Incongruity Theory and Memory

LE300R Integrative & Interdisciplinary Learning Capstone: Ethic & Psych of Humor in Popular Culture

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Introduction

There are many things that take place in the brain during daily life. Whether it be humor, anger, laughter, love, sleepiness, or relaxation, one's brain is always releasing neurotransmitters, or signals, around the body to facilitate the reactions of that individual. Previous studies have linked laughter and humor to the immune system, hypothesizing that laughter increases its efficiency, but it is possible laughter has other physiological effects still to be discovered (Martin, 2001). Together we will explore the neurotransmitters associated with memory and humor and the overall possibility of humor having a direct effect on memory, specifically incongruous humor. The connections between laughter and memory may support the correlation between humor and memory when reducing these concepts to a molecular level.

Incongruity Theory

The Incongruity Theory is one of the four original theories created about humor and laughter. As this theory was created by Emmanuel Kant, it states that laughter is caused by something unexpected (Morreall, 2009). If someone is telling a joke that has rhythm followed by an incongruous punchline, the interruption and breaking of expectations creates the response of laughter. Morreall describes this theory by relating it to semantics, or the closeness of the words used in everyday language. He uses a literary approach to define the phrase stating that incongruous things are "characterized by a lack of harmony, consistency, or compatibility with one another" (Morreall, 2009). In other words, incongruous humor works because it oversteps the realm of common understanding in any human language because the words do not "fit together" or "match" in any way. For example, if someone asked, "What do you call a black

person that graduated from medical school?" right away, the person listening to this joke is thinking of all the possible answers to this question except the most obvious one; when the person telling the joke then shouts, "A doctor," it leaves the person on the listening end of the joke frazzled for a moment because they were expecting something different--possibly racist--even though what the joke teller shouted was the most obvious answer. This is exactly what incongruity jokes rely on, expectation; this expectation is set up through the familiar phraseology of a "What do you call…" joke. A more visual representation of expectations would be trying to fit a square into a triangle if both objects were the same size, it would obviously not work because one does not fit into the other (see Figure 1). The human brain often puts incoming information into categories and tries to make sense when initially analyzing any situation. When the "making sense of things" part of one's observation gets challenged, that's when the humor sets in and causes laughter.

Memory

When one is attempting to remember something for an exam or an important presentation, acronyms are a useful tool. Even though the acronym may have no relation to the individual creating it, the acronym itself provides a memorable and often humorous saying that represents what that individual is trying to remember. Physiologically, memory is facilitated by the neurotransmitters glutamate, dopamine and serotonin (Integrative Psychiatry, n.d.) (I & Feria-Velasco A., 2008) (Izquierdo & Medina, 1997). Low levels of glutamate can result in tiredness and poor brain activity, which can have a direct effect on the capacity in which one is able to comprehend, and thus compartmentalize in their brain. Increased levels of this neurotransmitter, however, can cause neuronal death and can be a result of some neurodegenerative diseases (Integrative Psychiatry, n.d.). Serotonin and dopamine however, are

two of the most important neurotransmitters in the human body (Integrative Psychiatry, n.d.). Other than mood, serotonin's responsibilities are to modulate synaptic transmission, (signaling), to the central nervous system from the rest of the body and external senses; as well as aiding learning and memory in the presence of dopamine. Multiple studies have shown that an imbalance in serotonin and dopamine cause changes in learning and memory patterns and often cause impairment (I & Feria-Velasco A., 2008). Dopamine strongly regulates the signaling pathway in the brain. This is directly responsible for information processing and storage for all individuals, from birth until death. Furthermore, dopamine aids in overall cerebral function, mood regulation, reward-seeking behavior and happiness (Izquierdo & Medina, 1997). Moreover, dopamine cannot be in abundance along with excessive levels of cortisol.

Humor and Laughter

There are two neurotransmitters present and most abundant during laughter are serotonin and dopamine (Martin, 2001) (Mayo Clinic, 2016). When one laughs and experiences humor, mood improvement can occur as well as the relaxation of muscles and pain relief; all responsibilities of dopamine (Wooten, 1996) (Bennett et. al., 2003). Furthermore, when experiencing laughter, serotonin levels rise in the body creating a sense of relief and an increased desire for social activity (Bennett, Zeller, Rosenberg, & McCann, 2003). When laughing, a brief sense of relief is experienced, and this is due to the brief abundance of serotonin and dopamine (Wooten, 1996).

