

## An Analysis of Correlations between Persistence and Personality in Doctor of Pharmacy Students

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### Abstract

**Objective.** To establish if there is a correlation between personality traits/types and persistence levels in the McWhorter School of Pharmacy student body. To identify trends in the data in relation to persistence levels.

**Methods.** An online survey was sent to McWhorter School of Pharmacy students. The survey was designed to collect data about the student body's personality traits, demographics, persistence, wellness, depression, and Gallup Clifton Strength results. The investigators then analyzed the results using IBM's SPSS v. 26 statistical analysis program.

**Results.** The authors received 179 responses from the survey. Results indicated that males had a slightly higher persistence rating than females, and individuals who were intuitive had a slightly higher persistence rating than individuals who were sensing. The results showed similar ratings between extraversion and introversion, feeling and thinking, and judging and perceiving.

**Conclusion.** The study allowed for the identification of trends and patterns between personality types and persistence ratings. There were no statistically significant findings from the results. Hopefully, this study will lead to approaches in the future for improving overall well-being, reducing mental health issues, and preventing course failures due to non-persistence.

**Keywords:** Persistence, personality, students, pharmacy

### 1. Introduction

The Myers-Briggs Type Indicator (MBTI) is an assessment tool that allows individuals to answer questions using introspection about psychological preferences in how they view the world around them<sup>13</sup>. After completion of the questionnaire, the individual is placed into dichotomies. The dichotomies include introversion or extraversion, sensing or intuition, feeling or thinking, and judging or perceiving. Extraverts are action-oriented and are energized by frequent social interactions. Introverts tend to be thought-oriented and feel recharged after spending time alone. Sensing individuals tend to live in the moment and enjoy facts and details. Intuitives enjoy thinking of all the possibilities, fantasizing about the future and abstract concepts. Feelers are those who tend to make decision based on emotions, concerned about keeping harmony and may be seen as indirect. Thinkers tend to make decisions based on logic, enjoy technical and scientific fields and believe telling the truth is more important than being tactful. Judgers are individuals who prefer to have things planned out and orderly, appear to be task-oriented and like to make lists of things to do. Perceivers are spontaneous and flexible, appear to be loose and casual, work in bursts of energy, and are able to go with the flow<sup>13</sup>. Persistence is being able to take action in spite of difficulty or opposition<sup>14</sup>. An individual may need a high level of persistence to overcome the immense workload that pharmacy school casts upon students. Every student will face failures, setbacks, unstable moods, and overwhelming obstacles, not only in the classroom but outside. Studies have found that individuals with high levels of persistence tend to be more successful<sup>8</sup>. They understand that failure is a part of the process.

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Instead of becoming emotionally frustrated, they calmly reflect on the event, logically analyze their mistakes, and learn to correct those mistakes. Mentally tough individuals will then develop a plan for how they will overcome their failure—even if they know that it could result in another failed experience—because they understand that it will only benefit them in the future. Mentally vigorous individuals understand that things will not go as planned and will have to adapt to the ever-changing environment<sup>2</sup>. Overall, there is a multitude of traits that persistent individuals may use to help them overcome the obstacles in pharmacy school and become a successful student.

There have been similar studies comparing pharmacy students and MBTI tests<sup>12</sup>, as well as pharmacy students and persistence levels<sup>9</sup>but those studies have not examined the combination of all three variables. With that being stated, the previous studies have found that students with higher levels of persistence have a strong correlation with higher GPA's in pharmacy school<sup>6,9</sup>.One source indicates that the most suitable MBTI for pharmacy has been found to be ENTJ<sup>5</sup>.By conducting the research study on personality and persistence, the investigators hoped to find new statistical evidence about the correlation between McWhorter School of Pharmacy students' personality traits and persistence levels. By analyzing the results and discovering correlations, the school could potentially develop early intervention strategies for future students who may need additional encouragement to overcome the program's difficulty.

Pharmacy school is a challenging experience for many students who enter this professional degree program. With the challenges presented by the level of education, each student will have varying ways of dealing with obstacles. Some students will enter the program already having anxiety, depression, and other psychological disorders. Studies have found that a percentage of students will develop psychological disorders brought on by the stress of pharmacy school<sup>7</sup>.It is important to learn how to effectively cope with the added stress that pharmacy school brings. Being able to have adequate self-care and time management reduces the likelihood of developing depression. Another important factor is persistence levels. Students need a certain level of persistence to be able to push through the immense workload. If a student is unable to keep up and starts getting behind, stress levels will likely increase. If the study's outcomes indicate trends, it would be beneficial to identify those who may need assistance based on certain personality traits. This could help increase students' overall well-being and prevent the development of avoidable mental health disorders and course failures.

