SKILLRISE

AN ISTE INITIATIVE

Profile of a Lifelong Learner

- Literature Review -

Produced in Partnership with **Educational Testing Services** (ETS)

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Introduction

ISTE's SkillRise initiative recognizes that factors such as automation and artificial intelligence are changing the workplace. These changes are leading to a significant shift in the skill set employees require for career success. Specifically, noncognitive constructs – also referred to by terms such as "soft skills", "21st century skills", or "employability skills", among others – represent skills that are less likely to be consumed by machines or automation. There is a long history of employers and educators valuing noncognitive constructs as facilitators of workplace performance. However, this perception may be augmented by research that empirically links noncognitive constructs to job success. The primary goal of this literature review is to identify the noncognitive constructs whose relevance to job performance possesses the strongest research support. In turn, upskilling efforts such as those proposed by SkillRise may particularly emphasize these constructs. In other words, ISTE and its workplace partners may utilize the results of this literature review to prepare employees for the future of work.

Research Objective

The primary research objective for this literature review was to identify noncognitive constructs that are empirically related to workplace performance.

Literature Search Methodology

The following search terms were entered into EBSCO Information Services to search the literature for meta-analyses and systematic reviews that related soft skills to job performance (Table 1):

TABLE 1
SEARCH TERMS INCLUDED IN OUR LITERATURE REVIEW

Skill term	Outcome	Article type
Soft skills	Job performance	Meta-analysis
Employability skills	Workplace performance	Systematic review
21st century skills	Occupational performance	
Technical skills	Job success	
Digital skills	Workplace success	
Social capital	Occupational success	

The search involved combining all possible combinations of exact terms (one from each column) into search strings (e.g., "soft skills" + "job performance" + "meta-analysis"). This process resulted in 72 unique search strings (6 x 6 x 2). If any string identified more than 100 articles, only the first 100 were considered.

Inclusion Criteria

We applied the following inclusion criteria to the articles resulting from the search:

1. Must be a meta-analysis or systematic review
2. Must be peer-reviewed
3. Must include research conducted in the U.S.
4. Article must be published in 2000 or more recently
5. Must include task performance or overall job performance as an outcome variable
6. Relevant to the aims of the SkillRise study (i.e., identifying noncognitive constructs that are relevant to workplace performance)

Due to the large volume of relevant research, we limited our search to meta-analyses and systematic reviews, as these provide useful summaries of the extant literature. Meta-analyses involve the extensive collection of individual research studies in a particular area, which are then combined to calculate an overall 'average' statistical effect from these studies. For example, a meta-analysis may identify 100 studies that report a correlation between social skills and job performance, then calculate the average correlation found across these studies[1]. Systematic reviews use a similar methodology as meta-analyses except that they stop short of performing this final calculation. That is, instead of the quantitative (numerical) summary found in meta-analyses, systematic reviews may be considered qualitative (non-numerical) summaries. Meta-analyses and systematic reviews are recognized as efficient and powerful means for summarizing large bodies of research because, by aggregating the idiosyncrasies of individual studies, these idiosyncrasies are averaged out, which typically leads to a more precise and valid estimate of the effect of interest (e.g., Card, 2012). For our literature review, we also required these articles to be peer-reviewed, since these tend to represent research conducted with greater scientific rigor than those that are not peer-reviewed. We required articles to include U.S. research in order to maximize relevance to our audience. We required articles to be published in 2000 or more recently in order to prioritize research relevant to current and future work environments. Task performance or overall job performance were required to provide generalizable results, as opposed to studies that only focused on more specific subcategories of job performance. The final inclusion criteria ensured that the articles were appropriate for our overall research goal.

[1] This example represents a simplified representation of the more complex calculations typically involved in meta-analyses. For more detailed examples, the reader is encouraged to consult the reference list provided in this report.

Results

This literature review identified a total of 82 articles. Sixty-three of these articles failed to meet our inclusion criteria, and an additional five were unavailable for review. Thus, 14 articles[1] remained for consideration in our review (see References). Three of these articles (Passow & Passow, 2017; Pelt, van der Linden, Dunkel, & Born, 2017; Sackett & Walmsley, 2014) are systematic reviews; the remaining articles are meta-analyses. Additional information regarding the meta-analyses is available in Appendix A.

