



Do Personality Traits Impact Beginning Teacher Performance and Persistence?

In this policy brief, we assess the connections between first-year teachers' personality traits and four outcomes of interest—the types of schools teachers work in, the performance of teachers, as measured by value-added and evaluation ratings, and the persistence of teachers in North Carolina's public schools. We find that *openness to experience* significantly predicts working in high-poverty, high-minority, and low-performing schools. *Conscientiousness* significantly predicts higher value-added, higher evaluation ratings, and higher rates of retention in North Carolina public schools. Overall, the evidence suggests that:

1. *Teacher preparation programs and schools/districts may want to use personality trait measures as a way to improve their admissions and hiring decisions.*
2. *Continued research is needed to replicate this work—with additional samples and with data taken prior to admissions/hiring decisions—and to better understand the relationships between personality traits and teaching practices.*

Introduction

Given the sizable impacts of teachers on student academic outcomes and the significant variation in effectiveness across teachers, there are strong incentives for states and school districts to enact policies that improve the quality of their teacher workforce. Towards this end, one approach is to recruit and admit higher-quality teaching candidates into teacher preparation programs (TPPs) and to recruit and hire more effective and persistent applicants into teaching positions. For such efforts to be effective, TPPs and school districts need to better understand the pre-TPP or pre-teaching characteristics that significantly predict teacher performance and/or persistence. To date, research findings indicate that widely available characteristics, such as academic ability measures (SAT scores, grade point averages, licensure exam scores) or teacher preparation

type, explain only a small portion of the variance in teacher effectiveness. However, building from seminal research in psychology and economics highlighting the importance of personality traits to academic, workplace, and health outcomes, nascent research in education shows that teachers' personality traits significantly impact their performance and persistence. Personality traits, paired with academic ability indicators, may present a way to predict more of the variation in teacher performance. Therefore, in this policy brief, we examine the relationships between the personality traits of first-year teachers in North Carolina public schools (NCPS) and four outcomes of interest—the types of schools teachers work in, the performance of teachers, as measured by value-added and evaluation ratings, and the persistence of teachers in the state's public schools.

Background

We employ the five-factor model (FFM) of personality to assess the relationships between personality traits and first-year teacher outcomes. The FFM is a valid and empirically-based personality trait framework that identifies five broad domains of human personality; within each domain, the FFM also identifies six additional sub-domains (facets). These “Big Five” personality domains are *extraversion* (outgoing and energetic versus solitary and reserved), *agreeableness* (friendly and compassionate versus analytical and detached), *conscientiousness* (hard-working and organized versus careless and unreliable), *neuroticism* (sensitive and nervous versus calm and secure), and *openness to experience* (curious and imaginative versus conventional and cautious).¹

To measure these personality traits we administered the M5-120 personality trait assessment to first-year teachers in the spring of the 2013-14 school year. This instrument is a 120 item personality trait survey that provides scores for each of the Big Five personality trait domains and each of

the 30 personality trait facets.² These scores are normed, by age and gender, against the full sample of individuals (worldwide) who have completed the M5-120 assessment.³ Overall, 1,790 first-year teachers completed the M5-120 assessment. The top panel of Table 1 displays the Big Five personality trait domain scores, standardized against the population of worldwide values, for first-year teacher respondents. On average, teachers in our sample are more extraverted, agreeable, and conscientious and less neurotic and open to experiences than the full population of M5-120 completers.

To assess the relationships between personality traits and first-year teacher outcomes we estimate models including (1) all of the Big Five personality trait domains and (2) the set of facets for each Big Five personality trait domain (separately). These analyses report the overall relationship between personality trait domains and teacher outcomes and whether any facets of a domain are associated with teacher outcomes. For further details on our data and methods please see the sections below.

Table 1: Teacher Personality Traits

	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness to Experience
Mean Values in First-Year Teacher Sample	0.453 (0.753)	0.568 (0.775)	0.763 (0.795)	-0.590 (0.834)	-0.386 (0.909)
Personality Facets	Friendliness Gregariousness Assertiveness Activity Level Excitement-Seeking Cheerfulness	Trust Morality Altruism Cooperation Modesty Sympathy	Self-Efficacy Orderliness Dutifulness Achievement-Seeking Self-Discipline Cautiousness	Anxiety Anger Depression Self-Consciousness Impulsiveness Vulnerability	Imagination Artistic Interests Emotionality Adventurousness Intellect Liberalism

Note: This table displays mean values for each of the Big 5 personality domains in our sample of first-year teachers and lists the personality facets for each of the Big 5 personality domains.

