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The Motivation & Academic Competence (MACM) Commitment Pathway to Learning Model:

Crossing the Rubicon to Learning Action

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Author information and conflict of interest disclosure

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Dr. McGrew authored the current document in his role as the Director of IAP. The opinions and statements included in this report do not reflect or represent the opinions of WMF, MLC, or the University of Minnesota. More complete professional information, including his professional resume and conflict of interest statement, can be found at the MindHub™.

The Motivation and Academic Competence (MACM) Commitment Pathway to Learning Model: Crossing the Rubicon to Learning Action

There is only one unequivocal law of human behavior—*the law of individual differences*. People are more different than they are alike. Probably no environment elicits individual differences sooner in life than formal education.

When asked by teachers or parents to help understand why a particular student is not achieving adequately, school psychologists have traditionally reached for an intelligence battery. Although understanding a student's general, broad and specific cognitive abilities contributes important information for determining general expectations and the need for special instructional serves, at best, measures of cognitive abilities account for only approximately 40% to 50% of a student's predicted achievement. Much is still unexplained. Furthermore, attempts at modifying intelligence, or identifying evidence-based cognitive-aptitude-achievement interactions (ATI's) that can be implemented at the level of individual students, have not yet provided the magical link between cognitive ability testing and evidence-based instructional or cognitive modifiability recommendations. It is clear that school psychologists must go "*beyond IQ*" to help teachers, parents, and students themselves, to maximize student learning.

But…if not IQ…then what? The more appropriate question is "what should be added to cognitive ability assessment information to help school psychologists facilitate the achievement of all learners?" To provide some answers to this question this paper was developed with three primary goals. First, a conceptual framework is presented to help school psychologists better understand the salient non-cognitive individual difference student variables to consider when engaging in learning-related assessments and instructional planning. Second, the primary domains of the model are defined. Finally, how the various domains work within a *commitment pathway model to learning* (crossing the active learning rubicon) is briefly presented.

Beyond IQ: What Models of School Learning Have Told Us

A number of comprehensive models of school learning have been advanced to describe and explain the school learning process (see McGrew, Johnson, Cosio, & Evans, 2004). Walberg's (1981) *theory of educational productivity* is one of the few empirically tested theories of school learning. Walberg's model is based on an extensive review and integration of over 3,000 studies (DiPerna, Volpe & Stephen, 2002; Wang, Haertel, and Walberg, 1997). Walberg et al. reported that the following key variables are important for understanding school learning—student ability and prior achievement, motivation, age or developmental level, quantity of instruction, quality of instruction, classroom climate, home environment, peer group, and exposure to mass media outside of school (Walberg, Fraser & Welch, 1986). The first three

variables (ability, motivation, and age) reflect *student individual difference characteristics*. The fourth and fifth variables reflect *characteristics of instruction* (quantity and quality), and the final four variables (classroom climate, home environment, peer group, and exposure to media) represent aspects of the *psychological environment* (DiPerna et al., 2002). Clearly student characteristics are important for school learning, but they only comprise a portion of the complete learning equation.

The Walberg research group (see Wang, Haertel, & Walberg, 1993) also concluded that psychological, instructional, and home environment characteristics (*proximal* variables) had a more significant impact on achievement than variables such as state-, district-, or school-level policy and demographics (distal variables). More important for practicing school psychologists was the conclusion that student characteristics (i.e., social, behavioral, motivational, affective, cognitive, metacognitive) were the set of **proximal** variables that had the most significant impact on learner outcomes (DiPerna et al., 2002).

Beyond IQ: The Need for a Non-Cognitive Learner Characteristic Taxonomy

If school psychologists are to focus on the most learning-relevant student characteristics (beyond cognitive abilities), what individual difference student characteristic domains should receive priority? Even a partial list of potentially important non-cognitive domains mentioned in the school psychology literature is staggering. Social-emotional learning. Motivation. Self-efficacy. Engagement. Study and homework skills. Resilience. Executive functions. Engaged learning time. Self-regulated learning strategies. Social skills. Social and emotional intelligence. What are the similarities and differences between these different constructs? Does each construct consist of a single dimension or is there a complex model of subdomain characteristics within each construct domain? Where is a school psychologist to start? It my opinion that the answer first lies in outlining a working taxonomy of important non-cognitive learning-related student characteristics.

