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Prediction of performance by non-cognitive traits

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ABSTRACT

Project A clearly demonstrated that performance is multidimensional and that some aspects are better predicted by noncognitive measures. Substantial research and development in the ensuing years has focused on personality and vocational interests. The articles in this special issue convincingly demonstrate that at least one personality measure developed by military researchers, the Tailored Adaptive Personality Assessment System (TAPAS), is resistant to faking, which was an important concern about earlier single statement instruments. Moreover, several articles report showing that TAPAS predicts retention and important aspects of "will do" performance. On the other hand, these papers show that TAPAS adds little or no incremental validity to "can do" aspects of performance over and above the Armed Services Vocational Aptitude Battery (ASVAB). Three measures of vocational interest are described in articles in this special issue and research has been positive about their ability to predict attrition, rates of promotion and reenlistment, and job satisfaction. A number of topics for further research are noted.

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What is the public significance of this article?—An organization's effectiveness is based on the people who comprise it. Thus, selection and placement of personnel directlyimpact that effectiveness. Historically, cognitive testing has been the dominant tool for these purposes. However, cognitive tests have been shown to be limited in predicting elements of success beyond technical proficiency. They do not predict well those aspects of performance which depend on the individual's motivation to perform well over time, or to remain with the organization over time. For these outcomes, noncognitive attributes such as personality and vocational interests provide critical predictive information. This special issue demonstrates the effectiveness of personality and interest measures in a military context, and how these tools are transforming the military selection and classification process. The effort reported in thisissue marks major changes in the selection and classificationprocess, changes that can help both military and civilian organizations be more productive and successful.

In 2005 the Armed Services Vocational Aptitude Battery (ASVAB) Review Panel was convened with the assignment of examining the status of the military enlistment testing program. The Review Panel began by asking military researcher to describe the concerns of their leadership. In its final report, the Review Panel summarized these concerns as "Although explicitly created and implemented for the purpose of predicting performance in training schools, Service representatives told the Review Panel that their leadership criticized the ASVAB for its inability to:

- Improve retention during the first-term of enlistment;
- Create a culture with a strong Service orientation;
- Foster disciplined initiative;
- Improve problem-solving skills;
- Enhance teamwork, and
- Increase continuous learning and staying up-to-date with current events" (Drasgow, Embretson, Kyllonen, & Schmitt, 2006, p. 15).

Of these issues, only "Improve problem-solving skills" appears to be related to cognitive skills; all the rest seem to be related to non-cognitive attributes. This special issue of *Military Psychology* focuses on the assessment of these non-cognitive traits and thereby begins to address the concerns raised by the military leaders.

Since the days of Project A we have known that many important aspects of performance are motivationally driven. These dimensions of performance, sometimes termed "will do," are often not well predicted by cognitive ability. For insights about future behaviors of Service members in regard to these dimensions of performance, we need to look outside the world of cognitive ability.

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This is not easy. The latent structure and nomological network of non-cognitive traits seems very different than that of cognitive ability. For example, Malcolm Ree and his colleagues showed that for crystalized cognitive abilities, there is "Not much more than *g*" (Ree & Earles, 1991; Ree, Earles, & Teachout, 1994): Broad traits such as mathematical ability, verbal ability, and technical knowledge add little to the accuracy of prediction over psychometric *g* (defined as the first principal component of the ASVAB battery). One interpretation of Guilford's (1967, 1985) program of research is that it showed that division of broad traits into more homogeneous abilities was of limited practical value. Non-cognitive abilities, on the other hand, seem to be more complex than cognitive abilities in their latent structure and relationships with important outcome variables (and hence more interesting!).

Perhaps this is an overgeneralization, but it appears that not only do broad non-cognitive traits have differential relations with important outcome variables, but their underlying narrow facets also have more complex relations with criterion variables. First, consider latent structure. It might be technically possible to decompose broad cognitive abilities such as mathematics into narrower dimensions such as arithmetic operations, algebra, trigonometry, and so forth, but they would be very highly correlated. On the other hand, conscientiousness is a broad non-cognitive trait and it can be decomposed into the facets of achievement, order, self-control, responsibility, non-delinquency, and virtue (Drasgow et al., 2012). In a factor analysis, the latent (i.e., with no measurement error) achievement factor correlated only .47 with latent self-control and .27 with responsibility (Drasgow et al., 2012). This contrasts greatly with the .9+ correlations that would be found with mathematics subdimensions.

