



Conscientious Learners, Open Minds: Big Five Personality Traits, Adult Education Participation, and Self-Directed Work Behavior Among Korean Adults

Sun Joo Yoo^{1,2*} 

¹ Design for Learning Lab (Independent research institute), Director, SOUTH KOREA

² Seowon University, Instructor, SOUTH KOREA

* Correspondence: sunjooyoo@gmail.com

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ABSTRACT

This study examines whether Big Five personality traits are associated with Korean adults' participation in non-formal adult education and their self-directed behavior at work. Personality has long been linked to learning and performance outcomes, yet its role in adult learning participation has rarely been examined with nationally representative, internationally comparable data, and almost never in the Korean context. Using the Korean public-use file from the second cycle of the OECD Survey of Adult Skills (OECD, 2024; N = 6,198), which for the first time included a short-form Big Five measure (BFI-2-XS), this study estimated weighted logistic and linear regression models with Fay's balanced-repeated-replication variance estimation. Openness to experience and emotional stability were positively associated with participation in non-formal education in the preceding twelve months (N = 5,766), net of education, employment status, parental education, age, and gender. Conscientiousness showed a positive association that approached but did not reach conventional statistical significance ($p = .053$). Among currently employed respondents (N = 4,268), conscientiousness, openness, and extraversion were each positively and significantly associated with self-directed work behavior, defined as the frequency of planning one's own activities and organizing one's own time. These findings extend dispositional theories of adult learning to the Korean context and suggest that human resource development interventions may benefit from attending to individual differences in personality alongside the structural and institutional barriers that have dominated prior explanations of Korea's comparatively low adult learning participation.

Keywords: big five personality traits, lifelong learning, self-directed learning, PIAAC, adult education, human resource development, South Korea

INTRODUCTION

Adult participation in lifelong learning is widely regarded as a cornerstone of human resource development (HRD), enabling individuals to adapt to technological change, sustain employability, and pursue personal growth across the life course. South Korea presents a puzzle for adult education researchers: despite high average educational attainment and substantial public investment in education, the country has repeatedly reported adult learning participation rates below the average of countries participating in the OECD Survey of Adult Skills (Programme for the International Assessment of Adult Competencies, PIAAC), a gap that persists in the most recent assessment cycle (OECD, 2024, 2025). Explanations advanced in the literature have tended to emphasize structural and institutional barriers, including working hours, employer support, and the cost of training (Boeren, 2016; Desjardins, 2017). Comparatively little attention has been paid to dispositional, individual-difference explanations, even though personality psychology has long established that stable traits shape whether and how people seek out learning opportunities.

The second cycle of PIAAC, fielded in Korea in 2022-2023 and released in December 2024, offers a new opportunity to examine this question. For the first time, PIAAC's background questionnaire incorporated a validated short form of the Big Five Inventory-2 (BFI-2-XS) (Rammstedt et al., 2020), yielding standardized domain scores for extraversion, agreeableness, conscientiousness, emotional stability (the reverse of neuroticism), and open-mindedness for each respondent, alongside the survey's established measures of adult education participation and skill use at work. This study uses these new data to ask two related questions relevant to lifelong education and HRD theory: first, whether personality traits are associated with participation in non-formal adult education, net of the socio-demographic and institutional variables typically studied; and second, whether the same traits are associated with self-directed behavior in the workplace, a construct closely related to informal and self-regulated learning.

This study contributes to the literature in three ways. First, it is among the first studies worldwide, and to the author's knowledge the first using Korean data, to apply PIAAC Cycle 2's Big Five measure to adult learning participation. Second, it extends the dispositional strand of adult learning research, historically dominated by small-sample, self-selected surveys, to a nationally representative sample with rigorous replicate-weight variance estimation. Third, it offers HRD practitioners and policymakers in Korea an individual-difference perspective that complements, rather than replaces, existing structural accounts of the country's persistently low adult learning participation.

The question also has practical urgency for Korean HRD policy. As Korea's working-age population contracts and public and corporate initiatives increasingly frame lifelong learning, including online and blended provision, as a substitute for a shrinking pipeline of new labor market entrants, understanding who is reached by non-formal education, and why, becomes central to designing effective interventions. If participation is shaped not only by employer support and course availability but also by stable dispositional tendencies, then policies and platforms that assume a uniformly motivated adult population may systematically under-serve segments of the workforce lower in openness to experience, regardless of how accessible or well-funded the provision is. This study's findings are therefore intended to speak not only to personality psychology but directly to the design of workplace and platform-based adult learning interventions.

