Scientific Research Publishing

Psychology, 2023, 14, 1015-1032
https://www.scirp.org/journal/psych
ISSN Online: 2152-7199
ISSN Print: 2152-7180

Personality Traits, Thinking Style, and Emotional Intelligence among Pharmacy Staff towards Safer Patient Care

Adel Omar Bataweel*, Nada BinOthaimeen

Patient Safety and Risk Management Administration, King Fahad Medical City, Riyadh, KSA
Email: *abataweel@kfmc.med.sa, *adelbataweel@hotmail.com, nbinothaimen@kfmc.med.sa

How to cite this paper: Bataweel, A. O., & BinOthaimeen, N. (2023). Personality Traits, Thinking Style, and Emotional Intelligence among Pharmacy Staff towards Safer Patient Care. *Psychology, 14,* 1015-1032.
https://doi.org/10.4236/psych.2023.146054

Received: May 28, 2023
Accepted: June 27, 2023
Published: June 30, 2023

Abstract

Background: This study explored pharmacy staff characteristics like personality traits using the Big Five Inventory (BFI), emotional intelligence (EI), and thinking styles using The Rational Experiential Inventory (REI) and General Decision Making Style inventories (GDMS) together with demographic data to see how these measures could relate and the implication of this on pharmacy staff and patient safety. **Design:** A cross-sectional study. **Methods:** All of the organization's pharmacy staff were included with response rate of 64% (n = 119). Participants completed a self-report online survey questionnaire to measure personality traits, thinking styles, and emotional intelligence. **Results**: Decreasing BFI-Conscientiousness and GDMS-Dependent was associated with an increased likelihood of making an error. The BFI-agreeableness, GDMS-Rational, and EI-Self-Control were not associated with making an error. **Conclusion:** One of the most crucial findings is that BFI-Conscientiousness and GDMS-Dependent were significant predictors for medical errors. BFI-Neuroticism was a significant predictor of maladaptive behaviors and a trigger for lack of self-control and psychological issues. BFI-Conscientiousness was a factor among pharmacy staff who would recommend treatments that are less likely to cause pain, discomfort or interfere with patients' daily activities.

Keywords

Patient Safety, Emotional Intelligence, Rational Style, Experiential Style, General Decision Making Style, Medical Error, Personality Traits

1. Introduction

The constructs of emotional intelligence and personality traits were found to be

closely related and were found to have a strong genetic correlation, and they could be considered identical constructs and are distinctive, reliable and useful measures of individuals' characters and behaviour (van der Linden et al., 2018; Ciarrochi et al., 2000). The constructs are used as a predictive tool emotion and behaviour in the workplace in healthcare disciplines including nursing, medicine and pharmacy (Lievens et al., 2009; Qualter et al., 2011; Hardigan & Cohen, 2023; Bataweel, 2023; Bataweel & Ahmed, 2023). The other reliable construct of human behaviour is the style of thinking. One construct is based on the dual-system theory where thinking style is divided into two distinctive styles: system 1, more intuitive and less effort, and system 2 which is slower and requires more cognitive efforts (Bataweel, 2023; Bataweel, 2022; Kannengiesser & Gero, 2019). The study will aim to investigate four constructs, two for thinking styles using the Rational Experiential Inventory (REI) and General Decision Making Style inventories (GDMS), emotional intelligence and personality traits using the Big Five model to give a more holistic view of pharmacy staff as healthcare providers, the effect of these constructs on the performance and behaviour and investigate the correlation among all these constructs given the considerable evidence of the effect of personality with performance and its influence on decision making (Dewberry et al., 2013).

Personality traits affect how healthcare professionals communicate with each other and their patients and can also affect how they cope with stress and burnout (Kyaw et al., 2022). Personality traits also affect how we behave and adjust to life events, and can summarize, predict, and explain an individual's behaviour (American Psychology Association, 2022). For example, Australian pharmacists were found to score high on extraversion, agreeableness, consciousness, and openness, making them friendly, outgoing, helpful, and trusting (Waddell et al., 2020). Another study looked at Canadian pharmacists' personality traits and the effect of this on their behavior (Rosenthal et al., 2016). They found that pharmacists that scored high in openness and agreeableness made more checks and prescription adaptations for patients' medications than other peer pharmacists who scored high on neuroticism. Additionally, pharmacists who scored high in Neuroticism did not cope well with stressful events, making the assessment of personality traits a good regular assessment to identify this and give more help and support (Bataweel, 2022). Additionally, a study of 54 meta-analyses on personality traits using the big five frameworks found personality traits to be closely associated with job performance (Zell & Lesick, 2022). High scores in the Conscientiousness trait in pharmacists were found to be a significant predictor for particular behavior toward patients when choosing medications for them that are less likely to cause pain, or discomfort or affect patients' usual activities (Law et al., 2019). Personality traits could be used as a predictor for the pharmacy profession and the type of career path within pharmacy, like either dealing directly with patients or dealing with the drugs' side of pharmacy, where it was found that Neuroticism was a negative predictor for pharmacists who wanted to serve patients directly (Skrzypek et al., 2020).

Another important aspect of healthcare is Emotional intelligence (EI) where it was found to be an essential issue to measure and educate pharmacy staff as it increased their professionalism, mental health, and clinical performance, and their professional communication (Nelson et al., 2015). According to the American Accreditation Council for Pharmacy Education (ACPE), EI was essential to pharmacy education. It was needed to satisfy standard 4 of the ACPE and the Advancement of Pharmacy Education (CAPE), where EI can be improved through formal education for better self-awareness, ability to work as a team, and self-discipline and achievement (Nelson et al., 2015; Mounce & Culhane, 2021; Lust & Moore, 2006; Butler et al., 2022). High scores in EI were also found to be very important in reducing the effect of Autistic like traits in Japanese pharmacists, enhancing their communication skills, social interaction, and significantly improving empathetic behavior (Higuchi et al., 2017).

Another critical dimension investigated in this study was thinking styles to enable a broader understanding of pharmacy staff behavior, personality, and cognition. Two types of thinking styles have reliable measuring tools: Rational Style (RS) and Experiential Style (ES), which healthcare providers have used to compare them to each other for differences and utilize for better patient care (Bataweel, 2022). RS is more conscious, analytical, and structured than ES, which is more automatic, intuitive, and emotional (Bataweel, 2022). A Ph.D. study from Portsmouth University in collaboration with the National Health System (NHS) found that pharmacy participants preferred rational thinking and no significant differences between genders (Scott, 2018). Another study investigated the effect of thinking styles on pharmacists' performance on advanced Pharmacy Practice Experiences (APPEs), where they found that ES scores significantly and negatively impacted APPEs' grades (Williams et al., 2016).

