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Intellectual Competence and the Intelligent Personality: A Third Way in Differential Psychology

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This article conceptualizes the construct of the intelligent personality as an indicator of intellectual competence in an attempt to expand the traditional concept of intelligence and account for both ability and nonability determinants of academic performance. Theoretical implications are discussed with regard to recent attempts to (a) explain correlations between personality and intelligence measures, (b) conceptualize novel constructs that may bridge the gap between intelligence and personality, and (c) develop a conceptual model for understanding the relationship among individual differences underlying human performance in real-world settings. Practical implications are also considered, in particular with regard to the validity of the intelligent personality as a predictor of future achievement.

Keywords: intellectual competence, personality, academic performance, self-assessed intelligence, intelligent personality

Personality or Intelligence

What do personality and intelligence have in common? Three things; namely, that (a) they are latent psychological constructs (Chamorro-Premuzic & Furnham, 2005a), (b) their effects are manifested and observed in behavioral differences between individuals (Brebner & Stough, 1995), and (c) such differences can be quantified with standardized psychometric instruments (Funder, 2001). Furthermore, (d) both variables occupy a central position in the history of differential psychology (Barratt, 1995; Eysenck & Eysenck, 1985; Guilford, 1959), (e) they are largely genetically determined (Plomin, 1999; Plomin, Chipuer, & Loehlin, 1990), (f) individuals' scores on personality and intelligence (in particular, nonverbal) tests show relatively little variability throughout the life span (Costa & McCrae, 1992; Gottfredson, 2002; Matthews & Deary, 1998), and (g) they are predictors of individual differences in a wide range of outcomes including performance in educational and occupational settings (Barrick & Mount, 1991; Barrick, Mount, & Strauss, 1993; Chamorro-Premuzic & Furnham, 2003a, 2003b; Gottfredson, 2002; Kuncel, Hezlett, & Ones, 2001, 2004; Salgado, 1997). Cattell (1941) conceptualized intelligence as an aspect of personality and assessed it as part of his 16-personality factor model. Eysenck (1993, 1997) on the other hand, conceptualized intelligence as the cognitive component of personality (implying, like Cattell, that intelligence is part of personality) but used the term *temperament* to refer to the noncognitive[1] aspects of personality or what most psychologists now understand as "personality." Furthermore, and despite the above-listed similarities, most differential psychologists have chosen to conceptualize intelligence and personality as essentially distinctive and unrelated constructs, in terms of

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[1] Throughout this article, the terms *noncognitive* and *nonability* are used interchangeably to refer to individual differences traditionally conceptualized outside the realm of intelligence or cognitive ability. Examples of nonability factors may include anxiety, emotional regulation, confidence, and sociability. Conversely, *ability* factors refer to individual differences traditionally ascribed to the intelligence domain and may include spatial, verbal, and mathematical abilities.

methodological, empirical, and conceptual premises.

Methodologically, differential psychologists (Ackerman, 1994; Cronbach, 1949; Guilford, 1959; Hofstee, 2001; Zeidner & Matthews, 2000) have distinguished between personality and intelligence on the basis of the two salient psychometric approaches of self-report inventories and objective tests. Self-report inventories assess preferences and typical performance or what individuals *generally do* (tendencies). Conversely, objective tests measure maximal performance or what individuals *can do* (aptitudes). For instance, you may be able to run 100 m in 11.3 s (maximal performance) but would normally walk that distance in a minute or two (typical performance). Although there have been isolated cross-over attempts to test personality objectively (Cattell, 1971; Eysenck, 1997; Schmidt, 1988) and assess intelligence subjectively (Chamorro-Premuzic, Furnham, & Moutafi, 2004; Furnham, 2001; Goff & Ackerman, 1992; Paulhus, Lysy, & Yik, 1998), most objective tests represent measures of ability or intelligence, whereas self-report inventories are normally regarded as indicators of behavioral dispositions or personality traits. Thus, the choice of psychometric method has largely determined whether psychologists assessed personality or measured intelligence.

Empirically, the distinction between personality and intelligence has been grounded on the basis of relatively consistent evidence of low (zero-order) correlations between measures of both constructs (Zeidner & Matthews, 2000). In simple terms, this means that measures of ability such as IQ test scores should be uncorrelated with personality traits as assessed with self-report inventories. Before the early 1990s, however, there had been little consensus on the identification of the major personality dimensions or taxonomy that should be examined, making large-scale investigations of the personality–intelligence interface a difficult task.

Conceptually, the distinction between personality and intelligence is based on the assumption that those aspects of individuality that determine performance differences on an intelligence test are essentially different from those that determine different levels of responses on a personality inventory (Chamorro-Premuzic & Furnham, 2004a). This implies that the psychological processes or latent variables causing aggregated differences in personality and intelligence are qualitatively distinct. To put it simply, intelligence tests should measure intelligence but not personality, and personality inventories should measure personality but not intelligence.

However, since the acceptance of the Five-Factor Model as the consensual taxonomy for understanding individual differences in personality, an increasing number of studies reported significant correlations between personality and intelligence measures (Ackerman & Heggestad, 1997; Austin et al., 2002; Austin, Hofer, Deary, & Eber, 2000; Brand, 1994; Chamorro-Premuzic, Moutafi, & Furnham, 2005; Furnham, Chamorro-Premuzic, & Moutafi, 2005). The findings from the most comprehensive meta-analysis of personality and intelligence correlations (Ackerman & Heggestad, 1997), reported in Table 1, indicated that three of the five major personality dimensions, namely Neuroticism, Extraversion, and, in particular, Openness to Experience, are significantly correlated with the general intelligence factor *g*. A similar pattern of results emerges when intelligence is measured in terms of crystallized abilities (*gc*) or acquired knowledge, whereas correlations tend to drop when elementary cognitive processes such as cognitive speed and visual perception are measured. Mathematical abilities, on the other hand, have been found to be significantly correlated with Neuroticism, Extraversion, and Conscientiousness.

