy can significantly impact transformation success. The emergent five-phase approach - Exploration & Discovery, Surfacing & Co-Creation, Enablement & Prioritization, Implementation, and Empowerment - integrates practices informed by neuroscience to enhance leadership alignment, employee engagement, and change sustainability. By focusing on activities such as vision alignment, co-creation, and leadership development, the approach seeks to optimize brain functions related to trust, motivation, and adaptability. Neuroscientific concepts like neural synchrony, hormone and neurotransmitter release, and specific neural circuit activations are utilized to improve team dynamics, decision-making, and learning. This neuro-informed approach challenges conventional practices by emphasizing co-creative solutioning with employees, piloting programs, and empowering middle managers to lead transformation efforts. Data from case studies demonstrate significant improvements in employee experience and sustainable shifts in organizational behavior. The paper concludes with a call for further research to solidify the emerging intersection of neuroscience and organizational transformation.

1. Introduction

We have all experienced changes in an organization we have been a part of, and often we find it to be disruptive, unwelcome, or just plain annoying. These experiences are even greater when organizations set their eyes on true transformation, changing their culture, identity, and ways

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of working to be nearly unrecognizable. Not only are transformations disruptive, they also rarely result in their intended outcomes; only 31% of transformations are successful in improving the organization and enabling sustainability of the changes over time (McKinsey & Company, 2021). So, what gives? Why do organizations continue to go after and fail in transformation? And how might we increase those success odds?

The answer to these questions may lie in the deepest, yet most valuable, asset of every organization: their employees' brains. While neuroscience has often been withheld to clinical and lab applications, there is a growing movement to use neuroscience in other real-world contexts to simultaneously improve society and develop the field of neuroscience itself (Francken & Slors, 2018); organizational transformation is a ripe candidate for such application. "Big T" Transformation, as it is often called in the consulting industry, is an endeavor in changing the very social fabric, governance, culture, and identity of an organization, and thus its people too. The present paper will examine an approach for organizational transformation, through the lens of stakeholders' neuroanatomy, to increase chances of successful outcomes. The theoretical, five-phased model of organizational transformation described herein was developed by matrixing commonalities between traditional organizational transformation models against insights from contemporary neuroscience. The author has developed and applied this model in their work over the past decade, consulting both internally and externally for community and for-profit organizations, domestically and internationally. Each phase will be explored in both tactical actions and embedded neuroscientific practices which lead to enhanced effectiveness. The theoretical model for transformation has shown initial evidence of validity based on measurable changes in mindsets, behaviors, and sentiments in organizations where it has been applied, though further empirical research is warranted.

2. Traditional Models of Transformation

Organizational change and transformation are often conflated, though there are distinct differences between them. While there may be a similarity of approaches and considerations, organizational change is focused on finite, well-defined, and often discrete initiatives where transformation is usually focused on shifting the core business model or vision of the organization and is comprised of many unpredictable, interdependent, less-defined initiatives and thus requires a more iterative and experimental approach (Ashkenas, 2015).

Perhaps the most globally recognized and seminal model in organizational transformation, Kurt Lewin's (1951) three-stage theory of change consists of 'unfreezing', 'changing', and 'refreezing'. Lewin, arguably the father of modern social science, posited that unfreezing was based on disrupting the existing beliefs and assumptions of people within an existing social system, which may be triggered by a crisis or compelling event, such as a new competitive product gaining market share. The balance of the system must be disrupted to make a sense of urgency apparent. This unfreezing is immediately followed by a changing stage, where the organization's structures, beliefs, and habitual behaviors become more fluid, and are thus susceptible to experimentation and shifts from the prior state. Once the changes have been made in mindsets and behaviors to meet the need of the compelling event, a refreezing occurs where the new ways of working and thinking are habitualized. Further, Lewin pioneered 'action research', an approach to applied transformation research in social systems through iterative experimentation, which he developed while looking at changes in racial, religious, and worker rights tensions in 1940s America (Lewin, 1946). Lewin's action research model was a precursor to modern concepts of agility and continuous improvement in organizations.