Literature Summary

Briefly, these 14 articles may be summarized across three aspects: (a) the noncognitive construct(s) they examine, (b) the performance outcome(s) they examine, and (c) their overall results. These findings are summarized in the Table 2. The meta-analyses provide a metric for evaluating the strength of the empirical relationships between noncognitive constructs and job performance (i.e., Cohen's 1988 criteria for effect sizes; e.g., $r \approx \pm .10$ = small, $r \approx \pm .30$ = moderate, $r \approx \pm .50$ = large). Results in Table 2 describe positive associations unless otherwise specified. More detailed results regarding effect sizes are displayed in Tables 3 and 4, which facilitate comparisons of quantitative results across meta-analyses.

A description of the noncognitive constructs included in our review is provided in Appendix A. Information regarding the performance outcomes used in these studies are listed below:

- Studies tended to group outcomes into one of three categories based on the source of information: **self-report, other-report** (i.e., peer/superior/subordinate reports), and **objective measures** (e.g., salary, sales output, etc.). However, studies rarely examined outcomes at a more specific level.
- In terms of the type of job performance, studies typically reported results in terms of **overall job performance**, but more specific types of performance were also sometimes evaluated (e.g., **task performance, non-task performance, leadership performance, training performance, counterproductive work behavior**).
- The majority of studies – primarily the meta-analyses – evaluated these outcomes through **predictive validity**. Alternatively, a few studies used **importance ratings** or **employer surveys** of personnel selection practices to evaluate the importance of various noncognitive constructs.

TABLE 2
SUMMARY OF RESULTS FROM META-ANALYSES AND SYSTEMATIC REVIEWS

Article	Noncognitive Construct(s)	Performance Outcome(s)	Results
1. Cerasoli et al., 2014	Intrinsic motivation	Quality (e.g., creativity, assembly quality, research proposal), quantity (e.g., number of points, number errors detected, number of problems solved), or both/unspecified in school, work, or physical contexts.	Intrinsic motivation is a moderate-to-strong predictor of performance.
2. Davar & Bala, 2012	Job satisfaction	Peer ratings, supervisor ratings, self-ratings, and "other".	Job satisfaction is moderately associated with job performance.
3. Ford et al., 2011	Psychological well-being (affective and cognitive)	Overall, task, or contextual performance primarily assessed through supervisor ratings, company records, or self-report.	Psychological well-being is a moderate predictor of work performance.
4. Higgins et al., 2003	Workplace influence tactics (ingratiation, self-promotion, rationality, assertiveness, exchange, upward appeal)	Measures of performance or competence, salary, or promotions.	Ingratiation and rationality demonstrated small prediction of work performance; the remaining tactics were not predictive.

Article	Noncognitive Construct(s)	Performance Outcome(s)	Results
5. Hogan & Holland, 2003	The Big Five personality constructs (Emotional Stability, Extraversion, Agreeableness, Conscientiousness, Openness to Experience)	Context-specific performance ratings and objective productivity-personnel measures.	Each of the Big Five showed moderate prediction of workplace performance.
6. Lee et al., 2019	The HEXACO personality construct of Honesty-Humility.	Self- and non-self-reported measures of counterproductive work behavior (CWB) and organizational citizenship behavior (OCB), and non-self-reported measures of task performance.	Honesty-Humility shows moderate negative associations with CWB and small positive associations with OCB and task performance.
7. O'Boyle et al., 2011	Emotional intelligence; Big Five personality constructs (see study 5)	Peer/superior/subordinate ratings and objective measures.	Emotional intelligence showed small-to-moderate associations with performance. Of the Big Five, extraversion showed the most consistent and strongest prediction (small-to-moderate effect sizes).

Article	Noncognitive Construct(s)	Performance Outcome(s)	Results
8. Passow & Passow, 2017	Open-ended examination of various competencies relevant to engineering performance, guided by the Accreditation Board for Engineering and Technology (ABET) guidelines	Importance ratings from practicing engineers, alumni of undergraduate engineering programs, and engineering faculty.	Planning/time management, problem solving, communication skills, and teamwork showed the highest importance ratings. Respondents also noted the importance of coordinating multiple competencies (i.e., "meta-noncognitive skills).
9. Pelt et al., 2017	The general factor of personality (GFP; a combination of the Big Five; see study 5)	Other-ratings of job performance, productivity, turnover, promotions, salary, team performance (e.g., cooperativeness), training performance ratings.	GFP showed mostly moderate-to-large associations with performance.
10. Riketta, 2002	Attitudinal organizational commitment (AOC; "the relative strength of an individual's identification with and involvement in a particular organization")	Self- or other-ratings of performance; objective indicators, or combined/other/not specified.	AOC shows a small association with performance.

