HIGH SCHOOL EDITION
Journal of Student Research
Volume 11 Issue 4 (2022)

Analysis of the Extent to Which Advanced Placement Students Experience the Imposter Phenomenon

Ellie Easley[1] and Stephanie Guske[1#]

[1]Moorpark High School
[#]Advisor

ABSTRACT

The goal of this study was to assess the severity of the Imposter Phenomenon (IP) symptoms in AP high school students. The Imposter Phenomenon is a personal experience of believing that one is not as capable or as competent as others may view them. Prior research shows Imposter Phenomenon levels are higher in undergraduate and graduate students; however, little is known about how the IP affects high school students. Data was collected through a Google Forms survey in which both quantitative and qualitative methods were used to evaluate the full scope of Imposter Phenomenon feelings in AP students. The Clance IP Scale assessed symptoms in a numerical manner and free response questions were assessed qualitatively. Participants included 11th and 12th grade students at M. High School (MHS) that were enrolled in two or more AP classes. Initial results showed that students were answering higher on the Clance IP scale, showing that they were more likely to experience IP more intensely. This means that overall, students who are enrolled in multiple AP classes are reporting higher symptoms of the Imposter Phenomenon, whether it is realized or not. Therefore, the conclusion can be made that AP students are experiencing the IP to a higher, more concerning extent; however, this is limited due to the fact that research was conducted only on one school site, human error in score calculations, and participation limitations. Future research should expand across multiple school sites and multiple age groups, including adults, teenagers, and pre-teens.

Introduction

The Imposter Phenomenon (IP), first introduced in the 1970s, was a key turning point in the studying of different stressors or doubts in the workplace and classroom. The IP is a phenomenon in which an individual doubts their accomplishments and abilities, and they are unable to accept their successes. Over time, researchers have advanced their studies, looking more in depth at the different factors that play into the development of the IP, some including home life, personal pressure, and even uncontrollable factors like gender and/or race. Most of the population today suffers from the IP without even realizing it, and noticing these symptoms is imperative in the treatment/realization of the Imposter Phenomenon. The majority of those who do suffer have been noted to be placed in high pressure environments like in academics or in their individual careers. While most research has been done at the university level by testing college students, not much testing has been done at the high school level, leaving much to be questioned about this age group and how they truly experience the Imposter Phenomenon. This lack of information garners the question: To what extent do AP Students at MHS experience the Imposter Phenomenon? Through environmental impact, Imposter Phenomenon motivators, looking at the background information of the IP, and providing relevant data, this research can add to the current body of knowledge presented by researchers and fill in a research gap.

Literature Review

The commonality of the Imposter Phenomenon (IP) has grown significantly, especially in those enrolling in more challenging classes in high schools, like Advanced Placement courses. The Imposter Phenomenon can be defined as "when high-achieving individuals attribute their successes to external factors and are unable to internalize success" (Clance & Imes, 1978, as cited in Cusack, et al., 2013). In simple terms, IP includes feelings of unworthiness in one's accomplishments, self-doubt, and personal incompetence, among other similar symptoms. Cusack and her colleagues at Agnes Scott College suggest that the IP feelings have a strong relation to mental health, perfectionism, and test anxiety. Additionally, most of the population today suffers from the IP without even acknowledging it, and most do not realize that such a thing exists. General research being performed today is concerned with the significance of the IP in university students, rather than at the high school level, which leaves much to be questioned about this age group and their experiences with IP. What has been recorded, however, adds to the existing body of knowledge in that "environments that host a 'culture of genius' can alter our evidential landscape in a way that promotes the Imposter Syndrome" (Slank, 2019). Many high-achieving high school students with the IP have consequently been affected by external factors more so than internal factors. These external factors can include parenting style or even the course load that a student takes on. This literature review examines the initial research performed by Clance & Imes in the 1970s, IP catalysts, IP sub-categories, as well as the extent to which environment shapes the development of the IP in individuals.

