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The neuroscience of Wraparound: seeing collaboration and collective intelligence through the lens of brain science

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Abstract

Effective Wraparound teams are socially collaborative systems that work together in an intelligent manner to create positive outcomes at the child and family, program, and systemic levels. Emphasizing the social aspects of learning and the interdependent nature of complex problem solving, the Wraparound process harnesses the power of collective intelligence to move change forward. Discoveries in social cognitive neuroscience offer new insights into what is involved in the successful navigation of the social landscape of team practice. This paper discusses some of the most recent findings from modern neuroscience that provide Wraparound leaders and practitioners new ways of understanding engagement, collaboration, and the nature of group intelligence in a Wraparound process.

Key Words: Wraparound, neuroscience, engagement, collaboration, collective intelligence

Introduction

The role of Wraparound is to promote human development and positive transformation. Although the term “Wraparound” was coined in the early 1980s, the concept and general practice are not new ideas, as human beings have been supporting each other in creative and inventive ways for thousands of years (VandenBerg, Bruns, & Burchard, 2003). This collaborative team-based approach to improving the lives of young people with complex challenges and their families is rooted in a belief system that focuses on ensuring fairness and the rights of families with emotional, behavioral, and mental health needs. Wraparound practice acknowledges the importance of relationships, connections and ties between people. It is based on ten core principles that recognize the complexity of understanding and implementing a meaningful planning and service delivery model grounded in partnership with families (Bruns et al., 2004). A substantial amount of progress has been made in the past two decades, moving Wraparound from a philosophy to a more concrete methodology and making it a wide-spread practice used to, not only “do whatever it takes” to prevent young people from being placed in institutional care, but to also help them and their families have better lives. This has required a significant amount of change in the way leaders, helpers, and human service systems think and behave. Much of this progress can be attributed to the accessibility of national Wraparound resources, fidelity assessment tools, and seeing child and family team practice and initiatives through the perspective of implementation science (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005). Despite the reviews in the effectiveness of Wraparound (Suter & Bruns, 2009), gaps and variations in practice across community settings still exist, leaving room for a more thorough understanding of what is involved in a successful Wraparound effort- from child and family to

systems level implementation. Wraparound leaders and practitioners need to be able to create engaged work and team environments in order to manage the uncertainty associated with the interdependent nature of team-based practice. This means understanding what drives human behavior in a team context. To appreciate how humans think and behave together, Wraparound practitioners and leaders benefit from knowing the physiology of the human brain and how it relates to navigating the social landscape of team conversations.

Modern neuroscience provides insight into the science of engagement (Rock & Tang, 2009; Rock, 2009; Posner et. al, 2009) as well as a deeper awareness of what it takes to effectively collaborate with and influence others in a family-driven team-based planning and service delivery process. This paper explores what happens at a biological level in team settings along with recent breakthroughs in the field of social cognitive neuroscience (Ochsner & Lieberman, 2001) that help us improve collaboration, increase collective intelligence, and optimize performance in Wraparound practice.

Understanding the Deeply Social Brain in Team Settings

Neuroscience research illustrates the social nature of our brains and what this has to do with cooperative teamwork, creating new habits of behavior, and motivating ourselves and others. Wraparound practitioners are better equipped to manage complex social environments when they understand that social interactions in team settings profoundly shape how our brains respond. Findings from neuroscience demonstrate how we are wired to connect so that we can make sense of others. Our brains are designed to be a social organ so we survive as a species. This has important implications for maximizing team performance and achieving Wraparound outcomes.

Human behavior in the social world is regulated by the overarching principle of the human brain to minimize threat and maximize reward (Gordon, 2000, 2008). Approximately