¹ For additional details on the FFM—both the Big Five personality domains and their related facets—please see http://en.wikipedia.org/wiki/Big_Five_personality_traits. The facets are listed in the bottom panel of Table 1.

² To complete the 120 item personality trait assessment and receive an interpretive personality report, please see the following: <http://www.personal.psu.edu/~j5j/IPIP/ipipneo120.htm>

³ We sent the M5-120 assessment to 6,421 first-year teachers and had a response rate of 27.88 percent. To investigate whether survey respondents differed from non-respondents we compared the value-added, evaluation ratings, and retention rates of teachers in each category. Overall (1) respondents had value-added estimates and retention rates comparable to non-respondents and (2) respondents had significantly higher evaluation ratings for two out of five evaluation standards—Content Knowledge (3.05 to 3.02) and Reflecting on Practice (3.08 to 3.04).

Do Personality Traits Predict Working in High-Need Schools?

At both the federal and state level, there is broad interest in ensuring that highly-qualified/effective teachers are equitably distributed to high-need schools. Therefore, to advance our understanding of what predicts teaching in such environments, we assessed the extent to which the personality traits of first-year teachers are associated with their employment in high-poverty, high-minority, or low-performing schools. Here, we acknowledge that the personality traits predicting employment in these high-need schools may differ from those that predict teacher performance and retention. To define these high-need schools we used school-level data from the

2012–13 academic year and identified schools in the top quintile of students eligible for subsidized school meals, the top quintile of racial and ethnic minority students, and the bottom quintile of standardized test performance (performance composite). With these indicators we estimated logistic regression models, controlling for teacher personality traits and teacher demographics.

The top panel of Table 2 shows that, across outcomes, first-year teachers with higher levels of *openness to experience* were significantly more likely to work in high-need school environments.⁴ For example, a first-year teacher with an *openness* value two standard deviations below the mean had a 17 percent predicted probability of working in a high-poverty school; conversely, a first-year teacher with an *openness* value two standard deviations above the mean had a 36 percent predicted probability of working in a

Table 2: Teacher Personality Traits and Employment in High-Need Schools

Big 5 Personality Domains	High-Poverty Schools	High-Minority Schools	Low-Performing Schools
Extraversion	0.989 (0.907)	0.982 (0.843)	0.876 (0.164)
Agreeableness	0.933 (0.445)	0.917 (0.295)	0.908 (0.262)
Conscientiousness	0.948 (0.503)	0.944 (0.447)	0.949 (0.504)
Neuroticism	0.963 (0.672)	0.906 (0.261)	0.902 (0.228)
Openness to Experience	1.288** (0.001)	1.278** (0.001)	1.259** (0.003)
Personality Facets with Significant Results	Altruism (+) Modesty (-) Dutifulness (-) Imagination (+)	Friendliness (-) Altruism (+) Dutifulness (-) Cautiousness (+) Imagination (+) Intellect (+) Liberalism (+)	Trust (-) Altruism (+) Dutifulness (-) Imagination (+)

Note: Results in the top panel report odds ratios with p-values in parentheses. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Results in the bottom panel detail which personality facets significantly predict the outcome of interest. (+) indicates positive associations with the outcome of interest; (-) indicates negative associations with the outcome of interest.

⁴ As a complement to these models, which indicate whether personality traits predict working in the highest-need school environments, we also estimated models with continuous outcome measures (percentage subsidized meals, percentage racial and ethnic minority, and performance composite) to determine whether significant relationships exist across the entire distribution of these school characteristics. These results indicate that *openness to experience* significantly predicts working in schools with more racial and ethnic minority students and lower performance composite values.

high-poverty school. At the level of individual personality facets, the bottom panel of Table 2 indicates that altruism, imagination, and dutifulness (negative) significantly predicted employment across the three categories of high-need schools; intellect and liberalism significantly predicted teaching in high-minority schools. Overall, these results detail predictors for employment in high-need school environments for beginning teachers; from an equity standpoint, a key next question is whether these measures also predict teacher performance and persistence.

Do Personality Traits Predict Teachers' Value-Added to Student Achievement?

To assess whether personality traits predict first-year teachers' value-added to student achievement, we used EVAAS estimates—the official measure of teacher effectiveness for teacher evaluation in North Carolina—provided by the SAS Institute. These estimates are naturally expressed in normal curve equivalency units. To ease interpretation we standardized (among all teachers with EVAAS estimates) EVAAS estimates within subject or within subject-grade for End-of-Grade exams, so that results express the relationship between personality traits and a percentage of a standard deviation in teacher effectiveness. We combined EVAAS estimates across all End-of-Grade, End-of-Course, and final exams and estimated models controlling for personality traits and school characteristics.

