The Model of Achievement Competence Motivation (MACM): An overview of the model
(K. McGrew 01-05-2021)

A Working Definition of Motivation

The Broad Constructs of the Model

The Model as Three Sets of Key Questions

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These slides are provided as supplements to The Model of Achievement Competence Motivation (MACM): Standing on the shoulders of giants (McGrew, in press, 2021—for special issue on motivation in Canadian Journal of School Psychology). The slides in this PPT/PDF module can be used without permission for educational (not commercial) purposes.
This is the second in the MACM series of on-line PPT modules. The first, the Introduction to the model is available at:

MACM model heavily influenced by work of Richard Snow

Richard E. Snow

(1936 - 1997)
American Psychologist

Major Contributions

- Expanded the notion of "aptitude" from being purely cognitive abilities to include motivational and affective characteristics.
MACM model heavily influenced by work of Richard Snow

**Ideas and Interests**

Richard E. Snow is noted as having been a prominent educational psychologist who dedicated much of his life's work toward studying human aptitudes and learning environments. In his work, Snow expanded the definition of aptitude from the conventional cognitive-based strategies and abilities, to include conative and affective characteristics - conative being motivational and volitional aspects of learning and affective being temperamental and emotional aspects. He was opposed to the idea that
The big picture: An adapted Snow (Corno et al., 2002) model of aptitude (MACM revised; 10-13-16)

**Intellect**

**Knowing**
- **Physical**
  - Physical abilities
  - Psychomotor abilities
  - Sensory-perceptual abilities
- **Cognitive**
  - Cognitive processes
  - Acquired knowledge systems

**Willing**
- **Conative**
  - Motivation
  - Volitional controls

**Feeling**
- **Affective**
  - Temperament traits
  - Characteristic moods

**Personality**

(Note: Social abilities have been integrated in these major domains: Gei [cognitive aspects of social intelligence] now in Cognitive/CHC model. Social behavior characteristics now subsumed under personality).
Volitional controls

Motivation

Motivations

Self-Regulated Learning

Interests & Task Values

Self-Beliefs (competence & control)

Cog. Styles & Learning Approaches

Volitional (action) controls

Achievement orientations

Was included in original ESAF/MACM model but is now excluded—there are other models available for this huge domain.

Social Emotional
MACM currently addresses **two major conative domains** of learner characteristics.

- **Motivation**
  - Achievement orientations
  - Interests & Task Values
  - Self- Beliefs (competence & control)

- **Volitional (action) controls**
  - Self – Regulated Learning
McGrew (2004, 2007, 2016) – an initial attempt to organize this diverse literature

Old model

Note: Affective domain from Snow model excluded
Current evolving model (01-05-2021; Changes from earlier models)

**Orientations Towards Self (Motivations)**
- Motivational Achievement orientation
- Interests, Attitudes & Values
- Self-Beliefs (competence & control)

**Volitional (action) controls**
- Self-Regulated Learning
  - Planning & Activation
  - Monitoring
  - Control & Regulation
  - Reaction & Reflection
  - Preparatory Phase
  - Performance Phase
  - Appraisal Stage

**Motivational Orientation**
- Intrinsic motivation
- Academic motivation
- Academic goal orientation
- Academic goal setting
- ... etc

**Interests, Attitudes & Values**
- Need for cognition
- Academic interests
- Academic values
- ... etc

**Self-Beliefs (competence & control)**
- Academic ability conception/mindset (control)
- Academic self-efficacy (competence)
- Locus of control (control)
- Academic self-concept (competence)
- ... etc

**Self-Regulated Learning**
We have an **embarrassment of riches**—and a serious need to **make order out of chaos**

- Need for Achievement Theory
- Intrinsic Motivation Theory
- Goal Setting Theory
- Attribution Theory
- Achievement Goal Theory
- Interest Theory
- Self-efficacy Theory
- Self-worth Theory
- Self-regulation Theory
- Self-determination theory
- Social-emotional learning
- Cognitive & student engagement
- Self-determination
- Habits of Mind
- Growth mindset
- Executive functions
- Self-beliefs
- Competence perceptions
- Dispositions and drivers
- Grit
- Planning, monitoring, adjusting
- ......
The framework needs to use clear and consistent construct definitions

The **jingle-jangle-jungle** is when erroneous assumptions are made that two different things are the same because they have the same name (*jingle fallacy*) or are identical or almost identical things are different because they are labeled differently (*jangle fallacy*)

(Schneider & McGrew, 2018)

(Kelly, 1927)
The framework needs to use clear and consistent construct definitions: Here is an article demonstrating the jingle-jangle jungle.
We have an embarrassment of riches—and a serious need to make order out of chaos.
We need to develop a **common taxonomy and nomenclature**