Expanding on Lewin's concepts nearly 45 years later, Harvard professor John Kotter (1996) published his eight-step process. Kotter, having consulted with the likes of Ford, British Airways, and Bristol-Myers Squib, noticed shortfalls in the then-contemporary models of transformation. Kotter highlighted many failures of applying an oversimplification of Lewin's model including not establishing a strong enough sense of urgency, not creating a 'guiding coalition', lacking a vision (something strongly elaborated upon in the model presented within the current paper), under communication, leaders not removing barriers to change, failure to create short-term wins, claiming the transformation is done before it truly is, and not integrating changes with the corporate culture. Over the years, Kotter established ways to manage against these short-comings and accelerate transformation by establishing a sense of urgency, developing a guiding coalition of a significant number of influential stakeholders, developing a guiding vision and strategy, ensuring holistic communications of the vision, empowerment of the employees, generating short-term and visible wins within 18 months, consolidating gains to produce more change and encourage leaders to keep leaning in, and anchoring new ways of tackling change into the organization's cultural norms and values (Kotter, 2012).

While Kotter's thought leadership had been largely been put into practice by consultants and leaders of transformations, the failure rate continued to hover near 70% (Ashkenas, 2015). This prompted scholars of transformation to further explore potential underlying processes that may be more predictive of transformational success. Gene Deszca and Cynthia Ingols built upon Lewin and Kotter's models, while also incorporating Mary Gentile's (2010) work on values in systems change and Jeanie Daniel Duck's (2001) five-stage change curve model on emotional transitions in change, resulting in the Change Path Model of change (Deszca, Ingols, & Cawsey, 2019). The Change Path Model consists of four key phases; 'awakening' includes defining the need for change while assessing the organization against the target state, 'mobilizing' entails creating a sense of urgency via a coalition of change agents and champions across the social networks in an organization, 'acceleration' involves continued support of employees while celebrating wins of multiple sizes, and 'institutionalizing' is comprised of measuring evidence of changes to inform iterative changes in direction while deploying more permanent skills, processes, and structures to ensure sustainability of the transformation effort.

The five-phase approach described herein echoes previous models of change and transformation with a few novel modifications, aimed to enhance the probability of organizational effectiveness through transformations. Firstly, models to date leave the competence of leaders and the effectiveness of leadership teams to chance. Leader behaviors that model strong stewardship of change (Hartge, Callahan, & King, 2019) and model target-state cultural norms (Bommer, Rich, & Rubin, 2005) have an outsized impact on employee reception and engagement in transformation. As such, the present model includes a process of assessing leadership team effectiveness and individual leader competence against co-created behavior-based competencies to transform the individuals and teams leading the broader organizational transformation. Secondly, models to date draw from field research in social sciences and psychology but have yet to incorporate the emerging field of organizational neuroscience. Organizational neuroscience builds upon traditional management, organizational behavior, and industrial organizational psychology perspectives of organizational life by uncovering neurological bases of individual and systemic affect, behavior, and cognition (Waldman, Ward, & Becker, 2017). The author has incorporated emerging applications and studies of social cognitive neuroscience and neurobiology to organizational transformations to inform the proposed theoretical framework. The incorporation of leadership team effectiveness and neural substrates organizational transformation should increase the likelihood of successful and sustainable transformations.

3. The Phases of Transformation

3.1. Exploration & Discovery

The first phase of organizational transformation is exploration and discovery. This data collection and alignment phase is critical to ensure the organization is headed in an articulated direction and doing so in an evidence-based way. Still yet, this phase is most often truncated by organizations as they often believe they already have an aligned vision or have the data needed to make informed decisions. This phase can be completed in as little as six to eight weeks and consists of two key activities: aligning executive leadership to a common vision and employee listening.

3.1.1. Aligning Executive Leadership to a Common Vision

Many executive leadership teams start off a transformation with the assumption that they all have the same ideal future state of the organization in mind; however, this is rarely true. Further, as the transformation unfolds and the tensions between these disparate visions manifest, executive leaders become keenly aware they were never a well-formed team to begin with, and they each retreat to their functional silos, generating disfunction and resentment that reverberates across the organization.

To avoid this, it is critical that the executive leadership team (ELT) dedicate time to develop as a high-performing team, collectively define a common vision for the organization, and align to the desired future state as a unified front. To start, it is critical to build self and group awareness of team dynamics through a team effectiveness assessment, having the group reflect on their opportunities to grow based on assessment results, and facilitating trust building and awareness developing activities where members can share about themselves and views on the ELT and organization.

