

## **Introduction**

"We all have two different ways of relating to the world - through introversion and extroversion. We each favor one mode or the other, although the alternate style is within us to a lesser degree." (Carl Jung, 1920) The difference between introverts and extroverts is how they process information. How does one's personality type affect their learning and how can classrooms best accommodate learning styles?

## **Review of Research**

### **Methods**

From my researched I have narrowed down three topics in which I believe give us a better understanding of introversion and extroversion and how it affects learning. Understanding the difference between introverts and extroverts, The effect of Counter Disposition among introverts and extroverts, and An individual's learning style and how that affects the classroom/online environment.

In the studies I have read it was not made clear on how they determined that their participants were diagnosed introverts/extroverts or self proclaimed introverts/extroverts. In the other studies it was common to conduct a questionnaire to determine the personality trait of that individual. Unfortunately I do not think that this self assessment is ideal due to the general preference of extroversion to introversion in our culture. In order to avoid false results I think it would be best to have all participants of the study be professionally identified as an introvert or extrovert. The other studies I have researched varied on topic. Most studies recruited equivalency their participants gender or from a completely random pool of people. Some studies conducted their experiment on specifically women or men. Determining if this factor played a part in the experiment depends on the belief that introverts and extroverts are split evenly among the general population and among men and women. (Bernstein, 2011)

Determining if the methodology used among the several cases studies I have read is complicated due the the varied theories presented regarding introversion and extroversion. However most of the studies conducted two or three experiments with different variables to add validity to their results. Often the results of these studies gave us proof of correlation between the behavior and variables but rarely proved the theory completely. In nearly every study I read the experiments results warranted the need for further research and testing.

### **Findings**

Understanding the difference between introverts and extroverts. I gained insight to how defining introverts and extroverts has changed over the decades and varies depending on the opinion of the writer and their culture. In 1924 Max Freyd wrote an article Introverts and Extroverts about the the contributions to the definitions from writers of the psychoanalytic schools. "Oppressors usually don't perceive accurately the experience of those they oppress." (Copenhaver, 2012) This allowed me to view these articles and cases from a more neutral viewpoint. To help have a better understanding of the cause or reason why someone is introverted It was determined that there is no significant relationship between education level, work experience and age and the personality type (introversion/extroversion). (Soufi, 2012)

The biggest difference between introverts and extroverts is how they draw energy from social situations. Introverts draw energy from within. (Arbetter, 1991) They refuel with quiet reflection, while extroverts gain energy from the outside world and participating in new experiences. (Knott, 2011)

Recently researches have been able to determine that there are actual differences in the brain among introverts and extroverts. Research shows that introverted and extroverted temperaments are rooted deeply in the brain, and are strongly influenced by a person's genetics. (Knott Ph.D, 2011) The brains of introverts show increased response to external stimuli. (Bernstein, 2011)

I read studies conducted on several types of stimuli and its affect on introverts and extroverts. One study was based on the effect of noise stimulation (Green, 1984), caffeine as a stimulus (Liguori, Grass & Hughes, 1999) and lastly the effect of physical presence in the learning process of introverts and extroverts. (Khalique, 1981) All of these studies concluded that introverts have a more difficult time dealing with stimuli. In these cases the stimulus caused the introverted participants to take longer on completing a task or be less productive while the stimuli was present. Extroverts dealt better with distractions while completing a task.

The effect of Counter Disposition among introverts and extroverts.

During my research some proposed the idea that introverts should adopt extroverted traits. From his study, John Zelenski and his colleagues determined that "Trait introverts seem to enjoy acting extraverted more than acting introverted." (Zelenski, Santoro, Whelan, Nealis & Christina, 2013) However in a different study he concluded that extroverts suffered cognitive deficits when asked to behave counterdispositionally. (Zelenski, Santoro & Whelan, 2012)

An individual's learning style and how that affects the classroom/online environment.