Article	Noncognitive Construct(s)	Performance Outcome(s)	Results
11. Riketta, 2008	Job satisfaction and attitudinal/affective organizational commitment (AOC; see study 11).	Self- and other-ratings of extra-role performance; supervisor ratings and objective indicators of in-role performance.	Job satisfaction and AOC each showed small associations with performance.
12. Sackett & Walmsley, 2014	Big Five personality constructs (see study 5); open-ended list of applied social skills; O*NET personality attributes	Overall performance, task performance, organizational citizenship behavior, counterproductive work behavior, employer surveys of personnel screening practices, O*NET importance ratings.	Of the Big Five, Conscientiousness was most consistently associated with job performance, typically with small to moderate effect sizes. Conscientiousness was also the Big Five construct most frequently assessed in personnel selection practices. Among the applied social skills, interpersonal skills, communication skills, and leadership were most frequently assessed in personnel selection. The O*NET personality attributes with the top five mean importance ratings were dependability, integrity, cooperation, self-control, and stress tolerance.

Article	Noncognitive Construct(s)	Performance Outcome(s)	Results
13. Wang et al., 2019	Occupational commitment (OCC; "psychological link between an individual and his/her occupation"), affective occupational commitment (AOC; see study 11)	Task performance and organizational citizenship behavior (OCB) measured by self- or other-reports.	OCC showed small-to-moderate relationships with task performance and OCB.
14. Woo et al., 2014	The Big Five personality construct of Openness to Experience, and its six facets (intellectual efficiency, ingenuity, curiosity, aesthetics, tolerance, depth)	Overall performance, task performance, contextual performance, counterproductivity, turnover, leadership performance, training performance, and adaptive performance assessed by measures such as self- and other-ratings and objective indicators (e.g., official records, time spent working).	Depth (i.e., interest in personal growth) showed the strongest association with overall job performance (small effect size), but this result was based on only a single study.

Findings from Meta-analyses and Systematic Reviews:

Meta-analyses

- **Personality** as conceptualized through the Big Five or HEXACO models was represented most frequently in the literature, including four meta-analyses and two systematic reviews. Each of these constructs was associated with job performance to varying degrees, but most support was reported for **Conscientiousness**, including small-to-moderate effects in meta-analyses (Table 3). Sackett and Walmsley's (2014) systematic review also supported this finding, including O*NET ratings of similar constructs (e.g., dependability) and data from employer surveys of personnel selection procedures[2]. Among the other personality constructs:
    - **Emotional Stability** also showed small-to-moderate effect sizes with job performance consistently across three meta-analyses, though the effect sizes were generally slightly smaller than for Conscientiousness.
    - **Agreeableness** and **Extraversion** also demonstrated small-to-moderate effect sizes with job performance across multiple meta-analyses, though less consistently than for Emotional Stability or Conscientiousness.
    - **Openness to Experience** and **Honesty-Humility** were each only supported by a small-to-moderate effect size in one meta-analysis. However, Honesty-Humility was only examined in one meta-analysis.
- Three meta-analyses examined **occupational or organizational commitment**. These meta-analyses reported small-to-moderate associations with job performance (Table 4).
- **Job satisfaction** was investigated in two meta-analyses, which produced fairly disparate results in terms of associations with job performance (one small effect, one moderate effect; Table 4).
- **Intrinsic motivation, psychological well-being, emotional intelligence, and influence tactics** were each investigated by one meta-analysis (Table 4). Psychological well-being demonstrated the strongest association with job performance (moderate effect size), followed by emotional intelligence and intrinsic motivation (small-to-moderate effects). Influence tactics' associations with job performance varied, with the strongest associations reported for ingratiation and rationality (small-to-moderate effects).

[2] An additional systematic review (Pelt et al., 2017) examined the workplace predictive validity of the general factor of personality (GFP), which is an aggregate of the Big Five constructs. However, GFP has been heavily criticized in the literature (e.g., Comensoli & MacCann, 2013; Revelle & Wilt, 2013) and appears to be of limited interpretative and practical value.

