

Grief & Memory Reconsolidation Theory - A Neuropsychological and Humanistic Perspective

by Barry Karlsson, *specialist in neuropsychology*

One of the most renowned theories about grief is the often-quoted FIFDA model by Elisabeth Kübler-Ross. She identifies five stages in a grieving process: denial, anger, bargaining, depression, and finally, acceptance. Unintentionally, according to Kübler-Ross herself, these stages were never meant to follow a strict sequence, and she later clarified that it seems most of us rather oscillate between the stages and find ourselves at multiple levels simultaneously. However, does this not essentially diminish the explanatory value of the model? Step models have nonetheless become almost mandatory elements in a popular view of a "normal" crisis and grieving process – in Sweden, we have Johan Cullberg's well-known crisis model.

However, much criticism has been directed at this pragmatic approach to analyzing and understanding grief and losses. Not least because the empirical evidence for such step models is quite scant. Empirical researchers like George Bonanno argue, for example, that recovery and resilience are much quicker, more powerful, and more unevenly distributed than previously thought. Bonanno's term "coping ugly" is a telling expression for the highly individual nature of grief, occurring based on the experiences and relationships we happen to have with what has been lost. Why can't one feel relief when someone dies? Can an acquired disability mean suddenly avoiding too high social demands and expectations? Is it permissible to laugh while grieving? And how long does one actually grieve? And with what intensity? Can grief pass in five minutes? Is it okay to have a beer at the pub?

It has sometimes proven inappropriate to "uncover" so-called denied frozen grief by repeating unpleasant and traumatic memories; or to conduct repetitions in organized debriefing; or

to insist that grief must occur in certain ways; or to "live out" grief by crying in various forms of catharsis. Preconceived notions of how grief should be experienced can in some cases rather exacerbate feelings of guilt and shame. Loss of control can in some cases be frightfully scary and not infrequently perceived as life-threatening. The need for social security and predictability is often acutely necessary in such situations.

There are significant individual differences, which also show that there are various neuroanatomical correlates and memories that co-vary - not that there is just one "correct" model for how grief can be handled. Both O'Connor and Bonanno refer to most of us having a high degree of "resilience" that enables us to actually cope with major personal stresses without breaking down, and that most are also back at work within just a few days or a week after a major loss. The problem with earlier documentation is that it was made by clinicians and psychotherapists who primarily met people with complicated grief (10%) and therefore developed a confirmation bias with preconceived notions that a priori and naively generalized this to apply to most of us, and sometimes with anecdotal psychoanalytic case studies discussed "denial", "repression" and step theories as if they were the truth of the day. Empirical research shows otherwise.

Another criticism is the view of the authenticity or "genuineness" of "inner" feelings. Essentialism is not fully discussed by either Bonanno or O'Connor, who both adopt a waiting attitude, thus becoming half-heartedly vitalistically romantic. But are there any "basic emotions" such as grief, joy, disgust, surprise, anger, and fear, as claimed by Plato, Descartes, and Darwin, and later researched in the 20th century by Paul Ekman,

Tomkins, Adolphs, Solms, Panksepp, and others? Or do we just construct and cognitively update experiences through expectations and predictions that are then continuously revised and updated?

According to the latter view, discussed in research by Joseph LeDoux and Lisa Feldman Barrett, we are not victims of a blind inherited "essential" inevitability, but rather we bear a conscious responsibility for the direction of our higher cognitive experiences. This contrasts with immediate avoidance reactions, like when we reflexively protect ourselves from a sudden potentially life-threatening danger. The former is an executive function where we use our reasoning and our conscious impulse-inhibiting control abilities to control our experiences but also to evaluate and update memories. The latter is a non-conscious quick survival response in just a few milliseconds – and thus does not reach any conscious emotional experience within this short time frame, the conscious interpretation and experience arise secondarily.

Consciousness research is relatively new and today constitutes an increasingly extensive aspect of neuropsychological research on grief, challenging the reductionist black-box thinking. And also challenging the classical Frankfurt School's three-legged model of knowledge à la Jürgen Habermas to distinguish between natural science, humanities, and social science

But what is the experience of loss? What is the "true" experience of grief? Is grief and longing a fundamental primary emotion that stems from one's "deepest" and "essential" psyche? Or is grief nothing more than multiple layers of memories, imaginations, and broken expectations? Is this again a reflection of the old dualistic drama between body and soul?

If we grieve someone or something, it is in a personal relationship where memories also symbolize future planning, hopes, and dreams - which also explains why we miss famous celebrities whom we have not actually had any personal relationship with, but who are still part of consciousness and our life. This means at the same time that we do not grieve for

someone we have never had any thoughts about - such as a completely unknown person on the other side of the globe.

Handling grief can be seen as cognitively constructing, reconstructing, deconstructing, reorienting, anticipating, creating a new meaningful life line after a loss. Creating new expectations and new prospective memories - i.e., memories of what we believe will happen, and plans that will fulfill this expected future - and which from now on do not include the dead or what we have lost. In this way, grief can also become like a social construction that can be exemplified through various turns in social contexts, not least at funerals, with a defined turn-taking where those present are ritually expected to express their grief, e.g., where and how one sits, or who acknowledges whom. A person who is outside this inner circle, such as in forbidden love or hatred, may not be able to express themselves in the same social community.