A methodological caveat is stated here at the outset because it governs how every subsequent result should be read: the design of this study is cross-sectional, and the personality measures, the adult education participation indicator, and the self-directed work behavior composite were all collected at a single point in time. As a result, the associations reported below cannot establish that personality traits cause participation or self-directed behavior, nor can they rule out the reverse or a reciprocal relationship in which sustained learning or autonomous work experience gradually reshapes self-reported personality. Throughout this article,

including in the Abstract and Results, language such as “associated with” is used in preference to causal language for this reason; the fuller discussion of this limitation appears in the Limitations section.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Personality and Learning: The Big Five Framework

The Big Five, or Five-Factor Model, organizes individual differences in personality into five broad domains: extraversion, agreeableness, conscientiousness, emotional stability (or its inverse, neuroticism), and openness to experience (McCrae & Costa, 1992). Meta-analytic evidence links conscientiousness consistently to job performance and training proficiency across occupations, with openness to experience and extraversion also predicting training proficiency (Barrick & Mount, 1991). Evidence on participation in learning and development activities specifically is more limited, but recent studies of lifelong learning point to openness as an especially relevant trait (Åström et al., 2025; Eriksson Sörman et al., 2024). The BFI-2 measures these five domains through a hierarchical structure of 15 facets, three per domain, using 60 items (Soto & John, 2017). Its short forms, including the 15-item BFI-2-XS used in PIAAC Cycle 2, retain the domain-level structure while remaining brief enough for large-scale survey administration (Rammstedt et al., 2020; Soto & John, 2017).

The Big Five structure has been shown to replicate reasonably well across cultural contexts, including in East Asian samples, although mean-level comparisons across countries must be interpreted cautiously because of possible differences in reference-group effects when individuals rate themselves against culturally specific standards of, for example, assertiveness or emotional expression (Rammstedt et al., 2020). For the purposes of the present study, however, the relevant question is not whether Korean adults score higher or lower than adults elsewhere on any given trait, but whether within-country variation in these traits predicts within-country variation in learning behavior, a question for which the psychometric structure of the BFI-2-XS has been validated and which does not require cross-national mean comparability.

Determinants of Adult Learning Participation

Adult education participation research has traditionally emphasized structural, institutional, and dispositional barriers operating jointly (Boeren, 2016). Structural barriers include the cost of training, time constraints, and employer support; institutional barriers concern the availability and design of provision; dispositional barriers concern individuals' attitudes, prior educational experiences, and self-perceptions as learners. Comparative work situates Korea among the OECD countries with persistently low adult learning participation despite favorable formal educational attainment, a pattern attributed variously to long working hours, a credentialist orientation toward formal schooling, and limited employer-sponsored non-formal training relative to some European welfare states (Desjardins, 2017). Kyndt and Baert's (2013) systematic review of antecedents of employees' work-related learning similarly foregrounds situational variables such as job characteristics and organizational climate, while noting that individual variables, including learning motivation and self-efficacy, remain comparatively under-theorized and under-measured in large-scale surveys because standard household surveys rarely include validated personality instruments.

Self-Directed Learning, Self-Directed Work Behavior, and Personality

Self-directed learning describes the degree to which individuals take responsibility for planning, monitoring, and evaluating their own learning (Knowles, 1975), and is conceptually related to self-regulated learning, defined as the active, goal-directed management of one's own cognitive and behavioral processes (Zimmerman, 2002). In workplace settings, this disposition manifests as self-directed work behavior: the degree to which employees plan their own activities and organize their own time rather than relying on externally imposed structure. Conscientiousness, with its facets of organization, productiveness, and

responsibility, and openness, with its facets of intellectual curiosity and creative imagination, are theoretically well suited to predict such behavior, since both traits describe a proactive, exploratory orientation toward one's own activity. Extraversion, associated with assertiveness and energy, has also been linked to proactive workplace behavior in the organizational psychology literature, although its relationship with self-directed learning specifically is less consistently theorized than that of conscientiousness and openness. Recent studies have begun to examine personality in relation to engagement in lifelong learning (Åström et al., 2025; Eriksson Sörman et al., 2024). However, there is currently a lack of empirical research examining this association with nationally representative, internationally comparable data from Korea.

Despite this theoretical grounding, empirical tests linking the Big Five to adult learning participation using nationally representative data have been rare, largely because household skills surveys have not historically included validated personality measures. Where personality has been examined in relation to workplace learning, it has typically relied on convenience samples of employees within a single organization or sector, limiting generalizability to the wider adult population and precluding the kind of population-representative variance decomposition that a probability sample such as PIAAC affords. PIAAC Cycle 2 closes this gap by pairing a validated, internationally comparable personality instrument with an equally well-validated, internationally comparable measure of adult learning participation and workplace skill use, within a single nationally representative sample.

Building on the reviewed literature, this study tests two hypotheses. Hypothesis 1 (H1): openness to experience and conscientiousness are positively associated with participation in non-formal education in the twelve months preceding the survey, net of demographic and socio-economic controls. Hypothesis 2 (H2): openness to experience and conscientiousness are positively associated with self-directed work behavior among employed adults, net of the same controls. Because the literature reviewed above provides less direct theoretical grounding for agreeableness, emotional stability, and extraversion in relation to these two outcomes, associations involving these three traits are treated as exploratory rather than hypothesis-confirming, and are reported and interpreted accordingly.

