

## Chapter #30

### ATTITUDES TOWARD LEARNING PREFERENCE: THE RELATION WITH PERSONALITY

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#### ABSTRACT

In this study, 106 women ( $M$  age = 23 years) completed a series of questionnaires online assessing personality traits and facets (subscales), learning preferences (Activist, Reflector, Theorist, Pragmatist), and attitudes toward learning preferences. The vast majority of participants in this study believed that students are more likely to have academic success when teaching and learning strategies match their learning style. However, the results of several hierarchical regression analyses found that a large proportion of variance in learning style was accounted for by personality traits or facets. For example, 43% of the variance in the Activist Learning Style was accounted for by higher scores on Extraversion, and lower scores on Conscientiousness and Negative Emotionality. When personality facet scores were used as predictors, the proportion of variance jumped to 55%. Similarly, between 27-31% of the variance in Reflector, Theorist and Pragmatist Learning Style was accounted for by personality facet scores alone. The results are discussed in terms of learning style attitudes and myths pervasive in the literature, and the need for evidence-based practices.

*Keywords:* personality, learning styles, attitudes.

#### 1. INTRODUCTION

The concept of learning styles has been around for some time and has garnered much attention in the literature over the past few decades. There are numerous measures and definitions of learning styles (see Cassidy, 2004 for a review) yet there is no consensus on what learning styles are, or how they should be assessed. Regardless of this lack of a cohesive model, many educational settings encourage students to assess their learning style, in hopes of assisting them to achieve success in their academic studies. Unfortunately, there is little evidence to support the claim that learning styles (however defined) are related to academic outcomes (Pashler, McDaniel, Rohrer, & Bjork, 2008). Furthermore, Pashler et al. (2008) argue that although there is a large number of studies on learning styles, few use experimental designs with random assignment. As well, the literature generally does not support the notion that teaching styles have to “mesh” with learning styles. Yet, this belief seems ubiquitous in the general public. Despite a large body of evidence that learning styles are unrelated to educational outcomes, many people still believe that information is best learned when it is presented in a way that matches their style.

#### 2. BACKGROUND

In a classic study, Jackson and Lawty-Jones (1996) found that learning styles (more accurately called learning preferences) can be explained in terms of personality traits. In other words, learning preferences are a subset of personality types. They conducted a factor

analysis with the items from Eysenck and Eysenck's (1975) Personality Questionnaire and the items from Honey and Mumford's (1992) Learning Styles Questionnaire. They found considerable overlap between the items and argued that learning preferences could be explained in terms of personality traits. The Eysenck Personality Questionnaire, however, only measured Extraversion, Neuroticism and Psychoticism. In recent years, newer and updated measures of personality – measuring all “Big Five” traits (Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness) and their subscales or facets – have become available. Thus, there is a need to re-evaluate the relation between learning preferences and personality traits and facets using the newer measures.

### **2.1. Purpose of the present study**

The purpose of this study was to replicate and update the literature by examining the relation between all Big Five personality traits and facets (Soto & John, 2017), learning preference (Activist, Reflector, Theorist, Pragmatist; Honey & Mumford, 1992), and attitudes toward learning preferences.

## **3. METHOD**

### **3.1. Participants**

The sample consisted of 106 women ( $M$  age = 23;  $SD$  = 7.6, range = 19-54 years) who completed an online survey. The majority of women were university students who were made aware of the study on SONA, an online recruiting platform. However, members of the general public could access the survey online and participate. In terms of education, 14.2% of the sample had a high school diploma, 70.8% had some university or community college courses, 14.2% had a university or community college degree, and .9% had some graduate studies training. In terms of marital status, 85% of the women were single; 12% were married or common law; and 3% were divorced. The majority of the sample was Caucasian (92% White or Caucasian, 3% Asian, 1% Black or African Canadian; 4% Other). As an incentive to complete the survey, participants could choose to be entered into a draw for a \$50 Amazon gift card. As well, students attending university could earn a bonus point toward their final grade in their course.

### **3.2. Measures**

#### **3.2.1. Demographic questionnaire**

Participants completed a brief demographic measure that assessed age, gender, marital status, education level, and race/ethnicity.

