

I Only Eat Blueberry Pancakes on Monday

This installation explores the brain's distortion and fabrication of memories, especially in relation to feelings of guilt. I was particularly inspired by research showing that our memories are altered each time we recall them, and by the way guilt pushes us to make reparations with those affected by our actions. I worked on the installation with my younger sister in mind and, as it progressed, I found that this work of art had become my own way of making reparations with her for hurtful things I'd said or done to her in the past.

The entire window installation is symbolic of my childhood and relationship with my younger sister. The clear shapes containing glitter, colorful shards of plastic, string, sequins, and other various materials are surrounded by alphabet stickers to represent the messiness and chaos of our growing up, and call to mind the colorful toys and clothing of our youth. The repetitive letters and colors mimic the way our brain recalls old memories over and over, changing them subtly each time. Finally, the tooth imagery and use of unusual materials is intended to make the viewer uneasy--similar to how one feels when recalling experiences or actions they feel guilty about.

Guilt, however unpleasant it may feel to experience, is still an important and innately human emotion. It is the way we learn from mistakes. It encourages us to do the right thing. My intention is to show an emotional experience that is normally considered negative or otherwise unproductive in a more beautiful and thought-provoking light.

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An Analysis of Guilt and its Impact on Memory Fabrication and Distortion

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This paper sheds light on the characteristics and developmental purposes of guilt, including its differences from the associated emotional experience of shame, in an attempt to investigate how the way we remember our own events and actions plays a role in the guilt we internalize for them. Known information about the human guilt condition will be synthesized with the analysis of multiple studies of memory distortion as well as studies investigating how social emotions affect cognitive functions to reach a conclusion.

Around the month of September during my sophomore year of high school, thoughts and feelings I'd been struggling with for years began manifesting in my behavior and choices in ways that really hurt both me and the people closest to me at the time. It was a complete shock to my family. My parents ended up having to sacrifice a lot to try and help me recover from what I was going through and because of that, I think my younger sister was unable to get the attention or support she needed from them. My actions put a lot of stress on my family and as I bounced from hospital to residential treatment program to therapeutic wilderness program that year, I quickly realized that this was a reality I was going to have to live with. Despite the endless support I have received since then from my family, friends, and various therapists and professionals, forgiving myself for what I had put my family through and working through my internalized guilt and shame around the events continues to be a struggle. And, as time passes and my memories of the events leading up to that point have become faded and replayed to the point of confusion, it has become increasingly unclear to me what happened that year.

My own experiences living with guilt and regret have caused me to wonder: What developmental or evolutionary purpose does guilt serve? And, in conjunction, what is the relationship between feelings of guilt and how we remember associated events and actions? According to Donald L. Carveth, a Sociology and Social and Political Thought professor at York University, guilt is an emotional state that “Embodies depressive anxiety and capacity for concern for the other that characterizes the depressive position and motivates the desire to make reparation”¹. Guilt is an action-focused emotion, meaning that it involves self-criticism for a specific act² and often a desire to “fix” the problem caused or to make amends with those affected³. There is ample evidence supporting the theory that memory is malleable and that what we remember (or think we remember) can be altered when we are subjected to misinformation or suggestions, or after the passing of time has allowed the memory to fade⁴. Can guilt be internalized for actions we think we did, but did not actually do? Can we generate false memories to support feelings of guilt?

Guilt is more than the shallow notion that one has done something wrong; Guilt is a productive emotional state that is an essential component of maturity, morality, and mental wellbeing. That being said, feelings of regret and memory can work to distort each other or interfere with one another.

The Oxford English Dictionary defines the emotional state of guilt as “A feeling of having committed wrong or failed in an obligation.”⁵ However, to feel guilt is not just to feel bad about a past action, there is usually some component of desire to make reparations or to play a role in fixing whatever problem may have been caused. For example, you may feel guilty after ignoring a text or call from a family member, giving into a craving, or taking something that is not yours. Meanwhile, the emotion of shame is usually defined as a more painful feeling, usually associated with humiliation or the consciousness of “wrong” or “foolish” behavior. Shame tends to be a more self-centered emotion, with the focus being on one's self rather than one's actions.

