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# Non-Cognitive Dissonance: Clarifying the Theoretical Dimensions, Practical Value, and Empirical Horizons of Non-Cognitive Skills in Teachers and Students

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# Non-Cognitive Dissonance: Clarifying the Theoretical Dimensions, Practical Value, and Empirical Horizons of Non-Cognitive Skills in Teachers and Students

## **Abstract**

Academic literature has begun to explore the connection between so-called, non-cognitive skills (e.g. emotional intelligence, resilience, motivation, etc.) and traditional markers of student success. The literature has also begun to examine the relationship between non-cognitive skills and non-traditional markers of student success like wellbeing. Despite academic interest, there is little agreement – across a range of disciplines in the humanities and social sciences - as to the theoretical dimensions of these non-cognitive skills. This is problematic at the level of theory and practice. Moreover, proponents of non-cognitive skills that invoke the conceptually flawed and self-limiting characterization may find themselves in a state of cognitive dissonance about the state of non-cognitive skills. This internal tension is a phenomenon we call non-cognitive dissonance. As such, it will be the task of this project to redress this non-cognitive dissonance by creating a logic model that identifies key non-cognitive variables in the literature and that clarifies where there is conceptual as well as empirical overlap, connection, and distinction between constructs. In so doing, our logic model will bring greater clarity to the value of non-cognitive skills in terms of their positive predictive outcomes within and between teachers and students.

## **Keywords**

Education, Positive Education, Non-Cognitive Skills, Social-Emotional Learning

## **Disciplines**

Educational Psychology | Social and Philosophical Foundations of Education

Non-cognitive dissonance: Clarifying the theoretical dimensions, practical value, and empirical horizons of non-cognitive skills in teachers and students

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University of Pennsylvania

A Capstone Project Submitted

In Partial Fulfillment of the Requirements for the Degree of  
Master of Applied Positive Psychology

Advisor: Dr. Jane E. Gillham

August 1, 2016

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## **Introduction to Positive Psychology**

### **What is positive psychology?**

For the better part of the 20<sup>th</sup> century, the psychological and psychiatric community emphasized the research, treatment, and prevention of pathology, erroneously presuming that wellbeing would organically follow from a lack of maladaptive thoughts, emotions, and behaviors (Huppert & So, 2013). But as it turns out, wellbeing is about more than putting out fires; it also involves growing gardens (Seligman, 2011). Enter positive psychology. As an academic discipline, positive psychology focuses on the scientific understanding and promotion of wellbeing. It examines the what and how of positive experiences, positive traits, and positive institutions (Seligman & Csikszentmihalyi, 2014). Instead of exploring the ways in which humans are diseased, positive psychology investigates that which helps us thrive. In short, positive psychology is the empirical study of the behavior and mental processes associated with human flourishing.

But what is wellbeing? What are the strengths that enable individuals, organizations, and communities to flourish? And what sorts of things can one proactively do to better thrive? Various theories of wellbeing have been set forth in the past fifty years – some under the banner of positive psychology and some not – that provide conceptual and practical answers to these questions. Jahoda's ideal mental health (1958), Deci and Ryan's self-determination theory (1985), Ryff's psychological wellbeing (1996), Diener's subjective wellbeing (2000), Keyes' social wellbeing (1998), Seligman's wellbeing theory (2011), Huppert and So's notion of wellbeing (2013), and Prilleltensky's multi-dimensional wellbeing (2015) each present a theory of wellbeing that uniquely explains the what and the how of human flourishing. Taken together these theories serve as the theoretical and empirical bedrock of positive psychology. For the

purposes of this project, wellbeing theory (Seligman, 2011) will order our understanding. Thus, while we will honor other portraits of human flourishing, this project presupposes Seligman's wellbeing theory.

### **What is wellbeing?**

For the purposes of this project, we will focus on Seligman's (2011) theory of wellbeing. As such, the construct of wellbeing will be taken to involve positive emotion, engagement, positive relationships, meaning, and positive accomplishment (i.e. PERMA). Each element uniquely contributes to an individual's flourishing. According to wellbeing theory, the question is not how much of each element of PERMA does one need to flourish but rather how much of each element of PERMA do you need to flourish. The first component of wellbeing theory centers on positive emotion. Positive emotions (e.g. joy, hope, gratitude) are measured subjectively (i.e. did you experience a positive emotion?). For the flourishing individual, negative emotions will still be present; however, pleasure remains an important facet of wellbeing (Peterson et al., 2005). The second component of wellbeing theory is engagement. Like positive emotion, engagement is measured subjectively and refers to what Csikszentmihalyi (1990, p. xi) termed "flow." When we are engaged, time can stop and one can lose their sense of self-consciousness. In theory, this sort of engagement follows from the cultivation of authentic interest and character strengths (Peterson & Seligman, 2004). Importantly in wellbeing theory, engagement and positive emotion (in addition to the other elements of PERMA) are independent constructs; one does not logically precede or follow from the other. The third element of wellbeing theory includes positive relationships. Connecting with others is a cornerstone of wellbeing theory. Simply put, Sartre's (1958, p. 45) proclamation that "hell is other people" fundamentally misunderstands how to flourish. Quite to the contrary, research suggests that

Peterson (as cited in Seligman, 2011) was closer to the truth in claiming that other people matter, as interrelatedness is a key component of wellbeing. Positive relationships have a subjective component (i.e. do you think the relationship is positive?) as well as an objective component (i.e. do the other people in the relationship consider it positive?). The fourth element of wellbeing theory relates to meaning or having a positive purpose. In theory, meaning follows from leveraging a strength or interest to address a need (Rath, 2015). This typically takes the form of serving an organization or an ideal larger than one's self. In wellbeing theory, meaning is measured according to subjective account (i.e. do you find your work meaningful?) as well as objective account (i.e. do others find your work meaningful?). The final component is positive accomplishment. Broadly construed, accomplishment refers to achievements that are pursued for their own sake. Independent of the pleasure and/or meaning conferred, accomplishing intrinsically-motivated goals is a facet of wellbeing according to wellbeing theory.

### **Non-Cognitive Skills and Wellbeing in the Current Moment**

#### **The Current Moment**

Educational reform in the United States often takes the form of proposals to change curricula or pedagogy. In the case of curricular reforms, the change agent is the what: the new content/skills that teachers are asked to teach and students are asked to learn. In the case of pedagogical shifts, the proposed change agent comes in the form of how teachers teach what they intend for students to learn. Recently, the psychology of the student has become a point of emphasis in educational research (Dweck, Walton, Cohen, 2011). Calls to improve students' motivation, mindset, character, resilience and/or social-emotional competency are increasingly common.