The pattern of results from Ackerman and Heggestad (1997, recently replicated in another large-scale study by Reeve, Meyer, & Bonaccio, 2005) indicates that part (if only a minor part) of the variance in so-called intelligence tests can be accounted for by measures other than intelligence, which may suggest that intelligence tests are not only measuring intelligence or that personality inventories are not only assessing personality. In a recent article (Chamorro-Premuzic & Furnham, 2004a) we proposed a two-level semantic framework to interpret the significant correlations between personality and intelligence measures. The first level refers to "measured" intelligence and conceptualizes the effects of personality traits such as Neuroticism or Extraversion on individuals' ability test performance. For instance, negative correlations between Neuroticism and IQ measures are indicative of the fact that anxiety im-

Table 1
Personality Correlates of Psychometric Intelligence: The Big Five and Ability Test Scores

Ability measure	N	E	O	A	C
General intelligence (psychometric *g*)	−.15*	.08*	.33*	.01	.02
Crystallized intelligence (*gc*)	−.09*	.11*	.30*	.04	−.05
Cognitive speed	−.04	.06*	−.05	.04	.04
Visual perception	−.04*	.06*	.24*	.02	−.10
Mathematical/numerical ability	−.17*	.09*	.01	−.05	−.15*

Note. Table and results adapted from Ackerman & Heggestad's (1997) meta-analysis of 135 samples. (For a recent partial replication and extension on a sample of 71,887, see Reeve, Meyer, & Bonaccio, 2005). N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness.
* $p < .05$.

pairs cognitive performance, whereas positive correlations between Extraversion and timed ability tests may be explained by the fact that extroverts trade off speed for accuracy when solving cognitive problems. The second level, on the other hand, refers to "actual" intelligence and conceptualizes the effects of personality traits on intelligence, as well as the effects of intelligence on personality traits. For example, the positive correlation between measures of Openness and *gc* may be indicative of the fact that intellectual curiosity (need for cognitive experience) leads to higher intellectual investment and knowledge acquisition, whereas the negative correlation between Conscientiousness and fluid intelligence measures (*gf*) would support the idea that less able individuals become more conscientious over time to compensate for their lower intelligence level. Thus, two different conceptual levels are needed to interpret correlations between personality and intelligence: intelligence as performance and intelligence as actual cognitive ability.

The implications of the significant correlations between personality and intelligence measures can be summarized in terms of two major alternatives: Either we "refine" intelligence tests to avoid or minimize their correlations with personality inventories, or we consider those aspects of personality that correlate with psychometric intelligence a part of intelligence. We believe it is the second alternative that is more advantageous for understanding and predicting individual differences in educational and occupational settings.

Academic Performance (AP): The Criterion

Academic performance (AP) has been the criterion par excellence for validating IQ tests and other ability tests for over a century (Binet, 1903; Binet & Simon, 1905/1961; Spearman, 1904). It is, therefore, unsurprising that ability tests have been reported to correlate positively with AP, sometimes as highly as $r = .81$ (Deary, Whiteman, Starr, Whalley, & Fox, 2004), although usually lower at more advanced levels of formal education. For instance, Jensen (1980) reported correlations between psychometric intelligence and AP dropping from $r = .70$ in elementary school to $r = .50$ in secondary school, and to $r = .40$ in college (see also Boekaerts, 1995). Given that AP measures are, as are other behavioral measures, exposed to error variance, it would be conceptually erroneous to expect to explain 100% of the variance in AP. This said, it should also be emphasized that ability measures alone are insufficient to predict AP with the greatest possible accuracy.

The question of what measures should be added alongside psychometric intelligence in the prediction of AP can be addressed through an identification of the variables associated with the processes underlying differences in the outcome or criterion.

If a criterion *z* (e.g., grade point average [GPA]) is determined by *x* (e.g., cognitive ability [IQ]) as well as *y* (e.g., anxiety), then the best test to predict *z* will be one that measures both *x* and *y*, rather than either *x* or *y*. Thus, tests that measure *x* but not *y* will represent a "purer"

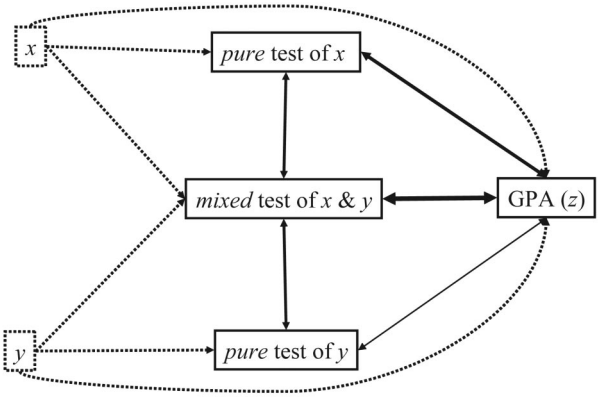
measure of *x* but a less accurate measure of *z*, whereas tests that measure *y* but not *x* will represent a purer measure of *y* but a less accurate measure of *z*.