A major MACM goal is to facilitate the process of developing a common nomenclature for these constructs...like the CHC periodic table of cognitive elements.
We need to develop a common taxonomy and nomenclature:

One personality example
We need to develop a common taxonomy and nomenclature:

One Big 5 Social-Emotional example—An institute in Brazil is doing some of the leading work in this area.
We need to develop a common taxonomy and nomenclature: One Big 5 Social-Emotional example—An institute in Brazil is doing some of the leading work in this area

<table>
<thead>
<tr>
<th>Domain</th>
<th>Facet</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-management</td>
<td>Determination</td>
<td>Setting goals and high standards, motivating oneself, working very hard, and applying oneself fully to the task, work, or project at hand.</td>
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<td></td>
<td>Organization</td>
<td>Possessing organizational skills and meticulous attention to detail that are useful for planning and executing plans to reach longer-term goals.</td>
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<td></td>
<td>Focus</td>
<td>Focusing attention and concentrating on the current task, and avoiding distractions.</td>
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<td></td>
<td>Persistence</td>
<td>Overcoming obstacles to reach important goals.</td>
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<td></td>
<td>Responsibility</td>
<td>Possessing time management skills, being punctual, and honoring commitments.</td>
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<tr>
<td>Engaging with others</td>
<td>Social initiative</td>
<td>Approaching and connecting with others, both friends and strangers, initiating, maintaining, and enjoying social contact and connections.</td>
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<tr>
<td></td>
<td>Assertiveness</td>
<td>Speaking up, voicing opinions, needs, and feelings, and exerting social influence.</td>
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<td></td>
<td>Enthusiasm</td>
<td>Showing passion and zest for life; approaching daily tasks with energy, excitement, and a positive attitude.</td>
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<tr>
<td>Amity</td>
<td>Compassion</td>
<td>Using empathy and perspective taking skills to understand the needs and feelings of others, acting on that understanding with kindness and consideration of others.</td>
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<tr>
<td></td>
<td>Respect</td>
<td>Treating others with respect and politeness.</td>
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<td></td>
<td>Trust</td>
<td>Assuming that others generally have good intentions and forgiving those that have done wrong.</td>
</tr>
<tr>
<td>Negative-emotion regulation</td>
<td>Stress modulation</td>
<td>Modulating anxiety and response to stress.</td>
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<tr>
<td></td>
<td>Self-confidence</td>
<td>Feeling satisfied with self and current life, having positive thoughts about self, and maintaining optimistic expectations.</td>
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<tr>
<td></td>
<td>Frustration tolerance</td>
<td>Regulating temper, anger, and irritation; maintaining tranquility and equanimity in the face of frustrations.</td>
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<tr>
<td>Open-mindedness</td>
<td>Intellectual curiosity</td>
<td>Mustering interest in ideas and a passion for learning, understanding, and intellectual exploration.</td>
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<td></td>
<td>Creative imagination</td>
<td>Generating novel ways to think about or do things through experimenting, tinkering, learning from failure, insight, and vision.</td>
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<td></td>
<td>Artistic interest</td>
<td>Valuing, appreciating, and enjoying design, art, and beauty, which may be experienced or expressed in writing, visual and performing arts, music, and other forms of self-actualization.</td>
</tr>
</tbody>
</table>
Mapping self-report questionnaires for socio-emotional characteristics: What do they measure?

Mapeando instrumentos de autorrelato de competências socioemocionais: o que eles medem?

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Daniel Domingues dos SANTOS 0000-0002-6055-2736
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Filip De FRUYT 0000-0002-5552-0754
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We need to develop a common taxonomy and nomenclature: An interesting reading “motivation“ formal concept analysis literature review and synthesis

Abstract  Despite the importance of motivation in understanding the development and practices of reading, problems persist in how motivation-related constructs are defined and investigated. This article reports a concept analysis of how 12 terms have been used in current reading research. Selection criteria resulted in the identification of 92 data-based articles published in 28 peer-reviewed journals from 2003 to 2013. Over the period examined, there was a steady increase in the number of studies reported. Most were conducted in North America and Europe. Only 17 % of the studies offered explicit definitions of the target constructs they examined. Another 64 % relied on various forms of implicit definitions, and 19 % provided no definitions of any kind. Usage problems frequently occurred as well. These included instances of vague associations among terms, occurring in 20 % of the studies, synonymous reference to distinctly different constructs in 32 %, and inaccurate statements made about constructs in 20 %. Although a variety of motivation theories were used to ground the investigations, some 22 % were essentially atheoretical. These difficulties were unrelated to the impact factor of the journals in which they appeared. Possible causes are discussed, together with suggestions for improvement.