For the majority of students in the United States, the Common Core State Standards Initiative establishes the content and skills taught in their K-12 classroom (Common Core State Standards Initiative, 2010). These educational standards seek to identify the minimum that students need to know and be able to do at the end of each grade level in order to enter an institution of higher education or the workforce upon graduation. Independent of the mathematic and linguistic standards that currently govern public school classrooms in forty-two of the fifty states, student wellbeing has been identified as a valued outcome in recent decades (Brekelmans, 1989; Knuver & Brandsma, 1993; Samdal et al., 1999; VanLandeghem, Van Damme, Opendakker, De Frairie, & Onghena, 2002; [ipositive-education.net](http://ipositive-education.net), 2016). Recent evidence suggests that parents and teachers want their students to know how to work and how to love (Cohen, 2006). These studies represent a call for a more robust curriculum than the Common Core, one that also includes the non-cognitive skills associated with wellbeing. More generally, this is in keeping with the trend toward positive education, which pushes for wellbeing to be taught in schools as a means of reducing depression as well as increasing life satisfaction and student learning (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). In short, the Common Core forgets that alongside literacy and numeracy, wellbeing is a birthright (Seligman, 2011).

Buddhists caution not to mistake the finger pointing at the moon for the moon (Hanh, 1991). This is to say that talking about one's commitment to a given domain (i.e. pointing at the moon) is not the same as acting committed to that domain (i.e. being the moon). This ancient proverb has important implications for modern society, particularly with respect to the teaching and inculcation of wellbeing in today's schools. It is common for politicians to opine about the importance of the physical and psychological health of children. This is in keeping with opinion polls in recent years, which suggest that the public yearns for the teaching of subjects associated

with wellbeing including social-emotional learning, stress management, sleep hygiene, nutrition, and character education (Metlife, 2002; Public Agenda, 1994, 1997, 2002; Rose & Gallup, 2000). Nevertheless, wellbeing continues to function as a happy accident rather than a driving value in our schools, as evidenced by the Common Core's points of emphasis (Common Core State Standards Initiative, 2010). This is to say that neither the what nor the how of wellbeing is required curriculum in today's schools. Nowhere in the standards is the promotion of positive emotion, engagement, positive relationships, purpose, or intrinsically-motivated action expressively commissioned. Although a compelling lesson in social studies may inspire a positive emotion or engagement, those components of PERMA are ancillary. Although a group project may lead to a new friendship, this component of PERMA is not the curricular goal. Although a physics experiment may resonate as meaningful or intrinsically motivate a student to pursue a career in engineering, again, this not evidence of curricular success for the teacher. PERMA is considered extra-curricular. As such, from the perspective of the student, so too is wellbeing.

### **Non-cognitive Skills in Theory**

Despite the absence of wellbeing content/skills in the Common Core, educators in schools across the country employ curricula and pedagogical strategies that teach more than literacy and numeracy. Within the social sciences, these are often collectively referred to non-cognitive or soft skills (Farrington et al., 2011). A review of the literature suggests that non-cognitive skills include a range of personal characteristics, including habit (James, 1892), locus of control (Rotter, 1966), self-efficacy (Bandura, 1977), metacognition (Flavell, 1979), character (Aristotle, 1982), inter/intrapersonal intelligence (Gardner, 1983), explanatory style (Abramson, Seligman, & Teasdale, 1978), emotional intelligence (Salovey & Mayer, 1990), self-control

(Baumeister et al., 1998), motivation (Ryan & Deci, 2000), character strengths (Peterson and Seligman, 2004), mindset (Dweck, 2006), grit (Duckworth et al., 2007), as well as resilience (Reivich & Gillham, 2010).

Simply put, the term “non-cognitive” is problematic. Given its ubiquity in academic literature, however, it is the term that we will use throughout this project. On the one hand, the term is misleading in the sense that non-cognitive skills involve cognition (Gorghans, Duckworth, Heckman, & Weel, 2008). This is to say that the term sets up a false dichotomy between those skills which involve cognition and those skills which do not. Within the literature – particularly that of education, psychology, and economics – cognitive skills refer to the reasoning, recall, and retention abilities commonly measured by achievement tests (Heckman, 2000). Although there is an important distinction between one’s capacity to solve word problems (i.e. reasoning) and the capacity to support a friend through a stressful circumstance (i.e. social-emotional competency), it is plainly wrong to label the former cognitive and the latter non-cognitive. How could it be that interpersonal skills do not involve cognition? Is one not thinking when they are supporting a friend? Is one not using memory? Is one not using language? Since thinking, memory, and language are common topics within the psychological study of cognition (Zimbardo, Johnson, Weber, & Gruber, 2009) and each is an important component of non-cognitive skills, the term is plainly misleading.

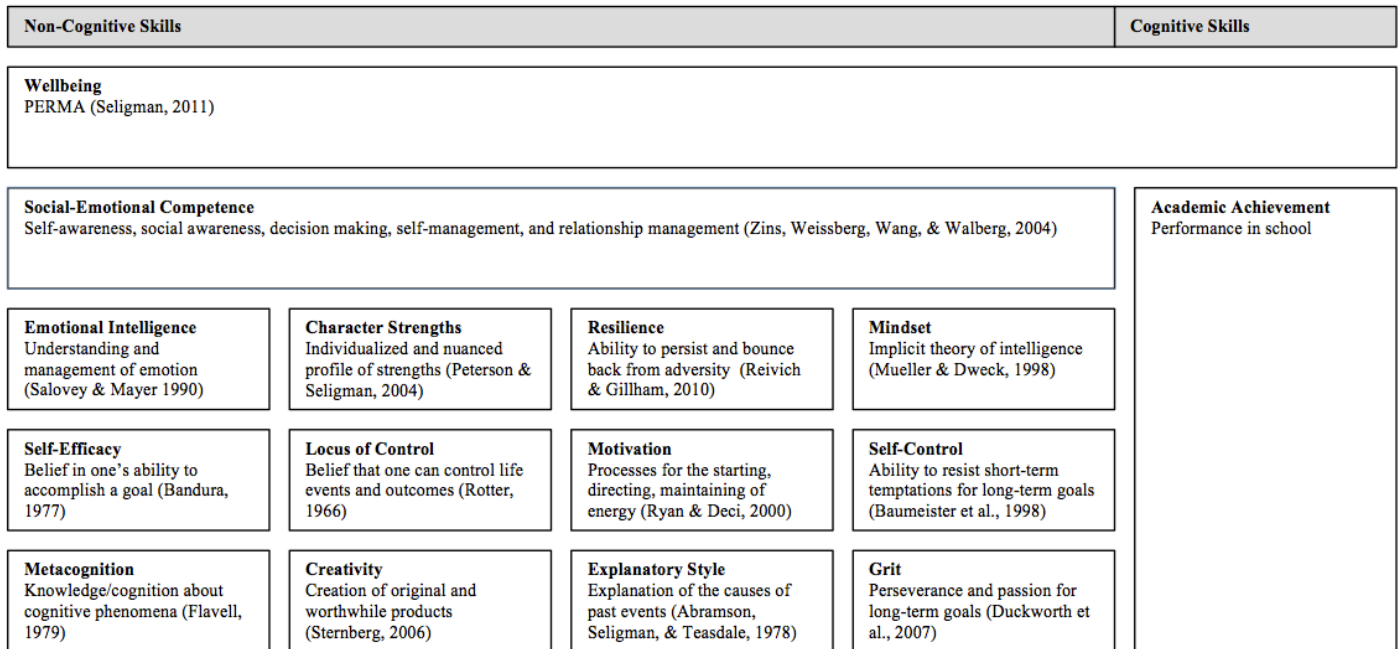
The concern over the term non-cognitive goes beyond the level of semantics. Labeling a skill non-cognitive or worse yet “soft” marginalizes it (Fickel, 2015). It belittles these abilities by defining them not by what they are but rather by what they are not. The reality is that cognitive and non-cognitive skills continually interact, acting together rather than separately (Farrington et al., 2012). The skills commonly labeled cognitive involve and in some cases rely upon so-called