METHOD

Data Source and Sample

This study uses the Korean public-use file (PUF) from the second cycle of the OECD Survey of Adult Skills (PIAAC 2023), released in December 2024 and revised in January 2026 to correct inconsistencies in the earnings variables (a revision that does not affect the variables used in this study). Data collection in Korea took place through the national statistical agency, following the OECD's standardized complex sampling and computer-based assessment design. The Korean sample comprises 6,198 respondents aged 16 to 65 selected to be nationally representative through a stratified, multi-stage probability sample. All analyses use the final full sample weight (SPFWT0) for point estimates and the accompanying 80 Fay's balanced-repeated-replicate weights (Fay's adjustment factor $k = 0.3$) for variance estimation, consistent with OECD technical standards for PIAAC. The analytic sample for the participation model, after listwise deletion of cases with missing values on the personality, outcome, or control variables, was 5,766. The analytic sample for the self-directed work behavior model, restricted to respondents who reported currently working at the time of the interview, was 4,268. Listwise deletion removed 432 cases (7.0%) from the participation model and a further 39 cases from the employed subsample, leaving analytic samples of 5,766 and 4,268, respectively. Because the self-directed work behavior model was further restricted to currently employed respondents, its analytic sample ($N = 4,268$) is smaller than the weighted share of currently working respondents within the participation sample (approximately 4,307, or 74.7% of 5,766); the difference of roughly 39 cases reflects additional listwise deletion of employed respondents with missing values on the model variables.

Measures

Personality. The five personality domains were measured using the BFI-2-XS, a fifteen-item extra-short form of the Big Five Inventory-2 administered as part of the PIAAC background questionnaire (Rammstedt et al., 2020; Soto & John, 2017). The PUF provides standardized (z-scored) domain scores, each based on three items, for conscientiousness, open-mindedness, agreeableness, emotional stability, and extraversion; item-level responses are not released in the PUF for confidentiality reasons, but the derived domain scores are. Higher scores indicate a stronger standing on the respective trait. Because the predictor variables are standardized (mean = 0, SD = 1) while the outcome variables retain their original metrics (binary for participation and a 1-5 composite scale for self-directed work behavior), the resulting unstandardized regression coefficients should be interpreted as the expected change in the outcome associated with a one-standard-deviation increase in the respective personality trait.

Adult education participation. The dependent variable in the first model was a derived binary indicator (NFE12C2) of whether the respondent had participated in any non-formal education activity, such as a course, seminar, workshop, or private lesson, in the twelve months preceding the interview (1 = yes, 0 = no).

Self-directed work behavior. The dependent variable in the second model was a two-item composite averaging respondents' reported frequency of (a) planning their own work activities and (b) organizing their own time at work, each rated on a five-point scale ranging from 1 (never) to 5 (every day). These two items correlated strongly (Pearson $r = .75$, $p < .001$) among currently employed respondents, supporting their combination into a single composite; the composite ranges from 1 to 5, with higher scores indicating more frequent self-directed work behavior. This measure was restricted to respondents who reported currently working, since the underlying items were administered only to respondents with current or very recent labor market attachment in the PIAAC routing design.

Controls. Both models controlled for age group (five ten-year bands, from PIAAC's derived AGE10LFS variable, exact age not being available in the Korean PUF for confidentiality reasons), gender, the highest level of educational attainment (recoded into low, medium, and high, following the PIAAC-derived EDLEVEL3 classification), and highest parental educational attainment (PAREDC2). The participation model additionally controlled for current employment status (currently working, recently worked, left work more than twelve months ago, or no work experience).

Analytic Strategy

Hypothesis 1 was tested with a weighted logistic regression model predicting non-formal education participation from the five personality domains and the control variables described above. Hypothesis 2 was tested with a weighted linear (ordinary least squares) regression model predicting the self-directed work behavior composite among currently employed respondents. Point estimates in both models were obtained using the full sample weight; standard errors were obtained using Fay's balanced repeated replication with the 80 replicate weights supplied in the PUF (Fay's adjustment factor = 0.3), following the replication-weight documentation accompanying the Cycle 2 public-use file and OECD (2019; Cycle 2) guidance for variance estimation with PIAAC data. All analyses were conducted in Python (statsmodels). Unstandardized coefficients based on these z-scored predictors are reported rather than fully standardized coefficients (β), because fully standardizing the dependent variables would obscure the intuitive metrics of the outcomes (i.e., log-odds/odds ratios for binary adult education participation and original scale points for self-directed work behavior) while providing no analytical advantage over per-SD unstandardized estimates.

RESULTS

Sample Characteristics

Table 1 presents weighted descriptive statistics for the analytic sample used in the participation model ($N = 5,766$, representing approximately 33.4 million adults). The sample was 48.6% female. In terms of educational attainment, defined according to the OECD PIAAC Cycle 2 framework, just over half of the respondents (53.9%) held a high level of education (tertiary education), while 38.3% had a medium level (upper secondary or post-secondary non-tertiary education), and 7.8% possessed a low level (below upper secondary education). Three-quarters of respondents (74.7%) were currently working at the time of the interview. Overall, 14.9% of respondents reported participating in at least one non-formal education activity in the twelve months preceding the survey.