Keywords  Conceptual review · Motivation · Reading · Instruments
We need to develop a common taxonomy and nomenclature: An interesting reading “motivation” formal concept analysis literature review and synthesis

Fig. 1 Categories of definitional clarity. Of note, although Murphy and Alexander used distinct language to describe IC and IO, they used a single, combined code that included both. For the purpose of a nuanced discussion, we chose to code these instances separately. In addition, when the term was not defined at all, even implicitly, we coded it as “X” and left the definition column blank.

1. Identify and name the concept of interest.
2. Identify surrogate terms and relevant uses of the concept.
3. Identify and select an appropriate realm (sample) for data collection.
4. Identify the attributes of the concept.
5. Identify the references, antecedents, and consequences of the concept, if possible.
6. Identify concepts that are related to the concept of interest.
7. Identify a model case of the concept.
We need to develop a common taxonomy and nomenclature: An interesting reading “motivation” formal concept analysis literature review and synthesis

<table>
<thead>
<tr>
<th>Theories</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other motivational theories</td>
<td>11.4</td>
</tr>
<tr>
<td>Mixed</td>
<td>12.7</td>
</tr>
<tr>
<td>Interest theory</td>
<td>6.3</td>
</tr>
<tr>
<td>Bandura</td>
<td>5.1</td>
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<tr>
<td>Attitude theory</td>
<td>10.1</td>
</tr>
<tr>
<td>Reading motivation theories</td>
<td>8.9</td>
</tr>
<tr>
<td>Reading engagement model</td>
<td>11.4</td>
</tr>
<tr>
<td>SDT</td>
<td>24.1</td>
</tr>
<tr>
<td>EVT</td>
<td>10.1</td>
</tr>
</tbody>
</table>
We need to develop a common taxonomy and nomenclature: An interesting reading “motivation” formal concept analysis literature review and synthesis

<table>
<thead>
<tr>
<th>Construct</th>
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<tbody>
<tr>
<td>Agency</td>
<td>A reader’s perceived capacity to determine involvement in reading processes and activities</td>
</tr>
<tr>
<td>Attitude</td>
<td>A set of acquired feelings about reading that consistently predispose an individual to engage in or avoid reading</td>
</tr>
<tr>
<td>Expectancy</td>
<td>The extent to which an individual believes that a reading experience will result in success or failure</td>
</tr>
<tr>
<td>Goal</td>
<td>An individual’s orientation and intentions toward reading</td>
</tr>
<tr>
<td>Interest</td>
<td>A positive orientation toward reading about a particular topic. An individual interest is a relatively stable and enduring positive orientation toward reading about a particular topic; a situational interest is a context-specific, often momentary, positive orientation toward reading about a particular topic.</td>
</tr>
<tr>
<td>Reading motivation</td>
<td>The drive to read resulting from a comprehensive set of an individual’s beliefs about, attitudes toward, and goals for reading. Intrinsic motivation is the drive to read for internal purposes, such as deriving pleasure, attaining personal goals, or satisfying curiosity; extrinsic motivation is the drive to read for external purposes, such as rewards or recognition</td>
</tr>
<tr>
<td>Self-concept</td>
<td>An individual’s overall self-perception as a reader, including one’s sense of competence and the role ascribed to reading as a part of one’s personal identity</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>The judgment of one’s ability to accomplish a specific reading task</td>
</tr>
<tr>
<td>Value</td>
<td>An individual’s beliefs about the extent to which reading is generally useful, enjoyable, or otherwise important</td>
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Constructs identified very similar to MACM “motivation” domain constructs. A demonstration of a method to help disentangle the mitigation “jungle mangle jungle”
Learning-related conative constructs

Motivation as a set of key questions

Do I want to do this activity?
Why do I want to do this activity?
What are my goals for this activity?
Is this activity of interest to me?
Is this activity worth the effort?
Can I be successful on this activity?
Am I capable of doing this activity?
Can I control my success on this activity?

Motivation

Achievement Orientations
- Intrinsic Motivation
- Academic Goal Orientation
- Academic Motivation
- Academic Goal Setting

Interests and Task Values
- Need for Cognition
- Academic Interests & Attitudes
- Academic Values

Self-Beliefs
- Locus of Control (control)
- Academic Ability Conception (control)
- Academic Self-Efficacy (competence)
- Academic Self-Concept (competence)

Fig. 9 A Hierarchy of motivation-related constructs
The Latin derivative of motivation means “to move” - movere

Motivation has no consensus definition

Motivation theories are typically concerned with the energization and direction of behavior (Pintrich, 2003)
Motivation has no consensus definition

Motivation refers to the processes of both initiating and sustaining behavior.

The study of motivation in educational psychology goes beyond thinking of students as motivated or unmotivated to examine how their self-related beliefs, cognitions, goals, and experiences shape engagement and learning. Importantly, these self-related motivational beliefs are thought to be “cognitive, conscious, affective, and often under control of the individual.”
Motivation has no consensus definition.