Systematic Reviews

- Passow and Passow (2017) identified **problem solving** and **the coordination of multiple competencies to accomplish a goal** as the most critical constructs for engineers, based on survey data from practicing engineers, alumni of undergraduate engineering programs, and engineering faculty, as well as from online job postings and other sources. However, there is some debate as to whether these skills are noncognitive or cognitive.
- In addition to examining personality, Sackett and Walmsley's (2014) systematic review identified several **applied social skills (interpersonal skills, communication skills, leadership)** as most frequently assessed in personnel selection, based on employer survey data.

Overall summary of findings

Based on our literature review, Conscientiousness, Emotional Stability, Agreeableness, Extraversion, and occupational commitment were most supported by the literature as valid predictors of job performance. Although there was some support for job satisfaction as a valid predictor, this construct is limited to employed individuals, and the inconsistency of the meta-analytic results suggests that more research may be needed in this space (e.g., Judge, Thoresen, Bono, & Patton, 2001).

Additional Comments

- Because meta-analyses summarize and quantify results across a larger body of primary studies, they are typically considered superior to individual research studies because they aggregate and therefore ideally limit the effects of various methodological idiosyncrasies that may influence the results of individual studies. However, meta-analyses vary in their quality (Delaney et al., 2005), and their results are naturally influenced by the individual studies they include. For example:
    - Some of the meta-analyses in our review included both published and unpublished primary studies, whereas others only included the former. Published studies are often considered preferable because their methodology and interpretations are typically subjected to peer review. However, published studies may also be biased in favor of larger effect sizes.
    - Some meta-analyses may include research conducted both inside and outside the United States. It is likely that most international research is relevant to U.S. applications, but any notable differences should be considered.
    - Meta-analysts may impose other restrictions on the studies they consider for inclusion. For instance, Hogan and Holland (2003) only included studies that used the Hogan Personality Inventory. Consequently, approximately two-thirds (27 out of 41) of the primary studies they analyzed included

Hogan as an author. This inclusion criterion may therefore introduce a conflict of interest or biased results.
    - Additional characteristics of the meta-analyses included in our study are described in Appendix A. For example, meta-analyses that include a larger number of primary studies and larger sample sizes generally produce effect size estimates with greater precision (i.e., lower margins of error).
- The meta-analyses in our review each included a generally heterogeneous cross-section of occupations and industries. That is, none of these articles focused on a specific occupation or industry, and none excluded any occupations or industries. Thus, results should be generalizable to a wide range of occupations and industries.
- Virtually all of the studies we examined investigated moderators and found significant effects. That is, noncognitive constructs' predictive validity may vary based on factors such as industry/occupation, assessments used to measure the noncognitive constructs or job performance, or the geographical location of the research. For brevity, we have only summarized the omnibus results.
- Although we are confident that the list of meta-analyses and systematic reviews we describe is comprehensive, it is likely not exhaustive. For example, O'Boyle et al. (2011) note two meta-analyses involving personality and job performance (Hurtz & Donovan, 2000; Schmidt, Shaffer, & Oh, 2008) that were not revealed by our search. However, the results from these two meta-analyses were consistent with those included in our review.

TABLE 3
META-ANALYTIC CORRELATIONS BETWEEN HEXACO/BIG FIVE PERSONALITY CONSTRUCTS AND JOB PERFORMANCE

Personality Construct	Meta-Analysis			
	Hogan & Holland, 2003	Lee et al., 2019	O'Boyle et al., 2011	Woo et al., 2014
Honesty-Humility	NR	.15	NR	NR
Emotional Stability	.19	.14	.13	NR
Extraversion	.13; .00	.10	.09	NR
Agreeableness	.09	.16	.10	NR
Conscientiousness	.14	.20	.24	NR
Openness to Experience	.05; .09	.17	.05	.08

NR = Not reported. All values represent meta-analytic population correlation estimates (i.e., ρ) between the construct and overall job performance. If overall job performance was not reported, values represent associations with task performance. Guidelines for interpreting ρ are ≈ ± .10 = small, ≈ ± .30 = moderate, ≈ ± .50 = large (Cohen, 1988; see also Lipsey & Wilson, 2001). Hogan and Holland (2003) results use the Hogan Personality Inventory (HPI) scales, therefore Extraversion is represented by HPI Ambition and Sociability, respectively, and Openness is represented by HPI Intellectance and School Success, respectively.

