

# Noncognitive Impact: Is There a Rationale for Assessing Postsecondary Students beyond Their Cognitive Skill Attainment?

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## Abstract

Noncognitive factors shape how people interact and perform in various settings and have received increased scholarly attention as academicians seek to holistically serve students pursuing postsecondary educational opportunities. This literature review aims to 1) better understand the rationale of assessing students beyond their cognitive skill attainment and 2) explore research evaluating the role of noncognitive skills in students' ability to persist in their educational studies and career skills attainment. Research demonstrates that exploring social-psychological phenomena, including a sense of belonging, impostor syndrome, stereotype threat, intersectionality, and mindset, may help understand students' experiences.

## Keywords

Noncognitive Factors, Belonging, Impostor Syndrome, Stereotype Threat, Intersectionality, Mindset

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## 1. Introduction

For many individuals, the decision to undertake postsecondary education is the result of months or years of personal reflection, family discussions, academic preparation, formative and summative assessments, and standardized testing. This period is often filled with proud moments when a potential student successfully demonstrates mastery of a skill as well as angst while awaiting testing results. Many postsecondary institutions rely on cognitive assessments to determine students' potential to perform well in their programs; however, for some prospective students, these standardized cognitive skill tests do not holistically demonstrate their capabilities. For example, many U.S. colleges and universities

require applicants to submit ACT (formerly “American College Testing”) or SAT (formerly “Scholastic Aptitude Test”) scores; U.S. graduate schools may require applicants to submit Graduate Record Examinations (GRE), Graduate Management Admission Test (GMAT), or Medical College Admission Test (MCAT) scores; and many U.S. law schools require applicants to submit Law School Admissions Test (LSAT) scores as part of the application process. These examinations assess students’ verbal reasoning, analytical writing, quantitative reasoning, integrated reasoning, scientific understanding, and reading comprehension via several timed multiple question testing blocks and various writing sample sections. While these tests may demonstrate an applicant’s aptitude for reading, math, and science, the assessments do not account for other personal characteristics that may assist a student in persisting through educational endeavors when faced with obstacles. The desire to better understand the impact of intersecting social and psychological factors on educational and career success has led scholars to further explore the trend to exclude noncognitive factors as criteria for consideration in postsecondary educational admissions and recruitment practices. The purpose of this literature review is to 1) better understand the rationale of assessing postsecondary students beyond their cognitive skill attainment and 2) explore research that evaluates the role of noncognitive skills in students’ ability to persist in their educational studies, graduate, pass required post-graduation examinations, and gain necessary career skills.

## 2. Methods

The researcher undertook a systematic literature review to explore the rationale of assessing students beyond their cognitive skill attainment and explore the practicability of evaluating the role of noncognitive skills in students’ ability to persist in their educational studies and career skills attainment. The review process followed Khan et al.’s five-step model of 1) framing review questions, 2) identifying research to be examined, 3) assessing the quality of identified research, 4) summarizing assessment findings, and 5) interpreting results (Khan et al., 2003). To conduct the literature review, the author modified the literature review approach recommended by Bramer et al. (2018) and Waitoller and Artiles (2013). The modified approach enabled the author to examine and synthesize existing research, evaluate what is known about the subject matter, identify what is missing in the literature, and explore implications of gaps in the literature. Specifically, the author 1) determined the research questions of various pieces of literature, 2) identified concepts, terms, and themes used to discuss the subject matter, 3) identified databases to employ search queries, 4) used academic publication search engines to research publications that identify and examine cognitive and noncognitive factors, 5) employed specific search terms to locate publications that explore factors assessing educational readiness or educational success, 6) recorded the search process to allow for replication with each search, 7) checked for errors, 8) translated the search process using other data-

bases, 9) tested and reiterated search methods, 10) examined each author's study methods and research findings, 11) synthesized each article individually and all articles collectively, and 12) developed an understanding of what is known in the field, gaps in the literature, and possible recommendations for the future (Bramer et al., 2018; Waitoller & Artiles, 2013).