## 2. Methods

A cross-sectional Qualtrics online survey was designed to collect data, categorize personality traits, and analyze persistence levels of McWhorter School of Pharmacy students. The survey included 10 multiple choice demographic questions and 53 questions on various topics to be assessed. The study was approved by the Institutional Review Board at Samford University. The survey was sent via an email link to eligible students, which were full-time students in the pharmacy graduating classes of 2021-2023. The survey was open for four weeks, with three reminders for completion. The results were recorded anonymously through the "anonymize response" feature in Qualtrics.

Survey respondents first answered the demographic questions, which consisted of questions such as gender, age, and previous education. The personality questions contained in the survey were based on the MBTI and were piloted for accurately. Subsequent questions on wellness, PHQ-9, persistence, and Gallup CliftonStrengths® were developed based on general principles in the literature. These questions were also piloted. The voluntary survey allowed students to enter a drawing with the chance of winning one of five \$20 Amazon.com gift cards or a hand sanitizer gift set. These items were used as an incentive to obtain an adequate number of student responses. The investigators were not allowed electronic access to the second survey to protect to anonymity of the participants. After the primary results were provided to the student investigators, Qualtrics was used to eliminate incomplete responses. Once the incomplete responses were eliminated from the data set, the investigators exported the final response set to Microsoft Excel and IBM's Statistical Package for the Social Sciences for further analysis. A total of 179 students completed the survey. Descriptive data analysis was used to identify similarities and trends. The investigators primarily utilized the Chi-Square test and the Fisher exact test to determine statistical significance, independence, percentages, and p-value.

## 3. Results

A total of 179 survey responses were recorded. Of these, there were 57 males and 122 females. In addition, there were 24 students age 18-21, 104 students ages 22-25, 28 students age 26-29, and 17 students 30 years and older. The persistence scores ranged from a minimum of 19 to a maximum of 35. Of the 179 responses, the mean score was 27.58, which was categorized as an "inconsistent" persistence rating.

Out of the 179 responses, there were 147 categorized as the introvert (I) trait and 32 categorized as the extravert (E) trait. The introvert and extravert trait both had results in all ratings of persistence. Frequency of I/E persistence rating can be found in Table 1.

**Table 1:** Frequency of Reported Wellness Ratings of Introverts/Extraverts in Doctor of Pharmacy Students at McWhorter School of Pharmacy

Persistence Rating*	Personality Traits	
	Introvert (n)	Extravert (n)
Very Good	1.4% (2)	3.1% (1)
Good	42.2% (62)	40.6% (13)
Inconsistent	51.7% (76)	53.1% (17)
Poor	4.8% (7)	3.1% (1)
Total	100.0% (147)	100.0% (32)

\* Persistence Ratings:

Very Good	= 35-40
Good	= 24-29
Inconsistent	= 23-28
Poor	= 17-22
Very Poor	= 00-16

The next set of data analyzed was the sensing (S) and (N) traits. There were 103 categorized as sensing and 76 categorized as intuitive. Again, both traits covered all persistence ratings. The frequency of S/N persistence ratings can be found in Table 2.

**Table 2:** Frequency of Persistence Ratings of Sensing/Intuition in Doctor of Pharmacy Students at McWhorter School of Pharmacy

Persistence Rating*	Personality Trait	
	Sensing (n)	Intuition (n)
Very Good	1.0% (1)	2.6% (2)
Good	37.9% (39)	47.4% (36)
Inconsistent	54.4% (56)	48.7% (37)
Poor	6.8% (7)	1.3% (1)
Total	100.0% (103)	100.0% (76)

\* Persistence Ratings:

Very Good	= 35-40
Good	= 24-29
Inconsistent	= 23-28
Poor	= 17-22
Very Poor	= 00-16

One hundred six (106) responses were categorized as the Feeling(F) trait and 73 were categorized as the Thinking(T) trait. Overall, both traits covered all the rating levels. As with I/E and S/N, the most common rating was "inconsistent". The frequency of F/T persistence ratings can be found in Table 3.