2. Method

2.1. Participants

The study was conducted at King Fahad Medical City (KFMC), Riyadh, Kingdom of Saudi Arabia, for the period of 05 February 2023 - 16 February 2023. All of KFMC's pharmacy staff were included.

The target group was pharmacy staff for this study to investigate their personality traits, emotional intelligence and style of thinking and the effect of this on patient safety. There was 207 pharmacy staff at the time of the study. The number of responses received was 133, making the response rate 64%. The completed responses were 119 out of the 133 total responses. The final sample (N = 119) comprised sixty males and fifty-nine females.

2.2. Design

A cross-sectional, self-administered online survey was conducted with all pharmacy staff through KFMC emailing system. Qualtrics XM Platform survey tool was used for the survey construction, and IBM® SPSS® Statistics (version 28) was

used for the analysis. Demographic data were first collected. The survey then presented participants with 40 questions to calculate the thinking styles RS&ES, 30 questions for the emotional intelligence calculation, 44 for the personality trait measure, and finally, 25 questions for the General Decision Making Styles (GDMS).

2.3. Demographic

Gender, age, social status, marital status, time on social media, leadership position, error rate, marital status.

2.4. Procedure

Ethical approval was obtained from King Fahad Medical City Institutional Review Board (IRB) (reference number: 23-043). Pharmacy staff was asked to complete an online electronic survey to collect data about thinking styles, emotional intelligence, personality trait, and the GDMS. Clicking the link or copying the link into a web browser, participants were brought directly to the study via Qualtrics.

Pharmacy staff were asked to complete an online electronic survey to collect data about their thinking styles. The survey comprised a questionnaire assessing pharmacy staff thinking styles using the Rational-Experiential Inventory-40 (REI-40) (Keaton, 2017). The REI-40 has been validated and has internal consistency scores (Cronbach's alpha) ranging from .74 to .91 (Jensen et al., 2016). This 40-item questionnaire consists of 4 subscales: Rational ability, rational engagement, experiential ability, and experiential engagement. Each subscale is measured by ten items that are scored on a five-point Likert scale from "Definitely false; score (1)" to "Definitely true; score (5)." The responses for negatively-worded questions were reversed and scored.

Pharmacy staff was then asked about emotional intelligence. The survey was composed of the Trait Emotional Intelligence questionnaires to measure the trait EI and other variables (Petrides, 2009). The research tool Trait Emotional Intelligence Questionnaire (TEIQUe-Short Form) was used to measure the nurses' emotional intelligence level. The short form comprised 40 items developed on a seven-point Likert scale ranging from disagree to agree completely. Out of the EI global as one single measure, four factors stem from it: well-being, self-control, emotionality, and sociability, with excellent internal consistency ranging from .89 - .92 (Keaton, 2017; Bru-Luna et al., 2021).

The survey for the Big Five Inventory (BFI) was composed of 44 items scored by a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The BFI is a reliable psychometric inventory for measuring personality traits and has been translated into many languages worldwide with high reliability and validity (John & Srivastava, 1999; Kupper et al., 2020; Li et al., 2015; Fossati et al., 2011).

Finally, the GDMS measures five different decision-making styles: rational,

intuitive, dependent, avoidant, and spontaneous, which has 25 questions (5 items for each dimension) rated on a 5-point Likert-type scale ranging from "strongly disagree" to "strongly agree". Reliability (Cronbach's alphas) for the different dimensions varies between .67 and .87 (Spicer & Sadler-Smith, 2005).

2.5. Ethical Consideration

King Fahad Medical City's Institutional review board approved the study (IRB Log Number: 23-043). Participants' completion of the study questionnaires implied their consent to take part in the study.

3. Results

3.1. Descriptive Statistics

Preliminary analysis

Thinking style REI, EI, BFI, and GDMS data had good internal reliability (Table 1).

3.2. Primary Analysis

Objective 1: Thinking styles (RS and ES) and demographic data

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA (F (2, 116) = 3.985, p = .021). The less than 2 hours/day group had the highest score in RS.

(Less than 2 hours/day: M = 3.80, SD = .566; Between 2 - 5 hours/day: M = 3.54, SD = .559; More than 5 hours/day: M = 3.41, SD = .531).

A Pearson's rank correlation was computed to assess the relationship between RS and Age. There was a positive correlation between the two variables, r = .242, p = .009.

Objective 2: Emotional Intelligence (EI) and demographic data

A Mann-Whitney test was used to compare EI-Self Control and error rate. There was a significant difference where staff who did not err had higher EI scores, U = 720.000, z = −4.84, p < .001, with a small-medium effect size r = .411.

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA (F (2, 116) = 3.255, p = .042). The less than 2 hours/day group scored the highest EI-Well Being score.

(Less than 2 hours/day: M = 5.38, SD = .810; Between 2 - 5 hours/day: M = 4.94, SD = 1.13; More than 5 hours/day: M = 4.74, SD = 1.13).

Table 1. Internal Reliability Statistics for thinking style data.

	Cronbach's Alpha	N of Items
REI	.84	40
EI	.78	30
BFI	.84	44
GDMS	.89	25

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA (F (2, 116) = 3.995, p = .021). The less than 2 hours/day group scored the highest EI-Emotionality score.

(Less than 2 hours/day: M = 5.00, SD = .966; Between 2 - 5 hours/day: M = 4.61, SD = .861; More than 5 hours/day: M = 4.34, SD = .984).

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA (F (2, 116) = 3.995, p = .021). The less than 2 hours/day group had the highest score in EI-Sociability.

(Less than 2 hours/day: M = 4.89, SD = .949; Between 2 - 5 hours/day: M = 4.46, SD = .891; More than 5 hours/day: M = 4.27, SD = .830).

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA (F (2, 116) = 3.995, p = .021). The less than 2 hours/day group had the highest score in EI-Global.

(Less than 2 hours/day: M = 5.10, SD = .717; Between 2 - 5 hours/day: M = 4.63, SD = .783; More than 5 hours/day: M = 4.40, SD = .902).

