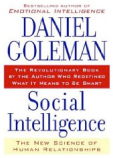
Social Connectivity: How the Brain Helps to Shape Interactions

A review of



Social Intelligence: The New Science of Human Relationships
by Daniel Goleman
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Abstract

Author Daniel Goleman explores the manner in which the brain is designed to engage in brain-to-brain "hook-ups" with others, and how these interactions affect both our social interactions and physical/mental well being. Based upon conceptualizations pioneered by Edward Thorndike, Goleman analyzes a traditional concept of social intelligence for the purpose of developing a revised model that consists of two categories: Social awareness (e.g., assessing the feelings of others) and social facility (e.g., awareness of how people present themselves). Goleman also explores advances in neuroscience that have made it possible for scientists and psychologists to study the ways in which emotions and biology work together.

Do our brains crave social contact? Are our minds innately "wired" to connect with others? In the follow-up to his 1996 book *Emotional Intelligence*, Daniel Goleman explores the manner in which the brain is designed to engage in brain-to-brain "hook-ups" with others, and how these connections affect our social interactions and physical/mental well being. Based upon conceptualizations pioneered by Edward Thorndike in his article *Intelligence and Its Uses* (Thorndike, 1920), Goleman analyzes the traditional concept of social intelligence for the purpose of composing his own revised model from Thorndike's ideas. His new model consists of two categories, namely social awareness (e.g., the ability to sense the feelings and inner states of others) and social facility (e.g., conscious awareness of how people present themselves). These categories encompass both fundamental "low road" and elaborate "high road" functions. Goleman also explores advances in neuroscience that have made it possible for both scientists and psychologists to study the ways in which emotions and biology work together.

Of entral importance to Goleman's work are social interactions, which have served as a crucial facilitator of human survival since the time of early humankind. For example, needs essential to survival (e.g., food, shelter) would be difficult to obtain in isolation, thereby making dependency on others necessary (Lakin, Jefferis, Cheng, & Chartrand, 2003). Theorists have also posited that, in order to survive, we must be able to understand others' actions, since comprehension makes social organization possible (Rizzolatti & Craighero, 2004). Therefore, our dependency on others makes relationships of preeminent importance with regard to survival, regardless of whether one is a child or adult (Trevarthen, 2001).

In relation to our survival abilities, Goleman discusses the process of "Neuroplasticity," or the brain's ability to reshape itself in response to experiences and events. Previous research supports this idea, showing that the ability for adaptation allows an individual to successfully navigate external obstacles in order to survive within a challenging environment (Balbernie, 2001). Specifically, Goleman identifies the automatic reactions that we experience in relation to the expressions of others as "Neural WiFi." He conceptualizes these reactions as a type of dance in which our brains act and react while sending and receiving signals from another person via social contagion. This spontaneous synchrony is the product of a class of neurons known as mirror neurons, an important feature in social connections. Specifically, these neurons allow humans to interpret the intentions and emotions of others. From an evolutionary perspective, Goleman's "brain-to-brain" interactions may have been helpful in allowing individuals in groups to connect with the emotions of others via perceptions of others' reactions to impending danger (e.g., perceiving one's reaction to a wild animal lurking behind another member of the social group). A modern day example of this brain-to-brain attunement is exemplified through the research of Moody, McIntosh, Mann, and Weisser (2007), who have shown that rapid

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facial reactions (e.g., facial mimicry) can convey an emotional component in reaction to the perceived expressions of others.

According to Goleman, the brain also possesses two pathways for neural processing, termed as "low road" and "high road" circuitry routes. These routes can be thought of as roughly analogous to "automatic" versus "controlled" cognitive processes (e.g., Bargh, 1997) that work together to encompass the full breadth of social intelligence. The low road operates outside an individual's awareness and is critical in making automatic judgments. This route represents automatic, fast lane processes (i.e., "gut reactions"). Constantly operating beneath the surface of one's consciousness, the low road primes people for emotions felt by others. For example, detecting fleeting interpersonal facial expressions (e.g., momentary flash of disdain across an interaction partner's face) can activate primal empathy or the ability to discern the feelings of another. Neuroscientists believe that a group of cells (i.e., spindle cells) are responsible for the speed of these automatic judgments and for synchronizing our emotions and reactions. The shape and size of these cells are central to the accelerated rate of information transmission.

Contrary to the effortless efficiency of the automated low road, the high road represents the more deliberate path on the neural superhighway. This slower, more thoughtful route increases response potential to the societal interactions an individual may encounter. Through this more "thoughtful" and deliberate response, individuals can obtain an enhanced understanding of others**.** As Goleman notes, the voluntary nature of the high road adds free will to our lives via flexibility. For instance, free will allows us to make the cognitive choice of whether or not to reciprocate the emotions of those with whom we interact via the monitoring of our own reactions. This protection thereby allows us the capacity to shield ourselves from unwanted social contagion. In short, this volitional flexibility allows the high road the ability to override the low road. An example that Goleman uses to illustrate the overriding capacity of the high road is through the use of exposure-based conditioning to overcome negative emotional states (e.g., extreme fearfulness). For instance, if a past event causes a person to feel anxious upon the retrieval of a memory, the high road allows that person to bring reason to the fear. Subsequently, each time a fearful memory is retrieved, it is altered based on current understanding and recently obtained knowledge through a process known as reconsolidation (Debiec et al., 2006).