### 3. Conceptualizing Noncognitive Skills

Historically, results from standardized assessments like the ACT, SAT, GRE, GMAT, MCAT, and LSAT were required components of students' postsecondary education application materials. These assessments measure cognitive skill attainment such as: logic and critical thinking; verbal and quantitative reasoning (analytic reasoning); and English, math, science, reading, and writing proficiency to determine if test-takers are prepared to enter postsecondary education. Standardized tests were initially adopted in the 1800s as a method to formalize the oral examination process to assess student progress and resulted in the creation of college entrance examinations (Elwick, 2021). By the 1900s, achievement tests purported to measure arithmetic, handwriting, spelling, drawing, reading, language ability, intelligence and mental capacity, vocation, and athletic ability in school applicants around the world (Elwick, 2021). Standardized testing ultimately became mainstream and is used in a variety of sectors including the military (e.g., the Armed Services Vocational Aptitude Battery [ASVAB]). Such tests are used to assess individuals at all levels, including elementary school (e.g., the Iowa Assessments, formerly the Iowa Test of Basic Skills), high school (e.g., the ACT and SAT), and college and professional schools (e.g., the GRE, GMAT, MCAT, LSAT, etc.) (Elwick, 2021). In the 21<sup>st</sup> century, standardized test scores are one of the metrics used to determine acceptance in selective elementary and high schools, colleges and universities, and medical programs and law schools around the world. Thus, the subject matter assessed by the tests plays a role in determining whether applicants are admitted, and the use of standardized test scores as a factor in determining admission has implications for those seeking admission.

While these skills are important in deciding whether a potential student possesses some of the skills necessary to persist in postsecondary educational settings, research has demonstrated that these skills may account for up to 18% of the variance to successfully matriculate in postsecondary education (Steele & Aronson, 1995; Steele, 2011) and up to 30% of the variance necessary to pass the bar examination (Jiang et al., 2019; Shultz & Zedeck, 2011). This leaves between 70% to 82% of the variance to persist in formal postsecondary educational settings unaccounted for by currently used standardized tests. Collectively, the aforementioned scholars opine that much of this variance can be examined by paying closer attention to noncognitive skills such as: self-efficacy, sense of belonging, goal setting, persistence, commitment, motivation, emotional maturity, adaptability, interpersonal skills, empathy, personality traits, cooperation, resi-

lience, grit, study skills, time management, self-discipline, reliability, verbal and nonverbal communication, leadership skills, conflict management, negotiation skills, delayed gratification, self-control and self-regulation, ethical behavior, and responsibility. As such, there are limitations in standardized tests' ability to account for the positive impact noncognitive factors can have on a student's ability to persist in post-secondary study and career.

Predictive validity concerns are present because standardized tests may fail to capture the full spectrum of some students' intelligence, creativity and leadership aptitude and can present an incomplete and sometimes inaccurate perspective of a student's capabilities and potential for success in higher education and beyond. Standardized tests have also been criticized as having socioeconomic bias and cultural fairness challenges for some test-takers as test questions may assume knowledge or values specific to certain groups, which can disadvantage students from diverse backgrounds (Hill, 2019). Similarly, standardized test-takers who have access to high-quality education, test preparation resources, and a supportive learning environment more readily available, tend to score higher on standardized tests than test-takers who do not have such access. Standardized tests also present educational outcome concerns. Mainly, the high stakes associated with standardized test performance can lead to situations where educators focus on preparing students to score well on standardized tests at the expense of fostering a comprehensive, critical, and creative approach to education (Razavipour et al., 2021). Standardized tests also provide limited feedback leading to missed opportunities for students and educators to address learning gaps.

Moreover, standardized tests present adverse psychological effect concerns. Students preparing and sitting for standardized tests often experience test anxiety, which may negatively impact test performance and does not necessarily reflect students' true abilities or knowledge in an academic subject area (Pachaiappan et al., 2023). Reducing a student's abilities to a single score can also encourage a fixed mindset, where students see their intelligence and potential as static rather than capable of growth (Dweck, 2007). This mindset can undermine motivation and engagement in learning. The emphasis on standardized testing may also increase student stress and burnout. This can result in a decline in academic motivation and possibly mental health issues, undermining the overall well-being and academic development of the student (Pachaiappan et al., 2023).

The importance of noncognitive factors in shaping the human experience and postsecondary education has been studied for decades (Bandura, 1977; Blackwell et al., 2007; Bowman et al., 2019; Bradburn & Schmitt, 2019; Cadman & Brewer, 2001; Clance & Imes, 1978; Collins, 2013; Crenshaw, 1989; Crenshaw, 1991; Dweck, 2007; Dweck & Leggett, 1988; French et al., 2005; Gil-Hernández, 2021; Haimovitz & Dweck, 2017; Jiang et al., 2019; Maftei et al., 2021; Shultz & Zedeck, 2011; Steele, 1992; Steele & Aronson, 1995; Walzer et al., 2019; Williams et al., 2018). However, an issue that one encounters when trying to better understand these skills is that different terminology is used to identify them across discip-

lines. For example, studies over the last several decades have used the following terms to identify the personal attributes encompassed in noncognitive skills: noncognitive factors; noncognitive attributes; noncognitive skills; character skills; soft skills; social skills; emotional intelligence; emotional maturity; social and emotional aptitude; psychological, social, and emotional aspects of education; non-scholastic predictors; non-academic predictors; and 21<sup>st</sup> century competencies.