non-cognitive skills (Bransford, Brown, & Cocking, 2000). The reverse is also true. After all, how could one's ability to reason not play a role when interacting socially or exercising self-control or cultivating a growth mindset? Despite this interplay, the term "non-cognitive" implicitly elevates that which is cognitive by maligning that which is non-cognitive. As such, the term is problematic on a number of levels.

The cognitive/non-cognitive distinction remains an important unifying force in the literature amongst school reformers looking to move beyond traditional markers of success and toward education of the whole child (Farrington et al., 2012). For those individuals committed to infusing greater wellbeing into schools (e.g. social-emotional learning programs, positive education programs), there is a certain degree of cognitive dissonance that accompanies invocation of the term non-cognitive skills as it pertains to educational reform. If one were being cheeky, this phenomenon might even be termed "non-cognitive dissonance." On the one hand, reformers seeking greater wellbeing in schools appreciate use of the term non-cognitive skills, as it suggests interest/research into a more progressive agenda. On the other, the term is conceptually flawed and self-limiting.

Moving forward, it will be the task of this project to redress the theoretical confusion surrounding non-cognitive skills by identifying key non-cognitive variables in the literature and clarifying where there is conceptual overlap, connection, and distinction between constructs. We will also identify key areas where there is empirical overlap, connection, and distinction between non-cognitive constructs. This will, in turn, bring greater clarity to the practical value of non-cognitive skills in terms of their positive predictive outcomes within and between teachers and students. In this way, this project hopes to reduce the "non-cognitive dissonance" in the social-science literature.

**Logic Model**



The proposed logic model identifies key cognitive/non-cognitive variables examined by the social science literature, particularly in the fields of education, economics, and psychology. The logic model makes visual a key claim: particular instantiations of the constructs represented by the smaller boxes (e.g. self-control, emotional intelligence, motivation, character strengths, mindset, resilience, metacognition, creativity, self-efficacy, locus of control) are conceptual, empirical, and/or practical relatives of the larger boxes (e.g. social-emotional competency, wellbeing) above them. In some instances, the relationship may be all-encompassing (e.g. emotional intelligence is a necessary but insufficient precondition for social-emotional competency). In others, the relationship may be less robust (e.g. the connection between one's character strength of love and one's explanatory style). The logic model also includes the variable of academic achievement, given the positive accomplishment facet of wellbeing.

At its broadest level, the logic model points to a conceptual relationship between the identified constructs. This model is not meant to suggest that social-emotional competency

requires mastery of all the other non-cognitive abilities below it. Just as wellbeing may manifest differently for different individuals (i.e. for some engagement may be more present than in others), self-control may be more present than creativity for the individual high in social-emotional competency. Moreover, neither the order of non-cognitive constructs represented in the rows/columns nor the fact that each of the smaller boxes are the same size is intended to suggest any conceptual or empirical meaning.

### **The Conceptual, Empirical, and Practical Dimensions of Non-Cognitive Skills**

#### **Social-Emotional Competency in Theory and Practice**

Social-emotional learning (SEL) programs strive to develop social-emotional competency (SEC) in students (Jennings & Greenberg, 2009). There is general theoretical consensus that SEC involves understanding, expressing, and managing the external (i.e. social) and internal (i.e. emotional) aspects of one's life (Elias et al., 1997). SEC might be further defined as self-awareness, self-management, social awareness, relationship management, and responsible decision making (casel.org, 2016; Zins, Weissberg, Wang, & Walberg, 2004). Self-awareness refers to the ability to identify emotions and assess one's strengths. It also includes being grounded, confident, and optimistic. Self-management is the ability to regulate thoughts, emotions, and behaviors. Additionally, this capacity includes motivation and goal setting. Social awareness is the ability to see things from the perspective of others and being able to empathize. Relationship management involves the ability to build and sustain healthy relationships. It includes communication skills, listening skills, helping behavior, and conflict management. Finally, responsible decision making is the ability to make good choices in light of personal and community-level values and in nuanced contexts.

Although SEC is not required by the Common Core (Common Core State Standards Initiative, 2010), some states have incorporated them into their state standards. As of 2014, Illinois, Kansas, Pennsylvania, and West Virginia include comprehensive, K-12, SEL standards while Connecticut, Idaho, Ohio, Massachusetts, and Washington incorporate SEL standards through 3<sup>rd</sup> grade ([casel.squarespace.com/state-standards-for-social-and-emotional-learning](http://casel.squarespace.com/state-standards-for-social-and-emotional-learning), 2016). Alaska, California, Nevada, Ohio, Tennessee, and Texas have district-wide SEL programs ([corestandards.org](http://corestandards.org), 2016). Amongst the remaining states, it is certainly the case that there exist school-wide programs and many more individual teachers that incorporate SEL in their classrooms.

SEL programs have been heralded as the missing link in today's schools (Elias et al., 1997). Over the past twenty years, educators and parents have increasingly acknowledged the importance of SEC in addressing a diverse array of learning goals, including content knowledge, critical thinking skills, character, physical health, psychological health, and civic engagement (Langdon, 1996). Given that as a polity there is general consensus but little specific agreement as to what education is for, it ought not be overlooked that SEC is so highly regarded. A recent survey reported that 93% of teachers believe SEL is important for students, 95% believe SEC is teachable, and 88% believe SEC is being taught in some form at their school (Bridgeland, Bruce, & Hariharan, 2013). Nevertheless, in a national survey of nearly 150,000 secondary school students, only 29-45% reported having the following SEC-related skills: empathy, decision-making, and conflict-resolution skills (Benson, 2006).