¹ Carveth, Donald L. “The Unconscious Need for Punishment: Expression or Evasion of the Sense of Guilt?” *York University*, 2001

² Cavalera, Cesare, and Alessandro Pepe. “Social Emotions and Cognition: Shame, Guilt and Working Memory.” *NeuroImage*, Academic Press, 18 Feb. 2014,

³ Krakovsky, Marina. “Why Feelings of Guilt May Signal Leadership Potential.” *Stanford Graduate School of Business*, Apr. 2013,

⁴ Loftus, Elizabeth F. “Creating False Memories.” *Lives of Women in the Early 1800s*, 1997

⁵ Guilt, Definition of Guilt in English by Oxford Dictionaries.” *Oxford Dictionaries English*, Oxford Dictionaries

Both these feelings can be categorized under the umbrella term of regret, as they both imply some kind of unhappiness or embarrassment about a past action. In a study at Princeton University, researchers found that feelings of regret (guilt and shame) actually caused a sensation of being physically heavier. In the experiment, several participants were asked to recall memories of acting “unethically” and were then asked to rate their subjective feeling of their own body weight as compared to their average body weight. Interestingly, those who were asked to recall their own unethical actions felt heavier than the control group, who were not asked to recall those memories. Participants were literally weighed down by guilt.⁶ Guilt and shame are usually felt under similar circumstances and often coincide with one another.

It is important to note that though there are similarities and often relationships between guilt and shame, they are two distinctly different emotional experiences that result in different behaviors. The difference between the two lies in the reaction to making a mistake: Guilty people that feel bad about a specific action will likely want to make reparations, whereas ashamed people will use the mistake as an excuse to feel bad about themselves and try to hide from or escape the problem⁷. Guilt is linked to positive qualities such as empathy, responsibility, and leadership, as it promotes behavior that benefits interpersonal relations such as apology, confession, and other prosocial actions⁸. On the other hand, in his essay on shame, author and clinical psychologist, Robert Karen, explains “Current research identifies shame as an important element in aggression, in addictions, obsessions, narcissism, depression, and numerous other psychiatric syndromes”⁹. When one is experiencing guilt, it is impossible for that guilt not to be accompanied by some level of shame. However, one can experience shame without simultaneously experiencing guilt, as it can be easy to become so self-involved that one loses sight or forgets about those that their actions have affected except for as a mirror, audience, or resource to the self. Overall, though shame is often thought of as a synonym for guilt, psychologists actually classify them as very different emotional experiences due to the different behavior that occurs as a result of either feeling, which is important to be aware of when trying to identify the effects of guilt.

Guilt, however unpleasant it may feel to experience, is an important and deeply human emotion crucial in our development. Renowned psychologist and psychoanalyst, Erik Erikson, in his highly influential eight-stage theory of development, theorized that preschool-aged children develop a sense of guilt as an opposite to feelings of playfulness and independence. Maintaining a balance of the two opposites was what he claimed gave children a sense of purpose early in life¹⁰. This theory supports the idea that guilt is necessary when it comes to emotional maturity and finding a sense of self. Additionally, because guilt is an emotion that connects the sense of self to relationships with others¹¹, guilt-prone people have greater senses of responsibility and greater empathy for others. The Stanford Graduate School of Business showed that in a study in which participants were given a personality test, then asked to complete a set of time-based tasks

⁶ Hotchkiss, Michael. “Weighed down by Guilt: Research Shows It's More than a Metaphor.” *Princeton University*, The Trustees of Princeton University, 2013.

⁷ Krakovsky, Marina. “Why Feelings of Guilt May Signal Leadership Potential.” *Stanford Graduate School of Business*, Apr. 2013

⁸ Cavalera, Cesare, and Alessandro Pepe. “Social Emotions and Cognition: Shame, Guilt and Working Memory.” *NeuroImage*, Academic Press, 18 Feb. 2014

⁹ Karen, Robert. *Shame*. The Atlantic Monthly, 1992

¹⁰ Erikson, Erik H. *Childhood and Society*. Vintage Digital, 2014.

¹¹ Cavalera, Cesare, and Alessandro Pepe. “Social Emotions and Cognition: Shame, Guilt and Working Memory.” *NeuroImage*, Academic Press, 18 Feb. 2014

with a small group of other participants, those who scored highest in guilt-proneness on the personality test, were also ranked as the best leaders by the participants in their respective groups¹². In fact, it was shown in this study that guilt-proneness was a better predictor of emerging leadership than qualities we normally associate with leaders, such as extraversion. “Guilt-prone people tend to carry a strong sense of personal responsibility to others, and that responsibility makes people see them as leaders,” says Becky Schaumberg, doctoral candidate in Organizational Behavior and lead researcher in this study. Furthermore, guilt serves an important evolutionary purpose: allowing us to deny gratification¹³, proving that guilt is more sophisticated and specific to humans than primitive emotions like greed or fear. Though many may argue that guilt is not a productive or particularly useful emotion (feeling bad about an action solves nothing and is not helpful to those impacted by the action), the ability to admit to wrongdoing or “badness” without succumbing to the belief that one is poisonously “all-bad” shows great emotional maturity and actually allows reparations to occur later on.