Team effectiveness activities, when methodically planned and facilitated, can impact the neuroanatomy of ELT members in two ways. Firstly, when members model transparency with one another and reciprocate vulnerability by sharing about themselves personally and their views of the organization, it develops trust through the release the “love” hormone and neuropeptide oxytocin produced in the hypothalamus (Zak, 2018). Oxytocin is a bonding hormone in mammals that is linked deeply with central nervous system activity for motivating voluntary cooperation and prosocial behavior. In fact, this increase of trust can result in a phenomenon known as neural synchrony, where brain waves and the central nervous systems of individuals begin to mirror one another, and this ‘getting on the same wavelength’ neurophysiologically predicts team performance in stressful environments (Elkins, et al., 2009) and predicts adaptive learning and information sharing during collective decision making (Sharika, Thaikkandi, Bhaktha, & Platt, 2024).

Secondly, by having members present to one another their personal views of the organization, the ELT, and their own personal goals it elevates the implicit aspects of individual member’s agendas. Such an activity has been shown to increase activation in the alpha, beta, and gamma bands of the temporoparietal brain area, which is positively associated with self-awareness of goals by time and efficacy, conscientiousness, and both dependent and rational decision-making styles in team members (Balconi, Angioletti, & Acconito, 2023). In short, this sets ELT members’ brains up well for an honest conversation about vision, goal setting, and making challenging decisions.

Having established a baseline understanding of their own team dynamics, developed a foundation of trust, and oriented their neural circuits toward decisive goal setting, the ELT can

then begin to co-define a vision for the organization. In practice, this can often look like splitting the team into two or three subgroups and having them either craft a future press release or a 'destination postcard' (a post card sent from the desired future state describing and depicting the 'amenities' and 'views'), then convening the subgroups to discuss the generated visions and co-creating a final, unified vision.

While simple at its surface, this vision setting and goal defining activity helps increase engagement of ELT members across the motivation spectrum of approach or avoidance by presenting multiple potential goals and showing they may not necessarily be at odds with one another, catering to a diverse range of individual members' frontal brain alpha asymmetry, which often results in trait behavioral activation or inhibition (Berkman, Donde, & Rock, 2013). Additionally, these visioning activities can mirror a socioanalytical technique called social photo-matrixing which allows deep, subliminal imagery come to light, shedding clues of the organizations culture, and allowing team members to discuss hidden assumptions in the images and words, rather than feeling pitted against each other directly (Sievers, 2013). In simple terms, this means the activity allows folks with various degrees of comfort with behavior change to come together, feel less avoidant or fearful, and more motivated to achieve a common vision. Further, design thinking research has shown that various states of the aforementioned neural synchrony can enhance both cooperation and collaboration uniquely, resulting in not only greater performance of the team but also more innovative results (Balters, Mayseless, Hawthorne, & Reiss, 2021), a critical aspect for a creative and compelling organizational vision.

In the initial phases of transformation for a global leisure and athletic clothing brand, the senior leaders of the newly formed business transformation team participated in aligning toward a common vision via two days of immersive workshopping to establish a 'north star' objective and corresponding metrics for key results. Many members reported having never had such a conversation in their organization, but also continued to collectively and independently reference the collective vision they established for prioritization, decision making, and communicating the 'why' of their transformation with both stakeholders and employees.

3.1.2. Employee Listening and Communicating the Vision

Conventional wisdom has often had boards and ELTs crafting a vision behind closed doors then enlisting management consultancies, or going about it themselves, to determine the largest growth opportunities of the organization to achieve the set vision. Generally, these activities are unbeknownst to employees or even management. This is problematic for a few reasons, including that it assumes that the ELT and board intimately understand the intricacies of every organizational process and assumes that employees will blindly accept the view of what the ELT feels are the biggest growth opportunities. The reality is that the greatest experts of the organization are not external consultants or the most senior leaders, but the employees that live day-in and day-out in their localized experiences with people, processes, and technology.

Employee listening can be incredibly simple yet reveal impactful findings. At its core, this activity involves carefully communicating the ELT vision for the organization's future and letting employees know they will help shape the road and destination of this visioned future by asking simple start, stop, continue questions. For example, a free response anonymous survey may go out to all employees, asking "in the context of our renewed vision, what is a) holding us back from achieving this vision [stop], b) already propelling us toward this vision [continue], c) is missing for us to achieve this vision [start]".