Meta-analyses have found a connection between SEL programs and student achievement (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). On average, students in SEL programs get higher grades and score 11% higher on achievement tests than those not

participating in the curriculum. A national survey of teachers found that 80% believed SEL would have a positive effect on student test scores and 75% believe it would improve academic achievement of their students (Bridgeland et al., 2013). The same survey also found that 85% of schools where SEL is taught also reported successfully imparting key content knowledge in preparation for state-wide standardized testing.

### **Emotional Intelligence in Theory and Practice**

Emotional intelligence (EI) is the topic of serious academic debate, both as it pertains the construct itself as well as its relationship to other psychological constructs. Within the academic literature, EI is viewed as an ability (Mayer, Salovey, & Caruso, 2004), as a trait (Petrides & Furnham, 2001), and as a combination of the two (Goleman, 1995). So-called ability EI emphasizes the capacity to perceive, use, understand, and manage emotions (Mayer, Salovey, & Caruso, 2004). Ability EI is most conceptually aligned with traditional psychological explorations of intelligence, which emphasize performance and environmental adaptation (Sternberg & Detterman, 1986; Terman, 1921; Wechsler, 1997). Concurrently, ability EI is measured using performance tests. Trait EI refers to “behavioral dispositions and self-perceived abilities” (Petrides & Furnham, 2001, p. 426). Relative to ability EI, trait EI occupies the realm of personality psychology and is prototypically measured via self-report. Goleman’s (1995) highly-popularized contributions to the field fall somewhere between the two conceptualizations, viewing EI as a combination of skills and characteristics that drive interpersonal performance (e.g. leadership).

Conceptually, EI is a related albeit narrower construct than SEC (Jennings & Greenberg, 2009). By definition, the SEC notion of self-awareness includes ability EI’s emotional perception just as the SEC notion of self-management is reflected in ability EI’s emotional-management.



This implies that all individuals high in SEC would be high in EI, though not all individuals high in EI would be high in SEC. The same would be true for those low in SEC and low in EI.

Although EI and SEC are conceptually distinctive, the practical impact is likely unfelt in classrooms. Importantly, educational non-profits – including the Collaborative for Academic, Social and Emotional Learning (CASEL; [casel.org](http://casel.org), 2016), the Center on the Social and Emotional Foundations for Early Learning ([csefel.vanderbilt.edu](http://csefel.vanderbilt.edu), 2016) and the Emotional Intelligence Network ([6seconds.org/education](http://6seconds.org/education), 2016) – treat EI as an indispensable means to SEL’s ends. This suggests that to understand the role and prevalence of SEC in today’s classrooms (see “Social emotional competency in theory and practice”) is likely to also understand the role and prevalence of EI.

Studies have confirmed the role that SEL programs can have in bolstering student SEC and emotional intelligence (Elias, Gara, Schuyler, Branden-Muller, & Sayette, 1991; Greenberg & Kusche, 1998; Greenberg, Weissberg, O’Brien, Zins, Fredericks, Resnik, 2003; Zins, Weissberg, Wang, Walberg, 2004). The question remains as to how and when successful implementation occurs. Evidence summarized by Jennings and Greenberg (2009) suggests that teacher SEC and teacher EI can play an important role. Successful SEL implementation is associated with greater self-awareness, social awareness, and effective relationships management skills in teachers (i.e. SEC, EI; Conduct Problems Prevention Research Group, 1999; Dane & Scheider, 1998; Domitrovich & Greenberg, 2000; Solomon, Watson, Schaps, & Lewis, 2000). Put simply, teachers that show high levels of SEC and EI are more likely to successfully impart SEL curricula. Using our logic model, this is also to say that teachers high in SEC can promote the skills associated with student wellbeing. And since teacher SEC and teacher wellbeing are related constructs, teacher wellbeing and student wellbeing might also be related.

### **Character in Theory and Practice**

Given the lack of conceptual clarity around character, it is not surprising that character education (i.e. values education, moral education) has taken an array of forms over the years. Historically, the construct of character has referred to some combination of moral behavior, moral knowing, and/or moral feeling (Lickona, 1989). In the US, three curricular approaches – traditional, developmental, and caring - have each emphasized the teaching of one of these components of character.

Traditional approaches to character education focus on moral behavior (Howard, Berkowitz, & Schaeffer, 2004). This approach pulls from the Aristotelian tradition of action over thinking and typically strives to inculcate character by obliging commitment to codes of virtues/conduct. Developmental approaches (i.e. progressive) to character education emphasize moral knowing (Howard, Berkowitz, & Schaeffer, 2004). The developmental view draws upon the Socratic tradition and extends through the work of Dewey (1909/1975), Piaget (1932/1965), and Kohlberg (1981, 1984). In this approach, the goal is less to distinguish right from wrong but more to support students in developing a process by which they can make good decisions. Caring approaches distinguish themselves from traditional and developmental curricula by emphasizing moral feeling as well as the relational nature of morality (Howard, Berkowitz, & Schaeffer, 2004). Desiring the good is the goal in the caring approach, as moral sentiments are seen as being logically prior to both moral thinking and action (Cohen, 2006).

More recently, strengths-based curricula inspired by positive psychology seek to build character by helping students identify their strengths and by asking them to use these and a broad, range of other strengths in everyday life (Reivich et al., 2003). These curricula contrast with prescriptive, homogeneous approaches (i.e. build certain qualities in all students) by

employing a descriptive, heterogeneous approach (i.e. discover the best qualities in each student; viacharacter.org, 2016). In strengths-based curricula, character is seen as nuanced, individualized, dynamic, expressed in degrees, and best understood as a profile of strengths (Niemiec, 2013; Peterson & Seligman, 2004). In lieu of conceptualizing character as doing, knowing, and/or desiring an external good, the strengths-based approach sees the good as internal to each individual. This is to say that one's unique constellation of strengths support individuals in uniquely pursuing larger universal virtues (e.g. wisdom, courage, humanity, justice, temperance, transcendence). Using one's core strengths, often termed signature strengths, can lead to life satisfaction when used in the appropriate degree at the appropriate time (Niemiec, 2013). Character-strengths curricula, then, involves raising student awareness (i.e. knowing your character strengths) and directing student effort (i.e. intentionally using your character strengths in new ways each day; Biswas-Diener, Kashdan & Minhas, 2011).