A Kruskal-Wallis H test was used to compare EI-Self Control and Social Media Usage. There was a significant difference,: H (2) = 7.761, p = .021.

There was a statistically significant difference between groups, Age, as determined by one-way ANOVA (F (3, 112) = 4.204, p = .007). Older staff had a higher score in EI-Well Being.

(27 - 29: M = 4.77, SD = .826; 30 - 35: M = 4.86, SD = 1.135; 36 - 40: M = 5.20, SD = 1.066; more than 40: M = 5.68, SD = .840).

There was a statistically significant difference between groups, Age, as determined by one-way ANOVA (F (3, 112) = 5.911, $p \leq .001$). Older staff had a higher score in EI-Sociability.

(27 - 29: M = 4.33, SD = .704; 30 - 35: M = 4.49, SD = .981; 36 - 40: M = 4.33, SD = .776; more than 40: M = 5.24, SD = .825).

There was a statistically significant difference between groups, Age, as determined by one-way ANOVA (F (3, 112) = 5.036, p = .003). Older staff had a higher score in EI-Global.

(27 - 29: M = 4.47, SD = .714; 30 - 35: M = 4.59, SD = .845; 36 - 40: M = 4.79, SD = .793; more than 40: M = 5.26, SD = .661).

A Kruskal-Wallis H test was used to compare EI-Self Control and Age. There was a significant difference: H (3) = 11.627, p = .009.

Objective 3: Personality Traits, Big Five Inventory (BFI) and demographic data

An independent-samples t-test was conducted to compare gender and BFI-Extraversion. There was a significant difference in the scores for females (M = 3.20, SD = .622) and males (M = 2.91, SD = .471); t (117) = -2.935, p = .019.

A Mann-Whitney test was used to compare BFI-Agreeableness and gender. There was a significant difference where females had higher scores, U = 1266.000, z = −2.681, p = .007, with a small-medium effect size r = .25.

A Mann-Whitney test was used to compare BFI-Agreeableness and error rate. There was a significant difference where staff who did not err had higher scores,

$U = 617.000$, $z = -5.078$, $p \leq .001$, with a medium effect size $r = .47$.

A Mann-Whitney test was used to compare BFI-Conscientiousness and error rate. There was a significant difference where staff who did not err had higher scores, $U = 616.000$, $z = -4.823$, $p \leq .001$, with a small-medium effect size $r = .44$.

A Mann-Whitney test was used to compare BFI-Neuroticism, and error rate. There was no significant difference, $U = 1309.000$, $z = -1.071$, $p = .284$.

There was a statistically significant difference between groups, Social Media Usage, as determined by one-way ANOVA ($F(2, 116) = 5.977$, $p = .003$). The less than 2 hours/day group scored the highest BFI-Openness score.

(Less than 2 hours/day: M = 3.65, SD = .496; Between 2 - 5 hours/day: M = 3.38, SD = .494; More than 5 hours/day: M = 3.22, SD = .541).

A Kruskal-Wallis H test was used to compare BFI-Conscientiousness and Social Media Usage. There was a significant difference: $H(2) = 15.818$, $p \leq .001$.

A Kruskal-Wallis H test was used to compare BFI-Neuroticism and Social Media Usage. There was a significant difference: $H(2) = 10.382$, $p = .006$.

A Kruskal-Wallis H test was used to compare BFI-Agreeableness and age. There was a significant difference: $H(3) = 16.635$, $p \leq .001$.

A Kruskal-Wallis H test was used to compare BFI-Conscientiousness and age. There was a significant difference: $H(3) = 10.752$, $p = .013$.

A Kruskal-Wallis H test was used to compare BFI-Neuroticism and marital status. There was a significant difference: $H(2) = 7.824$, $p = .020$.

Objective 4: General Decision-Making Style (GDMS) and demographic data

A Mann-Whitney test was used to compare GDMS-Rational and error rate. There was a significant difference where staff that did not err had higher scores, $U = 643.000$, $z = -4.936$, $p \leq .001$, with a medium effect size $r = .45$.

A Mann-Whitney test was used to compare GDMS-Dependent and error rates. There was a significant difference where staff that did not err had higher scores, $U = 847.000$, $z = -3.752$, $p \leq .001$, with a small effect size $r = .34$.

A Mann-Whitney test was used to compare GDMS-Avoidant and error rate. There was no significant difference, $U = 1173.000$, $z = -1.861$, $p = .063$.

A Kruskal-Wallis H test was used to compare GDMS-Rational and Social Media Usages. There was a significant difference: $H(2) = 10.508$, $p = .005$.

A Kruskal-Wallis H test was used to compare GDMS-Rational and age. There was a significant difference: $H(3) = 8.593$, $p = .035$.

Tables 2-4 summarize of all scales correlations and their effect on demographic data.

4. Regression Analysis

4.1. Error Rate

Significant variables for error rates (objectives 3 and 4) were used for logistic regression.

A logistic regression was performed to ascertain the effect of BFI-Agreeableness,

Table 2. Summary of Pearson/Spearman correlations between EI scales with REI, BFI, and GDMS scales.

		EI-Global	EI-Well Being	EI-Emotionality	EI-Sociability	EI-Self Control
REI	Rational (RS)	.65***	.56***	.56***	.55***	.51***
	Experiential (ES)	.22*	NA	NA	.38***	.29**
BFI	Extraversion	.50***	.54***	.35***	.40***	.38***
	Neuroticism	−.46***	−.40***	−.43***	NA	−.50***
	Agreeableness	.70***	.62***	.57***	.47***	.62***
	Conscientiousness	.71***	.57***	.63***	.46***	.60***
	Openness	.50***	.56***	.58***	.54***	.43***
GDMS	Rational	.58***	.50***	.45***	.50***	.47***
	Intuitive	NA	NA	NA	NA	NA
	Dependent	NA	NA	NA	.21*	NA
	Avoidant	−.31***	−.23*	−.39***	NA	−.34***
	Spontaneous	NA	NA	−.28**	NA	NA

Note: ***$p < .001$; **$p < .01$; *$p < .05$.

Table 3. Summary Pearson/Spearman correlations between BFI scales with REI and GDMS scales.