Noncognitive skills influence academic performance and life success during the important developmental stages of school-aged and college students and play an important role in fostering environments that promote growth and refinement (DeProspero Rogers, 2014). For example, in the family environment, noncognitive skill development is cultivated by parental involvement and encouragement, family stability, and home learning activities. These activities help shape children's and adolescents' attitudes toward learning and their persistence in facing challenges. Home resources, such as access to books, educational materials, and experiences that stimulate intellectual curiosity are instrumental in promoting engagement and self-directed learning. A student's socioeconomic background may also impact the development of noncognitive skills, particularly when quality education and enriching experiences are lacking (Anghel et al., 2022). Similarly, economic strain and associated stressors might impede the development of emotional regulation and persistence.

Furthermore, cultural values and societal expectations shape how students view themselves and their responsibilities towards others, while societal role models like mentors can either positively or negatively influence the ideals that students aspire to replicate. Likewise, personal life events and individual challenges or achievements can be pivotal in crafting one's noncognitive abilities. Overcoming personal hardships can foster resilience, while supportive interventions can bolster coping strategies. Equally, positive reinforcement and acknowledgment of accomplishments can motivate persistence and ambition (Schneider & Gottlieb, 2021). As discussed in detail below, noncognitive skills play an important role in personal, academic, and occupational settings.

#### **4. Evolution of Understanding the Impact of Noncognitive Skills in Educational Settings**

Albert Bandura's landmark 1977 study examined self-efficacy and hypothesized that one's belief in their capacity to execute behaviors when faced with adversity depended on the person's experiences, personal expectations, and motivation (Bandura, 1977). He found that these expectations were not static and could change over time depending on intervening influences such as additional experiences, messages received, commitment, persistence, resilience, and independent task performance (Bandura, 1977). Since Bandura's study, scholars have explored whether noncognitive skills play an important role in successful matriculation in postsecondary educational endeavors (Gutman & Schoon, 2014;

Izaak, 2002; McCarthy & Goffin, 2001; Scott et al., 1995). Over the last several decades, scholars have examined noncognitive variables such as maturity, motivation, self-concept, interpersonal skills, personality variables, and noncognitive oriented measures, such as biographical information, personal interviews, and recommendation letters, with the aim of understanding their impact or predictive value on college student performance (Izaak, 2002; McCarthy & Goffin, 2001; Scott et al., 1995). These researchers have argued that noncognitive factors include both social and psychological elements that impact college students' admission rates, college experience, and retention and graduation rates. According to this perspective, student experiences and persistence may include some combination of family income level, social protection, prior educational experiences, unemployment and job insecurity, occupational life conditions, food insecurity, housing availability, access to basic amenities, and the impact of environmental conditions (Sedlacek, 2004; Wood et al., 1990). The impact of intersecting social and psychological factors has led scholars to further explore the trend to exclude noncognitive factors as criteria for consideration in postsecondary educational admissions and recruitment practices. Several social-psychological phenomena, including sense of belonging, impostor syndrome, stereotype threat, intersectionality, and mindset have received increased scholarly attention and suggest promising avenues for a better understanding of the impact that noncognitive factors have on admission, retention, persistence, and graduation rates.

Baumeister and Leary (1995) have identified sense of belonging as a noncognitive factor that shapes a person's experiences and interactions. Desiring a sense of belonging may impact the performance of postsecondary school applicants. Students who feel that they do not belong in educational settings will be less likely to persist and graduate (Kirby & Thomas, 2022; McBeath et al., 2018). It is well-established that belonging is a fundamental motivation in contexts where humans need to have frequent interactions with others that promote positive relationships (Baumeister & Leary, 1995). Creating these relationships is an important process that shapes how people perceive themselves and can include developing an understanding of their culture and heritage intentionally through actions and unintentionally through environmental association (Osmani Ballazhi, 2015). In general, identity development can be challenging, and the complexity of this process can be compounded when race and ethnicity are considered. According to Branch and Young (2006), ethnic identity development is a process that does not occur in a vacuum; it is often shaped by narratives espoused by others that transmit positive or negative messages about a person. Ethnic identity development, therefore, also shapes a person's perception of their own intellectual capacity and may impact their educational experiences. Branch and Young note that these individual conceptions can often be fluid and are personal, interpersonal, and societal (Branch & Young, 2006). Failing to appreciate the individual and collective impact of dimensions such as race and ethnicity on people's lives can therefore reinforce inaccurate narratives and stereotypes and

can perpetuate the othering of those who have been minoritized. Johnston (2016) notes the difficulty in comprehending ethnicity and ethnic identity because of the lack of consensus in defining these terms; Johnson states, however, that there are recurring commonalities and distinctions across conceptual definitions, and that understanding the nuances can serve as a resource when addressing racism (Johnston, 2016).