When we think about memory, we tend to think about it like a library of past events and experiences within the brain: when we want to recall a memory, we simply check out the book containing the event we want to access, then when we are done, it goes back on the shelf so we can access it again at some later point. Unfortunately, this is not the way our brains work, and memory is far more complicated and mysterious than simply checking out books from a library--the processes of receiving and accessing information are constantly interacting. What we consider to be memory is made up of three separate, but constantly interacting parts: sensory memory, short-term memory, and long-term memory. Sensory memories are the most immediate and fleeting kinds of memories, as exist only to inform us of our surroundings. The images produced by sensory memory will be lost after a few seconds, unless committed to short-term or long-term memory.¹⁴ The short-term memory can only hold six or seven items at once, and only for about a half-minute without some kind of rehearsal (repetition out loud or to yourself). In her book, *Memory*, psychology professor, Dr. Elizabeth Loftus says, “One reason short-term memory is so important is that it plays a crucial role in conscious thought.”¹⁵ Finally, events or thoughts stored in the short-term memory may be transferred into long-term memory through repetition or rehearsal to keep us from repeating mistakes. It is important to note that when storing long-term memories, the brain condenses experiences, editing out the boring parts and emphasizing the exciting parts.

Because much of the way memory works has always been a mystery, throughout history, humans have experimented with memory manipulation, whether it be through electroshock therapy, cognitive-behavioral therapy, medication, or hypnosis. Two scientists at MIT actually succeeded in implanting a false memory in a mouse in 2014. The researchers made the mouse falsely believe it had received a foot shock in a box. This proved that it is possible to identify which brain cells are responsible for encoding a single, specific memory and that scientists could manipulate those cells to create memories of events that never occurred.¹⁶ While this discovery is

¹² Krakovsky, Marina. “Why Feelings of Guilt May Signal Leadership Potential.” *Stanford Graduate School of Business*, Apr. 2013

¹³ “Guilt, Unconscious Sense of.” “Guilt, Unconscious Sense Of.” *The Columbia Encyclopedia, 6th Ed*, Encyclopedia.com, 2018,

¹⁴ “How Memories Are Made: Stages of Memory Formation.” *Lesley University*,

¹⁵ Loftus, Elizabeth. “How Memory Works.” *Memory: Surprising New Insights into How We Remember and Why We Forget*, by Elizabeth Loftus, Ardsley House, 1988, pp. 13–33.

¹⁶ Noonan, David. “Meet the Two Scientists Who Implanted a False Memory Into a Mouse.” *Smithsonian.com*, Smithsonian Institution, 1 Nov. 2014,

exciting and can be applied in treatment for conditions such as post-traumatic stress disorder, Alzheimer's, and depression, it is also slightly unnerving and brings up many questions regarding the ethics of memory intervention.

Though the connection between feelings of guilt and memory distortion may not be immediately obvious, the two overlap in a number of situations including false confessions as a result of suggestive interrogation, the recovery of "repressed" memories through therapeutic hypnosis, and cases of receiving misinformation from external sources about actions or events we may have taken part in. Susan Krauss Whitbourne, Psychological and Brain Sciences Professor at University of Massachusetts says "If you think you did something wrong, you can experience almost as much guilt as if you actually committed the act-- or even more"¹⁷. This suggests that our brains can actually create new false memories or distort old memories to support our feelings of guilt. A recent study at Williams College, provided further evidence to support this. In the study, individuals were falsely accused of breaking a computer by pressing the wrong key, which they initially denied. Once another person claimed to have seen them perform the action, the innocent participants signed a confession and went on to internalize guilt for the incident¹⁸. Being exposed to "incriminating evidence" is just one of the ways in which people can be pushed to accept guilt for an act they did not commit.

False memories are often constructed by combining real memories with content of suggestions of others, which has been found to occur in some cases of hypnotherapy. In one extreme case, a woman from Wisconsin, Nadean Cool, began seeing a therapist who used techniques such as hypnosis and even exorcisms on her until she became convinced that she had uncovered traumatic repressed childhood memories of being a satanic cult, killing and eating babies, being sexually abused, and of being forced to watch the murder of her eight-year-old friend. Once Cool realized that these memories were not her own, but planted by the therapist, she was able to sue him for malpractice. Unfortunately, she is far from the only patient to report developing false memories as a result of questionable therapy. This disturbing case shows how malleable the memory is to the suggestions of others and how that can result in horrible guilt or trauma. Memories can be influenced or even created based on external implications, but they can also become distorted over time simply by accessing them. A 2012 study at Northwestern University found that every time you remember an event from the past, your brain networks change in ways that can alter the later recall of the event. "Your memory of an event can grow less precise even to the point of being totally false with each retrieval," says Donna Bridge, postdoctoral fellow at Northwestern University School of Medicine and lead author of the paper on the study. In other words, we remember remembering the experience, we don't travel back in time and relive the experience when we recall an event, which allows for a great deal of distortion to occur¹⁹. This is pertinent to feeling of guilt because we typically replay memories of actions we feel guilty for over and over again, wishing to change or undo the outcome. Famous psychologist, Daniel Kahneman claims in his TED Talk, "The Riddle of Experience vs Memory," that when we remember things it is impossible for us to not distort their importance due to a phenomenon he refers to as the "Focusing Illusion."²⁰ This is necessary for us to consider when trying to connect memory fabrication and guilt because guilt in its essence is a result of convincing yourself that you've caused other people harm, which can be hugely blown