While the low and high roads allow us to feel immediate empathy and apply deliberate effort to our actions and emotions, the discovery of mirror neurons has been of great aid in explaining why people unconsciously mimic the moods, emotions, and physical actions of others (Williams, 2001). Identified through the use of brain imaging devices (e.g., functional magnetic resonance imaging; fMRI), mirror neurons are scattered throughout the brain. These neurons activate based upon current, relevant interpersonal and intrapersonal activity. Goleman also notes that these neurons activate not only in response to an individual's own activity and emotions, but also in response to another person's situation or emotional experiences. As Preston et al. (2002) found through the use of Positional Emissions Tomography (PET), the brain activity in participants who imagined emotional situations from their own past was virtually identical to those participants who imagined an emotional situation from the past of another.

Mirror neurons also allow humans to engage in the sharing of emotions in a social context (Schulte-Ruther, Markowitsch, Fink, & Piefke, 2007) and to interpret the intentions of others. Goleman claims that mirror neurons respond to emotions felt by others, as with intrapersonal emotions, so that perceivers may better understand the intended actions of others. Thus, the pathway from personal empathy to action originates within the mirror neuron system, and the more active an individual's mirror neuron system, the stronger his or her empathic response will be.

Empathy, defined as the sensing, feeling, and compassionate response to another person's distress (p. 58), fits well with what neuroscientists have learned about the brain and attunement. The process of attuning to others extends beyond a transient moment of empathy to involve full attention to another in order to create rapport. During a period of attunement, both low and high processing roads engage, resulting in both the automatic imitation of another's feelings and a less transitory form of empathy. During such interactions, areas of neural circuitry combine to form the experience of our social interactions, regardless of whether the emotions themselves are personally experienced or imagined (Preston & de Waal, 2002).

Goleman also contemplates the other end of the empathic spectrum by discussing what occurs when brain circuitry is impaired. Activity in some regions of the brain is limited in those with developmental disorders characterized by impaired social interactions (e.g., autism). For example, a lack of eye contact may contribute to decreased ability to read feelings and sense emotions in others. According to Goleman, individuals with autism spectrum disorders (ASD) may experience attenuated empathic connection as a result of their limitations in making eye contact with others. This eye contact avoidance may be due to the amygdala reacting as it would to a fearful situation. Research has shown that the mirror neurons in individuals with ASD may not necessarily be broken (de C. Hamilton, 2008); rather, the processing ability of the circuitry may be disrupted in some way. It should be noted that, while research has been conducted to examine the neural circuitry of those with ASD, detailed mapping of these systems is still in its infancy.

While technology has aided in the identification of neural circuitry associated with our emotions, it may also impede our social interactions. To address this, Goleman briefly discusses the role technology plays in limiting social interactions and connectedness. While interfacing with technology, a connection exists between the individual and the chosen medium (e.g., music though an iPod, video gaming). However, the capacity for face-to-face connection via authentic interpersonal interaction is diminished. Quoting Alvin Weinberg's term "technological fix," Goleman disseminates his belief that technology has made it easier to disconnect from those around us, as well as from ourselves. Increasingly, interactions are conducted through artificial means (e.g., internet) rather than through face-to-face discussions. Consequently, this reduces the influence of the high road on the low road's reactions. This reduction attenuates our ability to successfully monitor the feedback from facial expressions or tone of voice that occurs during face-to-face interactions. Goleman believes that our general societal focus has shifted from family, social responsibility, and community to the latest interactive technology. As a result, our society's consistent connectedness only serves to keep individuals connected at a distance, reducing the quantity and quality of face-to-face interactions while increasing levels of stress. The consequences of our over-reliance on technology could be highly relevant to social psychology in particular, for as our interface with technology continues to expand, research on the psychological consequences of that interaction will likely increase exponentially.

In conclusion, the advances in the neurosciences have allowed scientists a glimpse at the manner in which our physiology corresponds with our emotions. This connection allows for a thoughtful analysis of the effects of social interactions and others' emotions on our own emotions, thoughts, and behaviors. Goleman expertly explains the connection between social interactions and the body itself (e.g., neuron reaction to the social environment, positive and negative effects of interactions on physical health) on a level that is comprehensible to most. This book allows those lacking expert knowledge of neural systems or general psychology a conception of the manner in which these systems interact without being overwhelmed by intimidating jargon. That stated, this book might also interest those experts searching for a unique synthesis of psychology and physiology. Whether utilized as a general overview of the literature or as a supplemental course text, the practicality of Goleman's applied examples could aid in the comprehension of various concepts typically discussed in neuropsychology.

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