Conceptually, the construct of character is intimately related to SEC and EI, if defined as awareness and expression of one's constellation of character strengths. SEC, like EI, includes a notion of self-awareness, which, by definition, would facilitate an appreciation for one's personality strengths. High levels of SEC and EI, then, are incommensurate with being unaware that one is particularly spiritual or particularly brave. Peterson and Seligman's (2004) articulation of character strengths offers other conceptual parallels to SEC and EI. Self-regulation, for instance, connects to what Zins et al. (2004) termed self-management. It also relates to ability EI's notion of emotional management (Mayer, Salovey, & Caruso, 2004). Peterson and Seligman's (2004) social intelligence relates to social awareness, another component of SEC. The same connection might also be made with EI, given that the perception and understanding of emotions refers as much interpersonally as it does intrapersonally. Also,

the character strength of teamwork seems to coincide with the relationship management piece of SEC.

Studies have revealed that knowing and using one's signature strengths is associated with progress toward goals and the meeting of psychological needs (e.g. autonomy, relatedness, and competence; Linley, Nielsen, Gillett, & Biswas-Diener, 2010) as well as greater happiness (Seligman, Steen, Park, & Peterson, 2005). This points to the potential value of strengths-based curricula in classrooms. Regarding scholastic achievement, some character strengths are more correlated with success than others. Perseverance, love, gratitude, and hope are associated with academic achievement in middle schoolers and undergraduates (Park & Peterson, 2009). Fairness, gratitude, honesty, hope, perspective, and perseverance predict GPA after controlling for IQ (Park & Peterson, 2008). Love of learning, humor, fairness, and kindness, and perseverance predict college GPA. Teachers that are higher in social intelligence, zest, and humor were more likely to have students with higher achievement gains (Park & Peterson, 2009). All in all, a range of character strengths are associated with positive educational outcomes.

### **Resilience in Theory and Practice**

Resilience refers to positive adaptation in the context or aftermath of significant adversity (Masten, Cutuli, Herbers, & Reed, 2009). It includes the processes that enable good outcomes in spite of tough challenges (Reivich & Gillham, 2010). Reivich and Shatté (2002) contend that resilience is comprised of the following qualities: emotion regulation, impulse control, optimism, causal analysis, empathy, and self-efficacy. Resilience is sometimes represented as a special quality that we are either born with or not. Far from being static, resilience is growable and exists on a continuum (Reivich & Shatté, 2002). Resilience results from ordinary, psychobiological

functioning and from relationships in families, communities, and society (Masten, 2001). This is to say that resilience, practically speaking, can be taught.

Formal instruction of resilience occurs in classrooms via programs like the Penn Resilience Program (PRP; Gillham, Brunwasser, & Freres, 2008). PRP is a group intervention that strives to help students develop resilience and curb depression by teaching them cognitive-behavioral principles/skills (Gillham, Jaycox, Reivich, Seligman, & Silver, 1990). To this end, PRP trains students to use a variation of Ellis' (1962) Adversity-Beliefs-Consequences (ABC) model in times of stress, which suggests that it is not the activating event (i.e. A) but rather our beliefs (i.e. B) about the activating event that yields emotional, behavioral, and/or physiological consequences (i.e. C). This is to say that a student's fowl mood is not derivative of their friend's snarky comment but rather their interpretation of the snarky comment. Broadly speaking, PRP teaches its students to identify, evaluate, and challenge inaccurate thoughts (Gillham, Brunwasser, & Freres, 2008). More specifically, PRP teaches its students how to think more flexibly, problem solve, take on the perspective of others, cope with difficult circumstances, and assert oneself. Meta-analysis has revealed that relative to control groups, PRP reduces and prevents symptoms of depression to a significant degree through one year of follow-up (Brunwasser, Gillham, & Kim, 2009).

Conceptually, the construct of resilience overlaps the construct of SEC as presently defined (Reivich and Shatté, 2002). The ability to remain calm in the face of adversity and to resist temptation, what are termed emotion regulation and impulse control respectively, connect to the SEC notion of self-regulation. Moreover, there is a component of empathy to resilience, which parallels the SEC notion of social awareness. Though related, resilience and SEC are distinct constructs. Resilience requires the ability to accurately identify and challenge erroneous

thought patterns. This is a highly cognitive process. As such, resilience, as presently defined, can manifest in ways that expand beyond the construct of SEC.

PRP is a curriculum that aims to provide its students with the skills to manage day-to-day stressors (Gillham et al., 2008). The PRP is designed to help individuals meaningfully address adversity by identifying the link between thoughts, feelings, and behaviors as well as by recognizing the benefits of optimistic explanatory styles. In a comprehensive series of studies, PRP has been shown to reduce depression and hopelessness across a variety of settings and demographics. (Brunwasser, Gillham, & Kim, 2009; Lopez, Edwards, Teramoto-Pedrotti, Ito, Rasmussen, 2002; Muñoz, Penilla, & Urizar, 2002; Seligman et al, 2009; Seligman, 2011). Studies also reveal that PRP can reduce anxiety and behavioral problems although findings are mixed. Recently, PRP has begun using a “train the trainer model” (Reivich, Seligman, & McBride, 2007, p. 25), in which resilience experts train individuals with the expressed goal of having them train others. This methodology may lead on to hypothesize that being resilient helps teach resilience.

### **Mindset in Theory and Practice**

The self-esteem movement presumed that telling students that they were bright – whether true or false - would improve their self-esteem and by extension their academic achievement (Baumeister, Campell, Krueger, & Vohs, 2005). The expectation was that the praising of native ability/intelligence would support the growth of cognitive and non-cognitive skills. The evidence is clear that this is not the case, in part, because of the mindset that such action imparts and reinforces in students (Mueller & Dweck, 1998). Dweck (2006) defines mindset as one’s implicit theory of intelligence; a fixed mindset refers to the belief that one’s intelligence is static while a growth mindset refers to the belief that it is malleable. Students that embody a fixed mindset

worry about proving rather than improving their intelligence (Dweck & Leggett, 1988). This can lead to erroneous cognition (i.e. catastrophic thoughts), negative emotions (e.g. dejection), and maladaptive behavior (e.g. quitting; Dweck, Walton, & Cohen, 2011). Conversely, students with a growth mindset are more likely to engage in resilient thinking (i.e. this approach to improving my algebra grade did not work, so I will brainstorm some alternative strategies), positive emotions (e.g. hope), and constructive behavior (e.g. careful reflection on the past, careful planning for the future).

Quantifying the prevalence of growth-mindset curricula in classrooms is difficult. To be sure, the construct of mindset has gained traction in recent years, given that Dweck's (2006) *Mindset: The new psychology of success* was a New York Times bestseller and has been translated into twenty languages (Boaler, 2013). As of its publication, evidence suggests that 40% of American students embody a growth mindset, 40% embody a fixed mindset, while 20% fall somewhere in between (Dweck, 2006). The presence of high-profile curricula designed to shift students toward growth mindsets, proffered by Dweck's Mindset Works company, suggests that these numbers will increase in future years. Currently, the Mindset Works Toolkit is used in 49 states by more than 600 schools and has been heralded by the Department of Education's Office of Educational Technology (Sparks, 2013; [tech.ed.gov/netp/learning](http://tech.ed.gov/netp/learning), 2016). Just how many teachers attempt to cultivate a growth mindset in their students, above and beyond what is captured in these numbers, is no doubt higher but unclear.