I am an admitted taxonomist. As stated in the context of human cognitive abilities, Joel Schneider and I stated "*A useful classification system shapes how we view complex phenomena by illuminating consequential distinctions and obscuring trivial differences. A misspecified classification system orients us toward the irrelevant and distracts us from taking productive action. Imagine if we had to use astrological classification systems for personnel selection, college admissions, jury selection, or clinical diagnosis. The scale of inefficiency, inaccuracy, and injustice that would ensue boggles the mind. Classification is serious business*" (Schneider & McGrew, 2012, p. 99).

I believe that before defining and articulating instructional implications of important non-cognitive student characteristics, the broad domain(s) must first be circumscribed. Furthermore, I believe that any working taxonomy must emerge from the extant empirical and theoretical literature, and not from the advocacy, policy, political arenas or narrow single trait programs of research. Although a variety of models of school learning have been articulated, it

is only recently that a model with sufficient breadth and depth, grounded in decades of educational and psychological research, has emerged with the potential to serve as a "bridging" mechanism between educational and psychological theory/research and educational practice.

Based on a large systematic program of educational research and research integration, Richard Snow and colleagues outlined a provisional and promising aptitude for learning taxonomy (Corno et al., 2002; Snow, Corno, & Jackson, 1996). Richard Snow's work unfortunately has flown under the radar screen of most of school psychology. It is hoped that this brief paper rectifies this oversight by describing a Snow-inspired framework for understanding the most salient non-cognitive student characteristics that influence school learning.

A first attempt at outlining an adapted and updated Snow model, based on a comprehensive review and integration of approximately three decades of contemporary school learning research, was first described by McGrew et al. (2004). This model was next revised as the *Model of Academic Competence and Motivation* (McGrew, 2007). Figure 1 presents the revision and update of the McGrew 2007 MACM model.

The Model of Academic Competence and Motivation (MACM): A Brief Overview

The MACM model includes the three broad domains of *orientations towards self (motivations), volitional controls (cognitive strategies and styles)*, and *orientations towards others (social ability)*. [1] As illustrated in Figure 1, the current focus is on the motivational and volitional domains of conation. The term conative, as well as volition, may partially explain why Snow and colleagues work has not been widely infused into education and school psychology. Conative and volition are not commonly used terms in education or psychology and, frankly, would result in puzzled looks from teachers and parents if used to describe characteristics of a student. However, they are important and have been part of a long standing "*ancient trilogy of human mental functioning that consists of cognition, affection and conation*" (Corno, 1996, p.14, italics added). This current paper seeks to amplify the importance of conative abilities as articulated by many giants in the field of intelligence theory and testing.

PDF files that contain detailed definitions of the MACM characteristics and theoretical foundations can be found here and here.