Although there is no single concrete definition for these terms, researchers have developed similar conceptions of the terms ethnicity and racial identity. Phinney (1992) argued that ethnic identity encompasses race and ethnicity, and that ethnic identity development can be a cyclical process, regardless of age, that incorporates multiple phases. Phases include a period in which one lacks conscious thought about ethnicity or race; a period of conscious thought and exploration searching for information about one's ethnicity or race and gaining understanding about other's ethnicities and races; and a period in which ethnic identity is internalized and can manifest as positive involvement in or separation from ethnic traditions and cultural milestones (Phinney, 1990; Phinney, 1992; Phinney, 1993; Phinney, 1996a, 1996b).

Ethnic identity development shapes a person's self-perception and provides the foundation for a person's understanding of how others perceive them. Recent research demonstrates the importance of ethnic identity development and the support needed to assist in cultivating positive self-perception. Pinderhughes et al. (2015) conducted semi-structured interviews with 114 participants from 46 families raising Chinese adoptees in the Northeastern United States. The researchers found that families who expanded their understanding of ethnic identity were also inclined to acknowledge cultural and racial differences. Such families also engaged in more meaningful cultural socialization activities that allowed them to support their children and help them navigate their ethnic identity development (Pinderhughes et al., 2015). Having a social support system that was willing to engage in meaningful exploration to assist children make sense of the world and how the world perceives them had a positive impact on the children's ethnic identity development. Butler-Sweet (2011) reached similar conclusions in her study of young Black adults who grew up in monoracial, biracial, and trans-racial families. Butler-Sweet found that class was a moderator in shaping Black identity development and resulted in middle-class participants having access to more robust educational settings and resources to assist them in interpreting their minoritized racial status. Butler-Sweet also found that parental guidance was a moderating factor that helped youth who struggled with negotiating their middle-class status and Black identity development (Butler-Sweet, 2011). The impact of the interrelationship of belonging and identity development underscores the importance of exposure in navigating social relationships and developing ethnic/racial identity; such factors play a crucial role as students navigate postsecondary educational settings.

A second phenomenon that may impact postsecondary school applicants is impostor syndrome. The term "impostor syndrome" was coined by the psy-

chologist Pauline Clance to describe the feelings of doubt some people have about their abilities and the worry they have that they are unqualified or undeserving and that their peers or mentors will find out about their shortcomings (Clance, 1985a; Clance, 1985b; Clance & Imes, 1978; Clance & O'Toole, 1987; Matthews & Clance, 1985). According to Clance, imposter syndrome may cause some students to have feelings of insecurity or inadequacy that hamper their progress despite the students' cognitive assessments demonstrating they are prepared for educational endeavors (Clance, 1985a, 1985b). Clance also notes imposter syndrome may manifest in a variety of ways ranging from mild nervousness to crippling anxiety.

Clance and Imes (1978) argued that the impostor phenomenon is shaped by societal role-stereotyping and early experiences that cause a person to negate personal, academic, and professional accomplishments and persist in believing that their success is due to accident (fluke), an external cause (luck), or a temporary internal quality (effort) that is not linked to their inherent ability. The researchers conducted a study of all female research participants, including 110 undergraduate women, 20 university faculty members, 20 graduate students, 6 medical students, and 22 professionals. They found that a significant number of research participants exhibited behavior that prohibited them from having an internal sense of success and negated external evidence that contradicted their belief that they were intellectual impostors (Clance & Imes, 1978). Clance and Imes noted that their participants attempted to stave off being "found out" by devoting excessive amounts of time to develop near-perfect deliverables to their stakeholders, being intellectually inauthentic to "psych out" their stakeholders, carefully studying the stakeholder they wanted to impress and using the knowledge gained and their charisma to win the person over, or avoiding displays of confidence (Clance & Imes, 1978).

In a recent study, Maftei et al. (2021) explored the impostor syndrome phenomenon using a cross-sectional, non-experimental study with 130 Romanian psychology students as participants. They found that over 56% of the study participants experienced intense impostor syndrome that led to the participants experiencing high levels of psychological distress and procrastination, and that many of the participants suffered from lower self-esteem, distorted perception of their confidence, depression, and anxiety (Maftei et al., 2021).