TABLE 4
META-ANALYTIC CORRELATIONS BETWEEN NON-PERSONALITY CONSTRUCTS AND JOB PERFORMANCE

Construct/Meta-analysis	Job Performance Correlation
Organizational/Occupational Commitment	
Riketta, 2002	.20
Riketta, 2008	.15
Wang et al., 2019	.29
Job Satisfaction	
Davar & Bala, 2012	.30
Riketta, 2008	.14
Additional Noncognitive Constructs	
Emotional Intelligence (O'Boyle et al., 2011)	.28
Intrinsic Motivation (Cerasoli et al., 2014)	.26
Psychological Well-Being (Ford et al., 2011)	.37
Workplace Influence Tactics (Higgins et al., 2003)	
Ingratiation	.23
Self-promotion	.01
Rationality	.26
Assertiveness	-.02
Exchange	-.03
Upward Appeal	.05

Note. All values represent meta-analytic population correlation estimates (i.e., ρ) between the construct and overall job performance. If overall job performance was not reported,

values represent associations with task performance. Guidelines for interpreting ρ are ≈ ± .10 = small, ≈ ± .30 = moderate, ≈ ± .50 = large (Cohen, 1988; see also Lipsey & Wilson, 2001).

Concluding Comments

Our review identified several noncognitive constructs whose relevance to job performance is empirically supported. The majority of these constructs demonstrate small-to-moderate meta-analytic associations with job performance. These results reiterate that noncognitive constructs generally predict job performance at a similar level as constructs such as cognitive ability or technical knowledge, and add incremental predictive value over these constructs (e.g., Barrick & Mount, 2005). Meta-analytic results provide a metric for comparing the relative predictive validity of various noncognitive constructs, based on aggregations of their respective bodies of research. In addition to each noncognitive construct's predictive validity, factors involving their amenability to training should be considered. For example, although psychological well-being demonstrated the strongest predictive validity, relevant training programs may resemble clinical interventions, which are beyond the scope of this research and that of professional training programs.

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References

**denotes meta-analyses and systematic reviews included in our review.*

Ashton, M.C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review, 11,* 150–166.

Ashton, M.C., Lee, K., & de Vries, R.E. (2014). The HEXACO Honesty-Humility, Agreeableness, and Emotionality factors: A review of research and theory. *Personality and Social Psychology Review, 18,* 139-152.

Barrick, M.R., & Mount, M.K. (2005). Yes, personality matters: Moving on to more important matters. *Human Performance, 18,* 359-372.

Card, N.A. (2012). *Applied meta-analysis for social science research.* New York, NY: Guilford.

*Cerasoli, C.P., Nicklin, J.M., & Ford, M.T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin, 140,* 980-1008.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Comensoli, A., & MacCann, C. (2013). Miscontruing methods and meaning in the General Factor of Personality. *International Journal of Psychology, 48,* 625-630.

*Davar, S.C., & Bala, R. (2012). Relationship between job satisfaction & job performance: A meta-analysis. *The Indian Journal of Industrial Relations, 48,* 290-305.

Delaney, A., Bagshaw, S.M., Ferland, A., Manns, B., Laupland, K.B., & Doig, C.J. (2005). A systematic evaluation of the quality of meta-analyses in the critical care literature. *Critical Care, 9,* 575–582.

*Ford, M.T., Cerasoli, C.P., Higgins, J.A., & Decesare, A.L. (2011). Relationships between psychological, physical, and behavioural health and work performance: A review and meta-analysis. *Work & Stress, 25,* 185-204.

*Higgins, C.A., Judge, T.A., & Ferris, G.R. (2003). Influence tactics and work outcomes: A meta-analysis. *Journal of Organizational Behavior, 24,* 89-106.

*Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job-performance relations: A socioanalytic perspective. *Journal of Applied Psychology, 88,* 100-112.

Hurtz, G.M., & Donovan, J.J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology, 85,* 869-879.

Jones, E. E., & Pittman, T. S. (1982). Toward a general theory of strategic self presentation. In J. Suls (Ed.), *Psychological perspectives on the self* (pp. 231-262). Hillsdale, NJ: Lawrence Erlbaum.