Turning now to relations with other variables such as performance, the underlying explanation for "Not much more than *g*" is that in addition to being highly correlated, cognitive abilities all have roughly similar correlations with outcomes. In sharp contrast, Roberts, Chernyshenko, Stark, and Goldberg (2005) found that an overall measure of conscientiousness had a correlation of .00 with Work Dedication, but the adjusted R for its six facets was .23. This resulted because two facets had significant and positive correlations with Work Dedication but another facet had a significant negative correlation.

In sum, non-cognitive traits tend to have lower intercorrelations than cognitive abilities and have more variability in their correlations with other variables. Unsurprisingly, they often add little to the prediction of job knowledge and other "can do" criteria (Nye et al., this issue), but can have substantial incremental validity for "will do" criteria (Nye et al., this issue). These characteristics provide ample opportunities for improving selection and classification decisions. Importantly, recent years have seen important new research and development efforts for the assessment and validation of non-cognitive skills. This special issue of *Military Psychology* contains ten articles that describe some of this exciting new work.

Prolegomenon

The first article in this special issue is "Personality and interests: Theoretical perspectives" by Michael Rumsey (this issue). This paper reviews and summarizes overarching theories of personality and vocational interests. Of particular note is that it addresses the stability of personality over situations and time as well as predictive validity. This is important because highly influential psychologists have argued that personality does not matter because the situation controls all the variance in behavior (Mischel, 1968) and because it has little criterion-related validity (Guion & Gottier, 1965). As the papers in this special issue and numerous meta-analyses show, personality is related to behavior in organizations – including the United States military. Moreover, personality is reasonably stable over time (although significant changes do occur; Roberts, Walton, & Viechtbauer, 2006).

Rumsey's paper also presents an introduction and overview of vocational interest theory. Although vocational interests have been studied for a century (e.g., from 1916 to 1923 at the Carnegie Institute of Technology as described by Strong, 1943, p. vii), work has primarily focused on their use for counseling. Importantly, several recent meta-analyses (Nye, Su, Rounds, & Drasgow, 2012, 2017; Van Iddekinge, Roth, Putka, & Lanivich, 2011) have shown that interests, particularly the congruence between one's interests and the work environment, are substantially related to job performance and retention. This has stoked renewed interest in interests by military researchers and some of their work is described in three papers in this special issue.

Personality

The research on personality described in the papers in this special issue has its roots in the Armed Services Applicant Profile (ASAP; T. Trent, 1993) and the Assessment of Background and Life Experiences (ABLE; White, Nord, Mael, & Young, 1993). The ASAP and ABLE were briefed to the Defense Advisory Committee (DAC) on Military Personnel Testing about 25 years ago and approaches to their use for enlistment screening were suggested (McBride, 1993). Although findings under research conditions were positive, the DAC recommended against implementation for enlistment testing because these instruments used a single statement format that could be easily faked (White

et al., 1993, pp. 149–153). This led White and colleagues (White & Young, 1998; Young, McCloy, Waters, & White, 2004) to develop the Assessment of Individual Motivation (AIM), which assesses the same six temperament dimensions as the ABLE. The AIM uses a four-option forced choice format and an "item" consists of two relatively personality positive statements and two relatively negative statements; each statement reflects a different dimension. Respondents choose the statement "Most like me" and the statement "Least like me." The AIM was found to be resistant to faking good and predicted first-term attrition with approximately the same efficacy as the ABLE (White & Young, 1998).

The AIM represents a major step forward for the use of non-cognitive measures in high stakes settings where informants (e.g., recruiters) can coach applicants to fake good. However, the AIM was not designed for large-scale use: There was only one static form consisting of a relatively small number of items. This form had been painstakingly produced, which suggested that creating the large number of parallel forms needed for enlistment testing would be a challenge. Consequently, Army researchers looked for an alternative approach that would retain AIM's fake resistance and criterion-related validity, but would be more amenable to mass testing. The result was the Tailor Adaptive Personality Assessment System (TAPAS; Drasgow et al., 2012).

TAPAS uses a two-alternative forced choice format with the statements usually drawn from different dimensions. The statements are roughly balanced in social desirability and extremity on their respective dimensions. Importantly, TAPAS uses a computer adaptive testing (CAT) format where statements are drawn dynamically from large item pools based on test takers' previous responses. Consequently, each assessee receives a unique test form, which thwarts some test taking strategies that can be highly effective for static tests (e.g., providing the single answer key to test takers). Item pools for 27 temperament constructs have been developed; 22 are facets of the Big Five personality domains.