Over the last several decades, studies have assessed imposter syndrome using the Clance Impostor Phenomenon Scale (CIPS; Clance, 1985a, 1985b), the Harvey Impostor Scale (HIPS; Harvey, 1981), the Perceived Fraudulence Scale (PFS; Kolligian & Sternberg, 1991), and the Leary Impostorism Scale (LIS; Leary et al., 2000; Mak et al., 2019) and have found that imposter syndrome played a significant role in participants' self-perception and interactions. If results from assessments exploring noncognitive factors are used during applicant screening, they have the potential to identify students' strengths and challenges and to allow educational practitioners to better prepare resources and services to support students' needs.



A third, social-psychological phenomenon that may impact incoming postsecondary school students is stereotype threat. The term “stereotype threat” was coined by psychologist [Steele \(1992\)](#) and further refined by [Steele and Aronson \(1995\)](#). Stereotype threat arises when a person realizes a negative stereotype has been associated with one of their identities and, due to apprehension about confirming the stereotype, actively works to disprove the stereotype ([Steele & Aronson, 1995](#)). Steele noted that the persistence of stereotype threat over time could result in lack of interest and motivation in educational attainment and achievement ([Steele, 1992](#)). Steele and Aronson conducted four research studies to explore the relationship between stereotype threat and performance on standardized tests. Their findings indicated that Black test takers’ awareness of a stereotype associated with their ethnic group interfered with their performance on standardized tests. More specifically, Black test takers underperformed on the tests in comparison to their White counterparts. The researchers also found that participants actively worked to not conform to negative stereotypes associated with one of their identities (e.g., stereotypes associated with age, race, gender, religious affiliation, ability, sexual orientation, etc.), and they worked against having the negative stereotypes used as criteria to judge them ([Steele & Aronson, 1995](#)).

A fourth social-psychological phenomenon that may impact postsecondary school applicants is intersectionality. The legal scholar Kimberlé Williams [Crenshaw \(1989, 1991\)](#) coined the term intersectionality to describe the impact of cumulative disadvantage experienced by those who identify as, or are perceived as, belonging to multiple social minoritized identities (e.g., Black women) in personal and professional life. In the context of educational attainment and persistence, the experiences of those at the intersection of minoritized identities are often shaped by multiple social-psychological phenomena that do not allow their identities to fit neatly into rigid socially constructed perceptions. As such, intersectionality represents the many ways in which marginalized identities interact to shape the numerous dimensions of students’ experiences. Crenshaw argued that failing to consider the role of intersectional dynamics may explain the challenges faced by those assisting people who have intersecting identities ([Crenshaw, 1989](#); [Crenshaw, 1991](#)). Intersectionality research has demonstrated that this phenomenon plays a significant role in students’ ability to persist in a variety of educational settings ([Ball et al., 2013](#); [Hsieh et al., 2021](#); [Noble et al., 2021](#); [Smith et al., 2019](#); [Westoby et al., 2021](#)) and may also explain some of the variance in performance and persistence of students on the margins.

A fifth psychological phenomenon that may impact postsecondary school applicants is mindset—i.e., whether the applicant has a fixed mindset or a growth mindset. [Dweck and Leggett \(1988\)](#) and [Blackwell et al. \(2007\)](#) argue that students’ perception of their intellectual ability is shaped by whether they believe the skills they need to achieve specific goals are fixed traits or skills that can be learned. Dweck describes people who believe that their intellectual capacity is innate as having a “fixed mindset” and people who believe their skills and intel-

ligence can be learned over time with persistence and effort as having a “growth mindset” (Dweck, 2007; Dweck & Leggett, 1988). Research has demonstrated that those with growth mindsets seek out challenging learning experiences, persist through obstacles, believe their abilities can be improved through hard work, learn from feedback, adopt meaningful work ethic and success strategies, and seek out guidance and instruction from trusted mentors and advisors (Blackwell et al., 2007). In contrast, those with fixed mindsets can lose interest in challenging tasks or become fearful of failure and may disengage (Dweck, 2007). Further, Haimovitz and Dweck (2017) argue that academicians must consider students’ mindsets as they continue to develop and refine transformative pedagogical best practices.

Considering these studies, there is a rationale for screening students applying for postsecondary education based on the totality of the circumstances because their strengths and challenges could be impacted by several social-psychological phenomena, including issues with belonging, impostor syndrome, stereotype threat, intersectionality, and mindset. Contemporary research underlines the need for a better understanding of the contributing influences, including non-cognitive factors, that shape each student and inform their intellectual and social-psychological understanding.