#### **3.2.2. The big five inventory – 2 (BFI-2; Soto & John, 2017)**

This inventory assesses personality in terms of five common universal traits or factors. As well, each factor is comprised of three subscale scores known as facets. The scale provides scores for Extraversion (with facets Sociability, Assertiveness, Energy Level), Agreeableness (with facets Compassion, Respectfulness, Trust), Conscientiousness (with facets Organization, Productiveness, Responsibility), Negative Emotionality (with facets Anxiety, Depression, Emotional Volatility), and Open-mindedness (with facets Intellectual Curiosity, Aesthetic Sensitivity, Creative Imagination). In the present study, the measure had excellent internal reliability (Extraversion Cronbach's  $\alpha$  = .86; Agreeableness = .78; Conscientiousness = .85; Negative Emotionality = .90; Open-mindedness = .82).

**3.2.3. Learning styles questionnaire (Honey & Mumford, 1992)**

This questionnaire was chosen to assess learning preferences in order to compare the results with those of Jackson and Lawty-Jones (1996). It consists of 80 items that assess preferred learning preferences in four domains. The Activist style characterizes people who like to jump right into learning activities and enjoys group problem-solving. They are often leaders in discussion groups. The Reflector style characterizes people who are introverted and like to give careful thought to their approach. They like to observe and gather evidence before drawing conclusions. Theorists are analytical and logical. They like to test theories and ask the big questions. Finally, Pragmatists like concrete, real world problems with hands-on practical solutions. This measure is commonly used in research. However, in the present study, the internal reliability was questionable (Activist Cronbach’s  $\alpha = .75$ ; Reflector = .63; Theorist = .58; Pragmatist = .68).

**3.2.4. Attitudes toward learning preferences**

Participants completed 6 questions (designed for this study) to assess their attitudes toward learning preferences. For each item, they rated their response on a scale from 1 = strongly disagree to 5 = strongly agree.

**3.3. Procedure**

Participants had access to the survey via their smart phone, tablet or computer, by accessing a link to Qualtrics, an online survey tool. The survey began with a description of the study that included a consent form. Once participants provided consent, the survey began with the demographic measure, and then the remaining measures were presented in random order. The survey took about 30 minutes to complete.

**4. RESULTS**

**4.1. Attitudes toward learning preferences**

See Table 1 for responses to these items. The majority of participants believed that there should be a match between teaching and learning styles.

*Table 1.  
Attitudes toward Learning Preferences by Response Percentages.*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Students are more likely to achieve academic success when their learning style matches the instructor’s teaching style.	0	2.8	2.8	32.1	62.3
Students learn best when they know what their learning style is and use strategies to match their style.	0	0	2.8	33.0	64.2

Information is best learned when it is presented in a way that matches the student’s learning style.	.9	0	1.9	36.8	60.4
If students use study strategies that match their learning style, they are more likely to have academic success.	.9	.9	1.9	33.0	63.2
Learning style matters more than motivation when learning difficult information.	2.8	41.5	21.7	26.4	7.5
Learning style matters more than effort and persistence when learning difficult concepts.	6.6	50.0	16.0	18.9	8.5

**4.2. Correlations among personality traits and learning preferences**

The correlations among personality traits and learning preferences are presented in Table 2. Extraversion correlated positively with Activist and Pragmatist styles, and negatively with the Reflector style. Agreeableness correlated positively with the Reflector style and negatively with the Pragmatist style. Conscientiousness was positively related to the Reflector and Theorist styles, and negatively to the Activist style. Negative Emotionality correlated negatively with the Activist style, and Open-mindedness did not correlate with any style.

*Table 2.  
Correlations Among Personality Traits and Learning Preferences.*

	E	A	C	N	O
Activist	.492**	-.119	-.254**	-.282**	-.004
Reflector	-.199*	.210*	.351**	.120	-.028
Theorist	.097	-.055	.346**	.038	.002
Pragmatist	.229*	-.213*	.042	-.006	-.087

\*p<.05; \*\*p<.01

E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Negative Emotionality; O=Open-mindedness

**4.3. Hierarchical regression analyses**

A series of hierarchical regression analyses were conducted predicting each of the four learning preferences. In each case, age was added on the first step for control for its effects. On the second step, the 5 personality factor scores were added. Similarly, the regressions were also conducted substituting the personality factor scores with the facets. In all regression analyses, Tolerance and VIF were well within acceptable levels (Keith, 2006).