THE NEUROSCIENCE OF WRAPAROUND

five times per second, the limbic region of the human brain makes a decision that something is either threatening (bad) or rewarding (good). This helps us pay attention to what and who is meaningful in our environment, and in what way. Based on this assessment, we decide to either approach or avoid something (see Figure 1). The outcome of this evaluation determines every decision we make. When the limbic system detects a threat to our survival, it impairs many of our brain's functions, moving us away from conscious higher order thinking that is governed by the region of the brain called the prefrontal cortex. The prefrontal cortex is primarily in charge of analytic thinking, regulating behavior, and governing social control. This region of the brain is paramount to success, as it is responsible for activities such as decision making, understanding, memorizing, planning, inhibition, and recall. The further we move into a state of threat – or what is also referred to as an avoid/survival state- the more disengaged this region of the brain becomes. Functions that help us engage in a cooperative team planning process are dramatically decreased when we determine something in the environment to be threatening versus rewarding. Just a slight threat state significantly decreases our ability to have insights (Jung-Beeman, Collier, & Kounious, 2008), reduces cognitive resources (Arnsten, 2009), increases pessimistic thinking, and impairs our capacity to share ideas and collaborate with each other. It reduces the resources available to the prefrontal cortex and narrows our field of view (Schmitz et. al, 2009), restricting the ability to take in more information and see things from a wider perspective. This significantly impairs decision making and problem solving capabilities. In addition, the threat state is much more intense and longer lasting than the reward state and it happens very quickly. Because the brain is organized to minimize danger first and then maximize reward, threat is the default state. On the other hand, a slight activation of the reward circuitry creates an approach/creation state. From a neurobiological perspective, engagement is

an approach state; it is when we are moving toward something versus moving away from it. This is when our brain is activated in a way that allows us to create new things. When the brain is in an approach state, we are more open to new ideas, more curious, and able to engage in novel perspective taking. While in this state, the arousal level in the limbic system is reduced and mental states that are conducive to teamwork and cooperation are supported.

Minimize Danger, Maximize Reward

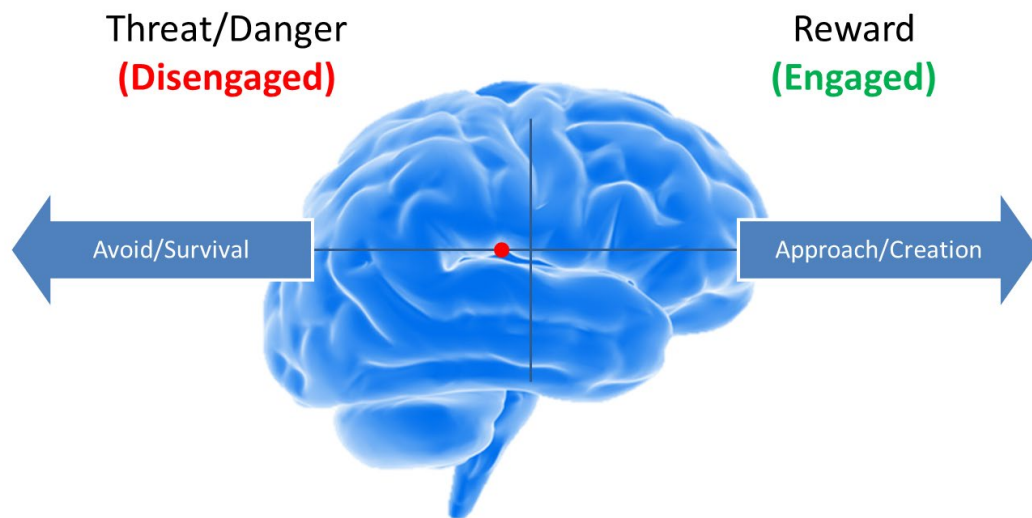


Figure 1: Organizing Principle of the Human Brain. The human brain is organized to minimize threat/danger and maximize reward. It seeks to minimize threat first and then maximize reward, making a slight threat state in the human brain the default state (Gordon, 2000, 2008). The default state is depicted by the red dot in this diagram.

Primary threats to our survival include a physical threat to our life, lack of sufficient shelter, hunger, and thirst for instance. Primary rewards include things such as food, sleep, and shelter. Insights from brain science inform us that the brain responds to social threats and

rewards the same as it does to physical threats and rewards. Social needs are treated like survival needs in the human brain. The brain experiences feeling left out, rejected, or ostracized the same as a blow to the head, broken arm, or the pain resulting from being cut with a sharp blade (Eisenberger & Lieberman, 2004; Lieberman & Eisenberger, 2008; Lieberman, 2013).

Individuals in team settings require socially rewarding versus socially threatening environments in order to be committed, engaged, and performing at their highest levels.