Judge, T.A., Thoresen, C.J., Bono, J.E., & Patton, G.K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin, 127,* 376.

Kipnis, D., Schmidt, S.M., & Wilkinson, I. (1980). Intra-organizational influence tactics: Explorations in getting one's way. *Journal of Applied Psychology, 65,* 440-452.

Lee, K., & Ashton, M.C. (2004). Psychometric Properties of the HEXACO Personality Inventory. *Multivariate Behavioral Research, 39,* 329–358.

*Lee, Y., Berry, C.M., & Gonzalez-Mulé, E. (2019). The importance of being humble: A meta-analysis and incremental validity analysis of the relationship between Honesty-Humility and job performance. *Journal of Applied Psychology, 104,* 1535-1546.

Lipsey, M.W., & Wilson, D.B. (2001). *Practical meta-analysis.* Thousand Oaks, CA: Sage.

McCrae, R.R., & Costa, P.T., Jr. (2008). Empirical and theoretical status of the Five-Factor Model of personality traits. In G.J. Boyle, G. Matthews, & D.H. Saklofske (Eds.), *The Sage handbook of personality theory and assessment: Personality theories and models* (Vol. 1, pp. 273-294). Los Angeles, CA: Sage.

Mowday, R.T., Steers, R.M., & Porter, L.W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior, 14,* 224–247.

*O'Boyle, E.H., Humphrey, R.H., Pollack, J.M., Hawver, T.H., & Story, P.A. (2011). The relationship between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior, 32,* 788-818.

*Passow, H.J., & Passow, C.H. (2017). What competencies should undergraduate engineering programs emphasize? A systematic review. *Journal of Engineering Education, 106,* 475-526.

*Pelt, D.H.M., van der Linden, D., Dunkel, C.S., & Born, M.P. (2017). The general factor of personality and job performance: Revisiting previous meta-analyses. *International Journal of Selection and Assessment, 25,* 333-346.

Revelle, W., & Wilt, J. (2013). The general factor of personality: A general critique. *Journal of Research in Personality, 47,* 493-504.

*Riketta, M. (2002). Attitudinal organizational commitment and job performance: A meta-analysis. *Journal of Organizational Behavior, 23,* 257-266.

*Riketta, M. (2008). The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology, 93,* 472-481.

*Sackett, P.R., & Walmsley, P.T. (2014). Which personality attributes are most important in the workplace? *Perspectives on Psychological Science, 9,* 538-551.

Schmidt, F.L., Shaffer, J.A., & Oh, I.-S. (2008). Increased accuracy for range restriction corrections: Implications for the role of personality and general mental ability in job and training performance. *Personnel Psychology, 61,* 827-868.

Van Rooy, D., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior, 65,* 71-95.

*Wang, Q., Jiang, Y., Weng, Q., & Wang, Q. (2019). A meta-analysis of the relationship between occupational commitment and job performance. *Social Behavior and Personality: An International Journal, 47,* e8232.

*Woo, S.E., Chernyshenko, O.S., Stark, S.E., & Conz, G. (2014). Validity of six Openness facets in predicting work behaviors: A meta-analysis. *Journal of Personality Assessment, 96,* 76-86.

Appendix A
Characteristics of Meta-Analyses Included in Review

Study	Noncognitive Construct(s)	Number of Primary Studies (*k*)	Overall Sample Size (*N*)	Date Range of Primary Studies
1. Cerasoli et al., 2014	Intrinsic motivation	183	212,486	1971 – 2014
2. Davar & Bala, 2012	Job satisfaction	11	NR	1971 – 2008
3. Ford et al., 2011	Psychological health	98	87,634	NR
4. Higgins et al., 2003	Workplace influence tactics	31	846 – 6,065	1971 – 1999
5. Hogan & Holland, 2003	Big Five personality	41	5,242	1980 – 2000
6. Lee et al., 2019	HEXACO personality	65	1,161 – 7,218	2003 – 2018
7. O'Boyle et al., 2011	Emotional intelligence; Big Five personality	43	5,795	1990 – 2008
10. Riketta, 2002	Attitudinal organizationa l commitment	93	26,344	NR
11. Riketta, 2008	Job satisfaction; attitudinal/aff ective organizationa	16	3,077	1974 – 2006

	l commitment			
13. Wang et al., 2019	Occupational commitment; affective occupational commitment	69	NR	1980 – 2018
14. Woo et al., 2014	Openness to Experience (Big Five)	119	9,564	1982 – 2010

NR = Not reported.