Personality Traits and Non-Formal Education Participation

Before estimating the regression models, bivariate correlations and variance inflation factors (VIFs) among the five personality domains were examined to rule out problematic multicollinearity given that all five traits were entered simultaneously in both models. As shown in **Table 2**, inter-trait correlations were modest (all $|r| \leq .39$) and all VIFs were well below conventional thresholds of concern ($VIF \leq 1.39$), indicating that multicollinearity was not a concern for the interpretation of the individual trait coefficients reported below.

Table 1. Weighted Sample Characteristics ($N = 5,766$)

Characteristic	%
Female	48.6
Age group	
16–24	9.2
25–34	19.7
35–44	20.9
45–54	23.5
55–65	26.7
Educational attainment	
Low	7.8
Medium	38.3
High	53.9
Employment status	
Currently working	74.7
Recent work (≤ 12 months)	6.0
Left work (> 12 months ago)	11.1
No work experience	8.2
Non-formal education participation (past 12 months)	14.9

Note. Percentages are weighted using the PIAAC full sample weight (SPFWT0) and may not sum exactly to 100 due to rounding.

Table 2. Bivariate Correlations and Variance Inflation Factors Among the Five Personality Domains (N = 5,766)

Domain	1	2	3	4	5	VIF
1. Conscientiousness	—					1.39
2. Openness	.17	—				1.09
3. Agreeableness	.34	.13	—			1.18
4. Emotional stability	.39	.06	.28	—		1.23
5. Extraversion	.36	.25	.13	.22	—	1.22

Note. Pearson correlation coefficients (unweighted); VIF = variance inflation factor from an auxiliary linear regression of each domain on the remaining four domains. All VIFs fall well below the conventional concern threshold of 5, indicating no problematic multicollinearity among the simultaneously entered personality predictors.

Table 3. Weighted Logistic Regression Predicting Non-Formal Education Participation, Past 12 Months (N = 5,766)

Predictor	b	SE	OR	p
Conscientiousness	0.107	0.055	1.11	.053
Openness	0.136	0.047	1.15	.004**
Agreeableness	-0.042	0.050	0.96	.394
Emotional stability	0.085	0.042	1.09	.042*
Extraversion	0.074	0.042	1.08	.078
Female (ref. male)	0.514	0.090	1.67	< .001***
Education: Medium (ref. Low)	0.072	0.180	1.07	.690
Education: High (ref. Low)	0.473	0.192	1.61	.014*
Employment: Recent (ref. Currently working)	0.218	0.192	1.24	.257
Employment: Left > 12 mo. (ref. Currently working)	-0.170	0.139	0.84	.221
Employment: No experience (ref. Currently working)	-0.433	0.172	0.65	.012*
Parental education: Sec/post-sec (ref. < Upper sec.)	0.106	0.101	1.11	.296
Parental education: Tertiary (ref. < Upper sec.)	0.251	0.142	1.28	.077
Constant	-2.298	0.274	—	< .001

Note. Personality predictors were z-scored prior to estimation; reported unstandardized coefficients represent the change in the outcome variable associated with a 1-SD increase in the predictor trait. The model also controls for a five-category age group variable (16–24, 25–34, 35–44, 45–54, 55–65; reference = 16–24), none of whose coefficients reached significance. b = unstandardized logistic regression coefficient; SE = Fay's balanced-repeated-replicate standard error (80 replicates, k = 0.3); OR = odds ratio. McFadden pseudo- R^2 = .032. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3 presents the results of the weighted logistic regression model predicting non-formal education participation. Hypothesis 1 was partially supported. Openness to experience was significantly and positively associated with participation ($b = 0.136$, $OR = 1.15$, $p = .004$): a one standard deviation increase in openness was associated with 15% higher odds of participation, net of controls. Conscientiousness was also positively associated with participation, but the association did not reach conventional statistical significance ($b = 0.107$, $OR = 1.11$, $p = .053$). Emotional stability was also positively associated with participation ($b = 0.085$, $OR = 1.09$, $p = .042$), and extraversion showed a similar positive but marginally significant trend ($b = 0.074$, $OR = 1.08$, $p = .078$). Agreeableness was not significantly associated with participation. Among the control variables, high educational attainment (relative to low, $OR = 1.61$, $p = .014$), female gender ($OR = 1.67$, $p < .001$), and having no work experience (relative to currently working, $OR = 0.65$, $p = .012$) were significantly associated with

participation. The model's McFadden pseudo- R^2 was .032, indicating small but non-trivial, consistent with the typically small effect sizes observed for individual-difference predictors of survey-measured behavior.