A Brief History of the IP

Initial research & results

In the 1970s, psychologists Pauline Clance and Suzanne Imes developed the diagnosis that is commonly referred to as the Imposter Phenomenon. Katherine Caflisch with the American Society for Microbiology details that "The study population in which Clance and Imes first observed imposter syndrome was a group of "highly successful" professional and pre-professional women (n=150) across several regions, institutes and disciplines, united by their disavowal of personal aptitude" (Caflisch, 2020). Simply put, the first research done to support the ideas of the Imposter Phenomenon were exclusively for women in the workplace; men were not considered to be affected by the IP whatsoever. This base that Clance & Imes built off of in their initial research was derived from "theories of gender-based differential success attribution" and concluded that the IP was "the manifestation of internalized social expectations" (Caflisch, 2020). These ideas compliment those of Cusack, Hughes, and Nuhu, who hypothesized that "Clance and Imes (1978) might have initially thought the IP affected women more than men because it became a new psychological phenomenon during the second wave of feminism" (Jarrett, 2010, as cited in Cusack, et al., 2013). Clance and Imes came to the conclusion that the majority of women in the workplace did, in fact, suffer from the Imposter Phenomenon, but as of late, current research suggests that the IP is present in many other groups of people.

Contradictory findings to the initial 1978 study

Drs. Clance & Imes' studies were considered to be true and weren't contested for a period of time; however, recent studies have shown many stark differences in their respective conclusions. It is important to note that the IP is not classified as a mental disorder, so the medicalized terminology of "syndrome" is inaccurate when referring to this subject (Williams, 2019-2021). However, certain authors continue to address it with this incorrect phrasing, which is crucial to consider in the overall understanding of the IP. Many medical professionals and journalists are unaware of specific Imposter Phenomenon details like the correct phrasing, showing a lack of widespread knowledge on the topic. Sandeep Ravindran from The Open Notebook, a scientific publishing site, states that the IP affects both men and

women. Furthermore, "Researchers have estimated that 70 percent of the general population [have] experienced the Imposter Phenomenon at some point" (Ravindran, 2016). A similar viewpoint was drawn by Queena Hoang at the University of Vermont, who adds the uncommon stance that "IP is exhibited differently for men, in that they feel the need to secure a "man's job" and must avoid traditionally feminine positions such as social work, teaching, nursing, and receptionist work" (Topping, 1983 as cited in Hoang, 2013). Based on modern conclusions, it is imperative to note that the IP can affect anyone, as long as there are certain stressors present that allow for the development and fostering of the Imposter Phenomenon.

Imposter Phenomenon Motivators

Personal influence

Although many have argued that the IP has had a larger impact on individuals through their environment, personal expectations and drive have a significant effect, as well. Anastasia Williams, a Ph.D. candidate at Brown University, includes that, "individuals with achievement-orientation, who have perfectionist expectations for themselves and work in highly competitive environments like academic settings, report higher tendencies of IP" (Williams, 2019-2020). The majority of those who experience the IP are more likely to not have positive associations with personal work or activities due to these stress levels. Perfectionists, or those with "Type A" personalities could be considered more at risk for these Imposter feelings. These stress levels translate to lesser motivation, followed by feelings of being a "fraud," hence the term, "imposter." Williams' work is supported by that of Britney Tran, a high school reporter from the LA Times, who argues that "Beyond high school, this combined fear of success and failure can prove even more detrimental and destructive in environments where the stakes are higher than college admittance" (Tran, 2020). These individual influences have a great effect on the viewpoints that one can have on their work and/or activities, but more often than not, one's environment shapes these mental habits.

External environment influence

Different factors outside of an individual's view of themselves and their accomplishments have an immediate impact on how one fosters the IP personally. These can include (but are not limited to): type of school (public, private, feeder schools), parental influence, set expectations, and relationships with peers. One element that is highly deemed to contribute to the development of the IP, especially in teenagers, is what is referred to as "culture of genius." "Culture of genius" is "one in which talent [and achievement are] worshipped" (Transcend, 2020). Dr. Shanna Slank, an assistant professor at the University of Kansas, has repurposed the idea of this "culture of genius." She essentially states that environments, specifically "those that harbour a culture of genius--may exacerbate the presence of IP by altering the evidential landscape making some things look like evidence of a non-talent cause" (Slank, 2019). The high expectations set by parents, mentors, etc. can often have detrimental effects in the development of the IP, especially with those who are placed in environments that have excessively above-average standards for students. When looking at the stress levels of those who are enrolled in feeder schools and have "helicopter" or overly involved parents, their likelihood of experiencing the symptoms of the IP are far greater than that of a public school student who does not have parents who set strict expectations. Dr. Slank's work coincides with that of Cusack, Hughes, and Nuhu, as previously cited. Cusack, Hughes, and Nuhu touched on the effects that perfectionism and anxiety have on people who have experienced the Imposter Phenomenon. They report that "the higher anxiety levels that people with the IP reported could be a product of self-criticism and high standards, as these are elements of perfectionism that are more pronounced in individuals with the IP than in people who do not endorse IP" (Thompson, et al., 1998, as cited in Cusack, et al., 2013). The development of these anxiety-like symptoms in agreement with enrollment in higher level classes continues to display the correlation found between the two.