Appendix B
Glossary of Noncognitive Constructs Included in Review

- **Agreeableness:** One of the Big Five personality constructs. Characteristics include modesty, trustfulness, and compliance.

- **Assertiveness:** An interpersonal workplace influence tactic conceptualized by Kipnis et al. (1980). Described as "using a forceful manner to get what one wants" (Higgins et al., 2003, p. 91).

- **Big Five:** Widely considered the definitive model of personality constructs – Agreeableness, Conscientiousness, Openness to Experience, Emotional Stability, and Extraversion (see review by McCrae & Costa, 2008). Originally derived from factor analyses of adjectives that may be used to describe individuals, decades of international research have established the Big Five as relatively stable characteristics, and that all individuals may be described as possessing each of these traits somewhere on a continuum from low to high levels. Occasionally referred to as the Five Factor Model (FFM).

- **Conscientiousness:** One of the Big Five personality constructs. Characteristics include orderliness, dutifulness, and self-discipline.

- **Emotional Intelligence (EI):** "The set of abilities (verbal and nonverbal) that enable a person to generate, recognize, express, understand, and evaluate their own, and others, emotions in order to guide thinking and action that successfully cope with environmental demands" (Van Rooy & Viswesvaran, 2004, p. 72).

- **Emotional Stability:** One of the Big Five personality constructs (formerly referred to as Neuroticism). Characteristics include stress tolerance, optimism, and positive emotionality.

- **Exchange:** An interpersonal workplace influence tactic conceptualized by Kipnis et al. (1980). Described as "making an explicit offer to do something for another in exchange for their doing what one wants" (Higgins et al., 2003, p. 91).

- **Extraversion:** One of the Big Five personality constructs. Characteristics include sociability, assertiveness, and excitement-seeking.
- **HEXACO:** An expansion of the Big Five model of personality, which adds a sixth dimension called Honesty-Humility (Lee & Ashton, 2004). The validity of the HEXACO model has been established in multiple studies (see review by Ashton, Lee, & de Vries, 2014).

- **Honesty-Humility:** A sixth personality construct included in the HEXACO personality model as an addition to the Big Five model. Described as "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation" (Ashton & Lee, 2007, p. 156).

- **Ingratiation:** An interpersonal workplace influence tactic conceptualized by Kipnis et al. (1980). Described as "using behaviors designed to increase the target's liking of oneself or to make oneself appear friendly in order to get what one wants" (Higgins et al., 2003, p. 91).

- **Intrinsic Motivation:** Engaging in behaviors "for their very own sake (e.g., task enjoyment), not being instrumental toward some other outcome" (Cerasoli et al., 2014, p. 980).

- **Job Satisfaction:** "A cognitive and/or affective evaluation of one's job as more or less positive or negative" (Riketta, 2008, p. 472).

- **Openness to Experience:** One of the Big Five personality constructs. Characteristics include creativity, artistic appreciation, and open-mindedness.

- **Organizational/Occupational Commitment:** "The relative strength of an individual's identification with and involvement in a particular organization" (Mowday, Steers, & Porter, 1979, p. 226).

- **Psychological Well-Being:** Affective and cognitive components of psychological health, including low levels of depression, anxiety, and fatigue, and high levels of life satisfaction (Ford et al., 2011, p. 190).

- **Rationality:** An interpersonal workplace influence tactic described by Kipnis et al. (1980). Described as "using data and information to make a logical argument supporting one's request" (Higgins et al., 2003, p. 91).

- **Self-Promotion:** A self-presentational workplace tactic conceptualized by Jones and Pittman (1982). Described as "attempting to create an appearance of competence or that you are capable of completing a task" (Higgins et al., 2003, p. 91).
- **Upward Appeal:** An interpersonal workplace influence tactic described by Kipnis et al. (1980). Described as "relying on the chain of command, calling in superiors to help get one's way" (Higgins et al., 2003, p. 91).

- **Workplace Influence Tactics:** Interpersonal or self-presentational styles applied by individuals in the workplace to influence coworkers and achieve personal goals (e.g., Jones & Pittman, 1982; Kipnis et al., 1980).