



## Thinking Big

How the Evolution of Social Life Shaped the Human Mind

**Dr. Robin Dunbar**

Those of you familiar with the CIMBA Leadership System know that we prescribe heavily to something we referred to internally as the Social Brain Theory of Leadership. Several of the books we have reviewed in this column have both supported and extended this core theory. From Dr. Leslie Brothers' Friday's Footprint (1997), which arguably predated social neuroscience, to Dr. Matt Lieberman's Social (2013), who is arguably the father of social neuroscience, the evidence supports our two most fundamental tenets: (1) The human brain is wired to be social; and, (2) Leadership is a social event. One of the most important lessons we have learned at CIMBA as we developed and tested our behavioral models, and the technology supporting their implementation in the workplace and beyond, is the importance of looking beyond neuroscience and social psychology to encompass other fields that have much to offer in supporting and solidifying our Social Brain Theory of Leadership. In all truthfulness, perhaps the most important step was the decision to move beyond the traditional bounds of leadership as it was then understood in the early 90s. An important contributor to our thinking was the anthropologist Dr. Robin Dunbar. Dr. Dunbar is recognized for building evidence in support of the core notion that the human brain got bigger, it evolved, in order to manage its demanding social responsibilities - his Social Brain Hypothesis. In the book, Thinking Big: How the Evolution of Social Life Shaped the Human Mind, Dr. Dunbar and his colleagues put together the pieces that led to the development of his theory and then provide us with a variety of studies that have been undertaken over the past 15+ years since he introduced it. In addition, given that it is the holiday season, reviewing the brain's sociability seems appropriate as many of us will gather together or in other ways communicate with our closest and most important social connections.

Before we begin, I would like to resurface for consideration other books and articles from our "social" brain list. Of particular note is Dr. Dan Siegel's Brainstorm, like Dr. Matt Lieberman's Social, a book we made the subject of this column in the recent past. The CIMBA Leadership System places considerable emphasis on social transitions and the role they play in exposing shortcomings in an individual's leadership competencies. In short summary, the tools we develop

to "survive" in one social group may not function or may not function as well in subsequent social settings to which we transition (e.g., from high school to college, from college to our first job, upon being promoted). Through our assessments, and the unique technologies that assist us in collecting the relevant data, our coaches work with program participants to identify shortcomings in those necessary-for-success competencies. Dr. Siegel gave us "permission" to assist participants in understanding how those prior social experiences, and particularly those social experiences originating in the participant's primary social group, may be creating unforeseen or unexpected shortcomings in performance and well being. It is not uncommon to find a participant's anxiety rise to unproductive and unhealthy levels in the face of social cues that functioned well in prior social settings but are not functioning in the same manner in the new one. On the other hand, we also observe participants who seem to make the social transitions quite effortlessly; internally, we refer to these latter participants as having a higher level of mental complexity or wisdom. Prof. Dunbar's thesis provides considerable support for this type of reasoning, although, as might be expected, using different language and terms of expression, something to which we have become accustomed as we compare and contrast findings from social psychology, neuroscience, and other sciences.

Dunbar's Social Brain Hypothesis states that the human brain evolved to its larger size relative to other primates in order to manage its demanding social responsibilities. Note that in his book, *Descent of Man*, Charles Darwin recognizes the fundamental importance of these social constructs: "With those animals which were benefited by living in close association, the individuals which took the greatest pleasure in society would best escape various dangers, while those that cared least for their comrades, and lived solitary, would perish in greater numbers." In making his case for the relationship between social responsibility and brain size, Dunbar persuasively argues away competing explanations such as the advent of tools, fire, language, and others in large measure by showing a willingness to move beyond the physical presence of artifacts and offer compelling explanations on the why and how of their existence. He makes a very strong case for the fact that our social nature is not an accident of having a larger brain relative to other species. Rather, the value of increasing our sociability is a major reason why we evolved to have a larger brain. A fundamental tenet of Dunbar's hypothesis is that the relative size of the human neocortex determines the size of the social group to which an individual could be a member. As an anthropologist, Dunbar is looking at this by observing development over a period of some 2 million years and across several animal species. Dunbar was able to estimate what the largest effective, coherent social group should be for each kind of primate, based on the size of its neocortex. In the current epoch, his analysis suggests that for humans the number is around 150 (and includes spouses, children, relatives, and friends), the largest for any primate. This is referred to as "Dunbar's number," and it turns out that a striking number of human organizations and activities tend to operate at around that size. For example, he notes that "despite the

opportunity to create new connections at the click of a 'friending' button, most people's Facebook pages list only between 100 and 250 names" (citing a study of more than 1 million Facebook pages). He shows us that as we move to cities and population concentrates, we still maintain a personal social group size of around 150 people. Consistent with our notion of mental complexity, he shows us research demonstrating that individuals with the capacity to have larger social groups tend to have a larger orbitofrontal cortex. Importantly, he also makes the case for the important role effective leaders play in the context of super-large communities "because they allow the group to impose some discipline on itself, to cut through the different levels of its huge numbers. ... A charismatic leader who can persuade everyone else to act in concert, despite what each of them might prefer to do individually." However, he makes no effort to investigate the notion of effective or ineffective leadership or its traits or characteristics, stating "it is the stuff of history and not anthropology."