		Extraversion	Neuroticism	Agreeableness	Conscientiousness	Openness
REI	Rational (RS)	.43***	−.24**	.46***	.58***	.57***
	Experiential (ES)	NA	.19*	NA	NA	NA
GDMS	Rational	.35***	−.20*	.58***	.60***	.62***
	Intuitive	NA	.40***	NA	−.18*	NA
	Dependent	NA	.19*	.18*	NA	.35***
	Avoidant	−.23*	.52***	−31***	−.40***	NA
	Spontaneous	NA	−.29**	−.25**	−.25**	NA

Note: ***$p < .001$; **$p < .01$; *$p < .05$.

Table 4. Summary Pearson/Spearman correlations between GDMS scales with REI scales.

		Rational	Intuitive	Dependent	Avoidant	Spontaneous
REI	Rational (RS)	.56***	NA	NA	−.35***	NA
	Experiential (ES)	.21*	.54***	.23*	.30***	.38***

Note: ***$p < .001$; **$p < .01$; *$p < .05$.

BFI-Conscientiousness, GDMS-Rational, GDMS-Dependent, and EI-Self-Control on the likelihood that pharmacy staff will make an error. Decreasing BFI-Conscientiousness (.19 [.04 - .83], $p = .027$) and GDMS-Dependent (.15 [.05 - .41], $p < .001$) (regression model was statistically significant: X^2 (5) = 54.601, $p < .001$, and the model explained 52.1% (Nagelkerke R^2) of the variance in error making

and correctly classified 69.7% of cases) were associated with an increased likelihood of making an error. The BFI-agreeableness, GDMS-Rational, and EI-Self-Control were not associated with making an error.

4.2. Social Media Usage

Significant variables for error rates (objectives 1, 2, 3 and 4) were used for ordinal regression.

Multinomial regression was performed to ascertain the effect of RS, BFI-Neuroticism, BFI-Conscientiousness, BFI-Openness, GDMS-Rational, and all EIs dimensions on the likelihood that pharmacy staff will spend more hours on social media. An increase in BFI-Neuroticism was associated with increased odds of higher social media usage (5.60 [1.42 - 21.92], $p = .014$) (Person's chi-square test indicates that the model does not fit data well [X^2 (214) = 259.359, $p = .018$], whereas the Deviance chi-square does indicate a good fit [X^2 (214) = 212.445, $p = .517$].

5. Discussion

Pharmacy staff in this study had above average expressions in their personality traits Extraversion, Openness, Agreeableness, and Conscientiousness and lower scores in Neuroticism similar to Australian pharmacists (Waddell et al., 2020). Australian study found an association between age and neuroticism, but in this study, the positive association for age was with agreeableness and conscientiousness (objective 3). The Australian study found that higher scores in agreeableness were associated with more medication reviews (the pharmacy's and the patient's communication process for the medication's safe and effective use). Even though this study did not cover medication review, it is worth mentioning that this study found females scored significantly higher in agreeableness than males (objective 3), age had a significant positive effect on agreeableness, and interestingly staff who scored higher in this dimension had positively and significantly less errors (objective 3).

Another study for pharmacy staff asserted the need for organizations to know their staff personality traits as this has a direct effect on their decision makings (Law et al., 2019). One of their findings was that pharmacy staff with higher scores in agreeableness preferred treatments approach that could have the potential to poor health state over death as a worse scenario outcome (Law et al., 2019), which could shed light on this study as females had significantly higher scores in agreeableness than males. Maybe this is due to how gender differs when looking at life, where one might prefer someone's death over living with suffering compared with people who prefer living over death regardless of health status. Interestingly, this study also showed that older age had significantly higher scores in agreeableness, which could make sense that older people wish people to stay alive regardless of the implications. Younger people might not cope well with seeing someone suffering. Another finding in this study was that pharmacy staff

who erred had lower scores in agreeableness.

A UK study from the National Healthcare Services (NHS) asserted a similar issue about personality traits in general and pharmacy staff in specific that organizations should use personality traits to give focused and better support to their staff (Kostrzewski et al., 2009). The NHS study found that pharmacy staff with higher conscientiousness and agreeableness scores were better compliant with obtaining their continuing professional development (CPD) hours. This study showed that conscientiousness and agreeableness significantly affected error-making, where staff who did not err had higher scores (objective 3). Therefore, it is worth it that organizations pay attention to this as part of the annual evaluation to help and support staff better.

Pharmacy staff who scored high in all BFIs dimensions but lower in neuroticism were early adopters of good practices and evidence-based practices compared to other pharmacy staff (Rosenthal et al., 2015). This was partially supported by this study from an error rate perspective, as was mentioned above in objective 3. Additionally, a Canadian study (Nair et al., 2021) found that pharmacy staff who scored higher in agreeableness, extraversion, and conscientiousness provided better patient-centered services. In this study, high scores in agreeableness and conscientiousness were associated with less error (objective 3). As for extraversion and agreeableness, females had significantly higher scores than male pharmacy staff (objective 3). As for agreeableness and conscientiousness, significantly higher scores were associated with older staff. This could be due to the maturity aspect with age.

At this point, it is essential to mention specific behavior that was found to negatively affect the personality traits of pharmacy staff and other healthcare providers like nurses and physicians. High daily usage of social media pharmacy staff was found to have significantly high scores in Neuroticism and lower scores in openness and conscientiousness (objective 3). This is similar to other studies where nurses with high daily social media usage had significantly higher scores in Neuroticism and lower scores in conscientiousness and agreeableness but not with openness, as is the case in this study (Bataweel, 2023). As was shown in this study (objective 3) and previous studies in nursing (Bataweel, 2023), higher error rates were significantly associated with lower scores in agreeableness and conscientiousness. Additionally, high scores in neuroticism were associated with many undesirable effects like depression, anxiety, medication errors, ineffective communication with peers and patients, and would have less ethical and moral values (Bataweel, 2023). It was recommended in one study about pharmacy and medicine should not accept students with high scores in Neuroticism due to the significant association with psychological issues (Bataweel, 2022). It was also found that one of the predictors of high neuroticism is the high daily usage of social media (Bataweel, 2023) and this study (objective 3, objective 4). High scores in Neuroticism and higher usage of social media were also significantly and negatively associated with emotional intelligence (objective 2), and this is similar to the finding for pharmacy (Bataweel, 2022) and other healthcare pro-

viders (Bataweel, 2023).