Personality Traits and Self-Directed Work Behavior

Table 4 presents the results of the weighted linear regression model predicting self-directed work behavior among currently employed respondents (weighted $M = 3.96$, $SD = 1.42$, on the 1–5 composite). Consistent with Hypothesis 2, conscientiousness ($b = 0.14$, $p < .001$) and openness ($b = 0.10$, $p < .001$) were both significant positive predictors, as was extraversion ($b = 0.18$, $p < .001$), which showed the largest per-SD coefficient of the five traits. Emotional stability showed a small negative association that approached significance ($b = -0.05$, $p = .060$), and agreeableness was not significantly associated with self-directed work behavior. Educational attainment and age were also positively associated with self-directed work behavior, while women reported significantly lower scores than men ($b = -0.18$, $p < .001$). The model explained 8.8% of the variance in self-directed work behavior ($R^2 = .088$).

To aid interpretation of the magnitude and precision of the personality effects across the two models, **Figure 1** plots each domain's unstandardized coefficient with its 95% confidence interval (computed from the Fay's balanced-repeated-replicate standard errors), side by side for the participation model (Model 1, left panel) and the self-directed work behavior model (Model 2, right panel). Coefficients whose confidence interval excludes zero ($p < .05$) are shown in a darker shade. **Figure 1** highlights that, in Model 1, the confidence interval for openness excluded zero clearly, whereas that for emotional stability excluded zero only narrowly (95% CI [0.003, 0.167]); in Model 2, the intervals for conscientiousness, openness, and extraversion all excluded zero clearly. This visually reinforces the distinction, discussed further below, between traits associated with whether adults participate in non-formal education at all and traits associated with how self-directed they are once already engaged in paid work. It is worth situating the magnitude of these associations within the broader literature on individual-difference predictors of survey-measured behavior.

Table 4. Weighted OLS Regression Predicting Self-Directed Work Behavior Among Currently Employed Adults ($N = 4,268$)

Predictor	b	SE	p
Conscientiousness	0.143	0.029	< .001***
Openness	0.103	0.025	< .001***
Agreeableness	-0.013	0.028	.651
Emotional stability	-0.048	0.025	.060
Extraversion	0.180	0.029	< .001***
Female (ref. male)	-0.179	0.051	< .001***
Education: Medium (ref. Low)	0.433	0.117	< .001***
Education: High (ref. Low)	0.768	0.122	< .001***
Parental education: Sec/post-sec (ref. < Upper sec.)	0.001	0.064	.982
Parental education: Tertiary (ref. < Upper sec.)	0.074	0.076	.326
Constant	2.914	0.154	< .001

Note. Personality predictors were z-scored prior to estimation; reported unstandardized coefficients represent the change in the outcome variable associated with a 1-SD increase in the predictor trait. Model also controls for a five-category age group variable (16–24, 25–34, 35–44, 45–54, 55–65; reference = 16–24); all four older age groups showed significantly higher self-directed work behavior than the youngest group ($ps < .01$). b = unstandardized OLS coefficient; SE = Fay's balanced-repeated-replicate standard error (80 replicates, $k = 0.3$). $R^2 = .088$. *** $p < .001$.

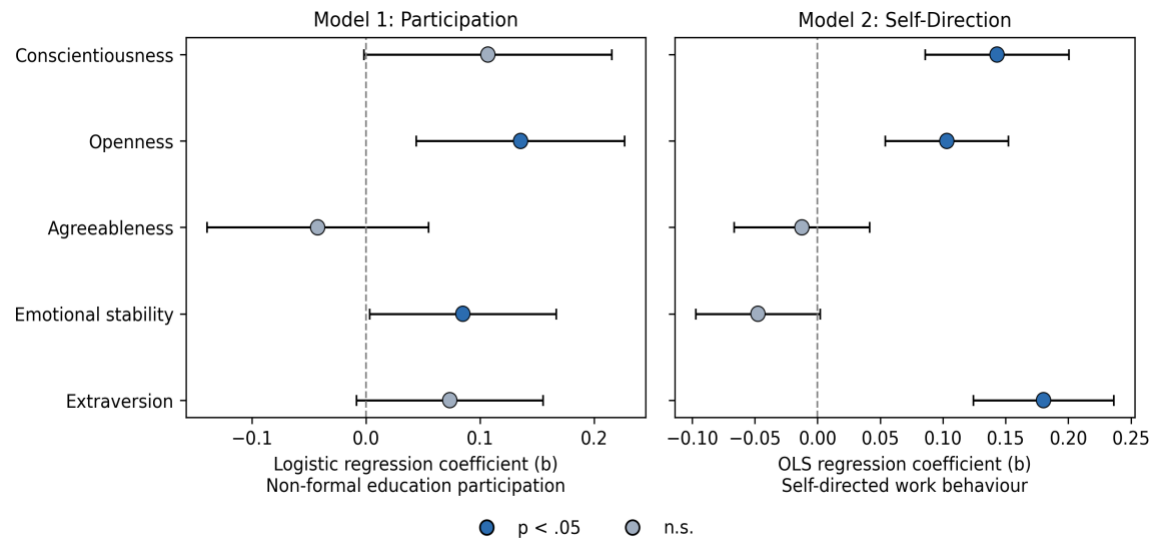


Figure 1. Personality Domain Coefficients (with 95% CI) Predicting Non-Formal Education Participation (Model 1) and Self-Directed Work Behavior (Model 2)

Note. (Points are unstandardized regression coefficients (b); error bars are 95% confidence intervals based on Fay's balanced-repeated-replicate standard errors (80 replicates, $k = 0.3$). Darker markers indicate $p < .05$. Figure 1 was generated with the assistance of Claude, Sonnet 4.6, under the author's direction. All intellectual property rights and copyrights reside with the author.

