The Biochemical Sociology of Human Interaction: How Brain Chemistry Shapes Social Behavior

“Look into how chemical reactions in the brain influence social behaviour, and how these interactions affect social structures, group dynamics, or even crime rates.”

According to scientists, more than a million chemical reactions constantly occur in the cytoplasm of our brain. These reactions produce numerous hormones, which are then transmitted all around our body. Some of the most commonly discussed chemical reactions are Dopamine, Oxytocin, and Serotonin, which in turn produce hormones, such as adrenaline, cortisol, testosterone, and oestrogen. How do chemical reactions and the hormones they produce shape your social behaviour?

Oxytocin: The ‘Love Hormone’

Have a crush on someone? A little physical contact could help spark attraction. When we experience positive physical touch, the hypothalamus releases oxytocin—often called the “love hormone”— into the bloodstream. One of the main purposes of this positive energy is to support childbirth, as it aids in fostering a strong connection between mother and baby. What’s less well-known is its effect on mental health, as it positively affects social skills like relaxation, trust, and overall psychological stability. It can also decrease social vigilance, which can have positive and negative effects. On one hand, it can make individuals more relaxed, trusting, and open to connection; on the other, it can make individuals less aware and thus more vulnerable or fuelling social avoidance. Certain findings suggest that oxytocin has different influences on different parts of the brain–it promotes social anxiety as well as reducing it altogether. It also tends to encourage favouritism and prejudice, rippling the social hierarchies of many groups, and causing a lot of people to feel envy and jealousy. Nevertheless, the extent to which oxytocin leaves a negative impact could depend on factors, such as one’s surroundings or a psychiatric disorder, but it still isn’t clear.

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Serotonin: The Key to Stability and Happiness

Serotonin, a neurotransmitter that facilitates communication between the central nervous system and the body, plays a crucial role in mood regulation, learning, memory, sleep, and body temperature control. Socially, serotonin promotes cooperation and prosocial behaviour. It regulates mood, reducing aggression and fostering a sense of well-being. Arguably, its most significant role is in maintaining emotional stability. Low serotonin levels are strongly linked to depression, often manifesting as persistent sadness, fatigue, and loss of motivation. This highlights serotonin's critical role in mental health and social functioning.

Dopamine: The 'Pathway to Pleasure'

According to the Harvard Medical School, dopamine's responsibility lies in heightening the desirability of behaviours essential to surviving. Ever wondered why the mere aroma of baked goods, hanging out with friends or even an intensive workout leaves the mark of being pleasurable on your body? That's just dopamine doing its job. Dopamine is released daily in our brains, once we associate simple day-to-day activities with pleasure. Activities such as movement, attention and even bodily functions like our heart rate and pain processing are monitored by dopamine in some way. However, every good ride has a dark side, and dopamine is an engraved example. dopamine neurotransmitters also control augmentation, intensifying the feeling of reward once drugs such as cocaine and heroin are in play, driving one towards addiction.

Understanding these neurochemical influences and how they affect our body and behaviour helps us to regulate our social abilities, keep our mental health in check and help in navigating relationships with our peers and individuals. We've all heard of the various different neurochemicals, but until now we'd never really bothered to wonder how they actually work and how they affect our bodies.

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CITATIONS

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