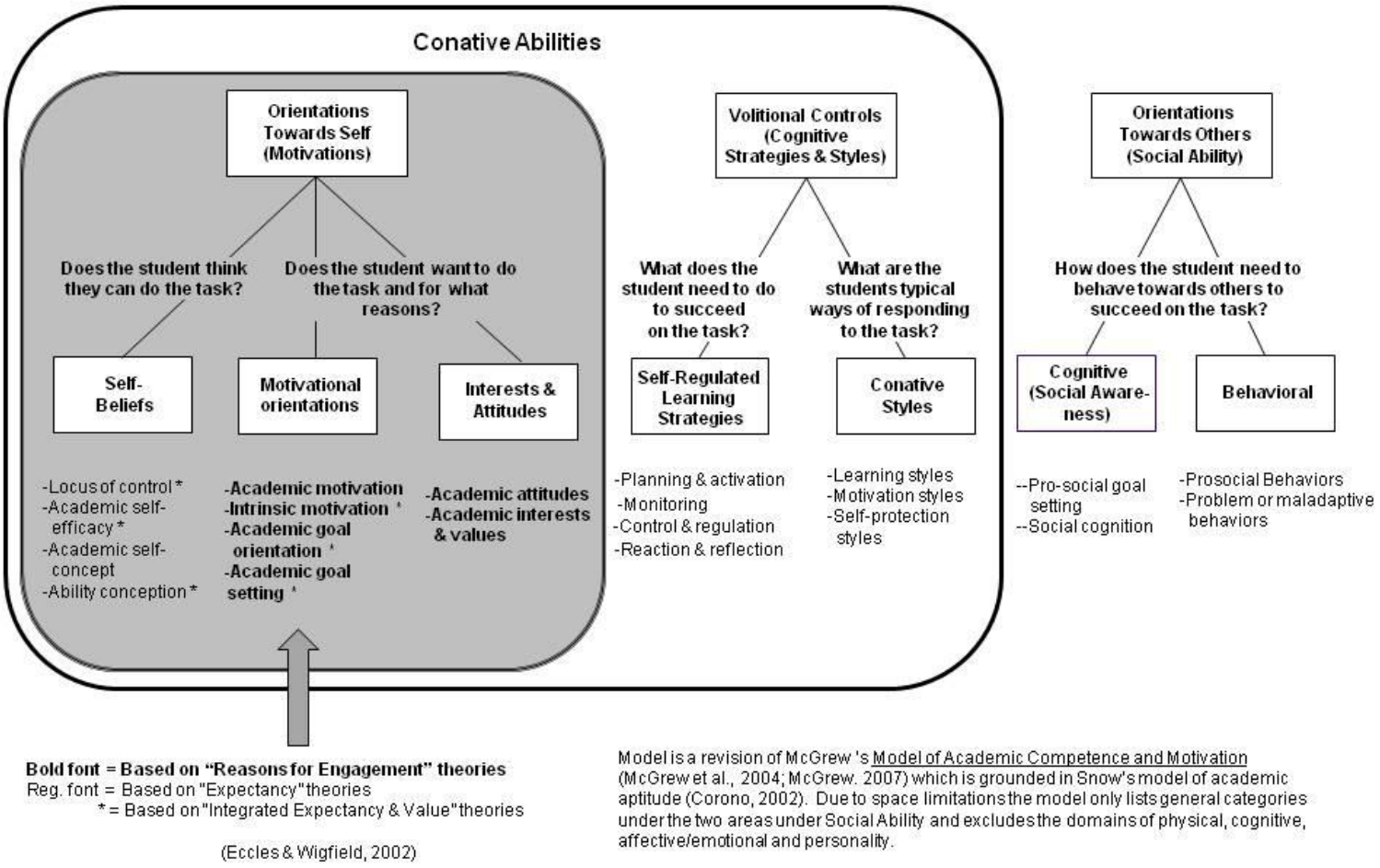

Figure 1. Model of Academic Competence and Motivation (MACM)

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Conative abilities have long been recognized as the important brides made-trait to cognition when attempting to explain intelligent performance or behavior. The *APA Dictionary of Psychology* (Vandenbos, 2007) defines conation as "*the proactive (as opposed to habitual) part of motivation that connects knowledge, affect, drives, desires, and instincts to behavior. Along with COGNITION and affect, conation is one of the three traditionally identified components of mind*" (p. 210; caps in original). Charles Spearman, who all psychologists associate with the birth of the psychometric study of intelligence, recognized the importance of conative abilities. Spearman (1927) stated that "the process of cognition cannot possibly be treated apart from those of conation and affection, seeing that all these are but inseparable aspects in the instincts and behavior of a single individual, who himself, as the very name implies, is essential indivisible" (p. 2). Alfred Binet, who is considered the father of the modern day intelligence test, also recognized the importance of "*non-intellectual*" factors in cognitive or intellectual performance. According to Corno et al. (2002):

- *Binet summed up his investigations in a famous description of intelligence: 'the tendency to take and maintain a definite direction; the capacity to make adaptations for the purpose of attaining a desired end; and the power of auto-criticism' (translation by Terman, 1916, p. 45). All three of these phrases refer at least as much to conative processes and attitudes as to reasoning powers. Binet's concept of intelligence was much like Snow's concept of aptitudes* (p. 5).