Conceptually, the construct of mindset refers to one's implicit theory of intelligence. For those with a growth mindset, intelligence is fluid. Mueller and Dweck (1998) point out that growth mindsets lead to improvements in thinking, feeling, and behaving. Thus, even if the construct of intelligence is fixed, one's mindset about one's intelligence leads to a variable

expression of that intelligence. This is a circuitous way of saying that growth mindsets are preferable fixed mindsets. The non-cognitive skills presented in this project are similarly malleable. Through specific action (e.g. telling a student that their resilience is variable), change is possible (e.g. resilience improves). In this way, one might say that a growth mindset pervades our presentation of non-cognitive constructs. And quite independent of the truth of the matter, it behooves one to adopt such a view. If one's mindset affects the expression of one's non-cognitive capacities then for all practical purposes the traits can be, and thus are, fluid. This conceptual point has important classroom implications. To the extent that educators are incorporating these non-cognitive skills into their curricula, the possibility of growth is presumed and made real. After all, if something can't be learned, why teach it? In sum, the logic offered by Dweck (2008) with respect to intelligence is the logic of the other non-cognitive traits presented herein: none are necessarily static or fluid "but thinking makes it so" (Shakespeare, trans. 1992, 2.2.251).

Growth mindsets are correlated with a host of positive educational outcomes. Middle schoolers with growth mindsets were more motivated to learn, more effortful, and more engaged than their peers with fixed mindsets (Blackwell, Trzesniewski, & Dweck, 2007). Curricula from the aforementioned Mindset Works Toolkit also is associated with resilience and life satisfaction (mindsetworks.com, 2012). There also seems to be a causal relationship between a growth mindset and scholastic achievement. For instance, teaching African-American and Latino students in rural areas that intelligence can be developed (i.e. teaching them to have a growth mindset) yielded higher reading test schools relative to control groups (Good, Aronson, & Inzlicht, 2003). Providing African-American and white college students with the same growth-



mindset intervention led to higher GPAs and enjoyment of academics relative to controls (Aronson, Fried, & Good, 2002).

### **Self-efficacy and Locus of Control in Theory and Practice**

Self-efficacy is an individual's belief in their ability to accomplish a goal in the future (Bandura, 1977). Self-efficacy as a construct is future oriented and situation specific; it involves perceptions about one's capacity to succeed in the future at a specific task. Einstein, for instance, might have high self-efficacy for an upcoming physics lab but low self-efficacy for an upcoming Farsi exam. Empirical evidence suggests that self-efficacy is a variable construct such that it can be improved (Bandura & Schunk, 1981). There is little evidence to suggest that self-efficacy sticks over time without reinforcers (Farrington et al., 2012).

Relatedly, locus of control refers to whether or not you believe you can control a given outcome (Rotter, 1966). Do you control life? Or does life control you? Those with internal loci of control believe they have power over the situation while those with an external locus of control believe outside variables dictate the results. Self-efficacy and locus of control are conceptually similar. At a general level, self-efficacy refers to how effective you think your behavior is while locus of control refers to whether you think power lies inside or outside of you. As such, high self-efficacy and internal loci of control are comparable concepts. The same might also be said of low self-efficacy and external loci of control. This is born out in empirical studies that reveal that self-efficacy and locus of control measure the same generalized concept (Judge, Erez, Bono, & Thoresen, 2002).

Currently, data reflecting student levels of self-efficacy is sparse. Although there are reliable and valid measures of self-efficacy (Pintrich, Smith, Garcia, & McKeachie, 1993), representative data for large populations is currently unavailable. The Common Core

expectations do not mention nor call for the instruction of efficacy beliefs (Common Core State Standards Initiative, 2010). The same is true with respect to locus of control. This is not to say that teachers do not encourage efficacy beliefs. Rather, in this moment, they are not required nor managed nor measured on a broad scale.

Conceptually, the constructs of high self-efficacy and internal loci of control are related to SEC as well as to each other as. SEC includes a self-awareness component, which includes recognizing one's cognitions and emotions. Regardless of whether one exhibits high or low self-efficacy, an awareness of their belief in their ability is implied. The same conceptual point might be made about locus of control. To believe that one can control life events – or not – presupposes an intrapersonal knowing about oneself. In this way, self-efficacy and locus of control might be said to be components of the larger construct, SEC. Self-efficacy and locus of control are related to another non-cognitive construct previously examined: character. Peterson and Seligman's (2004) articulation of character strengths include the attribute of hope. Hope, in part, refers to one's belief that the future is something that can be controlled ([viacharacter.org](http://viacharacter.org), 2016). The conceptual overlap between this particular character strength, high self-efficacy, and internal locus of control is evident.

There is evidence suggesting a connection between SEL programs and efficacy beliefs in students (Durlak et al., 2011). In a meta-analysis of 217 schools involving more than 270,000 students, researchers concluded that SEL programs promoted student attitudes toward self/others to a significant degree. In the study, student attitude included an element of self-perception, which was defined as a combination self-efficacy, self-esteem, and self-concept. Given the conceptual overlap between self-efficacy and loci of control, one might use the aforementioned meta-analysis to theorize a connection also between SEL programs and internal loci of control in

students. Given also that teacher SEC can promote successful implementation of SEL programs (Jennings & Greenberg, 2009), there may also be reason to hypothesize about a connection between the efficacy beliefs of students and teacher SEC.

### **Motivation in Theory and Practice**

Motivation is a construct used to describe all of the processes involved in the starting, directing, and maintaining of physical and psychological energy (Zimbardo et al., 2009).

Motivation refers to the reasons behind behavior or behind the development of inclinations to behave in a certain way (Deci & Ryan, 2008).

Motivation can be conceptualized in singular or plural terms. In singular conceptualizations, motivation varies in terms of amount, as in the student who becomes more motivated under the supervision of an encouraging teacher. As in this example, Baumeister and Vohs (2007) conceive of motivation as a unitary construct that affects and/or gets affected by other variables. In plural conceptualizations, motivation exists on a spectrum and can be categorized by type. And not all types of motivation are created equal. Self-determination theory (Deci & Ryan, 1985; Ryan and Deci, 2000), for instance, posits a self-determination continuum, a spectrum that distinguishes between autonomous and controlled motivation. Autonomous or self-determined motivation involves having choice. The quintessential example of autonomous motivation is the intrinsically regulated person, who chooses to join the cross-country team on account of her pure joy of running. In contrast, Ryan and Deci (2000) suggest that individuals can also exhibit controlled motivation, as in the case of the student whose parents force her to join the cross-country team as punishment for some previous transgression. Punishments of this kind would classify as extrinsic motivators. The self-determination continuum also allows for people to act autonomously, while being extrinsically motivated. Although this may seem

counter-intuitive, it is possible provided an individual can integrate or identify with an external regulator. For instance, a teacher may not be intrinsically motivated to grade papers but may autonomously choose to do so if they have internalized its value for their students. The setting of goals (e.g. get into college) or reward-drive behavior (e.g. get a part-time job to pay for school) might similarly serve as external motivators, whose value is appreciated and autonomously chosen.