## **5. Assessing Noncognitive Factors May Impact Acceptance Decisions and Educational Persistence**

Admissions committees use various criteria when deciding to admit applicants. Having a robust pool of cognitive and noncognitive variables to assess may impact acceptance decisions and educational persistence. Bradburn and Schmitt (2019) conducted an exploratory research study using a sample of 9675 students from an American university to assess whether there was a difference in their selection rates when comparing composite cognitive scores to composite cognitive and noncognitive scores. The researchers used the biographical data (biodata) inventory, a situational judgment test (SJT), high school grade point average (GPA), the standardized ACT, and race and ethnicity information to develop and assess noncognitive criteria (Bradburn & Schmitt, 2019). They found that incorporating both cognitive and noncognitive factors into admissions decisions did not impact acceptance rates for White applicants but did have a modest positive impact on the acceptance rate for Black, Hispanic, and multiracial applicants. However, Bradburn and Schmitt also found that incorporating both cognitive and noncognitive factors into admissions decisions had a negative impact in Asian American applicants’ acceptance rates. This finding underscores the complex impact that noncognitive skills have on the human experience and highlights the reality that there is no one-size-fits-all equation in determining a definitive set of skills that could predict acceptance rates and successful matriculation in postsecondary education (Bradburn & Schmitt, 2019). While Bradburn and Schmitt employed specific measures (i.e., SJT, high school GPA, ACT score, and race and ethnicity information) to analyze noncognitive factors, other re-

searchers have deemed assessing students' noncognitive skills as being important to providing holistic educational resources and have employed the following measures to explore the impact of noncognitive skills on student acceptance, persistence, and graduation: the Academic Intrinsic Motivation Scale (AIMS; Dember & Brooks, 1989; Gottfried, 1985; Jones & Crandall, 1986), a revised version of the Institutional Integration Scale (IIS; French & Oaks, 2004), Shultz and Zedeck's 26 Lawyering Effectiveness Factors (Shultz & Zedeck, 2011), the Behaviorally Anchored Rating Scale (BARS; Kell et al., 2017), the Hogan Personality Inventory (HPI; Hogan et al., 2007), the Revised Life Orientation Test (LOT-R; Chiesi et al., 2013), the Self-Monitoring Scale (SMS; Snyder, 1974; Snyder & Gangestad, 1986), the Emotion Recognition Test (ERT; Lee et al., 2004), the Clance Imposter Phenomenon Scale (CIPS; Clance, 1985a; Clance, 1985b), the Harvey Imposter Scale (HIPS; Harvey, 1981), the Perceived Fraudulence Scale (PFS; Kolligian & Sternberg, 1991), and the Leary Impostorism Scale (LIS; Leary et al., 2000).

Williams et al. (2018) studied 822 first-time college freshmen enrolled at a four-year institution to explore the relationship and predictability of cognitive factors (i.e., high school grade point average (GPA), first-year GPA, ACT/SAT scores, and academic major) and researcher identified noncognitive factors (i.e., gender, age, residence status, and financial status) on their retention rates. The researchers found that high school grade point averages, first-year grade point averages, ACT/SAT conversion scores, academic major, gender, age, residence status, and financial status were statistically significant in distinguishing between retention rates among freshmen college students who returned to college and freshmen college students who did not return to college. They also found that high school GPAs, first-year GPAs, ACT/SAT scores, and academic major (cognitive variables), and financial status and residence status (noncognitive variables) were statistically reliable retention predictors (Williams et al., 2018). According to this study, one of the implications of these findings is that, if students' primary needs are met, especially their financial burdens and living conditions on campus, there is sufficient evidence that they will return to school. The authors also noted that educators who are responsible for student retention should consider the impact of cognitive and noncognitive skills on retention rates (Williams et al., 2018).

These findings are in alignment with Gil-Hernández's (2021) study highlighting the impact of socioeconomic status (SES)—i.e., economic and sociological factors that encompass a person's/family's occupational experience, access to resources, and social position—on retention internationally. Using a 2055-person analytic sample of students enrolled in a school in Germany, Gil-Hernández found that SES could determine whether a student with a higher SES and a lower cognitive score could still be considered "college ready" when compared to a counterpart who had a lower SES and lower cognitive skills. Gil-Hernández found that high-SES students at the same level of cognitive and noncognitive skills as low-SES students were more likely to be placed in a college-bound aca-

ademic track and that high-SES students were also able to compensate for low noncognitive skills due to their access to resources. This finding is in alignment with the *compensatory advantage hypothesis*—which postulates that affluent families are more capable of compensating for their children’s challenges than disadvantaged families due to access to resources (Bernardi, 2012)—and the *skill substitution hypothesis*, which posits that cognitive and noncognitive skills may be used as complements or substitutes in achieving educational outcomes (Heckman, 2007). Essentially, this means that cognitively weak students from high-SES families received high educational returns even when they had low cognitive and noncognitive skills, a phenomenon not experienced by low-SES students (Gil-Hernández, 2021). Williams et al.’s (2018) findings indicating a relationship between financial status and student adjustment to the rigors of college were also consistent with the findings of researchers studying students across multiple postsecondary educational institutions. A resulting implication is that, beyond admission, noncognitive skills play an important role in persistence and retention.