If anxiety affects both GPA and IQ test performance, it is incorrect to assume that the purer measure of cognitive ability represents the better predictor of GPA, as if anxiety impaired performance on academic exams but not on IQ tests. Accordingly, the common case of underperformance on an IQ test caused by anxiety should not undermine the validity of the test but rather alert test score interpreters of the possible occurrence (or recurrence) of underperformance on academic exams and similar assignments. Just as measuring anxiety may increase the ecological validity of a measure aimed at predicting school success or GPA, then GPA may be an indicator of both intelligence and anxiety (see Figure 1).

In fact, the increase in predictive power associated with the increase in the number of reliable ability tests used to compute a general intelligence score to predict AP may also reflect a more reliable measure of the noncognitive determinants of ability test performance; that is, an aggregated measure of nonability variance picked up by *g*. Thus, anxiety moderates the effects of intelligence on ability tests, but it also moderates the effects of intelligence on academic exam performance. Accordingly, ability tests that correlate with Neuroticism will be better predictors of AP than those uncorrelated with Neuroticism. Likewise, Neuroticism scales that correlate with ability tests should be better predictors of AP than are those uncorrelated with ability tests.

To the extent that the same noncognitive processes that account for variance in psychometric intelligence may be similarly influential determining individual differences in future academic achievement, the variables that measure such processes should also be considered indicators of intelligence. This idea, already evaluated by Wechsler (1950), would require an expansion of the concept of intelligence rather than a reduction of the scope of intelligence measures. Accordingly, Neuroticism (and its reversed form, Emotional Stability) should be interpreted as an aspect of intelligence, and anxiety variance as an element that increases rather than decreases the validity of an intelligence test. Such an interpretation would be useful to explain the common finding that performance under nonarousing conditions is often not replicated under arousing conditions.

From a psychometric point of view, the conceptual identification of new determinants of AP has encouraged differential and educational psychologists and researchers to include other predictors alongside intelligence to explain additional variance in AP. An area that has received increasing attention in the past 20 years is the conceptualization of novel ability con-



Note. *x* = "actual" cognitive ability, *y* = "actual" trait anxiety, GPA = grade point average. *x* & *y* are predictors, *z* is the criterion. Since *z* is influenced by both *x* & *y*, tests of *x* & *y* will correlate higher with *z* than *pure* tests of *x* or *y* only. measure latent correlation influence

Figure 1. Ability and non-ability determinants of grade point average (GPA).

structs or abilities not encompassed by traditional intelligence tests.

Hot Intelligences: Successful but Not Intelligent

For many decades, psychometric intelligence enjoyed a monopoly in the prediction of AP. This should not surprise anyone aware of the fact that cognitive ability measures were specifically devised to distinguish between slow and fast learners (Binet, 1903; Binet & Simon, 1905/1961) and to predict academic outcomes first (Spearman, 1904) and occupational performance soon thereafter (Carroll, 1993; Cattell, 1941; Deary, 2001). However, the success of cognitive ability measures in predicting academic and occupational outcomes did not, by any means, justify the monopoly of psychometric intelligence, a fact acknowledged even by the most stalwart supporters of *g* (Gottfredson, 2003a, 2004a, 2004b; Jensen, 1998; Schmidt & Hunter, 1998). For example, Jensen (1996) admitted that "it might eventually be profitable for researchers to consider searching beyond high ability per se and identify personality indices that also will aid in the prediction of exceptional achievement. The proportion of those gifted youths selected for special opportunities who are most apt to be productive professionals in their later careers would thereby be increased" (p. 409). Instead of exploring and testing the incremental validity of existent nonability traits, such as established personality dimensions, in the prediction of AP, several educational and differential psychologists, particularly in the past 20 years, have focused on the creation of novel abilities that may account for individual differences in real-world success where IQ does not. Emotional (Goleman, 1995; Mayer & Salovey, 1997), successful, practical (Sternberg, 1997, 1999), multiple (Gardner, 1999), and social (Ford & Tisak, 1983) intelligences are all representative examples of a common enterprise: Demolish, replace, or improve *g*.

The popularity of novel ability constructs, often grouped under the label of "hot intelligences" in opposition to the "cold" notion of analytical, logical, and mathematical abilities represented by the traditional *g*, is largely inspired by the layman's dislike of psychometric testing, in particular the concept and measurement of IQ. Just as most people learn to hate examinations at school, IQ tests are bound to evoke negative reactions. The fear of being examined, tested, and put under pressure, manifested in measures of test anxiety (Hembree, 1988), has no doubt contributed to the low popularity of psychometric intelligence. Besides, there are political, ideological, and sociological implications associated with the acceptance of the idea that an individual's potential to succeed in this world is, to a great extent, dependent on inherited abilities. Thus, the IQ hypothesis has poised a historical threat to the illusion of an egalitarian society, generating a conflict between meritocracy and the very principle of egalitarianism (Gottfredson, 2004a; Herrnstein, 1973; Herrnstein, & Murray, 1994).

To be fair, one would also have to admit that the amount of unaccounted variance in AP did not justify the wave of attacks against *g* and IQ, even when such attacks were inspired by the assumption that high AP does not translate into high occupational success (Sternberg, 2004; Sternberg & Wagner, 1993; Sternberg, Wagner, Williams, & Horvath, 1995), an assumption that is in conflict with robust empirical evidence (Ackerman & Beier, 2003; Kuncel, Hezlett, & Ones, 2004). Concepts such as emotional and practical intelligence gained popular territory at the expenses of "conventional" intelligence: Case studies portraying book-smart people who are almost handicapped when it comes to interacting with others were reported as a paradigmatic example justifying any attempt to terminate the reign of *g* (Sternberg, 1997, 1999). Such attempts, however, ignore a century of well-established empirical evidence for to the validity of cognitive ability tests as predictors of real-life outcomes and are based on unrepresentative samples, sometimes as small as $n = 1$. Surely there are high IQ scorers who lack social skills, but there are also—and probably many more—highly emotionally and socially intelligent individuals who do badly on intellectually demanding tasks. On the other hand, the vast majority of cases—in particular, if one examines the wide distribution of IQ scores—are indicative of the contrary: Intelligent people have an advantage, rather than a disadvantage, with regard to social adjustment (Austin et al., 2002; Gottfredsson, 2002, 2003a, 2003b; Herrnstein & Murray, 1994).