The articles in this special issue examine some critical questions about TAPAS. First, can, and do, applicants fake good? An applicant who knew what job he or she wanted and knew what TAPAS facets predicted performance on that job would probably be able to fake good. But it appears that circumstances favor fake resistance: Many young people are not exclusively focused on one job and they do not know what facets contribute to the prediction of performance. Assuming it is resistant to faking (there is more on this below), then the critical question is "Does TAPAS predict performance in the military?". Answering this question is not easy because there are so many different jobs in the Services. Moreover, "performance," as convincingly demonstrated in Project A, is not a unitary construct. Instead, there are multiple dimensions of performance that are not necessarily highly correlated.

Fake resistance

J. Trent, Barron, Rose, and Carretta (this issue) carefully examined the fake resistance of TAPAS. Applicants for Air Force enlistment are routinely administered TAPAS. J. Trent et al. readministered TAPAS to a sample of new recruits during their basic military training. Two conditions were examined. One group was asked to respond honestly and the other group was directed to fake good. In within person analyses, scores for individuals in both groups were compared to their operational TAPAS scores obtained as part of enlistment screening. The effect sizes were very similar for the two groups: During basic training, both had somewhat lower Dominance scores and somewhat higher scores on Selflessness and Non-delinquency. Perhaps basic military training is an antidote to narcissism! J. Trent et al. (this issue) also directly compared the recruits' basic training TAPAS scores of the two groups and none of the effect sizes was large enough to be considered small according to Cohen's criterion (d = .2). As a check on the faking manipulation, these researchers had included the Air Force Social Desirability Scale (SDS). The effect size for the honest-fake good comparison was a whopping 1.86, which is more than twice as large as what Cohen considered as large (d = .8). In sum, J. Trent et al.'s faking manipulation was highly effective, but TAPAS was fake resistant.

Validity

The *Standards for Educational and Psychological Testing* (AERA/APA/NCME, 2014) begins Chapter 1 with "Validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing tests and evaluation tests. … When test scores are interpreted in more than one way …, each intended interpretation must be validated" (p. 11). The challenge for TAPAS in particular and personality in general is that so many inferences might be made. An assessment instrument developed for predicting attrition in the Army does not necessarily predict attrition in the Air Force or Navy. Similarly, successfully predicting "will do" performance during the first term of enlistment does not guarantee successful prediction in more senior roles such as drill sergeant or recruiter. As stated in the *Standards* quote, each new use of an assessment tool should be validated.

So where does the use of personality for predicting performance in the Services stand in regard to this never-ending process? This special issue contains six papers addressing aspects of the validity of TAPAS; they are summarized in Table 1. All obtained statistically significant predictions of important outcomes from TAPAS, even after controlling for AFQT scores. Generally, correlations of individual facets with criterion measures were small, but correlations of multi-facet composites with criteria were sometimes larger and in the .20s or .30s. Consistent with expectations, TAPAS often added little to the AFQT or ASVAB prediction of training performance or job knowledge for first term Soldiers.

Nye, White, Drasgow et al. (this issue) focused on criterion measures collected at the end of training for new recruits in five military occupational specialties (MOS). For their "can do" criterion (a combination of MOS specific job knowledge test scores and Army-wide job knowledge test scores) sometimes significant but small amounts of incremental validity were obtained after controlling for ASVAB scores. In contrast, ASVAB was generally unable to predict the "will do" criterion composite (a combination of Army Physical Fitness Test scores, the Army Life Questionnaire, training class failure, and disciplinary incidents), but TAPAS's "will do" composite added significantly and substantially (increases in R in the range of .19 to .28 for the five MOS). Interestingly, 12-month attrition was jointly predicted by ASVAB and TAPAS, with both explaining important proportions of variance: ASVAB *R*s ranged from .04 to .10 across the five MOS and TAPAS's increases in *R* ranged from .04 to .13.

As expected Nye, White, Drasgow et al. (this issue) found that personality facets and broad domains were less highly intercorrelated than cognitive abilities, leading to the potential for large gains in differential classification. This is indeed what was observed: About 40% of the Soldiers in each of the five MOS they studied were predicted to perform at least a half standard deviation higher in one of the other four MOS. This provides an opportunity to improve Force readiness at relatively little cost: During the enlistment process, individuals could be sorted into MOS where they would be likely to be high performers. Interestingly, Scholarios, Johnson, and Zeidner (1994) showed that important gains in overall Force performance could be gained by optimal assignment of individuals to jobs based on much more highly correlated cognitive tests. Analyses along the lines of Scholarios et al. would be expected to show even larger gains for the use of personality.