In their recent multi-institutional, longitudinal study, Bowman et al. (2019) used structural equation modeling (SEM) analyses to explore the impact of noncognitive skills on retention from the first to second year. Their sample included 16 four-year colleges and 10,622 student-participants. The researchers found that noncognitive skills were positively correlated with student financial status and with social adjustment. Similarly, they found that noncognitive skills impacted students’ commitment to the institution as well as students’ engagement on campus. Likewise, Bowman et al. (2019) found that noncognitive skills were related to college GPA after controlling for prior achievement and other variables (i.e., precollege achievement, socioeconomic status, and additional noncognitive attributes), had a positive association with retention to the second year, and could be analyzed to predict academic achievement, educational attainment, job retention, and job performance. The researchers also noted that short-term “wise interventions” can have long-term effects on noncognitive attributes and corresponding college behaviors if they occur early, actively involve students, harness a positive and supportive environment, and provide opportunities for students to engage meaningfully with peers, faculty, and staff (Bowman et al., 2019). Even in studies that found that cognitive skills were more strongly associated with college academic success and persistence than noncognitive skills, researchers noted that additional research is needed on the impact of noncognitive variables (French et al., 2005). Considering these findings, admissions committees would benefit from assessing both cognitive and noncognitive variables when making acceptance decisions and those responsible for analyzing post-secondary educational persistence could also benefit from understanding the interrelationship between noncognitive factors and retention and graduation rates.

## 6. Noncognitive Skills Assessment in the Helping Professions

The impact of noncognitive skills has also been studied in the helping profes-

sions. Cadman and Brewer (2001) posit that successful nurses must be able to master a balance of cognitive and noncognitive skills (i.e., self-awareness, self-regulation, motivation, empathy, and social skills) to assist those they serve. The researchers suggest that the Therapist Empathy Scale (TES) can be used to assess noncognitive factors (Cadman & Brewer, 2001; Decker et al., 2014). Specifically, they note that nursing candidates may be able to improve noncognitive skills through professional development opportunities. However, they believe that noncognitive skills attainment should be assessed more critically during the recruitment process because cultivating these skills requires extensive time and financial commitments (Cadman & Brewer, 2001). Collins (2013) conducted an exploratory, purposive, cross-sectional quantitative correlational study with a sample of 216 student registered nurse anesthetists (SRNAs) to analyze whether there was a relationship between emotional intelligence (a noncognitive factor) and academic factors among SRNAs. Collins found a statistically significant difference in overall emotional intelligence between students at the beginning, middle, and completion of four nurse anesthesia programs and identified a preliminary need for nurse anesthesia leaders to examine noncognitive variables with possible future use of them as admission criteria, or inclusion as part of noncognitive training in the nurse anesthesia curriculum (Collins, 2013). Considering the identified importance of noncognitive factors on those in the helping professions to be able to holistically perform their duties, noncognitive factors should be assessed in their educational programs.

## **7. Noncognitive Skills and Law School Admission, Matriculation, and Bar Passage**

Over the last several decades, researchers have begun to explore the impact of noncognitive skills on law school admission, retention, graduation, and bar passage rates. In one of the most well-known multi-year, empirical research studies using samples of lawyers, law faculty, law students, judges, and clients, Shultz and Zedeck (2011) postulated that cognitive predictors used in law school admission only explained approximately 25% of the variance in first year GPA. They posited that cognitive predictors have a disparate impact on those from underrepresented minoritized groups, and that cognitive predictors measure a narrow set of criteria and do not attempt to measure or predict lawyering effectiveness (Shultz & Zedeck, 2011). Their study found that noncognitive skills were more positively correlated with increased lawyer performance factors than were Law School Admission Test (LSAT) test scores or undergraduate GPA (Shultz & Zedeck, 2011). The authors noted that the LSAT was designed to assess analytic reasoning skills, which are also reflected in undergraduate GPA, while noncognitive skills reflect analytic reasoning used in the occupational setting (Shultz & Zedeck, 2011). In light of this study's findings, the authors developed a list of 26 cognitive and noncognitive "Lawyering Effectiveness Factors," which they believe can predict lawyering performance using a more inclusive

range of skills/abilities than the LSAT. These factors include: analysis and reasoning; creativity/innovation; problem solving; practical judgment; providing advice, counsel, and building relationships with clients; fact finding; researching the law; speaking; writing; listening; influencing and advocating; questioning and interviewing; negotiation skills; strategic planning; organizing and managing one's own work; organizing and managing others' work; evaluation, development, and mentoring; developing relationships within the legal profession; networking and business development; community involvement and service; integrity and honesty; stress management; passion and engagement; diligence; self-development; and the ability to be able to see the world through the eyes of others (Shultz & Zedeck, 2011).

