Meta-Intelligence

Subjects: Education & Educational Research
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The concept of meta-intelligence is as a way of understanding the relations of control and coordination among creative, analytical, practical, and wisdom-based approaches to problem solving (Sternberg n.d.b). An approach involves a complex of intellectual skills and attitudes applied to one or more problems.

Keywords: analytical skills and attitudes ; constraint ; creative skills and attitudes ; intellectual skills and attitudes ; meta-intelligence ; practical skills and attitudes ; problem-solving ; solutions ; systems ; WICS ; wisdom-based skills and attitudes

1. Why Meta-Intelligence?

Why introduce a construct of meta-intelligence to understand the coordination of the analytical, creative, practical, and wisdom-based functions?

First, meta-intelligence provides us with a way in which we can understand our own range and functioning of higher mental abilities. (Conventional or general) intelligence primarily learns, analyzes, and evaluates; creativity primarily creates; wisdom deploys creation and analysis for a common good. Intelligence, creativity, and wisdom are not singular or somehow “pure” abilities. They are not like verbal, quantitative, and spatial abilities, for example. Rather, intelligence, creativity, and wisdom—understood, controlled, organized, and deployed by meta-intelligence—serve different purposes. We understand that we can recognize, define, and solve convergent problems (general intelligence); recognize, define, and solve divergent problems (creativity); and put our solutions to the use of seeking a common good (wisdom).

Second, meta-intelligence provides the means by which we decide upon which set of collections of abilities we use when and how. It allows us to use the abilities that fit a given situation.

Third, meta-intelligence coordinates the use of the different collections of abilities. It provides a means by which we can control the deployment of those collections of abilities. A given problem may require intelligence, creativity, and wisdom, such as of a problem of how to allocate scarce resources, or such as of a new vaccine against an illness such as COVID-19 that has become widespread as a pandemic. Meta-intelligence enables us to know what to do when and then do it.

One reasonably might ask whether individuals have stable preferences among windows for solving problems. In other words, might some people, say, tend to gravitate toward an analytically oriented intelligent solution whereas others might work toward a creative solution? In an ideal world, the window or windows one would prefer would be totally problem- and situation- dependent. That is, one would fit the solution strategy to the problem and the situation in which it is presented. This is unlikely to happen for three reasons. First, people have different strengths and may be susceptible to solving problems with the tools that represent their strengths. Second, people have different preferences. They may simply gravitate toward particular windows, whether or not they are adept in their use. Third, and finally, people may filter perceptions of problems so that they construe the problems in certain ways (Sternberg 1997). Metaphorically, a carpenter might see problems as ones requiring a hammer whereas a painter might see problems as requiring a paint brush.

Do we need a new construct, such as of meta-intelligence? Actually, we have always known that people need to decide what kinds of higher order mental resources they need to allocate to a given problem and control that allocation. Meta-intelligence simply names this construct that always was implicitly there.

2. Relation to Existing Constructs

A legitimate concern of readers might be the relation to, and possible overlap between existing constructs and our model, and especially the construct of meta-intelligence. Three constructs with which meta-intelligence might be viewed as overlapping are (a) general intelligence *(g*), (b) broader intelligence (c) metacognition, (d) executive processing, and (e) personality.

2.1. Overlap with General Intelligence

Is meta-intelligence the same as general intelligence? General intelligence is at the top of many psychometric hierarchies of intelligence, as in Carroll's (1993) and McGrew's (2005) models. These are structural models, so they make no clear and systematic claims about information processing. However, all subfactors lower than *g* in the models contribute, at some level, to *g,* which could be seen as the overarching ability factor for all those subfactors. However, in no existing model of human abilities of which we are aware is *g* a super-factor that encompasses creativity and wisdom—that is, in no existing model are creativity and wisdom subsets of *g.* Such a claim would be extraordinary, because by any serious extant models, creativity and wisdom both encompass far more wide-ranging skills than does general intelligence (see Kaufman and Sternberg 2019; Sternberg 2020b; Sternberg and Glück 2019). For example, general intelligence does not include defiance of the crowd, an essential element of creativity (Sternberg 2018), or seeking of a common good, an essential element of wisdom (Sternberg 1998). Nor do tests of general intelligence measure these constructs.

For instance, the Cattell-Horn-Carroll (CHC) model places creativity within the factor of *Glr*, or Long term storage and retrieval (Schneider and McGrew 2018). *Glr* has recently been split into *Gl* (learning efficiency) and *Gr* (retrieval fluency), with creativity (or, rather, divergent thinking) falling under *Gr*—yet when *Glr* is measured on any intelligence test, it is only the *Gl* component; creativity is not included (Kaufman et al. 2011). Thus, meta-intelligence embraces intelligence, creativity, and wisdom in a way that *g* does not and is not alleged to in existing theories.