This invites the 'voice of the employee' into assessing the current state against the future state, which has many neuroscience-backed positive effects that can increase the likelihood of

transformational success. Firstly, communicating the vision early on provides employees with a sense of purpose in the organization, and in some cases more purpose in their lives, an action that has been scientifically shown to increase mental health, decrease cortisol (stress hormone) and inflammatory cytokines levels, and decrease the onset neurodegenerative cognitive impairment and Alzheimer Disease (Boyle, Buchman, Barnes, & Bennett, 2010).

Secondly, when done properly, asking for open feedback in organizations has been shown to significantly reduce neurophysiological signals of anxiety in employees being asked for feedback as well as in those asking for it (West, Thorson, Grant, & Rock, 2018), which could lead to greater engagement and change readiness. Thirdly, this sets a tone for the organization by starting a culture of feedback, which is often missing in organizations and is critical to develop to ensure later phases of transformation are successful. Providing simple opportunities for employees to provide feedback and basic sentiment, and enabling it to be as regular as a social media 'like' button, fires up the stratum and ventral tegmental areas of the brain which are circuits implicated in rewards (Sherman, Hernandez, Greenfield, & Dapretto, 2018).

3.2. Surfacing & Co-Creation

Setting a course for transformation via vision setting and gathering input sets a sound foundation; however, the immediate phase thereafter is critical to continue developing and maintaining momentum for change. Opining and listening are all for not, if not responded to well. In the surfacing and creation phase there are two critical activities: surfacing and reflecting on the gaps between vision and current state and co-creative solutioning to determine gap-closing actions. This phase can be completed in as few as three weeks, provided the appropriate facilitative resources and support exists.

3.2.1. Surfacing and Reflecting on Transformative Opportunities

This activity focuses on informing both the ELT and employees on findings from the explore phase, in essence holding a mirror up to the organization. The employee listening data is analyzed for critical, emergent themes using a grounded approach, an effort that used to take consultants and employee experience teams weeks to conduct, and can now be done almost instantaneously with the help of machine learning (ML) and natural language processing (NLP) (Nelson, 2017). It can then be cross-correlated with quantitative metrics, such as employee engagement scores and business metrics, for an even more nuanced perspective. Most importantly, this qualitative analysis elevates the most critical opportunities for transformation, in the context and exact language of the employees.

This act of following up is critical to gain buy-in from employees, inspire trust, and continue showing the commitment of the organization in valuing employee perspectives in the changing course of the organization (Huebner & Zacher, 2021). When employees at all spans and layers of the organization feel heard and understood, neural regions associated with reward and social connection are activated (such as the ventral striatum and middle insula); whereas, mandated top-down communications that do not resemble the voice of employees activate neural regions associated with negative emotions (such as the anterior insula) (Morelli, Torre, & Eisenberger, 2014).

3.2.2. Co-creative Solutioning

The voice of the employee should not stop at surfacing results of the gap analysis, it should continue through developing solutions. In practice, this may look like using design thinking ideation activities, such as workshopping with 'How might we…?' posters for each key opportunity area (e.g., *How might we improve cross-silo collaboration?*), allowing employees

to ideate as far out of the box as they wish, then asking employees to 'dot vote' the ideas they believe would be most impactful to realize the organizational vision.

Co-creation has been shown to increase the exchange between brain hemispheres, resulting in greater solution-orientation than rumination on current problems (Maclennan, 2015). Co-creation may activate mirror neurons and have effects in moderating empathy, transference, and countertransference (Granger, 2014); in other words, enhancing connection while reducing taking out frustrations on one another. When leaders publicly sponsor such co-creation, it helps employees maintain focus, restore motivation and emotional stability, enhance mood and confidence, and increase cognitive flexibility, all within cognitive processing networks within the brain (Sonderegger, 2023). Providing employees agency in shaping the transformation activates the striatum and the ventromedial prefrontal cortex (vmPFC), which makes people feel rewarded, it shapes their preferences, it changes their perceptions of the outcomes/vision, and ultimately impacts their motivation and performance (Murayama, Izuma, Aoki, & Matsumoto, 2017).

When three offices of a global life sciences organization came together in their company's new 'experience lab' in Japan to ideate potential solutions via an immersive, one-day co-creation workshop, employees not only contributed ideas that were not previously considered by the consultants or managers, but there were regular reports of enhanced collaboration and employee engagement for weeks after the event. In many ways, the ideation process served as an initial intervention to increase employee engagement and agency while showcasing leadership sponsorship.