At best, attempts to create novel intelligences have merely managed to bridge the gap or

"mine on the no-man's-land" between personality and intelligence (Stankov, 1999). As noted, psychometric methods are based on either the assessment of self-reported items or performance testing on items with correct and incorrect responses. The former method is widely used to quantify individual differences in personality traits, whereas the latter represents the state-of-the-art approach to intelligence testing. Thus, even if we support the claim that there are individual differences in emotional or social intelligence, such that some individuals are better at, say, identifying their own and others' emotions, or managing and influencing others, these "abilities" may not be measured through objective performance tests (Davies, Stankov, & Roberts, 1998; Petrides & Furnham, 2001; Zeidner, Matthews, & Roberts, 2001), as there are few predefined correct and incorrect solutions for emotional or social problems. Furthermore, even in the unlikely event of expert or general consensus to identify the correct solution to emotional or social intelligence problems, an individual's ability to identify the correct answer may not tell us anything about his or her ability to act in an emotionally or socially intelligent manner when confronted with those problems in real life (Brody, 2004). Thus, until the reliability and validity of hot intelligences is demonstrated, it may be safer to remain in the firm lands of established personality traits, which may provide more solid materials for constructing a theoretically and methodologically sound framework for the prediction of future achievement.

Five Big Reasons for *Not* Reinventing the Wheel

Year after year, and this has been a growing trend since the early 1990s, there is more and more consensus on the idea that the Five-Factor, or Big Five, Model of personality represents a universal language to describe and understand differences and similarities between individuals. According to the Five-Factor Model, individual differences can be understood in terms of Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness, which describe individuals' predispositions to think, feel, and behave in consistent ways relatively independent of the situation, context, and time (Chamorro-Premuzic & Furnham, 2005a, 2005b; Costa, 1997; Costa & McCrae, 1992; De Fruyt & Mervielde, 1996; Digman, 1990; Ferguson & Patterson, 1998; Matthews & Deary, 1998; McCrae & Costa, 1997) (for a contrary view, see Block [1995]). The snowball effect regarding the consensus on the Big Five is indicative of a self-fulfilling prophecy: The more researchers agree on the validity of the Big Five, the more research is conducted to validate the Big Five. The opposite scenario would consist of each personality researcher using his or her own instrument to validate his or her own model of personality, an alternative that resembles the idiographic approach whereby there are as many personality theories as there are individuals.

In the Big Five, differential psychologists have developed a common language, and the more that language is spoken, the more it evolves and clarifies. Why, then, make the case for novel constructs that only rename previously identified characteristics of the individual? Kelley's (1927) widely cited *jangle fallacy* may represent an accurate description of recent attempts to encapsulate individual differences in established personality traits under the labels of emotional or social intelligence. Such labels may appeal to the wider public, including test publishers and other industries, but are academically counterproductive conceptual fallacies. Thus, they are likely to produce "independent literatures that evolve[d] from related traits with little consideration of their possible common core" (Judge, Erez, Bono, & Thoresen, 2002, p. 693).

The acceptance of the Big Five as the major taxonomy for classifying individual differences in personality has also made it easier for differential researchers to understand and explain associations between personality and intelligence. Psychometric studies using reliable and valid instruments have shown that traditional intelligence measures tend to be negatively correlated with Neuroticism and positively correlated with Openness and Extraversion, although the correlation between Extraversion and intelligence may be moderated by the type of test, specifically the extent to which high scores are a function of accuracy (Introversion) or speed (Extraversion; Chamorro-Premuzic, Moutafi, & Furnham, 2005; Furnham, Chamorro-Premuzic, & Moutafi, 2005; Furnham, Forde, & Cotter, 1998a, 1998b; Wolf & Ackerman, 2005). Al-

though correlations between Neuroticism and intelligence may only be indicative of links at the level of tested or measured, rather than actual or latent, constructs—meaning anxiety impairs performance on IQ tests rather than actual cognitive ability, the traits of Openness and Conscientiousness have been partly conceptualized as developmental correlates of actual intellectual ability (Chamorro-Premuzic & Furnham, 2004a).

More important, most of the Big Five personality traits have been reported to be significantly correlated with AP, which, as noted, has remained the criterion par excellence for validating psychometric intelligence tests for over 100 years. Our own program of research has identified consistent links between various indicators of AP and Conscientiousness, Neuroticism, Extraversion, and Openness to Experience at different levels of formal education (Chamorro-Premuzic & Furnham, 2002, 2003a, 2003b, 2004a, 2005a, 2005b; Furnham & Chamorro-Premuzic, 2004b; Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005). This pattern of results suggests that personality traits, like intelligence, can significantly affect levels of AP, an idea that can be ascribed to a long-standing theoretical framework spanning back from Cattell's (1971) theory of investment, to Snow's (1992) aptitude theory, and the more recent version of Ackerman's (1996, 1999) PPIK (intelligence as process, personality, interests, and knowledge) model. Furthermore, recent studies suggest that individual differences in personality are not only important determining different levels of academic and IQ test performance, but also self-assessed abilities. In fact, the same personality traits that are associated with *g* and AP are significantly related to subjective indicators of intelligence: Individuals high in Openness and Extraversion, as those low in Neuroticism, tend to award themselves higher intelligence scores, compared with those low in Openness and Extraversion, as well as those high in Neuroticism.[2] Thus, another reason to include the Big Five in the prediction of performance-related individual differences is that personality traits are significantly related to self-assessed intelligence (SAI).