Broken Hearts, Broken Teams- Meeting Social Needs to Collaborate With Others

In a Wraparound process people work in partnership with other people, making the ability to collaborate with others fundamental to creating high performing teams. Findings in social neuroscience inform us that we are interconnected at a biological level, highlighting our dependence on the social world for survival. In 1943 psychologist Abraham Maslow developed a hierarchy of human needs, beginning with basic physical survival needs and ending with self-actualization needs, with social needs resting in the middle. However, research in neuroscience indicates that this order of human needs may not be accurate, as the brain responds to the need to be connected and have a sense of belonging much like the need for food, sleep, and water. Feeling hungry and experiencing social rejection activates the same circuitry in the human brain; the perception of being left out sets off a danger response in the brain much like hunger pains- a message that life is at risk. When the limbic system detects a threat to our social needs, it becomes aroused and moves the brain to a disengaged (avoid/survival) state. This has substantial implications for performance in a team setting, as our capacity for collaboration is what allows us to create and move shared goals forward. A Wraparound leader's job is to make the environment socially safe by minimizing threat and maximizing reward within herself and others. This increases connection, trust, and the value of social capital so that thinking resources and team outcomes can be fully leveraged.

Contemporary neuroscience uncovers insights that helps leaders and teams understand what motivates and drives human behavior. Studies describe five core social needs as the domains where the brain can be activated into a state of threat or reward. These social needs are *esteem* (Phan, Sripada, Angstadt, & McCabe 2010; Zink et al, 2008; Burkland, Eisenberger, & Lieberman, 2007; Eisenberger & Lieberman, 2003), *understanding* (Hedden & Gabrieli, 2006; Rock, 2009; Davis, Neta, Kim, Moran, & Whalen, 2016), *choice* (Stern, Dhanda, Hazuda, 2009; Donny et al., 2006; Dworkin et al., 1995), *relatedness* (Xu, Zuo, Wang, & Han, 2009; Cacioppo & Patrick, 2008; Mitchell et al., 2006), and *equity* (Cheng, Zheng, Li, Zheng, Guo, & Yang, 2017; Tabibnia, et al., 2008); Seymour et al., 2007). Esteem is about our perceived importance to other people – or where we rank. Understanding refers to having a sense of certainty and our ability to predict the future so we know what is coming up. Choice relates to a sense of control over situations and events, as well as feeling like we have autonomy. Relatedness concerns feelings of safety with others or deciding whether or not someone is friend or an enemy. The brain classifies people into threat or reward, just like it does with situations, and foe is the default state unless diffused early on in a team context. Equity is about exchanges between people being seen as fair and that there is a level playing field. The perception that things are not fair activates the anterior insula, a region of the brain associated with feelings of disgust. Translate this into a Wraparound team context, when families feel that information is not being shared, it signals a threat response in the equity social need domain, decreasing the team's collective thinking resources. When a social worker perceives a probation officer to be working in isolation outside of the team process, it arouses the limbic system and increases a threat - or avoid- response in the relatedness domain, breaking trust and the feeling that everybody is sharing the same goal. If a Wraparound team is not able to provide sufficient details about

options for a youth's academic setting, it may activate a danger response in the understanding social need driver, decreasing creativity, insight, and the ability to develop innovative activities and opportunities that lead to positive change. On the other hand, when families are given choice and their voices are elicited in the decision-making process, an approach response is activated in the choice and understanding social need domains, increasing creative thinking and overall cognitive resources needed for complex problem solving. When team members focus their attention on progress it is socially rewarding in the human brain, especially in the social need for esteem. In the animal kingdom survival is closely linked to high status. Even the smallest recognition and acknowledgement of improvement ignites the reward circuitry at a neurobiological level, as perceived esteem increases when people feel that they have made progress and are doing better in comparison to themselves. To collaborate effectively in team conversations, the human brain requires that social needs be met. Otherwise it will be concentrating on trying to figure out how to survive versus engaging in higher order thinking that is necessary for people to experience a clear and deep understanding of complex situations. Learning to navigate the social nature of teams is not just a nice idea, it is fundamental to improving child, family, and system level outcomes in a Wraparound process.

Team Member See, Team Member Do

Recent research in neuroscience has revealed a set of brain cells that help us understand how humans read the world and understand others. These brain cells, sometimes referred to as “monkey see, monkey do” neurons, are known as mirror neurons. They help us learn complex social behaviors just by watching, listening, and imitating. This scientific breakthrough provides a new perspective for how teams can more effectively work together in a way that coincides with this innate human capability. Mirror neurons inform us that we are linked at a neurobiological level and that emotion and intentions are infectious in a social environment (Cattaneo &