#### 4.3.1. The activist learning style

The overall model was statistically significant and accounted for 43% of the variance in Activist Learning Styles ( $F_{(6,99)} = 12.56, p < .001$ , multiple  $R = .66$ ). Age was not a statistically significant predictor, but the personality factors produced a statistically significant change in the model ( $R^2$  change = .41,  $F_{inc(5,99)} = 14.30, p < .001$ ). Significant predictors were Extraversion ( $\beta = .52$ ), Conscientiousness ( $\beta = -.45$ ) and Negative Emotionality ( $\beta = -.20$ ). The adjusted  $R^2$  value of .40 in the overall model indicates that a large proportion of the variability in the Activist Learning Style was predicted by the personality traits, namely higher scores on Extraversion and lower scores on Conscientiousness and Negative Emotionality.

When facet scores were substituted for the personality factor scores in a separate analysis, the proportion of variance accounted for in Activist Learning Style jumped to 55% ( $F_{(16,89)} = 6.68, p < .001$ , multiple  $R = .74$ ). Significant predictors were Respectfulness ( $\beta = -.28$ ) Trust ( $\beta = .20$ ), and Responsibility ( $\beta = -.22$ ). The adjusted  $R^2$  value of .46 in the overall model indicates that a large proportion of the variability in the Activist Learning Style was predicted by lower scores on Respectfulness and Responsibility, and higher scores on Trust.

#### 4.3.2. The reflector learning style

The overall model was statistically significant and accounted for 23% of the variance in Reflector Learning Styles ( $F_{(6,99)} = 5.00, p < .001$ , multiple  $R = .48$ ). Age was not a statistically significant predictor, but the personality factors were. Significant predictors were lower Extraversion ( $\beta = -.22$ ), and higher Conscientiousness ( $\beta = .44$ ).

When facet scores were substituted for the personality factor scores in a separate analysis, the proportion of variance accounted for in Reflector Learning Style increased to 27% ( $F_{(16,89)} = 2.10, p = .015$ , multiple  $R = .52$ ). Significant predictors were higher scores on Organization ( $\beta = .29$ ) and Responsibility ( $\beta = .30$ ).

#### 4.3.3. The theorist learning style

The overall model was statistically significant and accounted for 24% of the variance in Theorist Learning Styles ( $F_{(6,99)} = 5.27, p < .001$ , multiple  $R = .49$ ). Age was not a statistically significant predictor, but the personality factors were. Significant predictors were lower Agreeableness ( $\beta = -.41$ ), and higher Conscientiousness ( $\beta = .63$ ).

When facet scores were substituted for the personality factor scores in a separate analysis, the proportion of variance accounted for in Theorist Learning Style increased to 31% ( $F_{(16,89)} = 2.45, p = .004$ , multiple  $R = .55$ ). Significant predictors were lower Compassion ( $\beta = -.31$ ), and higher Organization ( $\beta = .26$ ).

#### 4.3.4. The pragmatist learning style

The overall model was statistically significant and accounted for 13% of the variance in Pragmatist Learning Styles ( $F_{(6,99)} = 2.55, p = .025$ , multiple  $R = .37$ ). Significant predictors were Extraversion ( $\beta = .23$ ) and Agreeableness ( $\beta = -.32$ ).

When facet scores were substituted for the personality factor scores in a separate analysis, the proportion of variance accounted for in Pragmatist Learning Style jumped to 28% ( $F_{(16,89)} = 2.13, p = .013$ , multiple  $R = .53$ ). Significant predictors were lower Respectfulness ( $\beta = -.40$ ) and lower Aesthetic Sensitivity ( $\beta = -.34$ ).

## 5. DISCUSSION

Over 90% of women in this study believed that students are more likely to have academic success when teaching and learning strategies match their learning style or preference, despite vast amounts of literature debunking this myth (Pashler et al., 2008). Thus, this attitude is still being perpetuated in educational settings. The downside of this belief is that it may hinder students from achieving success if it becomes a self-fulfilling prophecy. If students believe their instructor's teaching style does not match their learning style, they may be less inclined to engage with the material. This lack of engagement, in turn, may lead to lower grades, reinforcing their original belief. As such, there is a need for evidence-based practice. Educators should address the learning strategies and outcomes with their students by providing them with empirical evidence from peer-reviewed studies. This recommendation is useful as educators and students are entering the "new normal" of COVID-19 instruction. Online teaching and learning can be quite effective (Nguyen, 2015), yet, some students are expressing dismay that somehow, they are receiving an inferior education. It is also important to note, that many participants in the current study recognized that motivation, persistence, and effort were more important factors than learning style when learning difficult concepts.