Sounding a similar chord, David Wechsler emphasized the importance of conative abilities, which he referred to as nonintellectual factors (e.g., persistence, curiosity, and motivation) (Zachary, 1990). In Wechsler's (1994) own words, "*When our scales measure the nonintellectual as well as intellectual factors in intelligence, they will more nearly measure what in actual life corresponds to intelligent behavior*" (Wechsler, 1944, p. 103). More recently Richard Woodcock, first author of the WJ, WJ-R and WJ III, in his *Cognitive Performance and Information Processing Models*, includes the *facilitator-inhibitor* domain that includes both internal conative-like characteristics (e.g., health, attention and concentration, cognitive style), along with external variables (e.g., environmental distractions) that can "modify cognitive performance for better or for worse, often overriding the effects of strengths and weaknesses in the previously described cognitive abilities" (Woodcock, 1998, p. 146).

I humbly stand on the shoulders of Spearman, Binet, Wechsler, Woodcock and Snow and recommend that school psychologists organize their thinking regarding essential student learning characteristics within a model of student competence and achievement that recognizes the importance of conative abilities. To remove the terminology barrier to implementing this recommendation, conative abilities have been renamed as *motivations* (orientations towards self) and *cognitive strategies and styles* (volitional controls; see Figure 1). Being even more direct and simple, I have modified and extended the key question approach to understanding achievement motivation as presented by Wigfield and Eccles (2002). The major domains represented in the MACM model (see Figure 1) can be reduced to five basic questions (borrowed and revised from Wigfield & Eccles, 2002) school psychologists should ask as they

gather and integrate information regarding important non-cognitive school learning-related student information.

- **Does the student think they can do the task?** This question focuses on understanding the student's self-beliefs regarding their perceived locus of control, academic self-efficacy, academic self-concept, and ability conception.
- **Does the student want to do the task and for what reasons?** When pondering this question, the goal is to understand the student's motivational orientations such as degree of academic and intrinsic motivation, type of goal orientation, and the students' goal setting abilities. Additionally, understanding how a student values school learning and their global and situational academic domain-specific academic interests should be considered.
- **What does the student need to do to succeed on the task?** High motivation and positive self-beliefs are necessary but not sufficient conditions for succeeding in educational environments. A bridge must link abilities, self-beliefs and motivation with action-oriented behavior. The bridge is the presence of motivational controls or self-regulated learning strategies (e.g., study skills, cognitive and learning strategies, engagement) that allow individuals to manage efforts to accomplish their goal.
- **What are the student's typical ways of responding to the task?** This question focuses on determining if a student has characteristic stable styles for approaching learning tasks, success or failure (e.g., self-worth protection; adaptive help-seeking) that either need to be enhanced or modified to insure increased positive achievement outcomes.
- **How does the student need to behave towards others to succeed on the task?** Traditionally U.S. schools have valued student characteristics such as citizenship, conformity to social rules and norms, cooperation, and positive social behavior. The student who does not know how (or who lacks the appropriate skills) to behave appropriately and responsibly is at increased risk for academic failure and the possibility of not developing a sense of belonging or relatedness.

The MACM Framework and the Commitment Pathway to Learning Model: Crossing the Rubicon to Learning Action

There is no consensus explanatory model outlining how the various constructs included in Figure 1 interact within the MACM model or with other important learner characteristics (e.g., cognitive abilities) to produce positive achievement outcomes. In their introduction to the *Handbook of Competence and Motivation*, a seminal attempt to corral the major theories and research regarding motivation, self-regulatory processes and competence, Elliot and Dweck (2005) summarize this state of affairs when they stated, with regard to the weaknesses in the achievement motivation literature:

- *The literature lacks coherence and a clear set of structural parameters, and the literature is too narrowly focused and limited in scope. In essence, what is commonly referred to as the "achievement motivation literature" represents a rather loose compendium of*

> *theoretical and empirical work focused on a colloquial understanding of the term "achievement" (p. 5).*

Further illustrating the impossible task of specifying a single consensus explanatory or causal MACM-achievement model is a recent series of reports from the *Center on Education Policy (CEP)--Student Motivation: School Reform's Missing Ingredient* (Usher & Kober, 2012a). No less than eight different expert or theoretical views of the dimensions of student motivation (which represents only the motivations component of the MACM model in Figure1) were the basis of the CEP's series of six different policy briefs (Usher & Kober, 2012b).