Additionally, higher scores in neuroticism and higher usage of social media were found to have a significant negative effect on Rational thinking as measured by the REI-40 (object 1), which is also in line with other studies on healthcare providers (Bataweel, 2023). High usage of social media staff was also found to have a significant negative effect on rationality as measured by the GDMS (objective 4). High social media usage could also be used as a trigger to psychological issues and lower emotional stability. It was found that high social media usages staff had significantly lower scores in all EI components, including self-control (objective 3), and this is in line with other studies, especially with the self-control component (Bataweel & Ahmed, 2023; Jie et al., 2022; Süral et al., 2019) where they used this behavior to escape negative past thoughts and other negative feelings.

Emotional intelligence is another critical factor for pharmacy staff for good practice, professional development, and clinical performance, and it was recommended that EI should be part of pharmacy education (Nelson et al., 2015; Butler et al., 2022). EI can also be increased in pharmacy staff through training (Buckley et al., 2020), helping them to cope better with burnout and stress (Moreno-Fernandez et al., 2020; Mikolajczak et al., 2009). EI also helped in the interpersonal communications of pharmacy staff with patients, physicians, and other pharmacy staff and more compassionate and effective patient care (Higuchi et al., 2017; Butler et al., 2022). EI was found to be affected by age in pharmacy (Tyler, 2015), which is in line with this study (objective 2) and also with other professions like nursing (Bataweel, 2023). EI is also an indication of other undesirable traits like Neuroticism. EI in this study was found to have a significant negative effect on Neuroticism, where the higher scores of EI, the lower scores of Neuroticism (objective 2), and this is in line with other studies (Bataweel, 2023; Hjalmarsson & Dåderman, 2022). There were no significant differences between gender and EI (objective 2), and this is in line with other studies for nurses (Bataweel, 2023) and for physicians (Bataweel & Ahmed, 2023). However, other studies contrasted this for gender, where one found female nurses to have higher scores in EI than males (Kahraman & Hicdurmaz, 2016), and other studies found males in Radiography to have higher scores than females (McNulty et al., 2016). This is an important point to highlight that EI was shown to be sensitive to many factors like cultures. Still, most importantly, it was found to have genetic origin (van der Linden et al., 2018), which could explain the variations between genders and professions. However, one needs to bear in mind that EI changes with training, age and life experience, and so on, but this change does not come from changes in genetics but in learning new coping mechanisms either by experience or training (Rupani, 2013). As mentioned that EI and BFI were found to have a strong genetic correlation, and they could be considered identical constructs (van der Linden et al., 2018) and in this study, it was found that all EIs dimensions and all BFIs components were significantly correlated (objective 2) and this is also in line with other studies

(Bataweel, 2023). EI was also investigated to see if it can predict the thinking style. EI in this study was found to correlate significantly positively with both Rational and Experiential styles of thinking (objective 1), which is in line with other studies using the same scales for physicians (Bataweel & Ahmed, 2023) and nurses (Bataweel, 2023).

Age was found to have a positive and significant effect on GDMS-Rational of thinking where older age had higher scores (objective 4), which is in line with other studies (Delaney et al., 2015) and also, the same study did not find any significant differences between age and the GDMS-Dependent which is the same as this study (objective 4). This is interesting as it could have meant that asking for advice is essential at all ages, however more importantly and more significant to mention that the error rate was affected by this dimension where less errors were associated with higher scores of GDMS-Dependent which is extremely important in healthcare that we work as a team and depend on each other for advice and consultations. This is one of the vital errors in tasks taxonomy where the error rate is fifty percent in tasks that are knowledge-based where residents or novice healthcare provider fails to know a situation and fails to consult (Bataweel & Ahmed, 2023).

A study by Alacreu-Crespo et al. (2019) looked at the REI (RS & ES), GDMS, and BFI correlations (Alacreu-Crespo et al., 2019), using the same scales as this study, but the population was students from different backgrounds. There were similarities and differences. For example, RS in both studies significantly and positively correlated with GDMS-Rational and significantly and negatively with GDMS-Avoidant dimension, which could be expected. It is the same in this study (**Table 4**), as being rational could mean the same for all, and being more rational would encourage you to face issues logically rather than avoid them. However, there was no correlation in this study between RS and GDMS-Dependent (**Table 4**), but there was a significant negative correlation in Alacreu-Crespo et al. (2019) study. This is an interesting finding as one could interpret this as follows: during studying, rational people depended on themselves to compete and less on other people, but in the case of pharmacy staff working with patients whose lives are at stake, there were two scenarios, one that in general rational staff would depend on themselves more but when needed and to avoid errors they made a judgment to consult, and that's why in error rates staff who did not err had significantly and positively high scores in GDMS-Dependent and GDMS-Rational.

In general, decision-making styles by any scale are a good indication of how people behave in situations, and this could be beneficial to all originations for job/task selection and focused support (Bataweel & Ahmed, 2023; Alacreu-Crespo et al., 2019). For example, during stressful situations or times like a pandemic or specific task, high scores in the avoidant style were related to a higher level of cortisol (Crippen, 2018; Jones, 2020). This was confirmed in this study where GDMS-avoidant was negatively and significantly correlated with emotional intelligence components (EI-Global, EI-well-being, EI-Emotionality, and EI-self-control; **Table 2**), RS (**Table 4** and Alacreu-Crespo et al., 2019

study), and BFI (Extraversion, agreeableness, conscientiousness; **Table 3** and Alacreu-Crespo et al., 2019) and positively with Neuroticism (**Table 3** and Alacreu-Crespo et al., 2019 study). This might increase the chance of making errors (Embrey, 2005). In this study, less error was associated positively with higher scores with Agreeableness, conscientiousness, GDMS-rational, and lower scores in EI-self-control (objectives 3 and 4). Additionally, high scores in GDMS-avoidant could also lead to maladjusted behavior like drug abuse and antisocial behavior (Alacreu-Crespo et al., 2019; Crippen, 2018; Sample, 2017).