Results from a study at PSU indicated that online collaboration environments may be an effective way to get introverted students to participate in discussions. (Carnevale, 2003) Additionally Adam McDowell concluded in Why The World Needs More Introverts, that introverts should not be labeled as unsociable but they do prefer to get their ideas across using the the written word as their form of communication. (McDowell, 2012) According to Paul O. Radde Ph.D in his article Getting Introverts to Speak Up, introverts feel the need to spend more time coming to an opinion, decision or conclusion. An online environment allows an introvert to mull things over and process their thoughts thoroughly. (Radde, Ph.D, 2013) In Juanita Cohen's Master's Thesis she concludes from her research and study that "Personality does affect learning styles." Trainers, or in this case teachers, should be cognizant of their students personality type and use several learning style methodologies to increase learning effectiveness. (Cohen, 2008)

## **Summary**

I started this project believing that classrooms and curriculum were designed biased against introverts. However throughout my research I not only better understand what makes me, an introvert different, but what also makes an extrovert different. By understanding the definitions of the personality types and how the qualifications have evolved allowed me to think about introversion and extroversion more widely. To consider the many factors that may play a part in a study.

Although I still feel it is safe to claim that our culture favors the traits of extroversion, I have a newfound understanding for the possible struggles an extrovert may have in the classroom or in the workplace, and how different types of stimulus effect both personality types. These studies have provided me the knowledge needed to better design courses that allow each student to be as productive as possible and excel to their greatest potential.

## Annotations

Arbetter, S. R. (1991). What's your type? introverts and extroverts. *Current Health* 2, 17(7), 20.

Arbetter highlights how Carl Jung thought that our personality type is most likely somewhat dependant on our family and life experiences. Then Arbetter shares a study that showed that when extroverts and introverts pair up they will modify their own style to be more alike. The study also points out that opposite types are often attracted to each other.

Bernstein, E. (2011, June 28). When innies love outies: How odd couples cope. *Wall Street Journal*.

In this article Bernstein informs us that according to psychologist Laurie Helgoe the population is split evenly between introverts and extroverts, and introverts and extroverts were split evenly among men and women. She enlightens us on how introverts and extroverts differ in how they obtain energy. Bernstein also touches on the brain-imaging studies that indicate introverts are more susceptible to external stimuli. She also brings to attention how today's social-media driven world helps introverts speak on their own terms and communicate.

Carnevale, D. (2003). Introverts do well in online chats, study concludes. *The Chronicle of Higher Education*, 50(16), A29.

Carnevale shares with us the results from a study performed at Pennsylvania State University that indicated online collaboration environments may be the effective way to get introverts participating in discussions. However the study did reveal that online bulletin boards work better because they allow students to participate at their convenience.

Cohen, J. J. (2008). Learning styles of myers-briggs type indicators. (Master's thesis), Available from ProQuest Dissertations. (304608470).

In Cohen's Master's Thesis she concludes that personality does affect learning style. In her study she covers the different tests and methods to determining personality types, temperaments, dichotomies and learning and teaching styles. She informs us of great tips for teachers to adapt into their classroom and curriculum to better help students of the different learning styles to succeed.

Copenhaver, M. (2012). Quiet: The power of introverts in a world that can't stop talking. *The Christian Century*, 129(25), 28-31.

In this article Copenhaver sheds light on how introversion and extroversion varies based on culture. Some countries are seemingly more introverted than others. He also shares examples of introverts who have made important contributions in history as well as successful pairings of introverts and extroverts that have also made important contributions in history. Towards the end of the article Copenhaver shares his own struggles with being an extrovert in a classroom or other settings.

Freyd, M. (1924). Introverts and extroverts. *Psychological Review*, 31(1), 74-87. doi: 10.1037/h0075875

Freyd shares with us several definitions written for introversion and extroversion by writers of the psychoanalytic schools. The definitions seem to be heavily influenced by the decade,

culture and personality type of the writer. It is clear that in 1924 and earlier that psychologists were doing their best to understand the different personality types and what they might mean.

Geen, R. G. (1984). Preferred stimulation levels in introverts and extroverts: Effects on arousal and performance. *Journal of Personality and Social Psychology*, 46(6), 1303-1312. doi: 10.1037/0022-3514.46.6.1303

Geen conducted an experiment to test the preferred level of intensity of noise to be heard during a learning task. He found that his results were consistent with the theory of Eysenck. Introverts preferred significantly less intense noise while completing a task. However introverts and extroverts showed no differences in autonomic arousal or performance. The study also showed that introverts can function at very low levels of stimulation better than extroverts can function at very high levels.