**Table 3:** Frequency of Persistence Ratings of Feeler/Thinker in Doctor of Pharmacy Students at McWhorter School of Pharmacy

Persistence Rating*	Personality Trait	
	Feeling (n)	Thinking (n)
Very Good	1.4% (1)	1.9% (2)
Good	43.8% (32)	40.6% (43)
Inconsistent	53.4% (39)	50.9% (54)
Poor	1.4% (1)	6.6% (7)
Total	100.0% (73)	100.0% (106)

\* Persistence Ratings:

Very Good	= 35-40
Good	= 24-29
Inconsistent	= 23-28
Poor	= 17-22
Very Poor	= 00-16

Of the 179 responses, 136 were categorized as the Judging (J) trait and 43 as the Perceiving (P) trait. Judging individuals reflected all persistence rating levels. However, none of the Perceiving individuals scored in the “very good” persistence level. The frequency of J/P persistence ratings are listed in Table 4.

**Table 4:** Frequency of Persistence Ratings of Judging/Thinking in Doctor of Pharmacy Students at McWhorter School of Pharmacy

Persistence Rating*	Personality Trait	
	Judging(n)	Perceiving (n)
Very Good	2.2% (3)	0.0% (0)
Good	41.2% (56)	44.2% (19)
Inconsistent	52.9% (72)	48.8% (21)
Poor	3.7% (5)	7.0% (3)
Total	100.0% (136)	100.0% (43)

\* Persistence Ratings:  
 Very Good = 35-40  
 Good = 24-29  
 Inconsistent = 23-28  
 Poor = 17-22  
 Very Poor = 00-16

Of the total 179 responses, 58 were male and 121 were female. Results showed that both male and females covered every level of persistence, but the majority of males scored with “good” persistence, whereas the majority of females scored with “inconsistent” persistence. The frequency of male and female persistence rating can be found in Table 5.

**Table 5:** Frequency of Persistence Ratings per Gender in Doctor of Pharmacy Students at McWhorter School of Pharmacy

Persistence Rating*	Gender	
	Male (n)	Female (n)
Very Good	1.7% (1)	1.7% (2)
Good	55.2% (32)	35.5% (43)
Inconsistent	37.9% (22)	58.7% (71)
Poor	5.2% (3)	4.1% (5)
Total	100.0% (58)	100.0% (121)

\* Persistence Ratings:  
 Very Good = 35-40  
 Good = 24-29  
 Inconsistent = 23-28  
 Poor = 17-22  
 Very Poor = 00-16

#### 4. Discussion

The results indicated that 147 of the 179 response were introverts. This was more than expected. It could indicate a problem with the E/I personality trait questions and/or that survey responses were impacted by the statewide COVID-19 quarantine. During quarantine, many students who would normally classify as extraverts temporarily became more introverted because of the restricted social interactions. Other studies conclude that extraverts and introverts are equal when it comes to persistence levels, with extraverts having a little more persistence, possibly due to possibly having a stronger support system<sup>5,10</sup>. The results from this survey coincide with the studies suggesting that introverts and extraverts are equally persistent.

Next, the lead investigator hypothesized that intuitives would have a higher persistence level than the sensors. Intuitive focus on the future, while sensors focus on the present. The results reflected the investigator’s hypothesis: a greater percentage of intuitive than sensors scored as “very persistent”. When comparing feeling versus thinking trait, the results were fairly even across the board. The investigators hypothesis was that thinkers would have a higher level of persistence than feelers because they would be able to set aside their feelings and make decisions based on logic. This did was not the case with the results with feelers actually having a slightly higher percentage than thinkers.

For the judging versus perceiving trait, the results showed more people scored as judges than perceivers. This is reflective of the general population. Judging individuals had ratings in all levels of persistence, while perceivers did not have any ratings of “very good” persistence. While examining the biological genders, male and female results came back with an interesting find. There were more females than males in the study because that reflects the pharmacy school’s (and all pharmacy schools’) population. Results showed that males have a slightly higher persistence level than females, with males having a 55.2% “good” persistence rating and females having a 35.5% “good” persistence rating. This was further concluded with males having a 37.9% “inconsistent” persistence rating and females having a 58.7% “inconsistent” persistence rating. The p-value on this comparison was 0.073, so unfortunately it cannot be concluded as statistically significant. While some studies support these results of men having higher persistence than women, others do not<sup>11</sup>. There are more studies pointing towards women being better at handling adversity than men<sup>1,3,4</sup>.

A strength of the study was the accessibility. The survey was easily accessed online which was a great attribute during quarantine. This contributed to a strong response rate, which was assisted by survey reminders and an incentive (drawing) for completion. The number of responses allowed for adequate data to interpret conclusions.