Error-making has been a subject of investigation for decades, as they cost the government billions of dollars worldwide and has serious consequences on patients and healthcare providers. No healthcare provider is immune from it. It was estimated that 10% of patients were harmed during hospitalization, 50% of these incidents were preventable, and 1 in 300 will die as a result (Alser et al., 2020). In England, 237 million medication errors cost £98 462 582 per year and 1708 deaths (Elliott et al., 2021). There have been many attempts to understand the causation of errors. One approach was to classify errors through a taxonomy, and there have been tens of them in different industries, including healthcare which had 26 different medical error taxonomies (Baziuk et al., 2014). The journey of taxonomy has not been easy as they failed to generalize one for all industries, and if they did, they would fail in its inter-rater reliability. Taxonomies started in other industries before healthcare, and they were mostly about the system and external factors, which was obvious as industries like car making, nuclear plants, and even space rockets were different from healthcare as these industries were complicated that depended on machines that are predictable unlike healthcare which is a complex adaptive system that depended on humans more and they are unpredictable (Sturmberg & Lanham, 2014). However, with time, taxonomy started considering human factors, whereas the last approach considered human cognition a vital component amounting to 60-80% of error causes (Baziuk et al., 2014). In a systematic review of healthcare errors, healthcare taxonomy was recommended to focus on judgment, decision-making, and biases (Ludolph & Schulz, 2018). Additionally, the task component was also considered a taxonomy by itself, where different tasks required certain conscious levels (Embrey, 2005). All these efforts are part of the evolution process to understand this complex and costly issue, so the approach had to be holistic and through different concepts. In the authors' opinion, based on this and other studies (Bataweel, 2023; Bataweel & Ahmed, 2023; Bataweel, 2022), it is time to include new taxonomy that includes personality traits, style of thinking, and emotional intelligence as they are the internal processes of the external stimulus and as the external environment could be the same, however how healthcare provider react to them with vary according to their internal constructs. In this study, error rates were affected by at least five dimensions that were part of the construct of the individual, and one of them was a predictor (objective 4). It can be seen that being conscious as a trait helps healthcare providers to be more responsible and approach different tasks with an appropriate level of conscious-

ness, as it was shown that for medication errors, rule-based tasks were the most common. They require a medium level of consciousness as they are done in specific steps and in specific order (Scott, 2018).

6. Conclusion

One of the most crucial findings in this study was that BFI-Conscientiousness and GDMS-Dependent were significant predictors for medical errors. BFI-Neuroticism was a significant predictor of maladaptive behaviors and a trigger for lack of self-control and psychological issues. BFI-Conscientiousness was a factor among pharmacists who recommend treatments less likely to cause pain, discomfort, or interfere with patients' daily activities. This is unsurprising as BFI-Conscientiousness is linked with a high level of thoughtfulness, discipline, good control over impulsiveness, organization, and attention to detail. They also have better emotional stability, task handling, and work performance. The author's conclusion here is that we need a taxonomy or characterization of healthcare providers' constructs as a database or genome as a trigger tool of healthcare providers' behaviors and this was in line with one of the authors' previous recommendations to enable error rate to go down.

The study had limitation of being self-reported survey and also it was long having four psychometrics tests so there was survey fatigue and incomplete cases. Future recommendation is to use fewer tests and utilize previous studies findings of associations between various psychometrics tests and choose one that suits the study needs to increase participation and reduce fatigue and incomplete surveys.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Alacreu-Crespo, A., Fuentes, M. C., Abad-Tortosa, D., Cano-Lopez, I., González, E., & Serrano, M. Á. (2019). Spanish Validation of General Decision-Making Style Scale: Sex Invariance, Sex Differences and Relationships with Personality and Coping Styles. *Judgment and Decision Making, 14,* 739-751. https://doi.org/10.1017/S1930297500005453

Alser, M., Böttcher, B., Alfaqawi, M., Jlambo, A., Abuzubaida, W., & Abu-El-Noor, N. (2020). Undergraduate Medical Students' Attitudes towards Medical Errors and Patient Safety: A Multi-Center Cross-Sectional Study in the Gaza Strip, Palestine. *BMC Medical Education, 20,* Article No. 447. https://doi.org/10.1186/s12909-020-02375-z

American Psychology Association (2022). *Personality Trait.* APA Dictionary of Psychology. https://dictionary.apa.org/personality-trait

Bataweel, A. O. (2022). The Impact of Medical Profession Type, Gender, and Years of Experience on Thinking Styles: What Are the Implications for Patient Safety? *Journal of Behavioral and Brain Science, 12,* 569-588. https://doi.org/10.4236/jbbs.2022.1211034

Bataweel, A. O. (2023). Personality Traits, Thinking Styles, and Emotional Intelligence in Nursing, towards Healthcare Providers' Characterization and Safer Patient Care. *Open Journal of Nursing, 13,* 130-166. https://doi.org/10.4236/ojn.2023.132009

Bataweel, A. O., & Ahmed, M. G. M. (2023). Exploring Emotional Intelligence and Thinking Style in Saudi Residents: A Cross-Sectional Study. *Psychology, 14,* 158-180. https://doi.org/10.4236/psych.2023.142010

Baziuk, P. A., Rivera, S. S., & Mc Leod, J. N. (2014). Towards Human Factor Taxonomy with Cognitive Generic Terms. In *Proceedings of the World Congress on Engineering* (Vol. 2).

Bru-Luna, L. M., Martí-Vilar, M., Merino-Soto, C., & Cervera-Santiago, J. L. (2021). Emotional Intelligence Measures: A Systematic Review. *Healthcare, 9,* Article No. 1696. https://doi.org/10.3390/healthcare9121696

Buckley, K., Bowman, B., Raney, E., Afolabi, T., Fettkether, R. M., Larson, S., Tennant, S., & Goodlet, K. J. (2020). Enhancing the Emotional Intelligence of Student Leaders within an Accelerated Pharmacy Program. *American Journal of Pharmaceutical Education, 84,* Article 8056. https://doi.org/10.5688/ajpe8056

Butler, L., Park, S. K., Vyas, D., Cole, J. D., Haney, J. S., Marrs, J. C., & Williams, E. (2022). Evidence and Strategies for Including Emotional Intelligence in Pharmacy Education. *American Journal of Pharmaceutical Education, 86,* Article 8674. https://doi.org/10.5688/ajpe8674

Ciarrochi, J. V., Chan, A. Y., & Caputi, P. (2000). A Critical Evaluation of the Emotional Intelligence Construct. *Personality and Individual Differences, 28,* 539-561. https://doi.org/10.1016/S0191-8869(99)00119-1

Crippen, C. M. (2018). *Effects of Occupational Stress on Decision-Making Style in Law Enforcement Officers.* Ph.D. Thesis, Walden University.

