Term Project 3

Grief is a complex emotion that combines several emotions into one. These emotions include anger, sadness, fear and guilt. This can be described as the five stages of grief: denial, anger, bargaining, depression, and acceptance. According to the APA, Grief is considered to be a natural response to a death or loss of a loved one, whether that be a spouse, family member, pet or friend (2018). It can also happen before the death or loss of a loved one, like finding out a bad medical diagnosis.

Grief can also occur when a loss, not just death, occurs. These losses can be considered a major life change, such as getting or being a child of a divorce, moving into a new home, or loss of job or promotion. Grief can cause a person to have physiological distress, disruptions of the immune system, anxiety, and depression (O'Conner, 2012).

In a study using fMRI scans, Gundel et al. discovered that two brain regions activate together when a person is going through the stages of grief: the dorsal anterior cingulate cortex and insula (2003). These two regions of the brain are usually activated together when an individual is going through both physical and social pain. In the case of grief, an individual can go through physical pain, for example heartbreak, as well as social pain, losing a loved one and feeling alone. Gundel et al. also discovered that the posterior cingulate cortex also activates during grief. The posterior cingulate cortex is activated with the help of environmental stimuli, which in this case would be emotional memories. The posterior cingulate cortex activates first as the individual sees or remembers a lost loved one before sending signals to the dorsal anterior cingulate cortex and insula (Gundel et al. 2003).

A few neurotransmitters and hormones are also activated during emotional grief. Due to grief causing a stress-like response in the physiological systems, we are shown that the

dopamine, opioid, and oxytocin systems are activated (O'Conner, 2012). Dopamine is a neurotransmitter that helps us get the motivation to seek rewards, and conditions us to form an attachment to said reward. In this case, the reward is the loved one we are attached to, and a place and job we have an emotional attachment to. The opioid system are neurochemicals that works together with the dopamine system to give of the enjoyment and satisfaction of these rewards. Oxytocin also occurs during grief. Oxytocin is a hormone that helps us suppress anxiety during stressful situations (O'Conner, 2012).

We can see all these systems working together. For example, an individual has a parent who just passed away, while alone they start to think about the good times they had with said parent. The posterior cingulate cortex is activated as the individual thinks of these memories before it sends dopamine and opioid signals to the insula and the dorsal anterior cingulate cortex. This causes stress for the individual as this makes them miss their lost parent more and makes them upset because they are unable to reach them. Due to the brain knowing it is under stress; it tries to send out oxytocin in hopes it will help the individual feel better and not feel as much anxiety or stress.

References

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