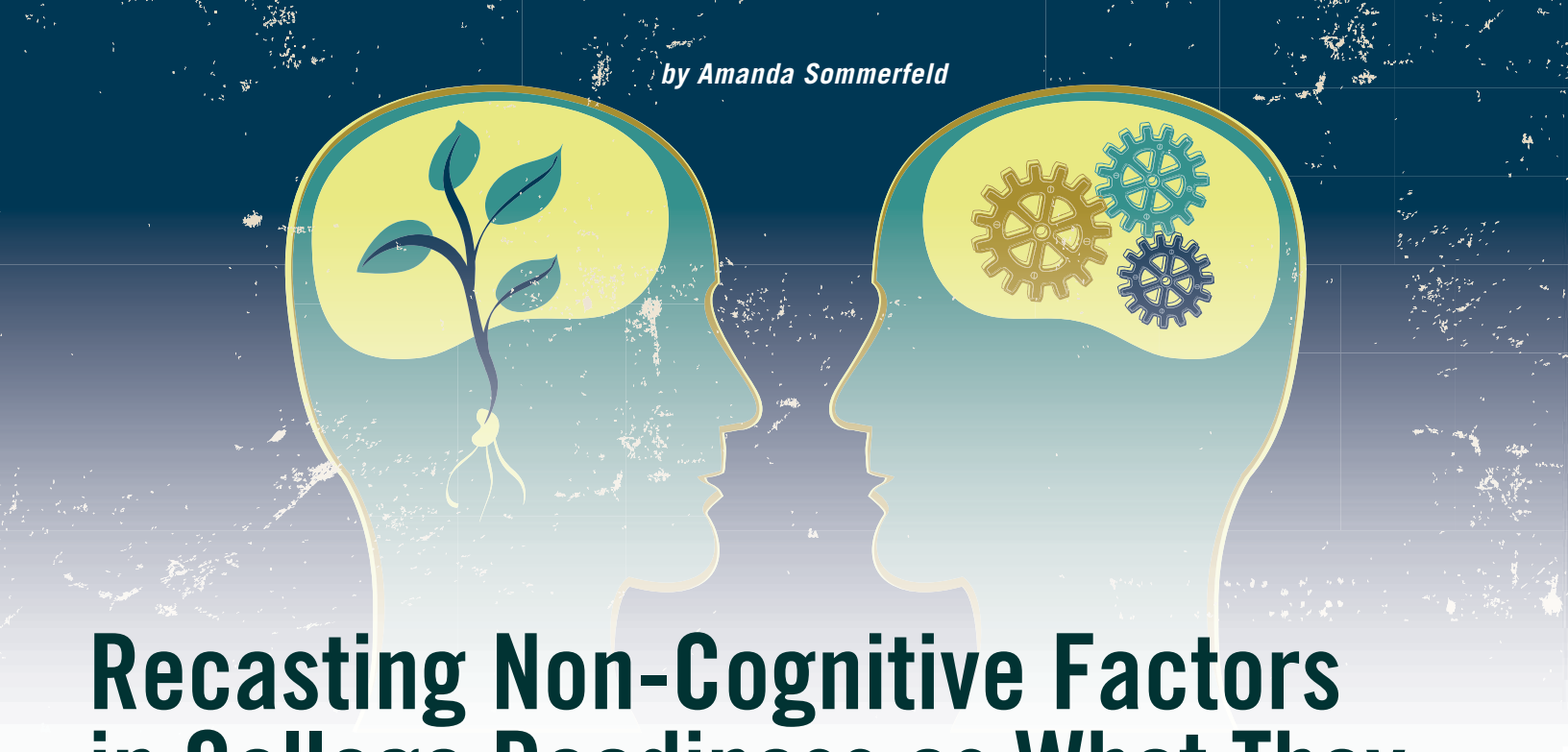
by Amanda Sommerfeld



Recasting Non-Cognitive Factors in College Readiness as What They Truly Are: Non-Academic Factors

Against the backdrop of traditional measures of college readiness (i.e., high school GPA, standardized test scores, and high school rank), the consideration of "non-cognitive" factors marked a significant departure when they were first discussed as integral aspects of college success. Used to refer to any characteristic, ability or disposition that was theorized to affect college success or retention, the term "non-cognitive" became a kind of a catchall for any variables beyond those "cognitive" or "intellectual" variables listed above. However, the term "non-cognitive" is now and has always been a misnomer, used to refer to a vast array of constructs, many of which reflect cognitive process.