Another purpose of the current study was to examine the relation between learning preference and all Big Five personality traits and facets. The Activist style is characteristic of someone who likes to get to work and enjoys group problem-solving. It is not surprising, then, that the personality factor of Extraversion accounted for the largest proportion of variance in this type. Activists also scored lower on negative emotionality, making them calm and well-balanced individuals, but their lower scores on Conscientiousness means they need to pay more attention to details. The Reflector style characterizes introverts who carefully approach their work by observing and gathering evidence before proceeding. In the current study, the lower scores on the personality factors of Extraversion (i.e., introverts) and higher scores on Conscientiousness lend validity to this description. Theorists, on the other hand, are described as analytic and logical; they scored higher on Conscientiousness, but lower on Agreeableness in the current study. As well, Pragmatists, who like concrete, hands-on solutions, scored higher on Extraversion, but lower on Agreeableness.

The results of this study support the findings of previous research. Jackson and Lawty-Jones (1996) examined the same learning styles, but only measured the personality traits of Extraversion, Neuroticism and Psychoticism. In their study, Extraversion correlated positively with the Activist and Pragmatist styles, and negatively with the Reflector style; thus, it was the identical pattern to the current study. However, Neuroticism did not correlate with any learning style in their study, whereas it correlated negatively with the Activist style in the current research. Komarraju, Karau, Schmeck, & Avdic (2011) also examined the relation between personality traits and learning styles, using a different measure of learning processes (reflective synthesis analysis, reflective elaborative processing, agentic methodological study, and agentic fact retention). Interestingly, although they used a different measure of learning styles, Conscientiousness and Agreeableness correlated positively with each style. It appears that regardless of learning style, Conscientiousness is a common attribute. One could argue that paying attention to details is important for any learning outcome.

The results of this study found that a large amount of variance in learning preferences was accounted for by personality scores. Notably, 43% of the variance in the Activist Learning style was accounted for by higher scores on Extraversion, and lower scores on Conscientiousness and Negative Emotionality (i.e., neuroticism). Thus, this study extended

the work by Jackson and Lawty-Jones (1996) by underscoring the importance of all 5 personality factors in relation to learning preferences. Komarraju and colleagues (2011) also used all five personality factor scores in their research, and although they used a different measure of learning styles, they found that 9-30% of the variance in learning styles was explained by personality factors. As well, when personality and learning styles were used to predict self-reported GPA in their study, most of the variance (14%) was accounted for by personality scores, and very little (3%) by learning styles.

A unique contribution of this study was the use of personality facet or subscale scores. When these subscales were substituted in the regression, there was an increase in the proportion of variance accounted for in all four learning styles. Indeed, 55% of the variance in the Activist learning style was accounted for by lower scores on Respectfulness and Responsibility, and higher scores on Trust. Jackson and Lawty-Jones (1996) argued that learning preferences were a subset of personality types. The large proportion of variance in the Activist learning style lends credence to this claim. However, personality facets scores accounted for less variance in the other styles (27%-31%). Although this proportion is still quite large, there is still a significant proportion of unexplained variance. Von Stumm and Furnham (2012) also found overlap between personality traits and learning styles (measured as learning that is surface, deep, and achieving or grade oriented). However, they argued that personality and learning styles should not be treated as redundant, as there is still a large proportion of unaccounted variance.

## **6. FUTURE RESEARCH DIRECTIONS**

Future studies need to further examine the relation between learning preference and personality. In the current study, the internal reliability of the learning preferences measures was less than optimal. Future studies need to examine measures with good reliability and validity. For a construct that is commonly used (Cassidy, 2004), there appears to be a lack of reliable measures to assess preferences. As well, future research should examine other predictor variables that may contribute variance. The idea that learning preferences are a subset of personality styles (Jackson & Lawty-Jones, 1996) should also be examined further. Finally, this study only examined the relation in women. A study of men and transgender men and women is warranted.

## **7. CONCLUSION**

Nancekivell, Shah and Gelman (2020) called learning styles "... one of the most pervasive myths about cognition" (p. 221). Although there is little evidence to support the claim that students learn best when the method of instruction matches their learning style (Pashler et al., 2008), many educators endorse this myth, especially for younger learners (Nancekivell et al., 2020). There is a need for evidence-based practice in the learning styles/preferences literature. Educators and educational institutions need to stop perpetuating this myth as it may actually have negative consequences – students who think their instructors' method of teaching does not reflect their learning style may feel unnecessarily stressed, anxious, and disadvantaged.

In this study, the majority of respondents believed that academic success was more likely when teaching and learning styles were matched, yet empirical studies largely refute this claim (Pashler et al., 2008). Furthermore, personality accounted for a large proportion of variance in learning style scores.

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