Personality effects on discrete life outcomes are typically modest in absolute terms, since any single behavior is jointly determined by numerous situational, institutional, and dispositional forces; a McFadden pseudo- R^2 in the .02–.04 range is broadly consistent with published effect sizes for personality predictors of comparably specific behavioral outcomes in the organizational and educational psychology literatures. The theoretical interest of the openness finding, therefore, lies less in its absolute explanatory power than in its consistency, direction, and specificity relative to the other four traits, all estimated within the same model and therefore directly comparable.

DISCUSSION

This study set out to test whether the Big Five personality domains, newly measured in PIAAC Cycle 2, predict adult education participation and self-directed work behavior among Korean adults. The findings offer partial support for both hypotheses. Openness to experience was the most consistent predictor of participation in non-formal education, ... echoing research that links openness to engagement in lifelong learning (Eriksson Sörman et al., 2024) and to training proficiency (Barrick & Mount, 1991). Conscientiousness showed a positive but only marginally significant association with participation, yet was one of the two strongest personality predictors of self-directed work behavior (alongside extraversion), suggesting that conscientiousness may matter more for how adults structure their existing work than for whether they seek out formal or non-formal training opportunities in the first place. This distinction is theoretically informative: participation decisions appear to be driven more by exploratory, curiosity-related dispositions, while day-to-day self-direction at work appears to be driven more by organizational and energetic dispositions.

Before turning to specific findings, a caveat about interpretation is warranted throughout this discussion. As noted in the Introduction and in the Limitations section below, the associations reported here are correlational rather than causal, and the direction of influence between personality and adult learning behavior cannot be established with the present cross-sectional design. Although personality traits are conventionally treated as

antecedents of behavior because they are relatively stable across adulthood, sustained participation in non-formal education and prolonged experience of autonomous, self-directed work could plausibly reshape self-reported standing on traits such as openness and conscientiousness over time, a reverse or reciprocal pathway that the present data cannot rule out. The interpretive language used below, including terms such as “predict” and “associated with,” should therefore be read as describing statistical relationships rather than as claims about the direction or mechanism of influence.

The comparatively large and highly significant effect of extraversion on self-directed work behavior was not explicitly hypothesized but is consistent with evidence linking extraversion's assertiveness and energy facets to proactive workplace behavior. One interpretation grounded in the Korean organizational context is that assertiveness and sociability may translate into self-direction indirectly, through relational rather than purely intrapersonal channels: extraverted employees may more readily initiate conversations with supervisors and colleagues, whether about task priorities, schedules, or expectations, through which autonomy over one's own activities and time is negotiated in practice within Korea's characteristically hierarchical and relationship-oriented workplace culture. This negotiation account is offered here as a hypothesis for future testing in Korean workplace samples, not as a confirmed mechanism, since the present cross-sectional survey data cannot observe the negotiation process it describes. If self-direction is granted as much as it is claimed, extraversion's association with self-directed work behavior may partly reflect a socially mediated route to autonomy rather than, or in addition to, a purely dispositional one. Emotional stability's small negative association with self-directed work behavior, approaching but not reaching conventional significance, runs counter to the straightforward expectation that lower anxiety would facilitate autonomous work behavior; one plausible interpretation, which should be treated as tentative given the marginal significance, is that a degree of vigilance or conscientious worry may accompany active self-management of one's own workload in the Korean labor market context, though this interpretation requires further, ideally qualitative, investigation. This pattern would be consistent with accounts of Korean workplace culture in which a degree of anticipatory concern about falling behind or being negatively evaluated, sometimes discussed in the Korean HRD literature in connection with long working hours and performance pressure, functions less as generalized anxiety and more as a vigilant, achievement-oriented disposition that motivates employees to proactively plan and monitor their own work; under this account, adults lower in emotional stability may self-direct their work not despite their worry but partly because of it, a possibility that is speculative here but could be tested directly with measures of work-related rumination or anticipatory stress in future Korean HRD research.