Khalique, N. (1981). Effect of physical presence of others on the speed of verbal learning of introverts and extroverts. *Pakistan Journal of Psychology*, 12(1), 33-39.

Khalique's study informs us that it is not the learning but the type of learners, meaning learning style) that determines the effect of the presence of others. He reports from his findings that introverts speed of learning is lowered in a social situation. However introverts and extroverts did not differ in the speed of learning while alone. He inferred that being alone when learning is equally congenial for both personality types.

Knott, Ph.D., C. H. (2011). Intriguing and intelligent: Three ways to nurture the introverted teenager. Retrieved from <http://aspeneducation.crchealth.com/article-introverted-teens/>

In Knott's article she informs us that recent brain research had shown that differences between introverted and extroverted temperaments were found to be rooted deeply in the brain and are strongly related to genetics. She also educates us on how introversion and extroversion is a spectrum and how people vary on where they fall on that spectrum based on extremity.

Liguori, A., Grass, J. A., & Hughes, J. R. (1999). Subjective effects of caffeine among introverts and extroverts in the morning and evening. *Experimental and Clinical Psychopharmacology*, 7(3), 244-249. doi: 10.1037/1064-1297.7.3.244

In previous studies it was shown that caffeine improved the production of extroverts but overstimulated introverts. Liguori and his team conducted a similar study but took into account the effect of the time of day (morning or evening). His team found significant results that suggest that caffeine increased positive effects for extroverts but not introverts but introverts and extroverts did not differ in their subjective response to the caffeine.

McDowell, A. (2012). Why the world needs more introverts. *Canadian Business*, 85(20), 60-63.

In McDowell's article he sheds light on the social relationships an introvert prefers as well as how they prefer to communicate. He shares a study conducted on 480 undergraduates in an online classroom setting. McDowell points out how the students in the group determined education and confidence level of their fellow classmates and who was more likely to take the reins for the leadership positions.

Radde, Ph.D., P. O. (2013). Getting introverts to speak up. *Successful Meetings*, 62(3), 21.

Radde educates us on the extroverted trends in the culture of business. He informs us that bosses and organizations would benefit by building in processes that recognize and take

advantage of the introvert and the ideas they can bring to their team. Radde also tells us about how introverts need a bit more time to process their ideas and when possible “sleep on it”.

Soufi, M. (2012). The studying of the relationship between personality type (extrovert or introvert) and the personals organizational citizen behavior. *Interdisciplinary Journal of Contemporary Research In Business*, 4(8), 611-619.

Soufi proposed the idea that there might be a relationship between personality type, education level, work experience and the age of individuals. Based on his study he found no strong relationships between personality type, education level, work experience or age of the individual. However during his study he acknowledge and explained that extroverts in their biological responses to the stimulation of noise differ from introverts.

Zelenski, J. M., Santoro, M. S., & Whelan, D. C. (2012). Would introverts be better off if they acted more like extraverts? exploring emotional and cognitive consequences of counterdispositional behavior. *Emotion*, doi: 10.1037/a0025169

Zelenski, Santoro and Whelan had read that dispositional introverts could improve their happiness by acting like extroverts. However they were more interested in the costs of acting counterdispositionally. They found that extroverts acting counterdispositionally were the only ones to suffer in performance. Introverts acting counterdispositionally benefit and extroverts should act counderdispositionally strategically.

Zelenski, J. M., Santoro, M. S., Whelan, D. C., Nealis, L. J., & Christina, M. (2013). Personality and affective forecasting: Trait introverts underpredict the hedonic benefits of acting extraverted. *Journal of Personality and Social Psychology*, 104(6), 1092-1108. doi: 10.1037/a0025169

Based on other research reporting that people, including introverts, enjoy extroverted behavior. This raised the question for Zelenski and his team, Why don't introverts act more introverted in it makes them happy? In their study they discovered that introverts underestimate the hedonic benefits of acting extroverted. They reported that trait introverts seem to enjoy acting extraverted more than acting introverted.