3.3. Enablement & Prioritization

Following a phase of creation, enablement aims to set in place plans and sequencing for the transformation rollout while concurrently redefining what leading looks like at the organization, ensuring behavioral expectations will support the shifts in ways of working. This phase at times will overlap with, and begin during, the Surfacing and Co-Creation phase, and generally takes a month. The most successful transformative approach consists of two key activities: drafting and prioritizing transformational actions in what are called enablement plans as well as defining and assessing leadership competencies in the context of emergent themes and ideated changes.

3.3.1. Draft Enablement Plans and Prioritize

Recommended co-created solutions from the previous phase are matrixed against both level of effort (e.g., resources, people, money) and level of impact (e.g., revenue increase, efficiencies, increase engagement). Low effort, high impact solutions are prioritized, high effort, low impact solutions are archived, and a roadmap is developed for everything in-between, including interdependencies. This process is usually done by the ELT, a specially established transformation office, and/or external consultants. Each initiative's enablement plan includes technical details on the actions to be done, what best practice looks like, how success is measured, and key considerations for change management – all in a digestible and simple format that might be considered a 'recipe card'. They are enough information on the 'ingredients' and 'steps' but allow enough room for the 'cook' (i.e., managers and employees) to embellish and make substitutions as appropriate to their unique contexts.

Developing enablement plans and prioritizing them engages brain circuits associated with short-term memory and motor functions (e.g., planning changes in digital tool user-experiences such as button placement), as well as long-term memory and cognitive functions (e.g., planning large shifts to steps in business processes in a value stream that crosses various functions) (Moll

& Grafman, 2011). Enablement plans and a collective roadmap can reduce activation of the anterior cingulate cortex 'neural alarm system' (a brain region associated with the overlap between physical and social pain) by communicating prioritized changes desired, how to develop new behaviors via change management activities, and changes to organizational systems that will support these behavior changes (Rock, 2018).

3.3.2. Define and Assess 'Leading'

With organizational changes formulated and in the process of being planned, it becomes critical to review current leadership competencies (if they exist) against the desired future state and forthcoming transformational activities. Leadership behaviors can make or break a transformation, and there is no better group to embody new leadership competencies than the ELT themselves. This activity is also co-creative, and thus includes all aforementioned neural benefits, while also introducing new benefits.

The ELT (and preferably, the next generation of executive leaders) are debriefed on the emergent themes from the exploration phase, participate in a series of facilitated exercises to determine core high-level leadership competencies that align to the vision and emergent themes, then use design thinking methods to ideate and vote on explicit behaviors and moments that matter for the application of competency. These competencies should be refined by trained leadership development experts, then used to create a bespoke 360 assessment which is deployed for all ELT members (and, again, the next generation preferably). This is used to increase the self and group awareness of the highest leadership on where they stand and how they model behaviors, while also helping inform a co-created blueprint design for an executive leadership development program to develop all to their expected level of competence.

Developing the competencies and curriculum co-creatively (in addition to well-developed learning experiences) activates a multitude of neuronal pathways that result in sustainable behavior change and neurogenesis. These pathways include the experience being brought into the sensory cortex, registering in the temporal cortex, being sent to and conceptualized in the frontal cortex, then being acted out through the motor cortex; a process with generates a protein in the brain stem called brain-derived neurotrophic factor (BDNF) which increases neuroplasticity and facilitates learning (Glisczinski, 2011).

The resulting bespoke 360 assessment builds self-awareness and motivation at a neuroanatomical level by making introspection goal-oriented, increasing dopamine release (motivation inducing) and activating the paralimbic medial prefrontal/anterior cingulate and medial parietal/posterior cortical networks and connected areas (Lou, Changeux, & Rosenstand, 2017). These self-awareness networks can be further developed, while bolstering leader well-being and generating a culture of learning, through mindfulness practices and contemplative education (Berkovich-Ohana, Jennings, & Lavy, 2019), both hallmarks of executive coaching sessions that the 360 assessments are paired with in transformations.

3.4. Implementation

The fourth phase, implementation, is where planned changes start to become a reality. In practice, this phase often begins between three and four months into the transformation journey and can last from nine months to multiple years, depending on the scale and magnitude of transformation. Many transformations fail at this phase; often transformation plans are made in a clandestine way and forcibly rolled out to employees (in contrast to the approach suggested herein), discovery and planning are done by a different consultancy than that which implements (in contrast to end-to-end co-creation and empowerment described herein), or the plans are

extremely detailed and changes are implemented at scale (in contrast to 'recipe card' plans, piloting, learning, and scaling through iterations).