The control variable results are also informative for HRD theory and practice. Consistent with prior research on Korea's adult learning system, high educational attainment (relative to low) was significantly associated with participation, and respondents with no work experience were less likely to participate than those currently working. These patterns reinforce concerns that non-formal education in Korea may disproportionately serve those who are already well educated and employed, rather than compensating for gaps in initial education. The significant positive association between female gender and participation, alongside a significant negative association between female gender and self-directed work behavior, is a notable pattern that merits further research; it may reflect gendered differences in the type of non-formal education pursued (for example, caregiving- or domestic-life-related course participation counted under the broad non-formal education measure) as opposed to gendered differences in autonomy afforded within paid work, but the present data cannot adjudicate between these explanations. A further, technology-specific explanation is suggested by prior Korean workplace research: in a study of employees' acceptance of e-learning in South Korean workplaces, Yoo et al. (2015) found that male employees reported significantly higher performance expectancy, effort expectancy, and behavioral intention to use workplace e-learning than female employees, and that male employees' adoption intentions were more strongly shaped by social influence from supervisors and peers. If similar gendered patterns of confidence and social reinforcement extend to technology-mediated self-direction at work more broadly, they would offer one plausible, HRD-relevant mechanism for the present study's gender paradox: Korean women may be participating in non-formal education at least as often as, or

more often than, men, while simultaneously reporting less autonomy in how they plan and organize their own paid work, not because women are less inclined to self-direct but because the workplace structures and social reinforcement that translate a general disposition into practiced self-direction may themselves be gendered. This mechanism remains speculative in the present study, since self-directed work behavior and technology acceptance were not measured jointly here, but it points to a concrete, testable extension for future Korean HRD research combining PIAAC-style behavioral measures with technology-acceptance constructs. The relational-negotiation account of extraversion above and the technology-acceptance account of the gender paradox here should both be read as competing hypotheses for future confirmatory research rather than as established findings. A further, non-mutually-exclusive possibility is that the broad non-formal education measure used here pools course types with very different autonomy profiles (for example, employer-mandated compliance training versus self-selected enrichment courses), so that a gender difference in course type composition, rather than in workplace autonomy itself, could also help explain the pattern; the present data cannot distinguish between these accounts. This caution is consistent with lifelong-learning research outside Korea, which has begun to caution that Big Five trait-outcome associations can mask differences attributable to course type, self-reflection, or institutional context rather than disposition alone (Åström et al., 2025; Eriksson Sörman et al., 2024).

More broadly, these results speak to a long-standing tension in the adult education literature between agentic and structural accounts of participation. Structural accounts, which have dominated Korea-focused research to date, correctly identify labor market attachment, employer support, and educational credentials as powerful sorting mechanisms. The present findings do not challenge this account so much as add a layer beneath it: even after these structural sorting mechanisms are held constant statistically, a stable disposition toward novelty and exploration continues to distinguish participants from non-participants. This is consistent with an integrated, multi-level view of participation of the kind proposed by Boeren (2016), in which structural, institutional, and dispositional factors operate jointly rather than as competing explanations, and with broader theories that locate learning at the intersection of an individual's internal psychological processes, including emotional and motivational dispositions, and the surrounding social environment (Illeris, 2003). It suggests that purely structural policy levers, such as subsidizing course fees or mandating employer-sponsored training hours, may raise the ceiling on participation without necessarily reaching adults whose disposition inclines them away from seeking out learning opportunities in the first place.

Taken together, these findings suggest that, within Korea, dispositional differences, particularly in openness to experience, are associated with who participates in non-formal education, alongside the structural sorting mechanisms discussed above. Because this study examines within-country variation only, it cannot show whether the distribution of traits contributes to Korea's comparatively low aggregate participation rate; addressing that question would require cross-national comparison with measurement-invariant trait scores. This does not imply that personality is a more important lever for policy than structural reform; rather, it suggests that HRD interventions designed to increase participation, such as workplace learning campaigns or nudges, might be more effective if they are designed with an awareness of which dispositional profiles they are, and are not, currently reaching.

IMPLICATIONS FOR WORKPLACE AND ONLINE LEARNING DESIGN

The pattern of findings has specific implications for the design of workplace and platform-based adult learning in Korea, where policy attention has increasingly turned to online and blended non-formal provision, including massive open online courses and corporate e-learning platforms, as a scalable response to the country's participation gap. If openness to experience is the trait most closely tied to whether adults engage with such

provision at all, then marketing and design choices that foreground novelty, exploration, and curiosity, rather than obligation or remediation, may be better matched to the traits that predict initial uptake. In concrete terms, a course-enrollment nudge or landing page framed around discovering something new is likely to draw in adults high in openness more effectively than copy centered on remediation or catching up. Given the modest variance explained by personality in both models, these design choices should be treated as one input among several. Conversely, because conscientiousness and extraversion were the stronger correlates of self-directed behavior among employed adults, it is plausible, though untested here, that course features supporting planning, pacing, and accountability, such as structured milestones or cohort-based scheduling, may help learners lower in these traits persist once enrolled. Persistence in learning was not measured in this study, so this implication should be read as a hypothesis for future research. This distinction between predictors of initial participation and predictors of sustained self-direction is, to the author's knowledge, not typically made explicit in Korean lifelong learning policy documents, which tend to treat participation as a single undifferentiated outcome.