Motivation...is such an amorphous and difficult subject. To even define motivation is challenging, let alone to measure it.
While researchers use different frameworks to think and define motivation, they essentially agree on the four major dimensions that contribute to student motivation.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Indicators</th>
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<tbody>
<tr>
<td>Competence (Am I capable?)</td>
<td>The student believes he or she has the ability to complete the task.</td>
</tr>
<tr>
<td>Control/autonomy (Can I control it?)</td>
<td>The student feels in control by seeing a direct link between his or her actions and an outcome.</td>
</tr>
<tr>
<td></td>
<td>The student retains autonomy by having some choice about whether or how to undertake the task.</td>
</tr>
<tr>
<td>Interest/value (Does it interest me? Is it worth the effort?)</td>
<td>The student has some interest in the task or sees the value of completing it.</td>
</tr>
<tr>
<td>Relatedness (What do others think?)</td>
<td>Completing the task brings the student social rewards, such as a sense of belonging to a classroom or other desired social group or approval from a person of social importance to the student.</td>
</tr>
</tbody>
</table>

Sources: Bandura, 1996; Dweck, 2010; Murray, 2011; Pintrich, 2003; Ryan & Deci, 2000; Seifert, 2004.
While researchers use different frameworks to think and define motivation, they essentially agree on the four major dimensions that contribute to student motivation.

Four Dimensions of Motivation

- **Competence** — The student believes he or she has the ability to complete the task.

- **Control/autonomy** — The student feels in control by seeing a direct link between his or her actions and an outcome and retains autonomy by having some choice about whether or how to undertake the task.

- **Interest/value** — The student has some interest in the task or sees the value of completing it.

- **Relatedness** — Completing the task brings the student social rewards, such as a sense of belonging to a classroom or other desired social group or approval from a person of social importance to the student.

Sources: Bandura, 1996; Dweck, 2010; Murray, 2011; Pintrich, 2003; Ryan & Deci, 2000; Seifert, 2004
Motivational factors – which can include beliefs, nonintellectual skills, and affect – are those factors that influence the pursuit of goals.

We argue that motivation is much more than simply a motor that turns actions on or off and more than simply a desire to do well. Motivation, importantly, also involves beliefs (e.g., beliefs about the nature of one's intelligence), nonintellectual skills (e.g., the ability to enforce self-discipline to achieve one's goals), and affect (e.g., how much one enjoys learning in a particular area) – all of which influence people's ability to pursue intellectual goals effectively.

Still a classic reference book

-Over 40 years of research on achievement motivation
-McClelland et al. (1950’s – 1960’s N-Ach)

-Achievement motivation refers to motivation in situations in which individual’s competence is at issue (Nicholls, 1984; in Wigfield & Eccles, 2002)
Competence motivation encompasses the appetitive energization and direction of behavior with regard to effectiveness, ability, sufficiency, or success (Elliott, Dweck & Yeager, 2017)
Achievement competence motivation encompasses the initiation and direction of persistent, sustained and self-regulated behavior towards a satisfactory level of success on cognitively implicit or explicit academic goals.

(Thanks to Elliott, Dweck & Yeager, 2017)
The framework must integrate different strands of psychological research.

The diverse nature of motivation and associated processes has been studied from multiple perspectives in psychology—cognitive, developmental, educational, social—and generated an extensive list of constructs and theoretical frameworks, resulting in an extensive research literature.
The framework must integrate different strands of psychological research.

Navigating this dizzying array of constructs can be a challenge even for the seasoned researcher. In education, Schunk, Pintrich, and Meece (2013) are on their fourth edition of a textbook that summarizes, but does not synthesize, motivation constructs and theories relevant to education.

Although there may be a need for a synthetic theory of motivation in education, this task was too big even for Schunk et al.'s book, so we will not attempt it here.
Motivation: As Three Sets of Key Questions

Do I want to do this activity?
Why do I want to do this activity?
What are my goals for this activity?
“Is this activity of interest to me?”
“Is this activity worth the effort?”

Can I be successful on this activity?
Can I control my success on this activity?
Am I capable of doing this activity?

“What do I need to do to succeed at this activity?”
“How am I doing on this activity?”
“What do I need to do different?”
Motivation: Three “Things”
Motivation

Self-Beliefs (competence & control)
- Locus of control (control)
- Academic ability conception/mindset (control)
- Academic self-efficacy (competence)
- Academic self-concept (competence)
- ....

Interests & Task Values
- Need for cognition
- Academic interests
- Academic values
- ....

Achievement orientations
- Academic motivation
- Intrinsic motivation
- Academic goal orientation
- Academic goal setting
- .... etc

Do I want to do this activity?
Why do I want to do this activity?
What are my goals for this activity?
"Is this activity of interest to me?"
"Is this activity worth the effort?"

Can I be successful on this activity?
Can I control my success on this activity?
Am I capable of doing this activity?