Now, this could be considered simply a semantic issue; "non-cognitive," "dispositional" or "non-academic," what difference does it make if there is shared understanding of what the term refers to? The problem is that there isn't shared understanding and as a result this essential area of study has been compromised by critiques and misunderstandings, causing not only confusion about how these factors affect college readiness, but also general skepticism about their utility in predicting college success. It seems, then, that for more transparent discourses to take place about the multifaceted nature of college readiness, this crucial area of research must be recast, enhancing the clarity of the field in order to provide a linguistic grounding for future research. With this in mind, as a preliminary step the author proposes that "non-cognitive" be replaced with the more appropriate "non-academic" term, thereby elucidating the true distinction that researchers are making between various contributing factors to college preparation and success.

Why Do "Non-Cognitive" Factors Matter?

The introduction of "non-cognitive" factors into college readiness discussions grew out of necessity, prompted by decades of disparity between the rates of college acceptance, attendance and completion by non-traditional college students (i.e., students of color, first-generation college students, older students, students with special learning needs, etc.) in comparison to the more traditional college-going population (i.e., white, middle to upper-middle class men). These disparities were quickly attributed to higher education's reliance on cognitive factors (i.e., standardized test scores, high school rank, high school GPA) as the basis of college admission that, though shown to be effective in identifying students likely to succeed in higher education (e.g., Bentekoe 1992, Bridgeman, McCamley-Jenkins and Ervin 2000, Kuncel et al. 2005, Kuncel, Hezlett and Ones 2001, Mouw and Khanna 1993, Noble 1991) were criticized for their inutility across more diverse student groups.

In particular, the use of traditional college admission criteria as the sole grounds for college access has been criticized for two reasons: first, because traditional measures of college admission are ineffective identifiers of students at risk of attrition (Sedlacek

1993); and second because they tend to lack predictive validity for assessing non-traditional college students' readiness for college, oftentimes either resulting in a number of false negatives or overpredicting performance (Young and Koplow 1997). For example, although traditional admission criteria have been routinely criticized for underestimating the college performance of non-traditional students, other studies have identified the tendency for "highly qualified" non-traditional students (e.g., students of color who score well on SATs and have high GPAs from high-quality schools) to oftentimes stumble academically in the face of unwelcoming college environments (c.f., Linn 1990, Young 1993).

Considering "non-cognitive" factors in assessments of college readiness was, therefore, seen as a way to improve the accuracy of selection criteria, casting light on students' abilities to navigate the multiple demands of the college environment so that they may have been better able to persist to graduation. In fact, research has consistently supported this theory, with dozens of studies across multiple populations demonstrating that the validity of college success predictions can be improved by including non-cognitive factors, such as commitment to school (Tinto 1993), long-term-goal setting (Young and Sowa 1992) and social support (Lotkowski, Robbins and Noeth 2004), just to name a few.

What Are "Non-Cognitive" Factors?

When we're referring to "non-cognitive" factors, what exactly defines them? The answer, albeit troubling, is "It depends;" it depends on who conducts the research and whether they're basing their work on an established theory or exploring a new variable of interest.

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For example, one of the most prolific researchers in the field of college readiness is William Sedlacek, who theorized that there are eight essential non-cognitive components of college readiness: positive self-concept regarding academics; realistic self-appraisal; understanding/dealing with racism; long-term goal setting; having an available support person; demonstrated experience and success with leadership; community service; and knowledge acquired in/about a field. Based on these factors, he developed the Non-Cognitive Questionnaire (NCQ), which has been used in scores of studies since its development in 1976 (Sedlacek and Brooks 1976).

An equally compelling, though less-employed approach uses the work of Owens and colleagues (e.g., Mumford and Owens 1987) who promote the use of biodata in predicting student outcomes such as overall achievement, disciplinary actions, college GPA, and course withdrawals. The "non-cognitive" factors they propose include: knowledge and mastery of general principles (Knowledge); continuous learning, and intellectual interest and curiosity (Learning); artistic and cultural appreciation (Artistic); appreciation for diversity (Diversity); leadership (Leadership); interpersonal skills (Interpersonal); social responsibility and citizenship (Responsibility); physical and psychological health (Health); career orientation (Career); adaptability and life skills (Adapt); perseverance (Persevere); and ethics and integrity (Ethics).