Additional influence on the Imposter Phenomenon

Mental health and stress

A deterioration of an individual's mental health has been proven to be influential in their development of the Imposter Phenomenon. Research performed by Clance, Hughes, and Nuhu of Agnes Scott College states that "lower scores of mental health [related to] higher scores of the IP" (Cusack, et al., 2013), further noting the correlations as studies progress. Lower scores of mental health in Cusack's survey (suggesting higher amounts of individual mental issues) imply that there is a significant appearance of mental issues in an individual's life. Jonna Chen, an undergraduate writer for the Cornell Daily Sun, amplifies this result by including how the Imposter Phenomenon is not binary or structured. Rather, it is a spectrum, with a wide range of experiences of the IP and influences (Chen, 2021). Many can also say that those with a higher workload, or amount of stress, can be experiencing greater amounts of anxiety than those without, continuing to contribute to the progression of the external environment influence on the advancement of the IP feelings. This addition of more mental health issues can aid in the common symptom of self-doubt or unworthiness in important situations with the IP. These feelings, especially among high school students, become more prevalent as mental health continues to be a struggle for many.

Summary

Studies that determine the extent to which students, specifically undergraduate and graduate students, suffer from the Imposter Phenomenon come to the conclusion that those with remarkable external factors continue to show more severe symptoms (Cusack, et al., 2013). Research that has been performed provides great insight onto what the Imposter Phenomenon can look like in those with copious amounts of stress, however, it does not cover high school age students. In order to address the research gap in the field, this study expressed in the upcoming paragraphs aimed to address the severity of the Imposter Phenomenon in AP high school students.

Research Design & Methodology

This study intends to assess the severity of the Imposter Phenomenon (IP) in an individual's day-to-day life. The data collected will address an underlying issue that many high school students face unknowingly, which can further the interest among these individuals to learn more about the Imposter Phenomenon.

The overall objective of this study is to provide a non-experimental, non-intrusive, accurate survey which gauges the extent to which the IP affects AP (Advanced Placement) students at M. High School (MHS). The IP cannot be scientifically measured, but a general estimate of severity can be derived from the Clance Imposter Phenomenon Scale. The survey method performed in this study models that of Cusack, Hughes, and Nuhu of Agnes Scott College; the researchers used the Clance IP Scale to safely measure how the Imposter Phenomenon affects an individual's lifestyle in relation to their gender and mental health state and were able to do it efficiently to get the most reliable answers they could. They note that, "Holmes found an alpha coefficient for the scale of .96, indicating strong internal consistency" (Cusack, et al., 2013), which adds an accuracy of measurement to the scale based on personal answers. Dr. Pauline Clance developed the survey after discovering the IP, including phrases like "It's hard for me to accept compliments or praise about my intelligence or accomplishments," and "I'm afraid people important to me may find out that I'm not as capable as they think I am" (Clance, 1985) to have participants personally measure their own IP feelings (Appendix A).

Participants received a score on a range that determined the extent to which the IP is an influencing factor on their academic performance and/or capabilities. If their score landed higher on the scale, they will be presumed to have more intense IP indicators.

<40:	few Imposter characteristics
41-60:	moderate IP experiences
61-80:	frequently has Imposter feelings
80<:	often has intense IP experiences

Figure 1. The Clance Imposter Phenomenon Scale Scoring Table

Those taking the survey included 16–18-year-olds who were enrolled in either eleventh or twelfth grade at MHS. The requirements for taking the survey include taking two or more AP classes and being in the specified age range to get an accurate representation of the school population that are taking more challenging courses. All participants were required to agree to a consent statement prior to taking the survey (Appendix B). They recorded their scores after ranking individual statements on a scale from one to five, adding up what they rank, then displaying the severity of the Imposter Phenomenon on their lives. Upon completion, they answered "yes" or "no" to whether they had been aware of the Imposter Phenomenon prior to the survey and then were guided towards resources that could aid in their understanding (Appendix C). This included general medical websites that had tips on "Understanding and overcoming Imposter Syndrome" (Psychology Today, n.d.).