In reality, we believe that the Social Brain Hypotheses proffered by Dunbar actually provides a solid foundation for understanding the evolution of followership - where a follower is defined as an individual who coordinates his actions with another individual who is frequently the leader but may also be another follower. Clearly, the transition from group member to leader is fundamental and may in many cases be as important to survival as was the decision to form the group in the first place -- a notion Darwin makes clear in the quote above. Taken from this perspective, it is difficult to understand why there is such a dearth of research on followership relative to the volumes and volumes conducted on leadership. Could this be the reason we see the high rates a failure in leadership development programs in companies and organizations -- with some reputable consulting companies placing that failure rate at more than 75 percent?

The significance of this question was made evident to us in a research article written in 2011 by Todd Heatherton, a professor in the Department of Psychological and Brain Sciences at Dartmouth College. Taking note of the evolutionary consequences of the adaptive challenges facing our earliest ancestors in much the same way as Dunbar, Heatherton persuasively asserts that the brain evolved dedicated neural mechanisms acutely sensitive to social context. In particular, those neural mechanisms would be most sensitive to any sign that the individual's group membership was imperiled. Given the adaptive challenges being confronted, those neural mechanisms involve at a minimum self-awareness (an awareness of our behavior so as to compare it against group norms), social awareness (to include mentalizing - essentially theory of mind, a component of social awareness upon which both Dunbar and Lieberman place considerable emphasis), the ability to detect threats (particularly in social situations), and self-regulation (to allow us to alter or inhibit behaviors that would place us at risk of group exclusion). Our research here at CIMBA has led us to view these four neural mechanisms as core competencies, enabling an individual to be an accepted group member. The failure of any one of

these for mechanisms can lead to poor outcomes and social rejection -- with such social rejection conflicting with considerable social pain. Of the four, we have found self-regulation to be of particular importance, a topic we have addressed in some detail in other ABCs.

As to the threat detection mechanisms, we have placed considerable emphasis on the social stimuli that engender social pain (as defined by Profs. Lieberman and Naomi I. Eisenberger, 2003), initially employing the SCARF model (which categorized social stimuli as being Status, Certainty, Ambiguity, Relatedness, or Fairness oriented) and more recently moving to SAFETY (Security, Autonomy, Fairness, Esteem, Trust, and You) to embrace the core elements of SCARF and to allow for the inclusion of the important components of Trust (T) and thinking biases (You). Under our Social Brain Theory of Leadership, an individual needs first to meet group norms for inclusion, and then develop those core competencies at elevated levels to take a leadership role. In other words, an individual must demonstrate competency in the behavioral manifestation of the four core neural mechanisms to be accepted as a group member and then to show elevated capacity in order to adapt or change the group itself as its leader. Of course, such an individual would need to be motivated (by status, prestige, desire to implement a particular vision whether the vision is driven by group desire or by the individual's desires) and persuasive, with the latter requirement lending credence to research arguing that our brains evolved to be more persuasive (or manipulative) than rational.

The book takes you on a fascinating journey, exploring the impacts of technology, fire, language, religion, and storytelling as it travels through some 2 million years of human development in piecing together the components of Dunbar's Social Brain Theory. At one point in the latter part of the book he proffers a very interesting anecdote to explain our brain's ancestral journey. He asks you to imagine an alien tourist (one of long memory and great curiosity), which seeks to visit Earth every 500,000 years. During the alien's visits at 1.5 and 1 million years the alien would have been taken by the slowness of our change. On the third visit 500,000 years ago, the alien would have found little difference from the prior two trips except now it would have found the human brain to be significantly bigger. Visiting today, it certainly would have been a surprise to find urban-living, super-technological humans, exploring the solar system and messaging on smart phones; and, they would also be taken by the fact that those brains were not much larger than the last visit. While other anthropologists might be led to believe that nothing much changed, Dunbar points to the fact that while extensive physical changes might not be apparent, humans experienced dramatic development in their social environment, placing particular emphasis on the development of social emotions such as compassion, and in music, laughter, language, and ceremony.

In this specific regard, the book seems to have particular relevance to this time of year. Dunbar argues that endorphins, and particularly the sub-class known as  $\beta$ -endorphins, play an important role in social behavior. Interestingly, these brain chemicals are released in response to stress and can be quite pleasant -- causing us to seek more of it. Many of you will recognize this notion from the pleasant "runner's high" that goes along with exercise. Based on a variety of interesting research, Dunbar makes the case for a similar response from two other "stressful" events: laughter and music. During this holiday season many of you will be enjoying the comfort of family and friends, all members of your Dunbar 150. I encourage you to embrace your body's ability to generate  $\beta$ -endorphins, but with a little advice based on the research. You will certainly participate in and enjoy the laughter and merriment that is an indispensable part of the holiday experience. My advice regards the music. The research clearly shows that listening to music will not deliver the  $\beta$ -endorphins high; you have to perform it in order to get the high. So I encourage you to actually sing along with those Christmas carols this year and fully embrace the experience by deriving all of its physiological benefits!

Happy Holidays!