Kirkendall, Bynum, Nesbitt, and Hughes (this issue) looked at the prediction of various aspects of in-unit performance for Soldiers during their first term of enlistment. They examined the Can-do, Will-do, and Adaptation TAPAS composites for a sample of 6,821 Soldiers. Similar to Nye, White, Drasgow et al. (this issue), none of the TAPAS composites provided substantial incremental validity for predicting "can do" criterion measures. On the other hand, the "will do" and Adaptation composites added meaningful amounts of incremental validity for the Army Physical Fitness Test score and Army and MOS fit.

Attrition and reenlistment were the focus of the paper by Hughes, O'Brien, Reeder, and Purl (this issue). The importance of this work is highlighted by their observation that a decrease of 0.1% in attrition could save the Army over $4 million per year. Hughes et al. examined when attrition occurred in the first term of enlistment and why it occurred. They found medical and performance-based attrition were the most common in the first 9 months of enlistment, but then misconduct became the most frequent. Using a proportional hazards regression analysis and controlling for AFQT score, they found TAPAS facets added significantly to the prediction of attrition. In addition, a number of interactions of time with personality facet were found. As an example of such an interaction, the personality dimension Achievement became more important over time for predicting performance-based attrition.

In the only non-Army study of personality, Trent et al. (this issue) found strong positive results (R = .30) when predicting self-reported counterproductive work

Table 1. Summary of TAPAS validation studies.

Authors	Service	Sample	Sample Size	Criteria
Kirkendall, Bynum, Kennedy, & Hughes	Army	In-unit Soldiers in first term	6,821	Army-wide job performance; self-rated fit; supervisory performance ratings; attrition
Hughes, O'Brien, Reeder, & Purl	Army	First term Soldiers	34,884–168,321	Attrition; reenlistement
Nye, White, Drasgow, Prasad, Chernyshenko, & Stark	Army	First term Soldiers at end of training	14,137– 232,761	Occupation specific job knowledge; commitment; fit; Army Physical Fit Test; attrition
Muhammad, Wolters, & Jayne	Army	Non-commissioned officer educational system instructors; Special Forces; Drill Sergeants	?	Commitment; fit; course completion; leadership
Nye, White, Horgen, Drasgow, Stark, & Chernyshenko	Army	Experienced recruiters	504–670	Supervisory performance rating; fit with job; commitment; job satisfaction
Trent, Barron, & Rose	Air Force	Recently enlisted recruits	1,341	Self-reported counterproductive work behaviors

behaviors (CWBs) from pre-accession TAPAS scores for recently enlisted Air Force recruits. This is an important example of research demonstrating that a measure developed for one purpose (prediction of attrition during Army enlistment screening) can be used for another (prediction of CWBs of Air Force recruits).

Turning now to research with more senior Service members, Muhammad and colleagues (Muhammad, Wolters, & Jayne, this issue) describe positive TAPAS results for several Army roles. They report that an adaptation of TAPAS, termed the Non-Commissioned Officer Special Assignment Battery (NSAB), predicted commitment to the Army, stronger intentions to stay in the Army, and higher satisfaction and better fit with the instructor roles of NCO Educational System instructors. Muhammad et al. also noted that TAPAS was useful for predicting success of Special Forces candidates: 61% of NCOs with high TAPAS scores successfully completed the Special Forces Assessment and Selection (SFAS) course vs. 35% for those with low scores. Muhammad et al. also described positive findings for another non-cognitive measure, the Non-Commissioned Officer Leadership Skills Inventory (NLSI) for predicting peer and supervisor ratings of the overall performance of Drill Sergeants.

Nye, White, Horgen et al. (this issue) provide a more detailed described of a study of another senior Army role, namely recruiters. They found NSAB to be a strong predictor of job performance (adjusted R = .36), Army Commitment (adjusted R = .38), and perceived fit with their recruiter job (adjusted R = .49).

The findings in these articles are interesting and important. But many more questions need answers. For example, the Big Five temperament constructs have been front and center since Barrick and Mount's (1991) seminal meta-analysis showing that conscientiousness was valid across jobs in the civilian sector. Several subsequent meta-analyses have confirmed and extended Barrick and Mount's results so that now we know that each of the broad domains is valid, at least for civilian jobs, when a job analysis suggests that it is relevant (Hogan & Holland, 2003). On the other hand, there are findings where weighted composites of facets outperform the broad domains. For example, Nye, White, Horgen et al. (this issue) found that one facet of Extraversion, Sociability, had a correlation of .27 with Army Commitment but another facet, Dominance, only correlated .02. Defining Extraversion as a unit weighted composite of these facets would dilute the Sociability-Commitment relations. As noted previously, Roberts et al. (2005) found two facets of Conscientiousness had positive correlations with a criterion variable and another had a negative correlation.