To avoid these pitfalls, organizations can increase their likelihood of successful implementations through three key activities: taking a pilot-iterate-scale approach, activating a champion network, and developing leaders.

3.4.1. Pilot, Iterate, and Scale

Executing on the backlog of prioritized changes should look more like a compass than a detailed map. Transformations are journey and require learning throughout the process to correct course toward the established vision. By standing up pilot programs, organizations can learn how to iterate solutions before scaling while simultaneously developing a culture of agility, experimentation, psychological safety, and learning. No matter how large or small the type of change, framing pilots as a fun endeavor can activate and develop a multitude of brain circuits associated with a continued capacity to learn (Liu, et al., 2017).

Approaching transformation in this way modifies hierarchical inferential neural pathways in individuals resulting in more adaptive behaviors from employees and increasing organizational adaptability, a critical trait in organizations and individuals in the age of AI and seemingly perpetual disruption (Fox & Kotelba, 2022). Further, this approach achieves the why (vision) by placing the will (motivation) and the way (enablement plan) into the hands of employees which decreases distress and the thought that tasks must be completed serially (via the dorsal anterior cingulate cortex (dACC)) while increasing execution and habitualization of new ways of working (via entire prefrontal cortex (PFC) and shifting from the dorsomedial to the ventral and dorsolateral striatum as new behaviors are rewarded and become habit) (Berkman, 2018).

3.4.2. Activate a Champion Network

Champion networks are intentionally architected communities comprised of influential, well-connected individuals across organizational silos to test out new ways of working and influence others in their local network to do the same, provide feedback on how the transformation is being perceived by employees, and collaborate on tactics to increase adoption of new behaviors. There are many best practices in forming a champion network to positively impact organizational changes (see McCreedy & Carey (2023)).

Creating a community for the change champions breaks down the 'out-group' dynamics of previously siloed units while simultaneously forming a new 'in group' identity focused on the transformation itself, activating champions' ventral medial prefrontal cortex (vmPFC) and dorsal cingulate cortex, regions that correspond a neural network identified as the 'personal self' (Morrison, Decety, & Molenberghs, 2012). This highlights the continued impact that transformation is truly an endeavor in redefining the identity of an organization and the people that it is made of. The supportive relationships formed in champion networks enhance the influence of new ways of working through emotional contagion, inspiring others, and empathy via mirror systems in the right inferior parietal lobe and regions positively associated with healthy relationships such as the right putamen and bilateral insula (Boyatzis, 2011).

3.4.3. Develop Leaders

Continuing off the enablement phase, it is critical to develop leaders against newly defined competencies while clarifying their role in enabling pilot teams to experiment and scale new ways of working. This is most transformative when the ELT and their potential successors form a pilot leadership development cohort and participate in a program designed against the bespoke competency model specifically to their roles as executive leaders. These programs

usually are most effective when delivered with both cohort-based learning experiences and regular 1:1 executive coaching sessions, spanning nine to twelve months.

This provides an opportunity for the leaders to develop and model behavior, sets a symbolic message of leaders' commitment to the transformation, tests the curriculum and competency model for potential scaling across the organization, and validates the 360-assessment tool psychometrically. Even further however, the ELT develops both individually and into a high-performing team via the cohort experience; recent clients have cited such experiences as unlocking previously untapped potential as they navigated transformational challenges as a cross-functional unit and successor took on elevated roles with confidence and competence.

This level of context-specific leadership development cannot be achieved with basic learning and development practices and off-the-shelf programs. It requires abandon of some traditional learning methods in favor of carefully designed developmental experiences that activate and develop the limbic system (amygdala – emotional learning, hippocampus – spatial and long-term memory, thalamus – sense of physical security, hypothalamus – facilitating to decrease aggression), the subcortex (basal ganglia – procedural learning, insula – social engagement and empathy), and frontal cortex (enhancing executive functioning and decision making) (Lim, Chai, Park, & Doo, 2019). The empathy circuits (specifically the anterior insula and anterior midcingulate cortex) are critically developed in an ELT-based cohort experience, which results in an environment of leaders learning and supporting one another as more difficult long-term transformation initiatives are rolled out down the road (Engen & Singer, 2013).