SAI: Expectancy and Insight

Ever since Bandura (1977), psychologists have emphasized the self-fulfilling effects of a number of overlapping psychological constructs such as self-efficacy (Bandura, 1982, 1986; Bandura, Adams, & Beyer, 1977) self-evaluations, self-perceptions (Beyer, 1990, 1998, 1999), locus of control (Anderson, 1977), and, more recently, metacognition (Stankov, 1999), trait emotional intelligence (or emotional self-efficacy; Petrides & Furnham, 2001), and self-estimated/assessed/reported intelligence (Borkenau & Liebler, 1993; Furnham, 2001; Paulhus, Lysy, & Yik, 1998). These constructs have at least two things in common, namely, (a) they refer to subjective evaluations rather than other-assessed or objectively measured traits, and (b) they are believed to affect performance, even when "objectively" measurable variables, such as cognitive ability, are taken into account. Recent research (Judge et al., 2002) has made significant progress identifying links between the above-listed scales. To the extent that these scales share a significant amount of variance in common, higher order constructs or core self-evaluations may be identified and used to predict performance in a more general sense.

Subjective evaluations such as SAI may have added valued in the prediction of performance (beyond IQ) because of their self-fulfilling effects. However, unlike locus of control, self-efficacy, and other self-evaluation constructs, SAI may also be considered a measure of intelligence, namely, a subjective one. Thus, it can be conceptualized as an indicator of insight or of individual differences in people's level of awareness of their capacity to perform on intellectually demanding tasks, such as those required in most educational and occupational settings. To this end, studies have examined the relationship between SAI and psychometric intelligence

[2] The alert reader may have noted the inconsistency regarding the fact that Extraversion is positively related to SAI but negatively related to AP, whereas Conscientiousness is positively related to AP but negatively related to *g*. This inconsistency is clarified in the section titled "Intellectual Competence and the Intelligent Personality: A Third Way."

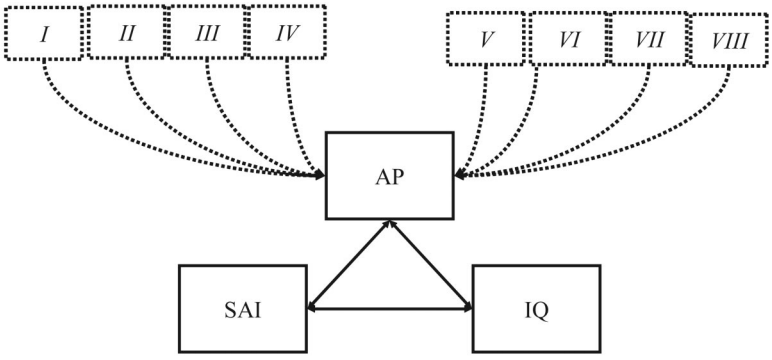
tests (e.g., Borkenau et al., 1993; Furnham, 2001; Paulhus et al., 1998), usually correlated in the region of $r = .30$.

We believe that attempts to validate SAI as an indicator of intelligence should not rely on correlations between SAI and IQ, which is itself validated against AP. Rather, the extent to which SAI may accurately account for individual differences in the capacity to learn new things and solve novel problems should be determined applying the same methodology used to validate IQ tests, namely correlating SAI with AP (Chamorro-Premuzic & Furnham, in press). Since cognitive ability measures, such as IQ tests, are validated against performance criteria, such as level of academic achievement or GPA, it would seem reasonable to validate SAI against AP, rather than the proxy measure of IQ, which, strictly speaking, is merely a predictor of academic and occupation success (if IQ tests did not predict AP, they would lose both its practical value and theoretical importance). Thus, we have conceptualized IQ and SAI as two different predictors of individual differences in AP (Chamorro-Premuzic & Furnham, 2004a), and, as illustrated in Figure 2, the validity of SAI as a measure of intelligence, just as the validity of IQ, will depend on the extent to which the processes that affect individual differences in AP are assessed or measured by SAI and IQ, respectively.

We have shown that SAI is also significantly related to personality traits, namely Neuroticism (low), Extraversion (high), and Openness (high) (Chamorro-Premuzic & Furnham, 2004a; Chamorro-Premuzic, Furnham, & Moutafi, 2004; Chamorro-Premuzic, Moutafi, & Furnham, 2005). To the extent that these levels of personality are also beneficial for performance, SAI may be hypothesized to mediate the effects of both personality and intelligence on IQ and academic exam performance. Furthermore, people's conceptions of their own intellectual abilities are likely to influence their level of achievement motivation and, in turn, determine individual differences in the development of intellectual skills and knowledge (Dweck, 1986; Muller & Dweck, 1998). In conjunction with personality traits, SAI and IQ should therefore provide a more comprehensive, overarching framework to account for individual differences in learning and problem solving than single intelligence tests could provide.