¹⁷ Whitbourne, Susan K. "The Definitive Guide to Guilt." *Psychology Today*, Sussex Publishers, 2012

¹⁸ Loftus, Elizabeth F. "Creating False Memories." *Lives of Women in the Early 1800s*, 1997

¹⁹ Paul, Marla. "Northwestern Now." *Your Memory is Like the Telephone Game*, 2012,

²⁰ Kahneman, Daniel. "The Riddle of Experience vs. Memory." *Ted*, Ted, 2010,

out of proportion when your memory allows you to believe that your actions had more importance or impact than they actually did. Considering the ease with which others can manipulate what we remember and cause us to accept guilt for these memories, as well as the impact that recalling memories can have on their accuracy forces us to question whether or not we can trust our memories.

It has also been shown that when you are in a state of guilt or shame, those feelings are actually interfering with cognitive functions-- specifically, your working memory. In a study done at University of Milan by the International Conference on Education and Educational Psychology, researchers gave 60 undergraduate students a task to test their working memory abilities, then randomly assigned them to one of three different writing disclosure tasks to induce a guilt-condition, shame-condition, or neutral condition. Participants being exposed to the guilt condition were asked to write about a time they felt inadequate about a specific action and wanted to confess or try repair their action, participants exposed to the shame-condition were asked to write about a time they felt so bad about themselves, they wanted to try to escape or hide from their actions (a very similar prompt to the one asked at the beginning of this paper), and participants exposed to the neutral condition were asked to write about the furniture in the room. Finally, they were assigned a new memory-based task to assess the differences in cognitive performances between the emotional and neutral conditions. The results of the test showed that the students experiencing guilt or shame performed significantly worse on the tasks than the students in a neutral condition, and furthermore, those experiencing shame performed worse than those experiencing guilt²¹. This further connects the relationship between guilt and memory. If guilt is able to even subtly impair your working memory, that could easily play a role in distorting the memories you have of the events or actions you feel guilty for.

Researching the relationship between the guilt condition and stressful memories surrounding our own actions has been an extremely healing and fascinating process, as I have started to realize the distortions in my own memory, as well as the value of guilt in moving forward after making a mistake. Had I not been able to feel remorse for the stress I put on my family, I don't think that my relationship with them would have been able to be as strong as it now. I would not feel that constant internal need to "make it up to them," to work hard and do well in school, to be an supportive, active, contributing member of our family unit. At the same time, it's been important for me to realize that I did not bring my mental illness onto myself. Mainly due to distorted memories, I have internalized a great deal of guilt and shame around actions that were a direct result of my mental illness. I think that knowing that guilt is normal, healthy, and productive emotional experience could be helpful to others dealing with similar feelings. We are taught throughout our lives that guilt is purely negative which is not only untrue, but also extremely limiting. There are few to no articles out there explaining the relationship between guilt and false or otherwise altered memories, which is surprising and disappointing, considering how obviously related the two tend to be. As ego-centric beings, we often believe that our thoughts and actions matter more or have a greater impact on other people than they do in reality. This knowledge can be grounding, and in some cases, liberating. In addition, being aware of the differences between guilt and shame can help prevent one from spiraling into self-pity or self-deprecation. When feeling guilty about something you have done or think you might have done, consider the possibility that your memory of these events and your

²¹ Cavalera, Cesare, and Alessandro Pepe. "Social Emotions and Cognition: Shame, Guilt and Working Memory." *NeuroImage*, Academic Press, 18 Feb. 2014

perception of their importance may have been warped over time by the suggestions of others, or by simply recalling these memories over and over again in your mind. To conclude, guilt is an emotional experience that is necessary to our emotional maturity, acceptance of mistakes, and overall sense of self. And beyond that, guilt is able to influence and be influenced by our memories of related events.

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