Delaney, R., Strough, J., Parker, A. M., & de Bruin, W. B. (2015). Variations in Decision-Making Profiles by Age and Gender: A Cluster-Analytic Approach. *Personality and Individual Differences, 85,* 19-24. https://doi.org/10.1016/j.paid.2015.04.034

Dewberry, C., Juanchich, M., & Narendran, S. (2013). Decision-Making Competence in Everyday Life: The Roles of General Cognitive Styles, Decision-Making Styles and Personality. *Personality and Individual Differences, 55,* 783-788. https://doi.org/10.1016/j.paid.2013.06.012

Elliott, R. A., Camacho, E., Jankovic, D., Sculpher, M. J., & Faria, R. (2021). Economic Analysis of the Prevalence and Clinical and Economic Burden of Medication Error in England. *BMJ Quality & Safety, 30,* 96-105. https://doi.org/10.1136/bmjqs-2019-010206

Embrey, D. (2005). *Understanding Human Behaviour and Error* (pp. 1-10). Human Reliability Associates.

Fossati, A., Borroni, S., Marchione, D., & Maffei, C. (2011). The Big Five Inventory (BFI): Reliability and Validity of Its Italian Translation in Three Independent Nonclinical Samples. *European Journal of Psychological Assessment, 27,* 50-58. https://doi.org/10.1027/1015-5759/a000043

Hardigan, P. C., & Cohen, S. R. (2023). Comparison of Personality Styles between Students Enrolled in Osteopathic Medical, Pharmacy, Physical Therapy, Physician Assistant, and Occupational Therapy Programs. *Journal of Osteopathic Medicine, 98,* 637-641. https://doi.org/10.1515/jom-1998-0112

Higuchi, Y., Inagaki, M., Koyama, T., Kitamura, Y., Sendo, T., Fujimori, M., Kataoka, H., Hayashibara, C., Uchitomi, Y., & Yamada, N. (2017). Emotional Intelligence and Its Effect on Pharmacist and Pharmacy Students with Autistic-Like Traits. *American Journal of Pharmaceutical Education, 81,* Article 74.

Hjalmarsson, A. K., & Dåderman, A. M. (2022). Relationship between Emotional Intelligence, Personality, and Self-Perceived Individual Work Performance: A Cross-Sectional Study on the Swedish Version of TEIQue-SF. *Current Psychology, 41,* 2558-2573. https://doi.org/10.1007/s12144-020-00753-w

Jensen, J. L., Bienkowski, A., Travers, A. H., Calder, L. A., Walker, M., Tavares, W., & Croskerry, P. (2016). A Survey to Determine Decision-Making Styles of Working Paramedics and Student Paramedics. *Canadian Journal of Emergency Medicine, 18,* 213-222. https://doi.org/10.1017/cem.2015.95

Jie, W., Poulova, P., Haider, S. A., & Sham, R. B. (2022). Impact of Internet Usage on Consumer Impulsive Buying Behavior of Agriculture Products: Moderating Role of Personality Traits and Emotional Intelligence. *Frontiers in Psychology, 13,* Article 951103. https://doi.org/10.3389/fpsyg.2022.951103

John, O. P., & Srivastava, S. (1999). The Big-Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of Personality: Theory and Research* (Vol. 2, pp. 102-138). Guilford Press.

Jones, G. T. (2020). *The Influence that Life Stress and Occupational Stress Have on Decision-Making Styles.* Ph.D. Thesis, Alliant International University.

Kahraman, N., & Hicdurmaz, D. (2016). Identifying Emotional Intelligence Skills of Turkish Clinical Nurses According to Socio-Demographic and Professional Variables. *Journal of Clinical Nursing, 25,* 1006-1015. https://doi.org/10.1111/jocn.13122

Kannengiesser, U., & Gero, J. S. (2019). Design Thinking, Fast and Slow: A Framework for Kahneman's Dual-System Theory in Design. *Design Science, 5,* E10. https://doi.org/10.1017/dsj.2019.9

Keaton, S. A. (2017). Rational-Experiential Inventory-40 (REI-40) (Pacini & Epstein, 1999). In D. L. Worthington, & G. D. Bodie (Eds.), *The Sourcebook of Listening Research: Methodology and Measures* (pp. 530-536). Wiley-Blackwell. https://doi.org/10.1002/9781119102991.ch59

Kostrzewski, A. J., Dhillon, S., Goodsman, D., Taylor, K. M., & Weinman, J. A. (2009). The Extent and Characteristics of United Kingdom Hospital Pharmacists Keeping, or Not Keeping, a Professional Development Portfolio. *International Journal of Pharmacy Practice, 17,* 299-304. https://doi.org/10.1211/ijpp.17.05.0007

Kupper, K., Krampen, D., Rammstedt, B., & Rohrmann, S. (2020). The German-Language Short Form of the Big Five Inventory for Children and Adolescents—Other-Rating Version (BFI-K KJ-F). *European Journal of Psychological Assessment, 37,* 109-117. https://doi.org/10.1027/1015-5759/a000592

Kyaw, L., Loh, K. Y., Tan, Y. Q., Wu, F. M. W., Tiong, H. Y., & Wang, Z. (2022). Personality Differences between Internal Medicine and Surgical Residents in an Asian Population. *BMC Medical Education, 22,* Article No. 650. https://doi.org/10.1186/s12909-022-03689-w

Law, E. H., Jiang, R., Kaczynski, A., Mühlbacher, A., & Pickard, A. S. (2019). The Role of Personality in Treatment-Related Outcome Preferences among Pharmacy Students. *American Journal of Pharmaceutical Education, 83,* 1512-1519. https://doi.org/10.5688/ajpe6891

Li, H., Xu, J., Chen, J., & Fan, Y. (2015). A Reliability Meta-Analysis for 44 Items Big Five Inventory: Based on the Reliability Generalization Methodology. *Advances in Psychological Science, 23,* 755-765. (In Chinese) https://doi.org/10.3724/SP.J.1042.2015.00755

Lievens, F., Ones, D. S., & Dilchert, S. (2009). Personality Scale Validities Increase Throughout Medical School. *Journal of Applied Psychology, 94,* 1514-1535. https://doi.org/10.1037/a0016137

Ludolph, R., & Schulz, P. J. (2018). Debiasing Health-Related Judgments and Decision Making: A Systematic Review. *Medical Decision Making, 38,* 3-13. https://doi.org/10.1177/0272989X17716672

Lust, E., & Moore, F. C. (2006). Emotional Intelligence Instruction in a Pharmacy Communications Course. *American Journal of Pharmaceutical Education, 70,* Article No. 6.