Based on their findings, Schultz and Zedeck recommend that law school admissions committees give more consideration to assessing noncognitive factors when evaluating students. If these suggestions are adopted, they could have a significant impact on those applying to law school. Currently, law school assessment committees recognize the importance of noncognitive factors in post-secondary educational persistence, retention, and graduation. Nonetheless, these committees continue to support assessing noncognitive skills in "low-stakes environments," such as within developmental initiatives, and not in "high-stakes settings" such as law school admissions or bar examinations (Testy, 2019). One of the primary rationales for this decision is the notion that noncognitive skills are thought to be amenable to coaching (Testy, 2019); however, there are dozens of test preparation companies solely devoted to teaching students the cognitive skills needed to pass the LSAT and bar examinations across the United States. As noted above, students with greater access to resources may also be able to compensate for low noncognitive skills due to their proximity to educational capital, a phenomenon that is consistent with the *compensatory advantage hypothesis* and the *skill substitution hypothesis* (Gil-Hernández, 2021; Heckman, 2007). It is worth noting that committees have demonstrated amenability to providing noncognitive assessments in "high-stakes settings" if law school deans, admission professionals, and academic support staff believe they would be useful (Testy, 2019). This is not only promising but is also consistent with recent research that demonstrates the benefit of including noncognitive factors in law school assessment settings.

For instance, Jiang et al. (2019) conducted a research study at Georgia State University College of Law (GSU COL) with 72 juris doctor (JD) student-respondents. The researchers found that the combination of LSAT score, first-year and upper-level doctrinal course performance (cognitive variables) only account for about 30% of variance in bar passage for schools under study. This means that approximately 70% of the variance in bar passage was unaccounted for in the study. Jiang et al. also found that time management, financial issues, self-confidence, motivation, anxiety, and stress negatively impacted participants' bar exam success (Jiang et al., 2019).

Similarly, the *LSAC 2018 Skills Analysis Study* (2019) surveyed law school faculty from 87 U.S. law schools to identify the skills they believed were important for successful law school matriculation. The results demonstrated that respondents valued “allocating available time based on priorities” and “identifying academic goals/priorities and the tasks necessary to achieve those goals” (non-cognitive variables) as “highly important.” Researchers interpreted this finding as meaning that respondents placed a greater emphasis on the importance of noncognitive skills in successfully completing law school than in previous years (Walzer et al., 2019). Some of the noncognitive skills respondents thought beneficial to law school matriculation were: personal qualities, professional responsibility, responsibility for learning, focus on work, response to criticism, wellness, practical application, emotional management, faculty interaction, and client relations (Walzer et al., 2019).

## 8. Conclusion

The purpose of this literature review was to 1) better understand the rationale of assessing students beyond their cognitive skill attainment and 2) explore research evaluating the role of noncognitive skills in students’ ability to matriculate, graduate, pass the bar exam, and cultivate job performance skills. While scholars across disciplines have not settled on one definitive term to capture all noncognitive skills, research demonstrates that there is between 70% and 82% of unexplained variability unassessed by standardized tests (e.g., GRE, GMAT, MCAT, ACT, SAT, LSAT, etc.). The literature demonstrates that social-psychological phenomena—such as belonging, impostor syndrome, stereotype threat, intersectionality, and mindset—may play a significant role in shaping students’ intellectual understanding and experiences. The literature also shows that noncognitive skills are fluid and may evolve overtime due to intervening influences, such as additional experiences, messages received, commitment, persistence, resilience, and independent task performance. The studies discussed above likewise demonstrate that incorporating both cognitive and noncognitive factors into admissions decisions may benefit applicants who may otherwise be underrepresented if noncognitive factors are not incorporated. Furthermore, noncognitive skills have been illustrated to be statistically reliable retention predictors and their assessment has been shown to combat the negative effects of *compensatory advantage* and *skill substitution*. Moreover, law school-specific studies have revealed a shift in the perception of the value of noncognitive skill assessment during the application process and throughout law school. Researchers have noted that noncognitive skills are important for law school matriculation, successful bar passage, and cultivating requisite job performance skills. Furthermore, studies over the last several decades have identified promising measurement tools to assess noncognitive factors. Considering these findings, noncognitive assessment would be beneficial to current and future postsecondary school applicants, professional school applicants, bar examinees, and future corporate,

academic, healthcare, and legal professionals. These findings also indicate there is a rationale for assessing postsecondary students beyond their cognitive skill attainment.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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