Not only is the number of proposed explanatory models of achievement motivation a barrier to incorporating the MACM learner characteristics into school psychology practice, the complexity of some of the models is not practice friendly. For example, the *general expectancy-value model of achievement* choices includes 11 separate model components (each with from 1 to 5 subcomponents) and over 12 different unidirectional or bidirectional arrows between components (Eccles, 2005). A model focused just on evaluation *anxiety during self-regulation* includes 5 model components and 9 unidirectional arrows, while a proposed model of *self-handicapping*, which is just one self-protection style (i.e., a *conative style* in the MACM model—see Figure 1) is a figure with 11 different components and 13 different arrows (Rhodewalt & Vohs, 2005). Finally, the MACM model includes two goal-related constructs (academic goal orientation and academic goal setting—see Motivational Orientations component in Figure 1), while a 1996 review of goal constructs in psychology listed 31 theories that have posited goal-like constructs and proposed a 6 domain, 24 subdomain taxonomy of human goals (Austin & Vancouver, 1996).

Against this backdrop, a simplified adaptation of Snow's dynamic model of conation in the academic domain (Corno, 1993) is presented next. It is assumed that the presentation of a simplified model is a first step towards helping school psychologists see the forrest-from-the-trees and thus, increases the chances of successful integration of the MACM concepts in their assessment and instructional planning repertoire. The MACM-based adaptation and extension of Snow's model is presented in Figure 2.

In simple terms, a three-stage process is at the heart of understanding the learner's commitment pathway to learning and achievement. Learners first address the questions of "*can I do this task*?" and "*do I want to do this task and why*?" These questions reflect the learner contemplating or deliberating over their beliefs regarding what they can do, what they want to do or are being asked to do, and what intentions they form (positive or negative) regarding how to proceed. Cleary et al. (2010) describe this as the *forethought* stage, or those processes that occur before the student commits to the learning task. For example, a student with a strong interest in science and a mastery goal orientation (i.e., wanting to learn for the sake of learning and mastering new skills) would likely decide to deploy strong and sustained engagement and effort on a science project. Conversely, a learner with a long history of academic failure may not feel they are capable (low self-efficacy) and may want to avoid failure