In summary, this points to several different cognitive variants of the phenomenon of grief, which sometimes can be perceived with a kind of cool stoic logic and which seems frighteningly objectifying, but which still opens up for new varying individual-centred forms, with all its proximity, relationship, and reinforcement mechanisms, which are integrated into different memory modalities, neural networks, and biofeedback systems: short-term memories, perceptual memories, conditioning, semantic memories, episodic memories, procedural memories, and not least: prospective memories.

The concept of "anticipatory grief" sheds light on the phenomenon we face in situations where we know something will happen in the future, or where our hopes will not be fulfilled. We prepare ourselves for the coming inevitable last moment, and we update our shattered hopes during an ongoing life process. This is the case with disabilities such as loss of sight, hearing, or body parts, or newborns with serious brain damage, cognitive impairments, or with progressive diseases that occur over time. Or a relative with a serious addiction that eventually breaks all social responsibility. In anticipation of the inevitable,

there is an infinitely long series of updated daily sorrows.

The grief reactions that are usually mentioned are typically grouped into four categories: a) Autonomous reactions (fight-flight-freeze); b) Physiological reactions, such as headaches, numbness, sleep disturbances, nutrition, and appetite; c) Emotional reactions such as sadness, crying, longing, clinging, guilt, depression, fear, anxiety; and d) Cognitive reactions such as problems with attention, impulse inhibition, rumination, memory, and learning.

But in all living beings, these reactions are also based on the ability to more or less well make predictions, i.e., forecasts, about how to ensure survival, mate selection, and reproduction, and to avoid enemies or being injured or eaten. And how every biological system, down to the smallest amoeba, self-corrects when something goes wrong by calculating at different levels and modalities via "prediction errors" new more adaptive ways of functioning. This is simply about all the expectations, ideas, and dreams we have, and what emotionally and cognitively happens when the expectations are not met according to our previously learned experiences and personal needs.

Research by Joseph LeDoux and colleagues, who have mapped avoidance in anxiety and fear reactions, shows that there are plenty of empirical findings that show that episodic memories, when actualized, often will be updated and changed. In grief, one can therefore conclude that when a memory is actualized, an adjustment of the memory ("updating") occurs when we experience that the memory-worthy association is no longer relevant but must be adapted to the difference in the actual new situation ("prediction error"). This can be compared to a neuronal plastic probability process that the brain processes, and which also gives physiological feedback reactions via proprioceptive and interoceptive memory structures between the central and peripheral nervous system - and where the phenomenological experience is simply "sadness" when predictive expectations do not arise - even in milliseconds in a myriad of associations at lower modalities. Which also

immediately triggers social bonding and care-giving behaviors, as part of an increased survival mechanism.

Moreover, the contours of various neuroanatomical correlates can preliminarily be discovered, and many describe experiences of grief as "striped", i.e., oscillating with ups and downs of grief, in and out of reactions and associations, and that the frequency of this oscillation varies and gets used to and gradually decreases, perhaps as a result of Donald Hebb's old neural principle, while they may never completely disappear but unexpectedly can return at an event or question that at first glance may seem completely irrelevant, but which still has a strong associative bearing; perhaps at a prospective memory that catches up and has not yet been updated...

Learning is a constantly repetitive process involving the frontal lobes, hippocampus, perceptual systems, and motor areas in the cerebral cortex. For the hippocampus to be relieved and "restarted", memories must be stored in different modalities and neural networks and mediated via associative areas, e.g., in the parietal lobes. These processes are optimized through sleep, during which a certain part of memory consolidation seems to take place. Particularly important is deep sleep (slow wave sleep). The Danish researcher Maiken Nedergaard discovered through deep sleep what she called the "Glymphatic system", analogous to the lymphatic system. This as a brain's cleaning system where astrocytes are most effective during deep sleep and open a permeability in the brain's blood vessel system that allows waste products to seep out and be transported away via the veins.

During deep sleep, there is also a consolidation of memories; exactly how these two systems (i.e., deep sleep / memory consolidation) are connected, scientists do not yet know, but there seems to be a clear connection between memory storage, deep sleep, and slag cleaning. In exhaustion, rest and recovery have been shown to be important to consider, but the idea of "sleeping on it" is good for memory storage, stress, and ordinary exhaustion, but this does not always have to

be true when it comes to traumatic events or other unpleasantness. If you go through something unpleasant, it may be better for some to stay awake for another 6 hours and instead do something completely different distracting so that the experience is not consolidated into new robust memory tracks.

Updating memories has a direct psychotherapeutic component. Research shows that when memories are actualized, it takes about 6 minutes for memories to be in a change mode, in a "reconsolidation window", which means an opportunity for molecular updating of memories for about 6 hours after the memory has been actualized. In well-designed psychotherapies, new alternative memories can be implemented and update the previous perhaps dysfunctional experiences. The difficult art is of course to get this to work in practice, but there are a number of different psychotherapeutic programs that have adopted this approach. While others jokingly say that this is what all psychotherapy is about, and that skilled psychotherapists, when they succeed, are just memory reconsolidation they have worked with, even though they did not know the neuropsychology behind it all.

Barry Karlsson

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