Participants were recruited by means of social media, for immediate accessibility and simplicity, as well as in-person during classes. The answers of those who agreed to participate in the survey were kept confidential and only used for data collection/interpretation purposes. By answering the survey, the participants agreed to answer questions that had the potential to be personal, and all information provided was kept private, so as to make the individual more comfortable. However, the participants did have the right to skip any or all questions to protect themselves from any potential harm or triggering situations. This study was best performed with a survey for confidentiality purposes, convenience, and simplicity in terms of data collection. Closely modeled to that of Cusack, Hughes, and Nuhu of Agnes Scott College, this survey addressed and allowed for an accurate representation of the Imposter Phenomenon's influence on AP students.

Results

Results Analysis

32 individuals completed a survey and were able to participate if they were in their junior or senior year of high school along with being enrolled in two or more AP (Advanced Placement) classes. Additionally, data was primarily collected from MHS to keep a controlled collection of responses. The survey relied on questions gathered from the Clance Imposter Phenomenon (IP) Scale, developed by Dr. Pauline Clance, the psychologist who discovered the IP originally (Clance, 1985). Participants ranked their agreement on a scale of 1 to 5, which added up after 20 questions to a score that would assess the severity of the IP in their everyday lives. Answers of 1 were worth 1 point, answers of 2 were worth 2 points, etc.

Figure 2. Clance IP Scale 1-5 Scoring Scale Key

After interpreting the overall scores provided by the survey, it can be concluded that students who are enrolled in higher level courses such as AP classes are more likely to experience symptoms of the Imposter Phenomenon. Many students showed consistent feelings of fraudulence within the classroom, furthering the assumption that academic stress can be a highly influential factor on the development of the IP. Only one participant out of 32 participants total answered in the "few Imposter characteristics" category on the Clance IP Scale, clearly demonstrating the conclusion that high school students that are enrolled in Advanced Placement classes are less likely to have minimal symptoms of the Imposter Phenomenon. Many statements that students were asked to rank consistently showed a large bias toward higher-ranking options within the survey by selecting 4 or 5 (Figure 3).

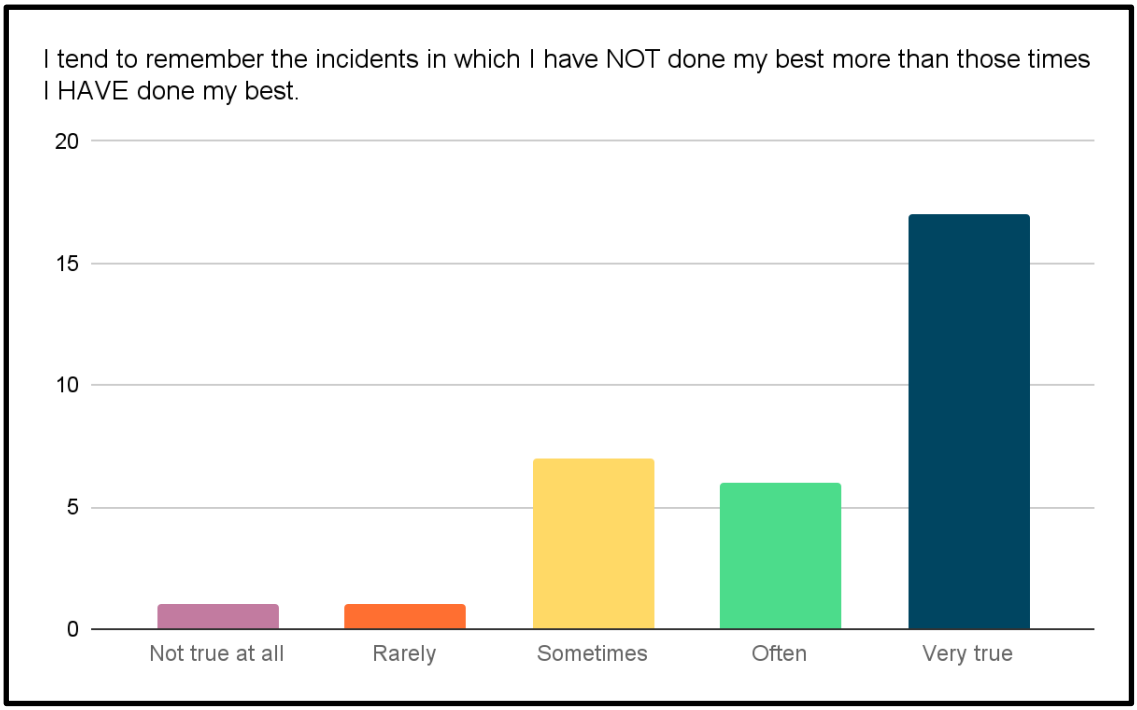

Figure 3. Graphical representation of ranking distributions within the Clance IP Scale survey.