Measuring student motivation in the current moment is challenging, particularly as one partitions motivation by type. Nevertheless, the literature paints a relatively depressing picture of motivation as it relates to achievement in primary- and secondary-school students. At a general level, 40-60% of students are chronically disengaged and unmotivated (Committee on Increasing High School Students' Engagement and Motivation to Learn, 2002). These statistics do not reflect those students who have already dropped out of school, of which 70% report lack of motivation to have played a key role (Bridgeland, DiIulio & Morison, 2006). These figures are particularly distressing given that motivation is essential to learning (National Research Council, 2000). The National Center for Educational Statistics (2000) reports that from elementary through high-school, student motivation steadily declines. When students are motivated, roughly 75% of students were motivated to get good grades in order to get into college (National Center for Education Statistics, 2001). This implies that students are extrinsically motivated; just whether this extrinsic motivation is autonomous or controlled is unclear. Certainly, the phenomenon of "doing school" is present, which is to say that students are motivated to make it look like they are learning for some external goal more than are motivated to actually learn for its own sake (Pope, 2001).

There is considerable conceptual overlap between the construct of motivation and other non-cognitive skills, given that the former can be taken to include the topics of needs, self-efficacy, self-esteem, locus of control, and goal setting (Richardson, Abraham, & Bond, 2012). Quite aside from how motivation relates to other non-cognitive skills, the term motivation in the academic literature often includes or is included within other terms. For instance, motivation also includes the topic of psychological needs. Deci and Ryan (1985) posit that human beings have a psychological need for autonomy, competence, and relatedness. Taken together and separately, these constructs represent the conceptual precursors to autonomous behavior. This is to say that motivation follows from feelings of autonomy, competence, and relatedness (Ryan & Deci, 2000). The need for autonomy refers to the urge to be the regulatory agent of one's life. The need for competence refers to the urge to exhibit control over outcomes. The need for relatedness refers to the urge to connect to other and have others connect with you.

Conceptually, there is also overlap between motivation and the constructs of SEC, self-efficacy, mindset, and locus of control. SEC includes motivation in its self-management component. This is a matter of definition. To exhibit social-emotional competence just means to have the requisite motivation and ability to regulate oneself. Relative to self-efficacy, the construct refers to the degree to which one believes one can accomplish a task or goal (Bandura, 1977). Competence, a necessary precondition for autonomous motivation (Ryan & Deci, 2000), requires the belief that one is capable. Put differently, feeling competent just means feeling capable. Competence similarly includes certain mindsets. While growth mindsets can facilitate feelings of competence, fixed mindsets can interrupt feelings of ability. Relatedly, the perception that that one has control over life events and outcomes (Rotter, 1966) is referred to as internal locus of control. Like growth mindsets, feeling competent just means feeling as though one's

actions matter. Thus, SEC, self-efficacy, growth mindsets, and internal loci of control might be said to be conceptual precursors to the construct of motivation as they pertain to autonomous motivation.

Haertel, Walberg, and Weinstein's (1983) meta-analysis identifies motivation as one of nine key constructs that is causally related to academic learning. Their review reveals that the academic literature has demonstrated this finding about motivation time and time again. There is evidence to suggest that SEL programs promote autonomous student motivation (Greenberg et al., 2003; Solomon, Battistich, Watson, Schaps, & Lewis, 2000). The Child Development Project (CDP) curriculum is in keeping with the tenets of SEL and was implemented in six districts over a four-year period. Versus controls, mean scores for both intrinsic academic motivation and intrinsic prosocial motivation increased in students exposed to the CDP program either to a significant or marginally significant degree (Solomon et al., 2000). This suggests that SEL programs directly promote autonomous motivation and indirectly promote learning.

### **Self-Control in Theory and Practice**

Self-control is a construct that permits us to consciously regulate our behaviors, thinking, and feelings to resist short-term impulses and to attain long-term goals (Baumeister, 1994; Baumeister, Vohs, & Tice, 2007). Galton (1892) poetically characterized self-control as one's ability to resist the hourly temptations. Put simply, self-control is the regulation of the self by the self (Duckworth, 2011). It is colloquially referred to as will power and psychobiologists refer to it as executive functioning (Diamond, 2013). Empirical evidence suggests that as a construct self-control is malleable, which is to say that one can learn to have more self-control (Piquero, Jennings, & Farrington, 2010). Just as one can learn to strengthen the muscle of self-control, Baumeister, Gailliot, DeWall, and Oaten (2006) show that our capacity to self-regulate can

fatigue. This state of ego depletion follows, at least to some degree, from an act of self-control, which is to say amending one's cognitive, emotional, or behavioral responses.

There is considerable interest in the study, teaching, and measurement of self-control (Duckworth, 2011). Given that self-control can be learned, schools directly and indirectly teach self-control in primary and secondary contexts. Empirical evidence reveals that one's capacity for self-control grows considerably through elementary school if not also into high school (Roberts, Walton, & Viechtbauer, 2006). A meta-analysis conducted by Piquero, Jennings, and Farrington (2010) of experimental studies using random assignment reveals that schools interventions focusing on social skill development, cognitive coping strategies, role playing, and delayed gratification can improve self-control and reduce delinquency. The prevalence of such programs in today's schools is difficult to know for certain; however, the conceptual overlap between self-control and SEC suggest that the prevalence of SEL programs in schools may also indicate the presence self-control curricula.

Conceptually, self-control is an umbrella concept that encapsulates or gets encapsulated by other non-cognitive skills. It is certainly reasonable to assume that SEL programs include instruction for self-control, given the self-management dimension of SEC. This is a matter of definition. Additionally, self-control is often used to refer to emotional regulation or what is often termed self-regulation (Moffitt et al., 2011). As such, self-control seems then to include the construct of emotional intelligence. While emotional intelligence is limited to the perception, use, understanding, and management of emotions, self-control is concerned with cognition, behavior, as well as emotions. There is also conceptual overlap between self-control and motivation. Self-control requires some variant of autonomous motivation. This is to say that one must be able to start, direct, and maintain physical/psychological energy in order to dismiss a

short-term temptation or pursue a long-term goal. In this way, self-control presupposes motivation.