Rizzolatti, 2009; Iacoboni, 2008). These brain cells are activated when we observe other people's intentional behaviors, affording us the opportunity to 'mirror' what someone else is doing and saying at a neural level (Iacoboni, 2008; Iacoboni & McHaney, 2009); they provide an explanation for the influence of non-verbal behaviors and how we learn in the context of relationships (Ramachandran, 2006). For instance, when we observe an action that is performed by someone else, our mirror neuron system creates a similar reaction in our own brains. Daniel Siegel (2010) describes this system to be an important component of our "resonance circuitry," giving us the capability to map the emotional states and intended behaviors of others. In a Wraparound team context, the emotional disposition of a care coordinator, for example, has a substantial impact on the effectiveness of the team. If the care coordinator's tone is pessimistic and disapproving, it will activate the same neural circuits in the brains of the other team members, impairing the mental resources needed to support young people and their families in engaging in an effective Wraparound process. Team members mirror each other, they are neurochemically linked, and moods are contagious, especially the mood of the perceived leader (Goleman & Boyatzis, 2008). This shines new light on the importance of self-awareness and self-regulation within team settings. For example, in a Wraparound context, by better understanding mirror neurons, Wraparound practitioners, stakeholders, and leaders may be able to improve their ability to sense when a family member, family support partner, or mental health provider experience social pain during a team meeting, which could lead to more effective management of the threat and reward response. Decreasing limbic arousal in a team member's brain increases cognitive resources and the potential for innovative ideas necessary for creating a customized plan of care. Being able to read people's emotions and intentional states is what highly socially perceptive people do well. Social perception is a key trait for high performing

teams. Competent and socially aware team members strive to understand the perspective of others. By more precisely recognizing other people's experiences, approaches used to increase engagement levels can be tailored according to the person and the social landscape of the team context.

Many Brains Working Together as One Mind - The Science of Collective Intelligence

With work becoming more collaborative and intelligence not just happening at the individual level, being able to regulate and respond adaptively is a key skill for creating high levels of group intelligence. Understanding how our brains work and our need to connect with others plays a big role in unlocking peak performance in team contexts. Collective intelligence is defined as how well a group or team of people perform together, make decisions, solve problems, and create things as a group (Woolley & Malone, 2011; Malone et. al, 2010, Katzenbach & Smith, 2003). In a successful Wraparound process, a team of people demonstrate how we are collectively more intelligent than any one person working in isolation; multiple brains work together to operate much like one mind. Research shows that highly intelligent groups are not dependent on how many smart people are on the team. Studies illustrate that the ability to understand the social and emotional responses and the needs of others significantly impacts collaboration, and that social abilities versus intelligence quotient are most important for performance in groups and teams (Woolley et al, 2010). People who score higher on social perceptivity perform more intelligently in groups. In addition, research illuminates that highly intelligent groups and teams engage in frequent conversational turn-taking, stressing the importance of avoiding team interactions where one person dominates the discussion, even if they are assessed to be the most intelligence member of the group. To illustrate this in a Wraparound process, the ability to understand the social needs and motivations of others and equally distribute the exchanges between the team members is vitally important to optimizing

group intelligence and Wraparound outcomes. Cognitive load and stress can impair a leader's ability to consider what other people are thinking and feeling, as it recruits the resources from the prefrontal cortex responsible for self-regulation. Being able to read people's emotions while maintaining cool under pressure requires effective self-regulation skills. This is a key trait for high performing team leaders who strive to understand the perspective of others and facilitate a cooperative dynamic in team contexts. By more precisely recognizing a team member's experience, approaches used to deepen engagement levels in the Wraparound process can be tailored according to the person and social context, suggesting the ability to detect subtle social cues as one of the hallmarks of effective collaboration in team-based practice. These critical social skills allow team members to democratically take turns and effectively collaborate, increasing collective brain power and overall levels of shared intelligence for better group performance and team outcomes.

Conclusion

Understanding and applying neuroscientific discoveries has the potential to change the way people connect and work together in a Wraparound process. Neuroscience insights inform us that deep interconnectedness is needed for team performance. The threat state is not conducive to being able to effectively collaborate with and influence others, and we are more attuned to people and things in our environment that activate threat - a state of disengagement. Fortunately, learning what is happening inside our brains further develops our capacity to regulate the danger response in ourselves and others. Wraparound practitioners and leaders who understand that social threats are very real and painful in team settings and that they take a substantial toll on collaboration if not regulated help others to be more flexible in how they navigate the social landscape, leveraging the interdependency of teamwork. By using science to explore inside the brain and learn how people understand the minds of others and how we share

THE NEUROSCIENCE OF WRAPAROUND

ideas, Wraparound practitioners and leaders more effectively and efficiently improve team performance and outcomes. Neuroscience provides a more robust awareness of what drives people in social settings, increasing our capacity to optimize collaboration and collective intelligence in a Wraparound process- at the child and family, program, and systemic level.

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