In relation to actual classroom and school stress, many statements that are included within the Clance IP Scale showed a significant gap between those who answered leaning towards "very true" and those who answered leaning towards the "not true at all" answer. The majority of respondents who recorded higher overall scores led the distribution of answers to lean heavily towards the right, implying greater levels of the Imposter Phenomenon.

This ties back to the foundational source from which this research was derived; Cusack, Hughes, and Nuhu of Agnes Scott College had reached a conclusion that those who suffered from more stress and mental illness were more likely to experience the Imposter Phenomenon overall. In regard to the study performed, AP students who experienced more stress from outside sources and/or from the classes themselves were more likely to answer with a higher ranking, thus experiencing the Imposter Phenomenon on a greater level.

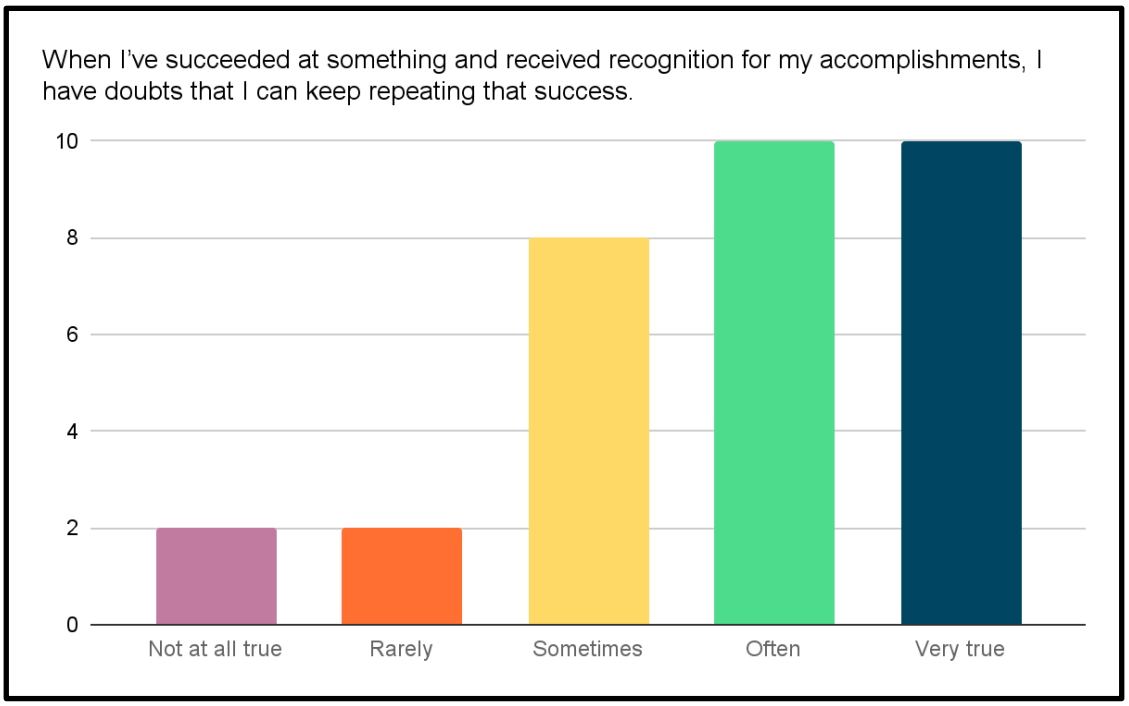

Figure 4. An additional Clance IP Scale distribution that displays a clear bias towards answers that rank higher rather than lower.

A statistical analysis proved that the survey results would accurately represent AP students at MHS and in the population of AP students as a whole. A one sample *z* confidence interval was conducted to find the true proportion of AP students who experience symptoms of the IP regularly (represented by a score of 61 or higher). This confidence interval helps prove the significance of the data produced. About 81 percent of participants in this individual study reported scores of 61 or higher, demonstrating a clear interaction of the Imposter Phenomenon in their lives. A margin of error that is close to zero is considered the best and most reliable for proving the relevancy for research. After constructing the *z* confidence interval, the margin of error was calculated to be about .1359. This low margin of error increased the confidence in which the results of the study accurately represent a larger population of AP students who experience Imposter Phenomenon feelings. The results were statistically significant, meaning they are likely to occur again in future research.