Another weighting issue can be inferred from Nye, White, Drasgow et al.'s (this issue) finding that many Soldiers may have performed better in another MOS. The fact that the predicted performance of Soldiers differs across MOS means that the set of facets and their weights in the composites varies across jobs. It seems sensible that Physical Conditioning would be more relevant for Infantry than Medics and the reverse would be true for Intellectual Efficiency. This finding is fundamentally different from cognitive ability where the "Not Much More than *g*" papers show that differential weighting (where all weights are non-negative) has relatively little effect and produces more or less the same rank ordering of individuals. Thus, personality appears to offer the opportunity for larger differential classification gains in overall performance than those found by Scholarios et al. (1994). Clearly, more research is needed to flesh out an operational model because there are many additional considerations such as how many individuals are needed for each job, the timing for when individuals can enter training classes, and so forth. Such a model might include optimal classification weighting for individual jobs or, at least, clusters of jobs with similar characteristics.

Another important issue is the generality of TAPAS, its derivatives such as NSAB, and other fake-resistant personality measures. TAPAS was originally designed as an enlistment screening tool and some of its moving parts reflect this origin. For example, when statements are paired to create an item, there are constraints that require the statements to be roughly comparable in their social desirability and item response theory extremity parameters. These parameters were derived based on data from new recruits. Would the parameters be substantially different for experienced Service members? Would they differ across Services? At the very least, research is needed to evaluate the validity of inferences for uses that differ from enlistment screening in the Army.

The studies included in this issue suggest that TAPAS and its derivatives work well for more senior Army jobs (but more research is needed to identify the range of jobs where they are effective). In fact, these personality measures seem more effective for predicting what Borman and Motowidlo (1997) termed task performance for experienced Soldiers than for newer recruits. This seems to be an example of Ackerman's (1988) skill acquisition model. New recruits would be in the declarative stage of skill acquisition, where heavy cognitive demands are placed on the learner and ASVAB or AFQT would be most predictive of performance. After soldiering skills have been mastered, Soldiers are in the procedural stage, which has much less of a cognitive load. Here motivation becomes more important, highlighting personality factors.

A final comment on personality research is that correlation coefficients can be highly misleading. For example, the point biserial correlation between the

TAPAS Adaptation composite and 12-month attrition for Nye, White, Drasgow et al.'s (this issue) sample was .09, which might be dismissed as nugatory. Figure 1 in their article shows that the attrition rate for the bottom 20% on the composite was 15% whereas the rate for the top group was 7%. Recalling Hughes et al.'s (this issue) observation that a 0.1% decrease in the attrition rate would have an annual $4 million impact, this 8% difference is highly meaningful and provides a much better indication of the impact of personality assessment than the point biserial correlation.

Vocational interest

The second non-cognitive domain addressed in this special issue is vocational interest, which now has been studied for nearly a century. Strong (1943) provided a World War I era quote from Walter Bingham dating to about 1920: "the developments with regard to the diagnostic meaning of interests would prove to be one of the great, if not the greatest, contributions to applied psychology" (p. vii). Perhaps it has not attained this lofty status, but several recent meta-analyses (Nye et al., 2012, 2017; Van Iddekinge et al., 2011) show that vocational interest assessment can be very useful and important to civilian organizations. The Services have been interested in interest for more than 65 years, with early work by Guilford, Christensen, Bond, and Sutton (1953, 1954) as recounted in Johnson, Romay, and Barron (this issue). The Services' focus on interest measurement is well founded, as the meta-analyses have shown that congruence between a person's interests and the characteristics of his or her job is associated with higher performance and lower attrition.

Watson (this issue) describes a careful developmental process used to create the Job Opportunities in the Navy (JOIN). It is based on the assumption that a young person would have no prior knowledge of Navy jobs (called "ratings"). Thus, part of what JOIN is intended to do is to inform applicants about Navy ratings. An interesting component of JOIN is that it provides images showing actual Navy Sailor performing tasks in their rating. After an individual completes the assessment, JOIN provides an index of fit for every enlisted rating.