Intellectual Competence and the Intelligent Personality: A Third Way

From Boring's (1961) operationalization of intelligence as that which intelligence tests



Note. AP = academic performance (e.g., exam grades), IQ = psychometric intelligence, SAI = self-assessed intelligence; *I* to *VIII* = selected processes causing individual differences in measured AP.

measure latent correlation influence

Figure 2. A causational model for validating SAI and IQ tests.

measure,[3] to Wechsler's (1950) attempt to account for the noncognitive determinants of IQ-test performance, and recent calls to "expand our conception of intelligence" (Sternberg, 1999, p. 311), the goal of differential psychology has always been the same—namely, to understand the psychological determinants of differences in human performance. Although there is long-standing empirical evidence indicating that higher intelligence is beneficial for performance on a wide range of tasks determining individual differences in real-world outcomes (Gottfredson, 2002, 2003a, 2003b, 2004a, 2004b; Herrnstein & Murray, 1994; Schmidt & Hunter, 1998), there is also irrevocable evidence for the idea that ability factors alone provide an incomplete picture of an individual's capacity to succeed in academic and occupational settings and that aggregated measures of the noncognitive determinants of AP can provide a wider and sharper picture (Barrick & Mount, 1991, 1993; Chamorro-Premuzic & Furnham, 2002, 2003a, 2003b; Kuncel et al., 2001, 2004; Salgado, 1997). Thus, the prediction of performance should not be limited to the validation of intelligence measures but should also consider nonability determinants of AP.

Rather than replacing or redefining the well-established concept of intelligence, we propose the construct of *intellectual competence* (IC) as a way of expanding the traditional notion of intelligence to include other determinants of future academic achievement (Chamorro-Premuzic & Furnham, 2005a, 2005b). To this end, we define IC as an individual's capacity to acquire and consolidate knowledge throughout the life span, a capacity that depends not only on traditional abilities but also on self-assessed abilities and personality traits. IC can be validated against AP, but it also provides an indicator of an individual's likelihood to succeed in occupational settings, particularly in psychologically demanding environments that require both cognitive and emotional adaptation (Chamorro-Premuzic & Furnham, 2005a, 2005b). Unlike most hot intelligences, the notion of IC is not at war with the traditional concept of intelligence. On the contrary, it acknowledges the undeniable power of IQ as a general predictor and cause of individual differences across a wide range of real-world settings. At the same time, however, IC reflects an attempt to look beyond IQ and install some order in the vast array of empirical evidence derived from quantitative attempts to predict performance, a complex task that requires a theoretical integration of different concepts and findings. In that sense, IC may be regarded as a *third way* in differential psychology (Chamorro-Premuzic & Furnham, 2005a).

The logic underlying the notion of IC is simple: AP is a well-established predictor of occupational success (Gottfredson, 2004b; Kuncel, Hezlett, & Ones, 2004; Schmidt & Hunter, 1998) but also the criterion par excellence for validating psychometric intelligence measures such as IQ tests or measures of *g* (Binet, 1903; Carroll, 1993; Chamorro-Premuzic & Furnham, 2004a, 2004b; Deary, 2001). Thus, *g* or IQ may be understood as a proxy measure of academic achievement. However, psychometric intelligence is not the only predictor of AP, which is also predicted by SAI and personality traits (Chamorro-Premuzic & Furnham, 2002, 2003a, 2003b, 2005a, 2005b). If AP can be used to validate IQ tests, then those factors that explain individual differences in AP should also be considered an indicator of IC.

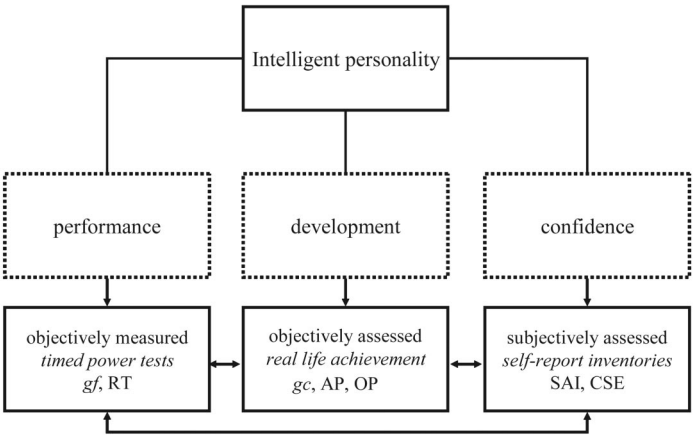
In the same way in which the term *intelligence* is used to refer to the ability determinants of individual differences in AP, the notion of the intelligent personality may be used to describe the personality characteristics that define an individual's level of IC. This idea is not new but can be traced back to Webb's (1915) hypothesis of a "*g*-factor of character" (an obvious allusion to Spearman's *g* factor of intelligence) and Coan's (1974) optimal personality. Although, in theory, the Big Five traits are orthogonal (Costa & McCrae, 1992), "when Neuroticism is reflected (as it sometimes is) and renamed Emotional Stability, [then] all five of the basic factors are positively correlated" (Funder, 2001, p. 200), particularly in U.S. samples. This pattern of results has often been attributed to

[3] Although this part of Boring's definition is as circular as it is empirically untestable, its theoretical implications are that noncognitive factors picked up by intelligence tests should also be considered an aspect of intelligence, for intelligence is what intelligence tests measure. It should nonetheless be noted that the following, less cited, sentence of Boring's (1961) text referred to intelligence as something "that [it] can be measured roughly although not very finely, [that it] is only one factor among many in the mental life, [that it] develops little or not at all in adult life, and [that it] is largely predetermined at five years of age" (p. 214).

socially desirable responding (Digman, 1997), as it is culturally more acceptable to score high on all factors when Neuroticism is reversed. However, personality traits would not be predictive of academic or occupational performance if most individuals were lying or "faking-good" when completing personality inventories. Furthermore, meta-analytical and large-scale studies have indicated that, rather than a threat to the validity of personality traits, social desirability seems "related to real individual differences in emotional stability and conscientiousness" (Ones, Viswesvaran, & Reiss, 1996, p. 660), which determine level of performance as much as personality scores do (see also McCrae & Costa, 1982; Smith, Hanges, & Dickson, 2001).