However, not all research on non-cognitive factors in college success is grounded in an overarching theory. In fact, most studies explore the utility of a single variable or cluster of variables in predicting outcomes, resulting in a seemingly limitless list of constructs that have fallen under the "non-cognitive" umbrella, including metacognitive skills (e.g., Credé and Kuncel 2008, Zeegers 2001), study attitudes (e.g., Zimmerman, et al. 1977), study motivation (e.g., Melancon 2002), academic and social integration (e.g., Milem and Berger 1997, Tinto 1993); college knowledge (Conley 2005); personality (e.g., Ridgell and Lounsbury 2004), student involvement (e.g., Astin 1993); university actions (e.g., Pascarella, Terenzini and Wolf 1986); problem-solving skills (e.g., Le, et al. 2005), and self-efficacy, effort regulation, and outcome expectations (e.g., Myers 2004).

Are They Really "Not Cognitive"?

As the above section details, clearly a great deal of variability exists in the constructs identified as "non-cognitive," but as the list is considered, the appropriateness of their categorization as "non-cognitive" becomes dubious.

From the Latin *cognoscere*, which means "to know" or "to recognize," cognition is defined as, "The mental process of knowing, including aspects such as awareness, perception, reasoning, and judgment." (The American Heritage Dictionary of the English Language 2000). As such, cognitive processes refer to how people process information, including how they perceive, learn and consider new facts or experiences.

Now, certainly there are some constructs included under the umbrella of "non-cognitive" factors that truly appear to fall outside its definition: constructs such as personality, having an available support person, and university actions. Aside from this short list, the majority of the remaining constructs are undeniably dependent on cognitive processes.

For example, the ability to set long-term goals is one construct that has received a great deal of support as an essential characteristic of successful college students (e.g., Mischel and Ayduk 2004). This construct, which is a direct manifestation of human executive functioning abilities seated in the prefrontal cortex, must certainly be considered a cognitive process; not only does it rely on an established awareness of consequences, but also requires the capacity to perceive how actions affect outcomes, and the ability to choose to delay immediate gratification in favor of greater benefits in the long run.

Similarly, constructs such as adaptability, understanding and dealing with racism and problem-solving skills all require students to be able to analyze a situation, identify the relevant factors, and make choices based on reasoned logic rather than initial reactions—all of which fall under the purview of cognitive processes. Given this, the term "non-cognitive" hardly seems the appropriate choice for capturing this highly variable domain of inquiry, as it is not only phenomenologically incorrect, but unnecessarily vague as well. Furthermore, by mislabeling these factors as "non-cognitive" scholars have succeeded in compromising the application of their own work, contributing to the confusion about what makes a student ready for college and undermining possible avenues of intervention.

Implications of Definitional Vagueness

Since their initial introduction, research on the "non-cognitive" factors in college readiness and success has steadily grown, with associated implications for college programming and resource allocation. For example, a 2000 article in the *Chronicle of Higher Education* about the Gates Millennium Scholars Program, a scholarship program for minority youth, proclaimed that "The $1-billion scholarship program—the largest in higher education—amounts to an unprecedented, large-scale experiment" because of its reliance on "non-cognitive" variables such as "community service, demonstrable leadership skills, the ability to cope with racism, and other hard-to-quantify characteristics" rather than traditional college admission criteria (Pulley 2000, A41).

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That a scholarship program with this many resources and of this caliber would choose to base its decisions on "non-cognitive" characteristics is evidence of the scope and caliber of research on the topic, with publications numbering in the hundreds (Thomas, Kuncel and Credé 2007). However, despite the prolific research and the fact that "non-cognitive" factors have begun being integrated into college admission decisions at institutions such as Louisiana State University Medical School (LA), North Carolina State University (NC), and Muhlenberg College (PA) (Sedlacek 2004), critiques persist, particularly because of the varying amounts of support that different "non-cognitive" constructs have garnered, and the widely disparate predictive validity of those constructs (Thomas, et al. 2007).

For example, in a study that examined the validity of non-cognitive factors in predicting the academic performance of African-American college students, Nasim and colleagues (2005) found that predictors varied in their utility across contexts. So whereas the academic performance of African-American students attending a predominantly white institution was associated with whether they had an academic support person available, their capacity to understand and deal with racism, and their espousal of humanist attitudes, the achievement of African-American students attending Historically Black Colleges or Universities was only influenced by their degree of positive academic self-concept.