The mean overall score was 73.97, making the average participant fall into the "frequently has Imposter feelings" category of the Clance IP scoring scale, as seen in Figure 1. This exemplifies a higher likelihood of developing symptoms of the Imposter Phenomenon if an individual is enrolled in more stressful classes as a whole. The inclusion of a wide range of responses from participants continually demonstrates the variety in which the Imposter Phenomenon can occur.

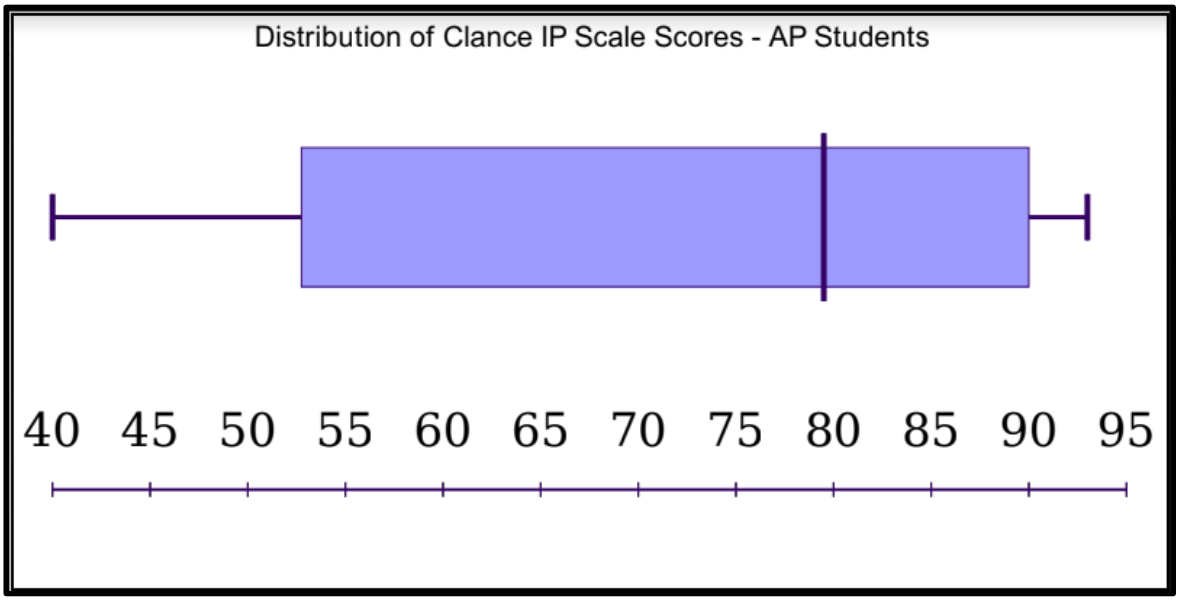

Figure 5. A boxplot distribution of overall Clance IP scores demonstrating the highest and lowest scores alongside the mean, which is skewed to the left. The lowest score was 40 and the highest was 93.

As students answered, it became clear that the majority were experiencing intense IP symptoms as indicated by the scoring scale. This spread of answers confirmed the initial hypothesis that AP students are more likely to demonstrate symptoms of the Imposter Phenomenon due to the rigor and workload of their classes. In Figure 6, there is a clear display that the majority of respondents experience severe IP feelings, with the contribution of outside sources that have a strong impact on their day-to-day lives.