The top panel of Table 3 indicates that *conscientiousness* is positively associated with teacher EVAAS estimates and that *agreeableness* is negatively associated with teacher EVAAS estimates. On average, a one standard deviation increase in *conscientiousness* leads to an eight percent of a standard deviation increase in teacher effectiveness; a one standard deviation increase in *agreeableness* leads to an eleven percent of a standard deviation decrease in teacher effectiveness. To put these differences into perspective, we note that, on average, the difference between first and second-year teachers is 23 percent of a standard deviation in teacher effectiveness; the difference between first-year and mid-career teachers (11 to 15 years of experience) is 36 percent of a standard deviation in teacher effectiveness. At the level of individual personality facets, the bottom panel of Table 3 shows that self-efficacy positively predicts teacher value-added while modesty, dutifulness, and impulsiveness are negatively associated with teacher value-added.

Table 3: Teacher Personality Traits and Value-Added Effectiveness

Big 5 Personality Domains	Standardized EVAAS Results
Extraversion	-0.007 (0.051)
Agreeableness	-0.114** (0.042)
Conscientiousness	0.083+ (0.045)
Neuroticism	0.014 (0.046)
Openness to Experience	0.010 (0.039)
Personality Facets with Significant Results	Modesty (-) Self-Efficacy (+) Dutifulness (-) Impulsiveness (-)

Note: Results in the top panel report coefficients as a percentage of a standard deviation in teacher effectiveness with standard errors in parentheses. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Results in the bottom panel detail which personality facets significantly predict teacher EVAAS estimates. (+) indicates positive associations with the outcome of interest; (-) indicates negative associations with the outcome of interest.

Do Personality Traits Predict Teachers' Evaluation Ratings?

Since value-added estimates apply only to a minority of teachers and do not provide information on specific aspects of teaching quality, we estimated the relationships between personality traits and first-year teachers' evaluation ratings on the five North Carolina Professional Teaching Standards (NCPTS) directly assessed by school administrators: Leadership (Standard 1), Classroom Environment (Standard 2), Content Knowledge (Standard 3), Facilitating Student Learning (Standard 4), and Reflecting on Practice (Standard 5). School administrators rate teachers at one of five performance levels—not demonstrated, developing, proficient, advanced, and distinguished—so for these analyses we estimated ordered logistic regression models controlling for teacher personality traits and school characteristics.

Table 4: Teacher Personality Traits and Evaluation Ratings

Big 5 Personality Domains	Leadership	Classroom Environment	Content Knowledge	Facilitating Student Learning	Reflecting on Practice
Extraversion	1.073 (0.473)	0.987 (0.878)	0.948 (0.562)	0.963 (0.687)	0.851+ (0.087)
Agreeableness	0.933 (0.420)	0.951 (0.536)	0.874 (0.113)	0.918 (0.318)	1.040 (0.662)
Conscientiousness	1.264** (0.006)	1.292** (0.002)	1.284** (0.004)	1.262** (0.006)	1.183+ (0.063)
Neuroticism	0.982 (0.834)	0.911 (0.243)	0.988 (0.893)	0.942 (0.484)	0.900 (0.228)
Openness to Experience	0.910 (0.234)	1.024 (0.727)	1.165* (0.033)	1.045 (0.525)	1.018 (0.814)
Personality Facets with Significant Results	Assertiveness (+) Self-efficacy (+) Ach. Seeking (+) Imagination (-)	Assertiveness (+) Trust (+) Cooperation (+) Self-efficacy (+) Cautiousness (+) Anger (-) Imagination (-)	Assertiveness (+) Self-efficacy (+) Cautiousness (+)	Assertiveness (+) Self-efficacy (+) Ach. Seeking (+) Cautiousness (+) Imagination (-) Intellect (+)	Excitement Seeking (-) Self-efficacy (+) Cautiousness (+) Imagination (-) Intellect (+)

Note: Results in the top panel present odds ratios for higher evaluation ratings with p-values in parentheses. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Results in the bottom panel detail which personality facets significantly predict teacher evaluation ratings. (+) indicates positive associations with the outcome of interest; (-) indicates negative associations with the outcome of interest.

