

Love and Stress

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Almost everybody can relate to a state of “being or falling in love” even though it is difficult to define love. Love may be a strong, passionate affection for a person. Hence, the Oxford English Dictionary defines love as an intense feeling of deep affection or fondness for a person or a thing, a sexual passion, or sexual relations. Thus, love is an emotion often associated with consensual sexual activity, or the willing, and even eager, participation of the individuals involved. Only recently has the biology of love, and in particular its neurobiological aspects, become a focus of basic science. Medical, or health, implications related to the love physiology are still speculative, i.e., mainly not proven.

Love is rarely investigated by scientific means. In part, this may be due to the fact that love has always been the domain of poets and artists, maybe psychologists and clinicians, but has certainly not been considered to be right within the scope of common experimental science, i.e., neurobiology research. Emotions and feelings such as attachment, couple and parental bonding, and even love – presumably typical of higher mammals and neglected for centuries by the experimental sciences – have now come into the focus of neuroscientific research in order to elucidate their biological mechanisms and pathways.

Moreover, love has consequences for health and well-being. The better we understand the concrete neurobiology of love and its possible secondary implications, the greater is our respect for the significance and potency of love’s role in mental and physical health. Love is closely related to the concept of pleasure and ‘positive psychology’, i.e., joyful mental states, and therefore has become a feature not only of thorough psychological but also basic science research and clinical medicine. This understanding utilizes limbic “neural emotionality”, using dopamine, morphine and nitric oxide as a molecular and physiological substrate [4,5,6,7,10,11,19,20].

Given this, love in the beginning may sometimes be stressful [8,9]. This is also true of various stress reducing practices incorporating a stress component initially, i.e., relaxation and placebo responses [14,15,17,18]. The initial activation of this stress component of the total response is significant and represents a protective mechanism since activation is started followed by relaxation if appropriate. Here an individual/ animal can assess whether the situation is safe before relaxing. Thus, it appears that the mechanism for relaxation incorporates a stress component as does love initially [8,9]. In this regard, the authors surmise that stress is critical for survival, representing a coping strategy, which has given rise to processes that later relieve stress, i.e., complementary medical strategies as well as relaxation, pleasure and love. Here we surmise, relaxation became an important secondary component for acute activation in order to restore homeostasis and terminate the overall physiological process of activation caused by acute stress, which damages organisms if it is not turned off [12]. This at first may have been a calming influence in non-cognitive animals. Thus, “economical” and time depen-

dent processes became adducts to stress activation, terminating it quickly. In this role we envision processes releasing nitric oxide, which can alter stress processes and adrenergic signaling [17].

Ensuring organisms' survival is the fact that all processes initially incorporate a stress response. Then if appropriate, i.e., situation favors this alternate process, stress terminating processes would emerge, which would favor survival of the species, i.e., relaxation/love. The emergence of "love" became quite important in organisms exhibiting cognition, because it deployed the validation for emotionality controlling "logical" behavior. The cognitive concepts of love and pleasure were required for logical organisms, for without this quality and short cut to rationality indecision would dominant behavior to the point of inactivity.

Taken together, because love overtakes the place of stress under appropriate circumstances, we surmise love is healthy since it can only emerge in an unencumbered person. Indeed, the biochemical messenger substrate, i.e., endocannabinoids, morphine, opioid peptides and nitric oxide all can lead to down regulating cells/tissues/organs/organisms that were excited or stimulated to be activated, thus restoring homeostasis [13,15,16]. This action alone can be judged to be healthy since stress induced activities for the long term are terminated.

The brain harbors beneficial autoregulatory pathways and salutogenic functions that contribute to health by enabling one's experiences in life – e.g., love – to benefit one's health [3,5,6]. However, science has long neglected these capacities, i.e., self-care potential. Yet, in clinical medicine and particularly in integrative or mind/body medical settings, including certain forms of complementary medicine, these self-healing capacities of the mind-brain construct have become widely popular, and therefore research on the neurobiological and physiological pathways underlying such 'healthy' phenomena as love, or therapeutic touch etc., has now gained recognition [1,2,5].

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