JOIN is doing what it is supposed to do. For example, in a sample of 5,000 recruits, 70% say they had increased knowledge of Navy jobs due to JOIN (Chen & Jones, 2008). Sailors with higher JOIN scores for their rating have lower attrition, a higher rate of promotion to E6, greater training success, and more frequent reenlistments (Watson, this issue). Clearly, JOIN provides the Navy with a useful tool for increasing Force readiness.

Johnson, Romay, and Barron (this issue) used the JOIN as a starting point for an Air Force interest measure. It was named the Air Force Work Interest Navigator (AF-WIN) and provides a measure of fit for 130 enlisted Air Force jobs. It also displays images depicting each job. Importantly, Johnson et al. found that just 29% of Airmen were in jobs that fell in their top ten "best fit" jobs, and 47% were in jobs in the top 25; this constitutes a real opportunity for the use of AF-WIN. In a sample of 4,222, Johnson et al. found that the AF-WIN fit measure correlated .44 with job satisfaction and .22 with reenlistment intention. This again provides powerful evidence of the value of interest measurement for the Services.

Kirkendall et al. (this issue) provide an update on a new vocational interest measure currently being developed by the Army. It is the Army Vocational Interest Diagnostic (AVID), which will be a computerized adaptive assessment utilizing a two-alternative forced choice format. In a departure from traditional instruments, it is being designed to accurately assess low and intermediate levels of interest as well as high interest. The force-choice format is intended to improve the resistance to applicants manipulating their scores (i.e., faking) to improve their odds of getting a desired MOS that they may, or may not, actually be suited for. AVID will assess both broad and narrow interest factors.

Summary and directions for future research

The research to date is promising. JOIN and AF-WIN serve useful educational purposes by informing young people about military jobs. Individuals with low scores on their fit measures have lower levels of job satisfaction, lower reenlistment intentions, and higher attrition rates.

But there is a great deal that is not known about the use of vocational interest measurement in military contexts. First, if such measures were implemented for all applicants to a Service, would faking become a problem? In the long run, it is certainly negative for a person to be placed into a job for which he or she has low interest. But, at the point of enlistment, prestige and glamor may lead a person to manipulate his or her responses to get a seemingly desirable job that might turn out to a bad fit. To date, research on the frequency and consequences of faking on vocational interest measures has been limited.

Military research has found that fit between a person's interest and his/her job leads to higher satisfaction and reenlistment intentions and lower attrition. Each of the Services is a very large organization and more research is needed to show that these findings

generalize across jobs. Also, the research has focused on entry level jobs; to what extend to these findings generalize to more senior jobs?

Johnson et al.'s (this issue) finding that interest-job fit, as assessed by the AF-WIN, correlated .38 with job satisfaction is very interesting in light of meta-analyses of fit with satisfaction. For example, Tsabari, Tziner, and Meir (2005) obtained a meta-analytic correlation of .16, which is in line with prior meta-analyses. Why is the correlation for the Air Force so much higher than those in civilian jobs? Again, additional research is needed.

Concluding remarks

For many years military scientists have conducted research and development for the assessment of individual differences; the ASVAB is an example of an outstanding instrument they developed. Countless studies have shown that it predicts success in training and that it has greatly improved Force readiness at a low cost. The preceding sections summarize some of the key findings of research on noncognitive traits that are described in more detail in the papers in this special issue. As should be apparent, military researchers have conducted important research that shows noncognitive assessments can also add real value to the enlistment screening process and facilitate matching people and jobs for more senior Service members. Much has been learned, but as with any line of research, there are many more questions that can be asked.

Validation research can be criticized, with some legitimacy, as never ending. The *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 2014) rebuts this issue by stating "At some point the effort to provide sufficient validity evidence to support a given test interpretation for a specific use does end" (p. 22). Have some noncognitive research and development efforts reached this point? At a high level, it appears reasonable to conclude that military research is consistent with civilian research in finding that temperament and vocational interest are related to workplace attitudes and behaviors: Jobs that are good fits with individuals' personality and interest are likely to lead to higher commitment, better performance on motivationally driven aspects of performance, lower attrition, and a highly likelihood of reenlistment. Thus, using military temperament and interest instruments for matching appears justified. Clearly, this cumulative body of research is important.

In sum, after a long and careful validation process, it is time to begin using an assessment to garner its benefits. Although implementation of the products of research on noncognitive traits has been relatively limited to date, it appears that several are now ready for operational use. It is time for military leadership to embrace these opportunities to improve person-job fit, job attitudes, performance, and retention.

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