The top panel of Table 4 shows that *conscientiousness* significantly predicts higher evaluation ratings across all five NCPTS. For Facilitating Student Learning (Standard 4), a first-year teacher with a *conscientiousness* value two standard deviations below the mean had a 18 percent predicted probability for rating at developing and an eight percent predicted probability for rating at advanced; conversely, a first-year teacher with a *conscientiousness* value two standard deviations above the mean had an eight percent predicted probability for rating at developing and an 18 percent predicted probability for rating at advanced. Additionally, *extraversion* significantly predicts lower evaluation ratings for Reflecting on Practice and *openness to experience* significantly predicts higher evaluation ratings

for Content Knowledge. From an equity standpoint, this *openness* result is important, since *openness* also significantly predicted working in high-need schools. Results in the bottom panel of Table 4 detail the individual personality facets that significantly predict teacher evaluation ratings. Overall, self-efficacy positively predicts all five NCPTS, assertiveness and cautiousness positively predict four NCPTS, achievement-seeking and intellect positively predict two NCPTS, and imagination negatively predicts four NCPTS.

Do Personality Traits Predict Teachers' Persistence?

Since teacher attrition has adverse effects on school performance and is financially costly for districts and schools, we assessed the relationship between first-year teacher personality traits and two measures of persistence—returning to any NCPS or the same NCPS in the 2014–15 school year. With these measures, we estimated logistic regression models controlling for teacher personality traits and school characteristics.

Overall, the top panel of Table 5 indicates that *conscientiousness* significantly predicts returning to NCPS in the 2014–15 academic year. First-year teachers with a *conscientiousness* value two standard deviations below the mean had an 80 percent predicted probability for returning to NCPS while those with a *conscientiousness* value two standard deviations above the mean had a 91 percent predicted probability for returning. At the level of individual personality facets, the bottom panel of Table 5 indicates that cautiousness (positive) and imagination and adventurousness (negative) significantly predict returning to NCPS; for school-level persistence, cautiousness, cheerfulness, trust, achievement-seeking, and self-consciousness positively predict retention while imagination and vulnerability negatively predict retention.

Discussion

In this policy brief we examined the relationships between the personality traits of first-year teachers and four outcomes of interest—teachers working in high-need schools, teacher performance, as measured by value-added and evaluation ratings, and teacher persistence. Overall, we found that *openness to experience* significantly predicts employment in high-poverty, high-minority, and low-performing schools and that *conscientiousness* significantly predicts teacher value-added, teacher evaluation ratings, and teacher persistence. These *conscientiousness* results are consistent with a rich history of research in psychology documenting the connections between conscientiousness-related traits and measures of job performance. Continued research is needed to replicate this work—with additional samples and with data taken prior to admissions/hiring decisions—and to better understand the relationships between personality traits and teaching practices.

Given the importance of teachers to student academic outcomes, these findings, in conjunction with other studies examining the relationship between teacher personality traits and teacher outcomes, suggest that TPPs and

Table 5: Teacher Personality Traits and Persistence

Big 5 Personality Domains	Retention in NCPS	Retention in the Same School
Extraversion	1.076 (0.530)	0.960 (0.636)
Agreeableness	0.971 (0.768)	1.019 (0.802)
Conscientiousness	1.249* (0.036)	1.127 (0.134)
Neuroticism	1.104 (0.371)	0.892 (0.158)
Openness to Experience	0.976 (0.799)	0.977 (0.727)
Personality Facets with Significant Results	Cautiousness (+) Imagination (-) Adventurousness (-)	Cheerfulness (+) Trust (+) Achievement Seeking (+) Cautiousness (+) Self-Consciousness (+) Vulnerability (-) Imagination (-)

Note: Results in the top panel present odds ratios for persistence with *p*-values in parentheses. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels. Results in the bottom panel detail which personality facets significantly predict teacher persistence. (+) indicates positive associations with the outcome of interest; (-) indicates negative associations with the outcome of interest.

schools/districts may want to start using personality trait measures as a way to improve their admissions and hiring decisions. Here, we note a few guidelines and cautions for this process. First, personality traits should be one of a number of *valid* indicators that inform admissions and hiring decisions—while personality traits matter, consequential decisions are better-off when based on multiple indicators. Second, such consequential decisions are also improved when measures significantly predict multiple outcomes of interest. In the case of our findings, *conscientiousness* significantly predicted value-added, evaluation ratings, and persistence; this consistency in results provides more compelling evidence that a measure should be included in consequential decision-making. Finally, we acknowledge that first-year teachers answered these personality trait items in a low-stakes setting after the start of the school-year; teacher responses and their subsequent relationships with outcomes may differ in high-stakes environments and before acquiring teaching experience.

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