McNulty, J. P., Mackay, S. J., Lewis, S. J., Lane, S., & White, P. (2016). An International Study of Emotional Intelligence in First Year Radiography Students: The Relationship to Age, Gender and Culture. *Radiography, 22,* 171-176. https://doi.org/10.1016/j.radi.2015.10.008

Mikolajczak, M., Roy, E., Verstrynge, V., & Luminet, O. (2009). An Exploration of the Moderating Effect of Trait Emotional Intelligence on Memory and Attention in Neutral and Stressful Conditions. *British Journal of Psychology, 100,* 699-715. https://doi.org/10.1348/000712608X395522

Moreno-Fernandez, J., Ochoa, J. J., Lopez-Aliaga, I., Alferez, M. J. M., Gomez-Guzman, M., Lopez-Ortega, S., & Diaz-Castro, J. (2020). Lockdown, Emotional Intelligence, Academic Engagement and Burnout in Pharmacy Students during the Quarantine. *Pharmacy, 8,* Article No. 194. https://doi.org/10.3390/pharmacy8040194

Mounce, M., & Culhane, N. (2021). Utilization of an Emotional Intelligence Workshop to Enhance Student Pharmacists' Self-Awareness. *Currents in Pharmacy Teaching and Learning, 13,* 1478-1483. https://doi.org/10.1016/j.cptl.2021.09.001

Nair, D., Green, J. A., & Marra, C. A. (2021). Pharmacists of the Future: What Determines Graduates' Desire to Engage in Patient-Centred Services? *Research in Social and Administrative Pharmacy, 17,* 545-552. https://doi.org/10.1016/j.sapharm.2020.04.030

Nelson, M. H., Fierke, K. K., Sucher, B. J., & Janke, K. K. (2015). Including Emotional Intelligence in Pharmacy Curricula to Help Achieve CAPE Outcomes. *American Journal of Pharmaceutical Education, 79,* Article 48. https://doi.org/10.5688/ajpe79448

Petrides, K. V. (2009). *Technical Manual for the Trait Emotional Intelligence Questionnaires (TEIQue).* London Psychometric Laboratory.

Qualter, P., Barlow, A., & Stylianou, M. S. (2011). Investigating the Relationship between Trait and Ability Emotional Intelligence and Theory of Mind. *British Journal of Developmental Psychology, 29,* 437-454. https://doi.org/10.1348/026151010X502999

Rosenthal, M. M., Houle, S. K., Eberhart, G., & Tsuyuki, R. T. (2015). Prescribing by Pharmacists in Alberta and Its Relation to Culture and Personality Traits. *Research in Social and Administrative Pharmacy, 11,* 401-411. https://doi.org/10.1016/j.sapharm.2014.09.004

Rosenthal, M., Tsao, N. W., Tsuyuki, R. T., & Marra, C. A. (2016). Identifying Relationships between the Professional Culture of Pharmacy, Pharmacists' Personality Traits, and the Provision of Advanced Pharmacy Services. *Research in Social and Administrative Pharmacy, 12,* 56-67. https://doi.org/10.1016/j.sapharm.2015.05.003

Rupani, R. J. (2013). *Exploring the Emotional Intelligence of Obstetrics and Gynecology Medical Residents.* Ph.D. Thesis, The Chicago School of Professional Psychology.

Sample, M. (2017). *Emotional Intelligence and Decision-Making as Predictors of Antisocial Behavior.* Ph.D. Thesis, Andrews University.

Scott, H. F. (2018). *An Investigation into the Effect of the Decision-Making Process and Human Factors in Prescribing Errors within an Inpatient Mental Health Setting.* Ph.D. Thesis, University of Portsmouth.

Skrzypek, M., Turska, D., Marzec, A., & Szczygieł, K. (2020). Personality Traits and Personal Values as Retail Pharmacy Choice Predictors in the Context of Pharmaceutical

Care Requirements. *Research in Social and Administrative Pharmacy, 16,* 68-73. https://doi.org/10.1016/j.sapharm.2019.03.001

Spicer, D. P., & Sadler-Smith, E. (2005). An Examination of the General Decision Making Style Questionnaire in Two UK Samples. *Journal of Managerial Psychology, 20,* 137-149. https://doi.org/10.1108/02683940510579777

Sturmberg, J., & Lanham, H. J. (2014). Understanding Health Care Delivery as a Complex System: Achieving Best Possible Health Outcomes for Individuals and Communities by Focusing on Interdependencies. *Journal of Evaluation in Clinical Practice, 20,* 1005-1009. https://doi.org/10.1111/jep.12142

Süral, I., Griffiths, M. D., Kircaburun, K., & Emirtekin, E. (2019). Trait Emotional Intelligence and Problematic Social Media Use among Adults: The Mediating Role of Social Media Use Motives. *International Journal of Mental Health and Addiction, 17,* 336-345. https://doi.org/10.1007/s11469-018-0022-6

Tyler, L. S. (2015). Emotional Intelligence: Not Just for Leaders. *American Journal of Health-System Pharmacy, 72,* 1849-1849. https://doi.org/10.2146/ajhp150750

van der Linden, D., Schermer, J.A., De Zeeuw, E., Dunkel, C., Pekaar, K., Bakker, A., Vernon, P., & Petridis, K. (2018). Overlap between the General Factor of Personality and Trait Emotional Intelligence: A Genetic Correlation Study. *Behavior Genetics, 48,* 147-154. https://doi.org/10.1007/s10519-017-9885-8

Waddell, J. J., Nissen, L. M., Hale, A. R., & Kyle, G. (2020). Using the Big Five Inventory to Evaluate the Personality Traits of Australian Pharmacists. *The International Journal of Pharmacy Practice, 28,* 275-281. https://doi.org/10.1111/ijpp.12597

Williams, C. R., McLaughlin, J. E., Cox, W. C., & Shepherd, G. (2016). Relationship between Student Pharmacist Decision Making Preferences and Experiential Learning. *American Journal of Pharmaceutical Education, 80,* 119-119. https://doi.org/10.5688/ajpe807119

Zell, E., & Lesick, T. L. (2022). Big Five Personality Traits and Performance: A Quantitative Synthesis of 50+ Meta-Analyses. *Journal of Personality, 90,* 559-573. https://doi.org/10.1111/jopy.12683