The study can be generalized to young college students in professional or graduate programs. A limitation of this study was that results indicated a disproportionate number of introverts over extraverts. Another limitation of the study was the lack of statistical significance; there was no correlation p-value of statistical significance, meaning that the null hypothesis was accepted in every case. In a future study, the survey should be administered in a time without quarantine, which may more accurately reflect typical personalities.

## 5. Conclusion

Pharmacy school is a challenging experience for all students who are enrolled. Persistence is a key trait in overcoming the obstacles faced with in pharmacy school, workplace, and everyday life. This study was beneficial in allowing the investigators to see trends and relationships between the personality traits and persistence levels. Studies need to be more conclusive before developing early intervention techniques related to personality and persistence. Although, there was no statistical significance in these comparisons, this study was a good starting point for future studies.

## 6. References

- Alnuwieri, T. (2018, January 11). *Women are more resilient than men, study shows*. Well+Good. Retrieved on November 29, 2020 from <https://www.wellandgood.com/women-more-resilient-than-men-life-expectancy/>
- Barker, E. (2019, June 5). *A Navy SEAL explains 8 secrets to grit and resilience*. Ladders.com. Retrieved on November 21, 2020 from <https://www.theladders.com/career-advice/a-navy-seal-explains-8-secrets-to-grit-and-resilience>
- Boardman, J.D., Blalock, C.L., & Button, T.M. (2008). Sex differences in the heritability of resilience. *Twin research and human genetics*, 11(1), 12-27. doi:10.1375/twin.11.1.12
- Browning, F. (2015, April 29). *Survival secrets: What is it about women that makes them more resilient than men?* Cal Alumni Association, California Magazine. Retrieved on November 29, 2020 from <https://alumni.berkeley.edu/california-magazine/just-in/2015-04-30/survival-secrets-what-it-about-women-makes-them-more>
- Career Assessment Site. (n.d.). *Myers-Briggs® test ENTJ personality type pharmacist career*. Retrieved on November 29, 2020 from <https://careerassessmentsite.com/myers-briggs-test/mbti-personality-types/entj/careers/pharmacist/myers-briggs-entj-career/>
- Choi, A. N., Curran, G. M., Morris, E. J., Salem, A. M., Curry, B. D., & Flowers, S. K. (2019). Pharmacy students' lived experiences of academic difficulty and Tinto's theory of student departure. *American journal of pharmaceutical education*, 83(10), 7447. doi:10.5688/ajpe7447
- Fischbein, R, & Bonfine, N. (2019). Pharmacy and medical students' mental health symptoms, experiences, attitudes and help-seeking behaviors. *American journal of pharmaceutical education*, 83(10), 7558. doi:10.5688/ajpe7558
- Kelly, J. (2018, September 7). *Habits of mentally strong people, and how they can help you succeed*. Forbes.com. Retrieved on November 29, 2020 from <https://www.forbes.com/sites/jackkelly/2018/09/07/habits-of-mentally-strong-people-and-how-they-can-help-you-succeed/?sh=1a5a04411ac1>
- Pate, A.N., Payakachat, N., Harrell, T.K., Pate, K.A., Caldwell, D.J., & Franks, A.M. (2017). Measurement of grit and correlation to student pharmacist academic performance. *American journal of pharmaceutical education*, 81(6), 105. doi:10.5688/ajpe816105
- Peasland, P. (2017, September 4). *Extroverts, introverts and practising resilience*. Retrieved on November 29, 2020 from <https://philippa-peasland.medium.com/extroverts-introverts-and-practising-resilience-4511d1b288e9>

- Sambu, L.J., & Mhongo, S. (2019). Age and gender in relation to resilience after the experience of trauma among internally displaced persons (IDPS) in Kiambaa Village, Eldoret East Sub-County, Kenya. *Journal of psychology and behavioral science*, 7(1), 31-40. doi.org/10.15640/jpbs.v7n1a4
- Shuck, A. A., & Phillips, C. R. (1999). Assessing pharmacy students' learning styles and personality types: A ten-year analysis. *American journal of pharmaceutical education*, 63(1), 27-33. doi:aj630104.pdf
- The Myers & Briggs Foundation. (n.d.). *MBTI® basics*. Retrieved on November 29, 2020 from <https://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/>
- Vocabulary.com. (n.d.). *Persistence – Dictionary definition*. Retrieved on November 29, 2020 from <https://www.vocabulary.com/dictionary/persistence>