

Cognitive/Affective and Neural Obstacles of Human Symbiosis

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The phenomenon of symbiosis is widely observed in animals, but is a big challenge for humans. Although international mutual assistance — such as Japan and China helping each other with disaster relief in the wake of major earthquakes, as has recently happened — may be seen as an example of symbiosis, it is questionable whether humans in general can be regarded as living in symbiosis with each other. It is also worth questioning why humans help each other in the first place.

In both animals and humans, altruistic and prosocial behaviors depend on a cognitive/affective process known as empathy. Studies using neuroimaging techniques, such as electroencephalography and functional magnetic resonance imaging (fMRI), have revealed that the neural regions for processing pain and suffering enable individuals to recognize such feelings in others.

Research has also shown that sympathetic neural responses are subject to ingroup bias; responses are significant toward members of one's own group, but are less so toward others, such as people of a different race. Recent findings indicate that neurotransmitters, genetic polymorphisms, and sociocultural factors play key roles in the regulation of this bias.

Another intriguing, newly-discovered fact is that there seem to be ways to partly reduce ingroup bias. There are reports of laboratory manipulation of subjects' attention and sense of membership having this effect, as well as experiences of interacting with outgroup members, such as while residing in a foreign country.

Overcoming ingroup bias, which arises from a combination of multiple factors as discussed above, would represent a major step toward human symbiosis. I am hopeful that we will be able to realize symbiosis and solidarity of all humans by working toward common goals.