Concrete Understanding

As stated previously, there are two primary neurotransmitters released during laughter: serotonin and dopamine; whereas, there are three primary neurotransmitters that have a direct

affiliation with memory: glutamate, serotonin, and dopamine. The correlation that these two physiological processes have is the neurotransmitters in which they release. Two of the three neurotransmitters that facilitate memory are also released during laughter: dopamine and serotonin. Due to the fact that these two neurotransmitters are active in both physiological processes it can be concluded that humor can increase one's memory efficiency. Furthermore, due to the overwhelming importance serotonin has in the body and its impact on memory, this neurotransmitter alone has the ability to relate humor and memory. A previous study shows the presence of puns also enhancing memory strength on the basis of semantics which further shows the relationship between memory and humor (Lippman & Dunn, 2000). Some studies link humor and memory specifically to academia and advertising, while others have mixed results (Martin, The Psychology of Humor: An Integrative Approach, 2007). Six experiments were conducted that allowed for the presentation of both humorous and non-humorous sentences and the participants involved were asked to recall both the humorous and non-humorous sentences. The humorous sentences were found to be more memorable than those that were not humorous (Martin, The Psychology of Humor: An Integrative Approach, 2007).

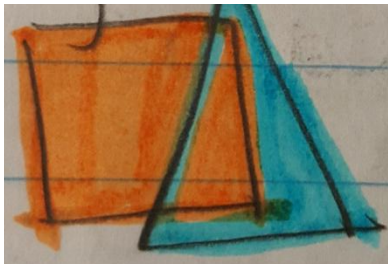
Reflection and Conclusion

After analyzing the physiological phenomenon of both psychology and biology, memory does appear to be affected by humor in a positive manner; the more incongruous the humor and the further away in semantics words are, the more likely one is to remember a specific situation. When considering disengagement that occurs within humor, one could hypothesize that humor might actually inhibit or suppress memory rather than enhancing it. Due to the fact that when one experiences humor and disengagement from reality occurs, one would presumably be less inclined to remember a situation. The disengagement from reality combined with the realm of

play, I assumed, would have adverse effects on memory because one is not focused on reality; but rather in the mode or realm of play.

While researching this topic and the specific neurotransmitters associated with both memory and humor, it became very clear that there was a strong correlation between them. From the disciplines of psychology, biology and chemistry; two neurotransmitters continued to be mentioned. This highlighted the similarities of each phenomena within each discipline. From these similarities a strong correlation was made in relation to memory and humor, specifically incongruous humor. This relation can be used all over the world for a plethora of reasons. Some examples include but are not limited to the following: remembering birthdays, studying for exams, name recollection, schedules, etc. So if you run across a teacher, friend, family member or even your own sticky situation in which are asked to remember something; remember that incongruous humor could be your hero.

Figure 1. Fitting a Square into a Triangle (original sketch)



Bibliography

Bennett, M. P., Zeller, J. M., Rosenberg, L., & McCann, J. (2003). The Effect of Mirthful Laughter on Stress and Natural Killer Cell Activity. *Alternative Therapies*, 38-44.

I, G.-B., & Feria-Velasco A. (2008). Serotonin/dopamine interaction in memory formation. *Prog Brain Res.*, 603-623.

Integrative Psychiatry. (n.d.). *Glutamate: Excitatory Neurotransmitter*. Retrieved from Intergrative Psychiatry: http://www.integrativepsychiatry.net/glutamate-excitatory-neurotransmitter.html

Izquierdo, I., & Medina, J. H. (1997). The biochemistry of memory formation and its regulation by hormones and neuromodulators. *Psychobiology*, 1-9.

Lippman, L., & Dunn, M. (2000). Contextual connections within puns: effects on perceived humor and memory. *Journal of General Psychology*, 185-197.

Martin, R. A. (2001). Humor, Laughter, and Physical Health: Methodological Issues and Research Findings. *Psychological Bulletin*, 504-519.

Martin, R. A. (2007). *The Psychology of Humor: An Integrative Approach.* Burlington: Elsevier Inc.

Mayo Clinic. (2016, April 16). *Stress management*. Retrieved from Mayo Clinic: http://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/stress-relief/art-20044456?pg=2

Morreall, J. (2009). *Comic Relief.* Malden: Blackwell Publishing.

Wooten, P. (1996). Humor an Antidote for Stress. *JEST FOR THE HEALTH OF IT*, 49-55.