This concern with dispositional heterogeneity in technology-mediated learning is not new to educational technology research, even if it has rarely been framed in Big Five terms. In an early study of college students' engagement with emerging online learning tools, Huang et al. (2008) found significant correlations between students' learning styles, assessed with the Gregorc Style Delineator, and their reported utilization of six Web 2.0 applications for learning, including blogs, wikis, and online video- and audio-conferencing tools, indicating that dispositional individual differences have long shaped how learners select and use technology-mediated learning environments. The present findings extend this observation from learning style to personality and from a single-institution sample of undergraduates to a nationally representative sample of working-age adults, but the underlying implication is consistent across both studies: online and blended non-formal education platforms designed around a single, undifferentiated learner profile are likely to under-serve learners whose dispositional profile, whether characterized in terms of learning style or personality, diverges from that assumed default.

For HRD scholars, these findings argue for incorporating dispositional variables into models of workplace learning that have historically emphasized organizational and situational factors alone. For practitioners, the results suggest that generic appeals to skill development may be less effective for adults lower in openness, and that workplace learning cultures explicitly built around autonomy, exploration, and self-pacing may be better aligned with the traits that drive self-directed engagement. Future research should extend this analysis with facet-level personality data where available, examine mediation through learning motivation and self-efficacy, and track whether the personality-participation relationship documented here changes as Korea's adult education policy evolves toward the government's stated lifelong learning goals.

LIMITATIONS

Several limitations should be noted. First, the cross-sectional design precludes causal inference; personality traits are relatively stable but not entirely fixed across adulthood, and reverse or reciprocal relationships between personality and learning experience cannot be ruled out. Second, the Korean PUF provides only the three-item BFI-2-XS domain scores, not facet-level scores, which can be derived only from the full 60-item BFI-2. Although the domain scores are the internationally standard PIAAC personality measure, facet-level analysis, which was not possible with the released data, might reveal more specific mechanisms, for example by distinguishing the intellectual curiosity facet of openness from its aesthetic sensitivity facet. A related concern is the measurement adequacy of a three-item-per-domain instrument administered in Korean translation: with only three items per domain, internal consistency reliability cannot be estimated from the released PUF and is almost certainly lower than that of the full 60-item BFI-2, which increases measurement error and would, if anything, bias the present associations toward zero rather than inflate them. In addition,

self-report personality measures administered across cultural and linguistic contexts are potentially subject to reference-group effects, whereby respondents implicitly rate themselves against culturally specific standards of, for example, assertiveness, emotional restraint, or achievement orientation, which could shift mean trait levels in ways that are not directly relevant to within-country regression analyses of the kind conducted here but would matter for any future cross-national comparison of Korean BFI-2-XS scores. Rammstedt et al. (2020) explicitly discuss this possibility in validating the short forms, and translated short-form instruments adopted in new national contexts warrant continued psychometric scrutiny; the present study's within-country associations should therefore be interpreted as reasonably robust to reference-group effects, while facet-level and reliability questions remain open. Third, exact age was not available in the Korean PUF for data protection reasons, requiring the use of ten-year age bands, which may have attenuated the precision of age-related controls. Fourth, the non-formal education participation measure is a broad binary indicator that does not distinguish job-related from personal-interest training, or online from in-person delivery, distinctions that may interact differently with personality traits and that future research using the fuller background questionnaire could examine. Fifth, the analysis does not include measures of household income or job task complexity, both plausible confounders that could jointly shape personality-linked selection into non-formal education and self-directed work arrangements; their omission means the reported associations are net of the included controls only, not fully adjusted for socioeconomic or job-content differences. Sixth, a sixth limitation concerns the handling of missing data: listwise deletion removed 432 cases (7.0%) from the participation model and a further 39 cases from the employed subsample. If missingness is related to both personality and learning outcomes — for example, if adults lower in conscientiousness or openness were also less likely to complete the background items — the complete-case samples may be mildly selective, and multiple imputation or inverse-probability weighting should be used in future analyses to probe the sensitivity of the estimates to this assumption. As with all PIAAC analyses, the findings describe population-level associations in Korea in 2022–2023 and should not be generalized to other countries without replication using their respective national files.

CONCLUSION

This study provides novel evidence, using the newly released Korean PIAAC Cycle 2 data, that the Big Five personality traits, particularly openness to experience, are meaningfully associated with adult education participation, and that conscientiousness and extraversion, alongside openness, are associated with self-directed behavior at work.

Finally, this study illustrates the value of embedding validated psychological instruments within large-scale, internationally comparable skills surveys. As further PIAAC cycles and comparable national panels accumulate personality data over time, researchers will be able to move beyond the cross-sectional associations reported here toward genuinely longitudinal and, where feasible, quasi-experimental designs capable of testing whether dispositional traits shape learning trajectories, or whether sustained engagement with learning itself gradually reshapes traits such as openness and conscientiousness. Until such data become available, the present findings offer a reasonably well-powered, nationally representative baseline against which future Korean and cross-national research on personality and adult learning can be compared.

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Ethical statement: This study is a secondary analysis of publicly available survey data (OECD PIAAC Cycle 2 Korean public-use file); no new data were collected from human participants by the author.

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