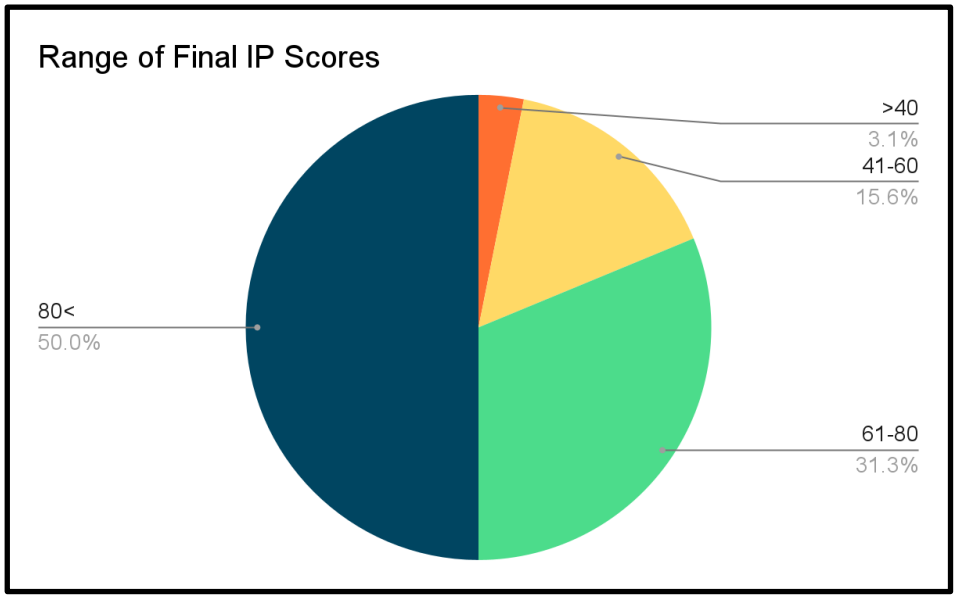

Figure 6. A pie chart displaying the final range of final Clance IP Scale scores.

Fifty percent of individuals (16 out of the sample size of 32) tallied their final scores at 80 or more points. However, it is important to note that there may be a slight miscalculation overall due to human error in final tallies. Based on the information provided, though, there is a significant representation of AP students who are likely experiencing severe IP symptoms. Additionally, many students were not aware of the Imposter Phenomenon at all. 65.6% of respondents answered that they did not know what the Imposter Phenomenon was prior to the survey (Figure 7).

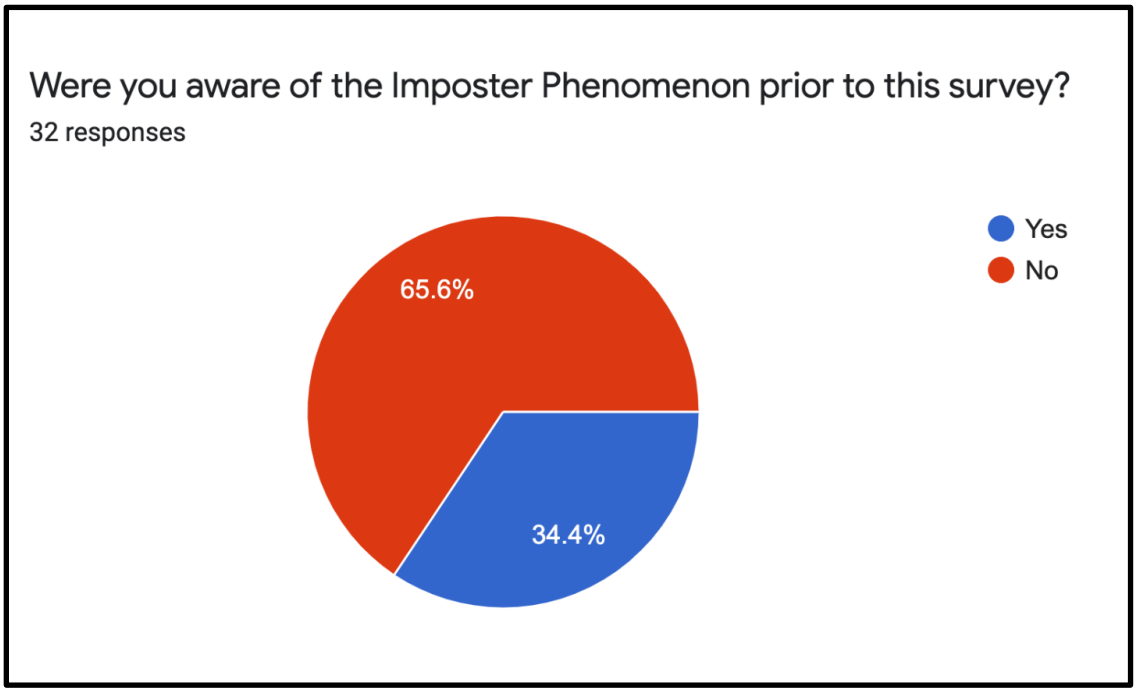

Figure 7. A pie chart showing the distribution of students who had either known of the Imposter Phenomenon or not prior to the survey.