Undoubtedly, the personality trait that best represents the intelligent personality is Openness to Experience, a trait referring to individual differences in creativity, artistic, and scientific curiosity (Aguilar-Alonso, 1996; Chamorro-Premuzic & Furnham, 2004b; Eysenck, 1993). There have even been suggestions that Openness should be considered an aspect of intelligence rather than of personality (Brand, 1994). Conscientiousness, on the other hand, is an important indicator of individuals' level of persistence, responsibility, achievement striving, and intrinsic motivation, which are all associated with higher academic and occupational performance. Metaphorically, then, we may conceptualize intelligence as the engine, Conscientiousness as the accelerator, and Openness as the map. Neuroticism and Extraversion, on the other hand, may be regarded as indicators of the driver's level of nervousness, optimism, confidence, and energy, whereas Agreeableness (only a marginal indicator of IC) may indicate how ruthless and competitive the driver is. Crucially, all personality traits are somehow related to individual differences in IC.

Figure 3 presents a graphical depiction of the causal paths between the intelligent personality and other indicators of IC. As seen, there are three ways in which personality contributes to individual differences in IC; namely, performance, development, and confidence. Measures of performance, such as ability tests, pick up noncognitive variance that can be explained by aggregated self-reports of the intelligent personality, notably Neuroticism and Extraversion. These traits moderate the correlation between actual ability and test performance: Neuroticism, by determining higher levels of test anxiety and excessive arousal, which, in turn, impair cognitive performance; Extraversion, by determining test-taking styles (i.e., speed or accuracy). Likewise, the intelligent personality can partly explain individual differences in confidence or self-assessed abilities, which are known to affect performance independently of actual abilities. Last, but not least, the central path in Figure 3 represents the influence of



Abbreviations: gf = fluid intelligence, RT = reaction time, *gc* = crystallized intelligence, AP = academic performance, OP = occupational performance, CSE = core self-evaluations

Figure 3. Intellectual competence and the intelligent personality.

personality traits on the development of crystallized abilities (notably, knowledge), which, in turn, determine individual differences in academic and occupational performance.

Limitations, Implications, Applications

As noted, one implication associated with the inclusion of the intelligent personality as an indicator of IC and predictor of individual differences in AP is that the same personality traits may be differentially related to different indicators of academic and occupational performance. For example, Conscientiousness may be a positive predictor of AP but a negative correlate of performance on creative tasks, whereas Extraversion may be beneficial for performance on tasks requiring speed but detrimental for those demanding accuracy or long-term attention span. This begs the question of whether it is conceivable to think of the intelligent personality as a singular construct or whether it may be more feasible to conceptualize different, situationally determined, intelligent personalities. Even when the intelligent personality construct is validated against AP criteria, a combination of homogeneous traits may be difficult to justify as predictors of AP. For instance, extraverts may obtain higher grades when assessed orally or for their participation in class, whereas introverts may outperform extraverts in assignments that require months of independent studying. Likewise, under nonarousing situations, Neuroticism may be a poor predictor of AP, and the intelligent personality may be better represented by other Big Five traits.

Admittedly, when the intelligent personality is extended to real-world achievement criteria, the construct may become even more diversified—in fact, so diversified it may seem meaningless to conceptualize a predefined combination of traits underlying the intelligent personality. However, the fact that the same combination of personality traits may not be extrapolated across different performance criteria should not discourage researchers from conceptualizing and assessing the personality determinants of success in each context or setting. Rather, a robust and methodical examination of the different performance criteria will shed light on to the different algorithms that represent the intelligent personality in different circumstances or environments, which merely requires identifying moderating variables in the relationship between the Big Five and different indicators of performance. As long as the processes determining individual differences in a specific outcome are defined, the "right" combination of personality traits can be identified, too.

There are several practical considerations to be made before the inclusion of the intelligent personality as a predictor of future academic and occupational success can be recommended. An important one is the extent to which the validity of personality tests may merely be an artifact of nonrepresentative samples, not because participants are not representatives of wider populations but because the circumstances in which psychological subjects complete personality inventories are not representative of the scenarios associated with personnel selection or real-world testing (Kanfer, Ackerman, Murtha, & Goff, 1995; Whyte, 1956). Thus, it would only be a matter of time before people would be coached or trained to respond correctly (rather than honestly) to personality inventories used to determine selection, promotion, or any real reward or punishment. This apparent problem, however, should not detract applied researchers from including personality inventories in the prediction of performance. On the contrary, it should encourage us to think of novel methods and instruments to *assess* and *measure* the intelligent personality. The well-known fact that individuals' performance on IQ tests can be significantly improved through non-*g*-saturated factors such as coaching and practice techniques (Coyle, in press; Jensen, 1998; McCall, Applebaum, & Hogarty, 1973; Moffitt, Caspi, Harkness, & Silva, 1993) has rarely discouraged researchers and practitioners from using IQ tests in educational and occupational selection. Likewise, the use of self-report inventories should not be theoretically boycotted on the basis of possible test score gains after coaching or practice sessions. Current users of personality inventories in the context of personnel selection are already aware of the possibility that participants may identify the correct responses and fake-good on self-report items; nevertheless, they do not deter from including personality scales in the prediction of performance. Surely, the possibility of missing out on recruiting the best students or employees (including those with an intelligent personality) posits a greater threat to competitive organiza-

tions than the likelihood of "being fooled" by some applicants. Not having the perfect test for something should not stop us from using the best tests we have until better measures are developed.