The authors of the Noncognitive Questionnaire, the measure most commonly used to assess "non-cognitive" factors in the research literature, similarly found differences in the predictive validity of constructs across groups. In their initial construct validation study, they found that of the six non-cognitive factors that were supported

by their factor analysis (i.e., leadership, recognizing racism, long-term goal orientation, realistic self-appraisal, support for college plans, and self-confidence), only self-confidence, long-term goal orientation and realistic self-appraisal were predictive of white students' first semester GPA, and only positive self-concept and realistic self-appraisal were predictive of GPA in African-American students.

Findings like those outlined above have been replicated in a variety of others studies (e.g., Ancis and Sedlacek 1997, Fuertes, Sedlacek and Liu 1994), indicating differential predictive validity of "non-cognitive" constructs. Despite this, scholars persist in writing broadly of the importance of "non-cognitive" factors in college readiness. As a result, claims that "non-cognitive" factors, overall, are essential for college readiness have been challenged, accompanied by calls for more psychometrically sound measures and greater definitional clarity on the whole.

In response to these critiques, the author argues for a semantic switch—a movement away from the broad, undefined category of "non-cognitive" to nomenclature that allows for greater conceptual clarity. By categorizing important factors of college readiness as "academic" v. "non-academic," a more apparent distinction can be made between that which is based on formal education (i.e., grades, subject matter knowledge, etc.) and those additional factors that affect a student's ability to adapt to and meet the varying demands of a college environment. The category of "non-academic" could then be broken down into appropriate subgroups, such as dispositions, executive functioning abilities, habits of mind, external resources, and college knowledge (see Table 1), that more specifically capture the different domains of integral variables.

Changing the Language: Implications of the Semantic Switch on Research and Interventions

Even if it may seem a trivial adjustment, making the linguistic switch from "non-cognitive" to "non-academic" signals a deeper, meaningful change in the area of college readiness. Ever since factors outside of GPA and standardized test scores were initially considered as potentially meaningful in the collegiate experiences of students,

Table 1: Factors in College Readiness and Success

Factor	Definition	Examples
Academic Factors	Factors explicitly targeted in formal education.	Subject matter knowledge, high school grades, standardized test scores, etc.
Non-Academic Factors		
Dispositions	Internal characteristics that distinguish a person's predominant outlook or characteristic attitude.	Personality (Ridgell and Lounsbury 2004) Temperament Values Attitudes (Owens et al. 1976)
Habits of Mind	"Habits of thought and action that help people manage uncertain or challenging situations… [supporting] thoughtful and intelligent action" (Costa and Kallick 2000, 4).	Metacognitive skills (Zeegers 2001) Creative thinking (Owens 1976) Study attitudes (Zimmerman, et al. 1977) Outcome expectations (Myers 2004) Intellectual curiosity (Owens 1976) Appreciation for diversity (Sedlacek 1993) Leadership (Owens 1976) Positive self-concept (Sedlacek 1993)
Executive Functioning Abilities	Foundational skills that allow individuals to effectively navigate daily tasks, including the ability to "orient, plan, program responses, and verify and modify performances" (Denckla 1996, 263).	Study habits Reasoning (Le, et al. 2005) Long-term goal setting (Sedlacek 1993) Realistic self-appraisal (Sedlacek 1993) Decision making Self-control (Myers 2004) Goal commitment
External Resources	External factors that the individual may be able to access to support college readiness/success.	University fit (Nasim, et al. 2005) Financial stability Family beliefs about education Institution intervention (Pascarella, et al. 1986) Support person (Sedlacek 1993)
College Knowledge	Explicit and implicit knowledge required for college success; essentially knowing how to "do" college.	Knowledge of college requirements, placement test policies, and tuition costs (Conley 2005) Understanding of the structure of college Ability to recognize the systemic requirements and norms

research on the topic has faced (oftentimes justified) criticisms for its lack of clarity and rigor, as well as for overgeneralizing its findings. By virtue of changing the language around the constructs of interest, researchers can indicate an even greater attention to conceptual clarity and an intention to pursue continued research on which non-academic variables impact college success and how they do so. Furthermore, by delineating a categorization scheme that explicitly recognizes the variability in non-academic factors, researchers will be better positioned to inform interventions both within and outside of schools. For by more carefully delineating the different domains of non-academic factors, practitioners and educators could be provided with more explicit recommendations about how particular non-academic factors affect college preparation and persistence, and thereby how we might better prepare our students for their postsecondary school years.

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