

Practical intelligence and tacit knowledge: Advancements in the measurement of developing expertise[☆]

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Abstract

Practical intelligence as measured by tacit-knowledge inventories generally has shown a weak relation to other intelligence constructs. However, the use of assessments capturing specialized, job-related knowledge may obscure the generality of practical intelligence and its relation to general intelligence. This article presents three studies in which three new everyday tacit-knowledge inventories are examined. Confirmatory factor analysis was used to evaluate the factor structure of each inventory and their measurement equivalence across samples. In addition, a single-factor model was tested for its fit to the covariance among the three new tacit-knowledge inventories and the Practical subscale from the Sternberg Triarchic Abilities Test. The relation between a higher-order practical intelligence factor emerging from this analysis and fluid and crystallized intelligence also was investigated. The results indicate that the new tacit-knowledge inventories are reliable and valid assessments of practical intelligence across diverse samples. The results also support the conclusion that practical intelligence and general intelligence are not the same construct, though some overlap was found.

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Practical intelligence and the related construct, tacit knowledge, first were advanced as individual differences constructs in the mid- to late-1980s (Sternberg, 1988; Wagner & Sternberg, 1985). Although the concepts of “naturalistic intelligence” and “knowing without telling,” were not new (Neisser, 1976; Polanyi, 1958, 1966), Sternberg and his colleagues applied them in novel ways to address emerging perspectives in differential psychology and intelligence research. The advancement of practical intelligence was driven in part by an interest in accounting for the less-than-perfect relation between general tests of intelligence and occupational performance. More broadly, the purpose of advancing practical intelligence was to demonstrate a scientific basis for the commonly held belief that there is more to success in everyday life than can be captured by tests of intelligence that target academic knowledge or modes of thinking (McClelland, 1973; Sternberg, Conway, Ketron, & Bernstein, 1981).

The definition of the word practical—“of or concerned with the actual doing or use of something rather than with theory and ideas” (New Oxford American Dictionary, 2001)—makes a distinction between the realms of the concrete and of the abstract, between the immediate and the more general application of thought and action. In concert with this distinction, Sternberg (1988) defined practical intelligence as an ability—distinct from general or academic intelligence—to perform successfully in naturalistic settings in a way that is consistent with one’s goals. Wagner and Sternberg (1985) have asserted also that practical intelligence enables people to determine adaptive (as opposed to “unambiguously correct,” Legree, 1995) solutions to ill-defined problems.

Wagner and Sternberg (1985) proposed using a knowledge-based approach to assessing practical intelligence, analogous to the use of knowledge tests to assess general or academic intelligence (Sternberg, 1988). Consistent with Polanyi (1966), Wagner and Sternberg (1985) defined tacit knowledge as the generally unspoken knowledge gained from experience (as opposed to explicit instruction), which distinguishes more and less expert individuals in a particular domain. Practical intelligence therefore can be viewed as developing expertise (Sternberg, 1998), and tacit knowledge its manifest indicator (Sternberg et al., 2000). That is, performance on assessments of tacit knowledge reflects the confluence of overall neurological functioning, experience dealing with practical matters, and exposure to successful adaptive behavior, much as crystallized intelligence reflects the confluence of fluid intelligence and enculturation (Horn & Cattell, 1966) and job knowledge, as traditionally assessed, reflects the confluence of general intelligence and job experience (Schmidt & Hunter, 1993).

The validity of the constructs of practical intelligence and tacit knowledge and their measurement has been investigated for nearly two decades (e.g., Colonia-Willner, 1998; Hedlund et al., 2003; Legree, Heffner, Psotka, Martin, & Medsker, 2003; Tan & Libby, 1997; Wagner & Sternberg, 1985, 1990a; Wagner, Sujan, Sujan, Rashotte, & Sternberg, 1999). This research has focused on demonstrating a distinction between practical intelligence and general (or fluid) intelligence, crystallized intelligence, and such non-ability constructs as personality and motivation. In keeping with the initial interest in better accounting for individual differences in job performance, tacit-knowledge inventories such as the Tacit-Knowledge Inventory for Managers (TKIM, Wagner & Sternberg, 1990b) and the Tacit-Knowledge Inventory for Military Leaders (TKML, Hedlund et al., 2003) have been designed to capture specialized, job-related knowledge acquired from experience. For this reason, some validation research has also explored the distinction between tacit knowledge and technical job knowledge (Tan & Libby, 1997).

In general, practical intelligence has been shown to be distinct from other intelligence constructs. Scores on tacit-knowledge inventories generally show relatively weak (below .20 and sometimes negative) correlation with measures of general intelligence and crystallized intelligence [Legree et al., 2003; Sternberg et al., 2001; Tan & Libby, 1997; Wagner, 1987; Wagner & Sternberg, 1985, 1990a,b; though see Colonia-Willner, 1998, for slightly higher correlations between the TKIM and scores on Raven’s Progressive Matrices and the Differential Aptitude Battery, $r(\text{reflected}) = .28$ and $.32$, respectively]. Practical intelligence also appears to be distinct from aspects of personality, including sociability, self-control, and achievement via conformity (Wagner & Sternberg, 1990a; $r = .14$, $.19$, and $-.05$, respectively), though it may bear a relation to social presence (Wagner & Sternberg, 1990a, $r = .29$).

Although relatively less studied, the relation between tacit knowledge and job knowledge has been reported to be weak. Tan and Libby (1997) found a correlation of .22 between a technical knowledge composite for auditing and scores on an auditing tacit-knowledge inventory. Tan and Libby also found that while top and bottom (determined by annual evaluations and pay increments) senior-level auditors (i.e., managers) did not differ in the amount of their technical knowledge they did differ significantly in their amount of tacit knowledge. The opposite pattern was found for lower-level auditors (i.e., staff and seniors).

Tacit-knowledge inventories and similar tacit-knowledge assessment methodologies also repeatedly have shown a meaningful relation to performance (Colonia-Willner, 1998; Hedlund, Wilt, Nebel, Ashford, & Sternberg, in press; Tan &

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