Beyond the behavioral development of such programs, the kinship developed across the cohort often results in decreased selfish behaviors and newly internalized cultural norms; an actual shift in organizational culture, starting within the septo-hypothalamic region and subgenuel frontal cortex of the executive team members' brains and radiating outward (Zahn, de Oliveira-Souza, & Moll, 2020). Further, development of leaders can and should be an emotional experience as they are challenged to grow personally and work together to enhance sustained behavior change; the connections of the emotional core of the brain (amygdala) to the hippocampal/ parahippocampal region play a critical part in learning and memory (McDonald & Mott, 2017).

3.5. Empowerment

The fifth and final phase of transformation is empowerment, ensuring all stakeholders associated with the transformation are communicated with, are visibly supported by management, and are eventually able to take ownership of the newly transformed ways of working they helped co-create. In consulting practice, this is the most effective time for consultants to ensure the client organization demonstrates the ability to take on full ownership of rolled out efforts, as well as the remaining roadmap of changes. While labeled as the final phase, successful transformations begin empowerment early on, increasing efforts as pilots are scaled across the broader enterprise.

Empowerment is embedded within the neuro-informed actions of all previous phases; however, there are two key tenants that should be highlighted to empower an end-to-end transformation. First is a relentless focus on strategic two-way communications and the second is ensuring piloting and scaling of initiatives are led by front-line managers as much as possible.

3.5.1. Ensure Strategic Two-Way Communication

From day one, it is critical that the organization communicates the vision, expectations, and remains as transparent as possible on changes while simultaneously opening channels for

feedback from employees. These are inherent features within the present approach, as seen in cocreation, champion networks, etc. Still yet, failure to effectively communicate can activate the stress networks within the brain and even lead to acute employee burnout, phenomena known as vicarious traumatization and post-traumatic organizational growth (McHale, 2022). It is important to recognize the grieving process of the former organizational identity, employees' old roles, and former ritualized ways of working while also being clear, framing the opportunity as exciting, and utilizing the inclusive "we" as much as possible.

3.5.2. Empower Managers to Lead

The saying "people leave managers, not jobs" holds the key toward unlocking transformation empowerment at scale. Not only does the organizational development literature show that managerial action is one of the most impactful ways to act on employee input to organizational changes (Huebner & Zacher, 2021), there are neurobiological drivers. Studies suggest that when managers model transparency while reciprocating communication and signals of vulnerability, it increases oxytocin (the previously mentioned 'love' hormone) in employees, generating a culture of trust (Zak, 2018). Creating trusting relationships at the front lines of a transformation may seem paradoxical to those who have experienced failed transformations; but the neuro-informed approach described herein does just that.

4. Discussion & Conclusion

Understanding the functional neuroanatomy of leaders and employees can generate outsized impacts on organizational transformations. This approach requires an abandon from some conventional practices lauded in organizational development and business school literature; however, the data show these conventions have failed to deliver successful transformations. After following nearly all actions described herein, one life sciences client of the author's experienced between 10 to 25 percent increases in their five lowest employee experience scores after only three months of manager-led pilot initiatives in a global transformation in their ways of working. Two other clients, a global insurer and a world renown apparel brand, both experienced double-digit behavior shifts and increased employee engagement after multi-month transformations to their operating models using many aspects of this neuro-informed approach. A global apparel organization began piloting these methods and also saw double-digit changes in behavior in pilot teams, then took learning forward to scale the transformation across others, all while investing heavily in leadership team development to model the behaviors necessary for the organization to scale revenues and market share.

Leaders and consultants can utilize insights from neuroscience to successfully transform organizations today including using brain science to enhance leadership team alignment and effectiveness to lead change and engaging employees more often in co-creative activities that activate the rewarding centers of their neuroanatomy. While the present paper drew from the emerging neuroscience literature applied to the workplace, the anecdotal case studies described leave large gaps in proven applications of social cognitive neuroscience and functional neuroanatomy in organizational transformations. Further research should bridge this gap, including measuring neural correlates and transformational outcomes more directly, in real-world organizations. Further, gathering and using data related to the neurobiology of employees is a still forming area of ethics and policy that requires further investigation and policy development. For now, it is recommended that change agents utilize proven aspects of neuroscience in the architecture of their organizational transformations, as described herein, to enhance effectiveness and sustainability of changes.

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