The intelligent personality may also be used to adjust the person–environment fit by mapping job categories on to employees' potential, and vice versa, and mapping course requirements on to student and teacher profile. For example, human resources managers may seek to compensate a company's "low Agreeableness" by recruiting agreeable employees, whereas a college course coordinator may decide to select students high on Openness rather than Conscientiousness (to foment creativity rather than responsibility or dutifulness). Unlike IQ, which is always positively correlated with performance, the direction of the correlation between personality traits and performance may be context-dependent, that is, moderated by specificity of task requirements. However, the generality of the intelligent personality can be sustained on the basis of aggregated parameters derived from correlations between the Big Five traits and specific outcome measures. Needless to say, the necessary *levels* of intelligence may be context-specific, too. Hence, certain jobs or educational programs will require more intelligence than others.

There are important theoretical implications to be drawn from our IC model, in particular with regard to the identification of developmental paths underlying adult knowledge acquisition and the progressive increase in an individual's potential for achievement. Unlike biologically based intelligence theories, which overemphasize the role of *gf* as determinant of individual differences in academic and occupational outcomes, IC may account for the longitudinal variability of individual's skills, abilities, and knowledge. Thus, *gf* can be used to predict *gc*, but *gc* can also be predicted, and therefore explained, by the intelligent personality. Higher levels of processing speed, for instance, may play an important role in determining differences in knowledge acquired or culture possessed, but intellectual curiosity, imagination, and achievement–motivation, may be much more important explaining such differences. In the beginning, IC may only be manifested through *gf*, which remains pretty much the same throughout an individual's life until its decline in late adulthood (Brody, 1992; Deary, 2001). Soon, other aspects appear that are expressions of an individual's IC. These aspects may be assessed in terms of SAI and personality traits and are also manifested in individual differences in *gc*. Accordingly, the interaction between different indicators of IC will give rise to the dynamic processes that are constitutive of individual differences in future academic and occupational achievement (Chamorro-Premuzic & Furnham, 2005a).

It should be emphasized that the proposed model of IC is preliminary rather than conclusive. A wide range of potential determinants of future achievement, such as interests, motivation, and even hot intelligences that are reliably assessed and show incremental validity (over established personality traits) in the prediction of AP may also be considered part of IC. One particularly good candidate is trait emotional intelligence, which refers to aspects of individuality not assessed by traditional personality traits such as the Big Five (Petrides, Frederickson, & Furnham, 2004; Petrides & Furnham, 2001). In addition, the concept of SAI could be expanded to assess not only individuals' insight into their intellectual ability but also AP and personality traits. Accordingly, a three-level measure of subjectively assessed AP, IQ, and intelligent personality, may increase the correspondence between actual and perceived IC. Self-assessed AP may include items such as "I am able to obtain high grades at school," whereas self-assessed personality may include items such as "I am very conscientious," and "I am very neurotic." Such items may be used to derive an estimate of individual's level of insight: The higher the correlation between self-assessed and psychometrically assessed personality, the more accurate an individual's SAI. Another short-term goal is the application of Holland's (1959, 1997) theory of vocational personality to the IC framework; in particular, the incorporation of interest-related aspects underlying individual differences in achievement and explaining specific feedback loops between ability and nonability constructs.

Summary and Conclusions

In recent years, differential psychologists have begun to bridge the gap between personality and intelligence. Two types of bridges that

received widespread attention are (a) the development of *mixed* constructs, such as emotional and practical intelligences, and (b) the psychometric links between self-report personality inventories and traditional ability tests. Both approaches have advantages and disadvantages. Perhaps the greatest advantage of the former lies is the creation of novel (often merely a rediscovery of old) constructs. Personality and intelligence are largely overpublished variables, and alternative constructs bring fresh air to the realm of differential psychology. The downside, however, is that very few of these measures are reliable and show incremental validity in the prediction of real-world criteria once personality and intelligence are taken into account. The latter approach, on the other hand, is more suitable for psychometric and empirical investigations, as there are numerous reliable and valid measures of personality and intelligence. However, associations between personality and intelligence measures are often weak, inconsistent, or difficult to interpret. For instance, correlations between *x* measure of ability and *y* measure of personality may be an artifact of test-taking styles rather than a reflection of the true relationship between both latent constructs.

In the present article, which expanded on three recent publications (Chamorro-Premuzic & Furnham, 2004a, 2005a, 2005b), a third way has been proposed in the concept of IC as a compromise between the two extreme theoretical positions that overemphasize or deny the importance of traditional intelligence measures. IC conceptualizes an overarching framework for understanding and predicting individual differences in academic achievement, allowing both ability and nonability traits to coexist. IC can be validated against AP measures and is determined not only by intelligence but also by SAI and the intelligent personality. Accordingly, interactions between ability and nonability predictors of future performance may be examined at three different levels rather than merely in terms of the traditional personality–intelligence interface. Likewise, the processes determining different levels of occupational performance should not only be measured through standardized intelligence tests, such as IQ or *g* measures, but also in terms of SAI and a combination of established personality variables. Thus, an individual's ability to perform highly on an IQ test may represent a valuable tool for adaptation in the real world, but his or her likelihood to acquire knowledge and excel in academic and occupational settings will also require other, often equally important, adaptational tools. In the concept of IC, we have laid the foundations for a theoretically based and empirically sound exploration of such aspects of individuality.

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