Limitations

As this research was conducted, it became clear that the population surveyed was extremely limited due to lack of expansion to other high schools and the lack of underclassmen (including freshmen and sophomores) who are taking two or more AP courses. Due to the fact that there were only a select number of underclassmen taking two or more AP classes, it would have proved unreliable to be contributed to the study. Furthermore, many individuals who did qualify as a junior or a senior at MHS were enrolled in one AP class, denying them the ability to participate in the survey. A higher sample size could have altered the distributions, either confirming the stated conclusion or altering the end result. Additionally, human error in calculations of the final Clance IP Score could easily have had an effect on the outcome and conclusion of this study. All scores were calculated by the participants themselves, which leaves room for error as all answers were on the honor system and taken/interpreted as given.

Implications

Implications of this study mainly include increased awareness of the Imposter Phenomenon among AP students and overall understanding of where the individual is at when noticing the influence that the IP has or could have on their lives. In addition, it fills a research gap of an age group that has been skipped over by many researchers over the years.

This phenomenon has been studied at the university level and beyond; high school students and their experiences with the Imposter Phenomenon have seldom been addressed. Awareness of the Imposter Phenomenon is crucial to the well-being of students and professionals and should be a topic of interest. The IP is relatively new in the medical world, so as the Imposter Phenomenon is brought to light across a multitude of academic settings, preventative measures could be implemented to stop the development of the IP in many students. This could take the form of interventions by teachers and staff, mental health check-ins, and/or open discussions about what the Imposter Phenomenon looks/feels like.

Areas for Future Research

The Imposter Phenomenon is considered relatively new in the medical world. As research continues to be performed and published throughout the coming years, it is important to address the development of the IP across age groups that span from 11 years old to 18 years old. These age groups have rarely seen a study performed by researchers and it would prove to be beneficial to address additional research gaps. This type of study will allow for a widespread understanding of the phenomenon and could aid in the development of new conclusions in regard to how the IP is developed, how it can be treated, and how it can be prevented.

References

Abrams, A. "Yes, Imposter Syndrome is Real. Here's How to Deal With It." *TIME Magazine*, 20 June 2018. https://time.com/5312483/how-to-deal-with-impostor-syndrome/

Caflisch, K.M. "Imposter Syndrome: The Truth About Feeling Like a Fake." *American Society for Microbiology*, 14 August 2020. https://asm.org/Articles/2020/August/Imposter-Syndrome-The-Truth-About-Feeling-Like-a-F

Chen, J. "Imposter Syndrome 101." *The Cornell Daily Sun*, 12 April 2021. https://cornellsun.com/2021/04/12/chen-imposter-syndrome-101/

Clance, P.R. "Imposter Phenomenon (IP)." *Pauline Rose Clance, Ph.D.*, 2013 https://paulineroseclance.com/impostor_phenomenon.html

Cusack, C.E. et al. "Connecting Gender and Mental Health to Imposter Phenomenon Feelings." *Psi Chi Journal of Psychological Research*, Summer 2013. https://drive.google.com/file/d/1Zyj1BnmyINBy637Jyr7CG5nm3wFbanV6/view?usp=sharing

Hoang, Q. "The Imposter Phenomenon: Overcoming Internalized Barriers and Recognizing Achievements." *The Vermont Connection*, 34(1), 2013. https://scholarworks.uvm.edu/tvc/vol34/iss1/6

Psychology Today Staff. "Imposter Syndrome." *Psychology Today,* n.d. https://www.psychologytoday.com/us/basics/imposter-syndrome

Ravindran, S. "Feeling Like a Fraud: The Imposter Phenomenon in Science Writing." *The OPEN Notebook*, 15 November 2016. https://www.theopennotebook.com/2016/11/15/feeling-like-a-fraud-the-impostor-phenomenon-in-science-writing/

Slank, S. "Rethinking the Imposter Syndrome." *Ethical Theory & Moral Practice*, 5 March 2019. https://drive.google.com/file/d/1RXhNcmPJoDITs_9SqOPApX7Nt7wZr3QS/view?usp=sharing

Tran, B. "Imposter syndrome and the high school student." *Los Angeles Times HS Insider*, 2 December 2020. https://highschool.latimes.com/fountain-valley-high-school/opinion-imposter-syndrome-and-the-high-school-student/

Transcend Staff. "Culture: Genius vs. Learning." *Transcend*, 11 February 2020. https://transcendculture.co/culture-genius-vs-learning/

Williams, A.T. "Imposter Phenomenon in the Classroom." *Brown University Harriet W. Sheridan Center for Teaching and Learning*, 2019-2021. https://www.brown.edu/sheridan/impostor-phenomenon-classroom