A related argument would be that aspects of meta-intelligence are renamings, for example, of practical intelligence as a new name for crystallized intelligence (Cattell 1971). This equation of constructs has already been shown not to hold up, as reviewed by Hedlund (2020; see also Sternberg and Hedlund 2002; Sternberg et al. 2001). Practical intelligence, which is based on tacit procedural knowledge, certainly draws on crystallized intelligence as well as on fluid intelligence. However, the correlations are relatively weak across many different testing situations, even if one corrects for attenuation and restriction of range. Or perhaps wisdom is crystallized ability plus a willingness to use this ability. The problem is that people may be knowledgeable but unwise, because wisdom, according to every extant theory of the construct of which we are aware, entails not just crystallized intelligence and "willingness," but effective deployment of that knowledge; in some theories, that deployment is toward a common good (e.g., Sternberg 1998). People may be knowledgeable but not interested in, or skilled at, deploying their knowledge for a common good. Rather, they may use their crystallized ability, or practical intelligence, just for their own good. The world sees a lot of that.

2.2. Overlap with Broader Theories of Intelligence

Is meta-intelligence the same as intelligence, construed broadly? The proposed account here is consistent with broader systems theories of intelligence (Sternberg 2020c), such as Gardner's (2011) theory and especially Sternberg's (2020a) augmented theory of successful intelligence. However, Sternberg's ([1] 2020a) earlier work specified that creative, analytical, and practical intelligence, as well as wisdom, are part of a broader conception of successful intelligence, but it lacked any mechanism for these constructs to interact and work together. That is, they were presented as separate elements—creative intelligence to formulate novel and useful ideas, analytical intelligence to specify whether the ideas were tenable, practical intelligence to implement the ideas and persuade others of them, and wisdom-based skills to ensure a common good. The augmented theory of successful intelligence not only had no mechanism for how the elements worked together, it also dealt only with creative intelligence, not creativity (which includes elements of personality, motivation, and environment as well as of cognition).

2.3. Overlap with Metacognition

Is meta-intelligence the same as metacognition? Metacognition is usually defined as comprising one's understanding of, and control of one's cognition. Metacognition is important to the effective execution of many, if not most cognitive operations. One needs to put them together. However, metacognition is not the same as what we are calling meta-intelligence, because so much of creativity and wisdom are either affective, attitudinal, or motivational. For example, defying the crowd is an attitude; it is not cognitive. Similarly, intrinsic motivation, a crucial part of creativity in many theories (see, e.g., Hennessey 2019), is not cognitive but rather conative. Similarly, emotional sensitivity and regulation, an element of the MORE model of wisdom (Glück and Bluck 2013), as well as other models, is not a cognitive but an affective attribute. In other words, metacognition simply does not encompass the scope of meta-intelligence as defined here, which manages creativity and wisdom as well as intelligence and its interactions with these other sets of skills.

2.4. Overlap with Executive Processing

Is meta-intelligence the same as executive processing? In the augmented theory of successful intelligence, executive processes are called metacomponents, as described above. They are viewed in the current account as individual constraints, that is, as limiting one's application of meta-intelligence within the person. They are, however, not the only

individual constraints. Others are attitudinal. There are also contextual constraints, which originate outside the person. The bottom line is that meta-components are constraints on the operation of meta-intelligence. They are not meta-intelligence itself. They are a part of meta-intelligence, not the whole thing.

2.5. Overlap with Personality

Is meta-intelligence simply another name for personality, or aspects of it? A number of theories have tried, in various ways, to integrate aspects of cognition and personality (e.g., Ackerman 1996; Blömeke et al. 2015; Schneider and McGrew 2018; Sternberg 1997; [2] 2018). Each of these theories attempts the integration in a somewhat different way. At this point in time, it is clear that there is no one consensually accepted framework that specifies exactly how the integration should be achieved. What we believe to be unique in our model are the four particular windows—analytical and practical intelligence, creativity, and wisdom (see also Sternberg 2003)—as a proposed way of looking at their interactions through the use of metacomponents as well as their activation and integration by meta-intelligence.

It is always tempting to reduce new constructs to old ones—in Piaget's (1972) terms, to assimilate rather than accommodate—but sometimes, it just does not work out well. For example, might the aspect of practical intelligence that resides in one's ability to persuade others actually be nothing more than the assertiveness facet of extraversion?

The potential problem is that people may be assertive but totally unpersuasive—think of pushy but unpersuasive salespeople who insist you buy their product; or, for some people, the assertive but unpersuasive individual might be their vocal and highly assertive mother- or father-in-law who believes they know how their child's marriage ought to be and makes sure the married child and son- or daughter-in-law knows it too.

This is not to say that personality is irrelevant to intelligence or meta-intelligence. Openness to experience, for example, has been associated with intelligence in a wide variety of studies (DeYoung 2020). If one defines openness broadly enough, it can account for almost any willingness to do anything one has not done before, but the construct then becomes vacuous and meaningless—not explanatory but rather a catchall category for virtually all motivations to do anything not done before. In the cognition and personality literatures, many different attributes correlate modestly to moderately with each other, a fact recognized long ago by Walter Mischel (1968). Regrettably, such often modest correlations have been too often used to assert causality or even identity (Mackintosh 2011). We have no doubt that selected personality traits would correlate with meta-intelligence, as they correlate with hundreds, if not thousands of other things. They do not reduce to it, however.

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