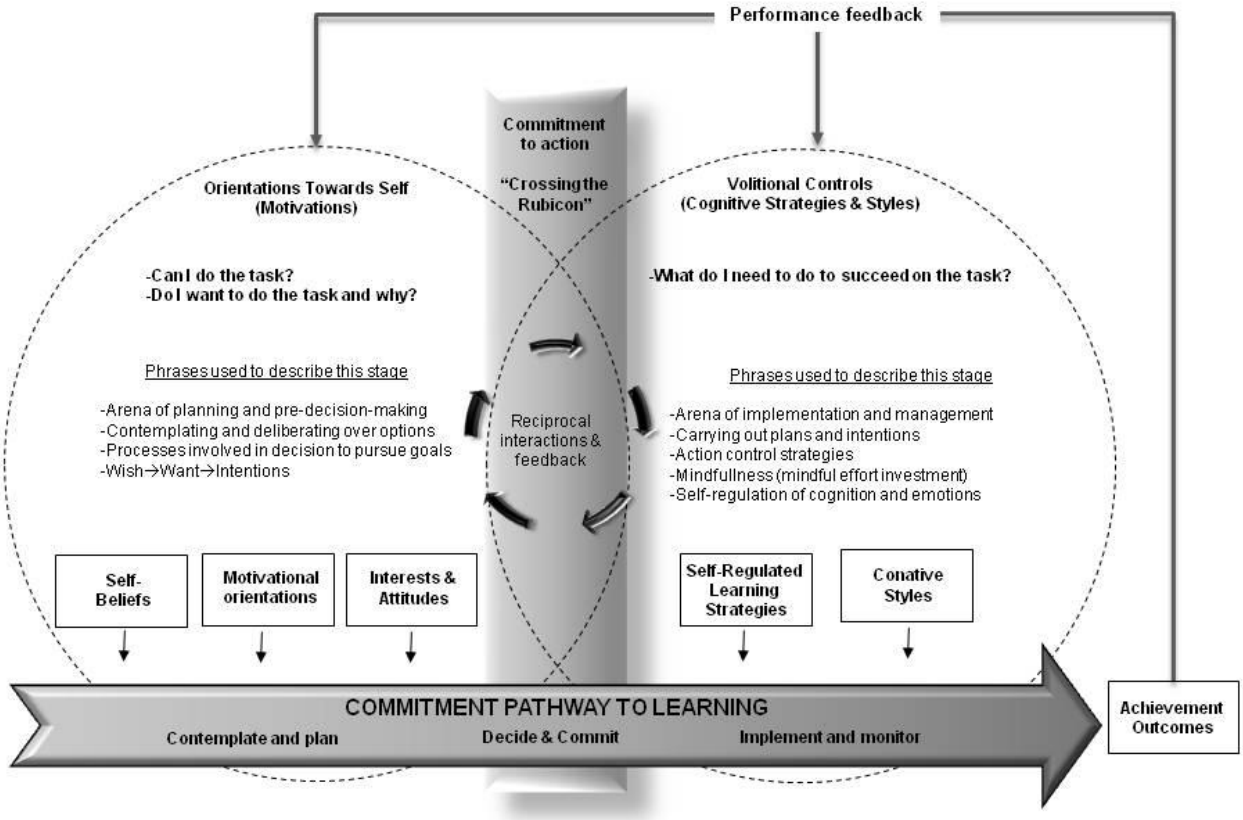

Figure 2. Simplified MACM-based adaptation and extension of Snow's *dynamic model of conation in the academic domain* (Corno, 1993)

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as their primary goal, which would result in a different decision—a different degree of commitment to a science project and possible deployment of self-protection conative style behaviors. The act of committing to a course of action for a task has metaphorically being called "*crossing the Rubicon*" (Corno, 1993; Corno et al., 2002). Once committed to implementing a plan, the success of the student attaining their goals is turned over to their *self-regulated learning strategies* (volitional controls)—carrying out the plans and intentions. The student has moved into the domain addressed by the question "*what do I need to do to succeed on the task?*"

Of course, this is on overly simple explanation of an obvious non-linear process where the results of plan implementation and self-regulation may require moving back to the contemplation and planning stage if the initials goals require modification (e.g., a student sets an unrealistic goal to perform perfectly on a math project). Multiple recursive and dynamic iterations occur across the commitment to action pivot point (the Rubicon; see circle of arrows in Figure 1), with motivations modifying cognitive control and regulation strategies, and cognitive strategy feedback requiring goal adjustment and changes in plans, is often required.

Summary Comments

It is hoped that this brief description of the **MACM** model and the **MACM Commitment to Learning Pathway Model** (Crossing the Rubicon to Learning Action)stimulates thought, research, and further development. Updates to this model will be posted at this blog and will typically be accessible by clicking on the *MACM* and *Beyond IQ* blog labels on the blog roll.

Reference Notes

Most all the references cited in this post can be found at McGrew et al. (2004) and McGrew (2007).

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[1] A complete description and discussion of these three primary MACM domains is not possible here. The interested reader should review Corno et al. (2002), and McGrew et al. (2004) and McGrew (2007). It is important to note that the MACM model is only a *partial* taxonomy of relevant school-related individual difference characteristics. The model presented here only lists general categories under the two areas of *Social Ability* and does not include *physical and psychomotor competences, affective or social-emotional characteristics, cognitive abilities, and overarching constructs such as personality*, which Corno et al. (2002) include in the more comprehensive big picture taxonomy of aptitude related constructs. The literature on social intelligence, social cognition, and social skills requires treatment in separate chapters or books. Social ability is included in the MACM model to reflect an awareness of the importance of social ability and behavior constructs when discussing important non-cognitive characteristics important for school success.