Studies have confirmed a causal connection between the implementation of SEL programs in students under 10 and improvements self-control relative to controls (Riggs, Greenberg, Kusche, Pentz, 2006). In a controlled study of elementary schools, researchers determined that those students exposed to an SEL program known as the Promoting Alternative Thinking Strategies (PATHS) curriculum exhibited greater post-test inhibitory control (i.e. self-control). Teachers of students taking part in the PATHS curriculum report a 36% increase in students exhibiting self-control and a 32% reduction in students exhibiting aggressive behavior (CASEL, 2003). These data clarify the role that SEL programs can play in promoting greater self-control in elementary school students.

### **Metacognition in Theory and Practice**

Metacognition refers the process of thinking about thinking. It is any knowledge and cognition about cognitive phenomena (Flavell, 1979). Metacognitive strategies, then, are conscious, careful, goal-directed efforts to select, monitor, and plan strategies toward a goal (Zimmerman, 2001). Within the educational literature, metacognition involves students taking deliberate action to accomplish a task given their thinking about their own thinking. This includes goal setting, planning, problem solving, bringing awareness to their strengths/weaknesses, assessing progress, and choosing strategies in context (Pintrich, 2002). Empirical evidence suggests that as a construct, metacognition (i.e. using appropriate metacognitive strategies in a given situation) can be developed (Dignath, Büttner, & Langfeldt, 2008). Claxton's (2007) research shows, however, that the content/skills learned in metacognitive curricula can fade with time.



Given the malleability of metacognition as a construct, schools can improve a student's ability to craft individualized learning strategies. The prevalence of metacognitive curricula is unclear. Although the term "metacognition" is not included in the Common Core expectations, "metacognitive strategies" is cited in the introduction (Common Core State Standards Initiative, 2010, p. 4). The reference is not included in a specific standards, however, and thus it cannot be expected to be included in all public schools classrooms.

The presence of metacognitive ability amongst students in today's classrooms is also unclear. Evidence suggest that metacognitive strategies vary with age. Younger children tend to use overt strategies like self-talk while older children use multifaceted strategies like self-appraisal (Kuhn, 1999). This suggests that school curricula are involved and/or that students naturally develop metacognitive abilities as they mature. Across all ages, students that know about various learning strategies are more likely to use them (Pintrich, 2002).

Conceptually, metacognition is a key component of several other non-cognitive skills. Certainly, the self-awareness dimension of SEC obliges one to be able to accurately think about one's thinking. This is to say that metacognition is a component of SEC. Similarly, metacognition could be involved in identifying and using your character strengths, as defined by Peterson and Seligman (2004). Using tools like the VIA Inventory of Strengths (viacharacter.org, 2016) to identify one's character strengths ostensibly would involve the sort of intrapersonal reflection inherent to metacognition. Of course, one's strengths of character exist quite independent of one's knowing about them.

In addition to SEC and character, there is important conceptual overlap between metacognition and resilience. Resilience training involves identifying, evaluating, and challenging inaccurate thoughts. Said differently, resilience obliges one to be able to think about

one's thinking in a particular way. PRP use of the ABC model is a metacognitive tool that promotes resilience by structuring an individual's metacognitive reflection. In this way, the construct of metacognition and resilience might be related.

Metacognitive strategies seem also to be key conceptual precursors to motivation and self-control. By definition, metacognition can support motivation. It is certainly not required, but knowledge about one's cognitive habits could be useful in the starting, directing, and maintaining of psychological energy. If self-control requires autonomous motivation then, by extension, both are predictive of metacognition.

Meta-analyses reveal that programs promoting the use of metacognitive strategies in schools can help students set/achieve their goals (Higgins, Hall, Baumfield, & Moseley, 2005). Moreover, metacognitive strategies can be taught (Nietfeld & Shaw, 2002) and are associated with successful learning (Borkowski, Carr, & Pressley, 1987). A meta-analysis by Dignath, Büttner, and Langfeldt (2008) found that metacognitive training has a large effect on math /science performance and a medium effect on reading. According to this review of the literature, those metacognitive interventions that focus on teaching planning strategies yield the largest effect sizes with respect to academic gain, as measured by improved test scores. Clearly, metacognition can be of practical value in classrooms.

### **Creativity in Theory and Practice**

There is general academic consensus that creativity refers to the production of that which is original and useful (Mumford, 2003). Exactly how to define creativity beyond that general description is a matter of considerable debate. According to psychometric theories, creativity is a trait that represents a precursor, type, or indicator of intelligence (Guilford, 1950; Torrance, 1962). Most psychometric theories identify divergent thinking and its components as the key to

creativity. Systems theories differ, focusing more on the confluence of events that occur when creativity happens (Amabile, 1982, 2013; Sternberg & Lubart, 1991; Csikszentmihalyi, 1999). In these theories, creativity is as much cultural and social as it is psychological (Csikszentmihalyi, 1999). For Amabile (2012), creativity occurs when there is domain-specific expertise, personality processes in place to permit original thinking, intrinsic motivation, and supportive environment. Thus, creativity is both internally and externally driven. For Sternberg and Lubart (1991) the right intellectual skills, knowledge, mindsets, personalities, motivations, and environments are needed to facilitate creativity. Amongst systems theories, there is a sense in which creativity is an internal decision occurring within a larger context of outside factors (Sternberg, 2006).

Garaigordobil and Echebarri's (1995) research suggests that creativity is a malleable construct that can be developed through training. In this experimental study of elementary students, a weekly intervention over the course of the school year yielded greater creativity than controls, as measured by the Torrance Test of Creative Thinking (TTCT; Torrance, 1966). Evidence also suggests that alongside rises in IQ scores, creativity scores - as measured by the TTCT - have decreased amongst Americans of all ages since 1990 (Kim, 2011). In the context of elementary schools, creativity scores decrease precipitously from kindergarten through 3<sup>rd</sup> grade. Amongst secondary students, creativity scores are static or decrease beginning in the 6<sup>th</sup> grade. The Common Core expectations (Common Core State Standards Initiative, 2010) do not explicitly mention creativity and there is considerable debate as to whether or not the Common Core standards (or standards per se) curb creativity, whether in students and/or teachers. A recent Phi Delta Kappan/Gallup poll (Bushaw & Calderon, 2014) suggests that 60% of Americans oppose the Common Core standards and that of those opposed, 65% felt as though the standards

limited teacher creativity. Even with these numbers in hand, it is difficult to know to what degree creativity is taught in classrooms. The lack of explicit standards and the declining creativity scores suggest something about its presence in today's classrooms, however.

Conceptually, the construct of creativity relates to other non-cognitive skills. Viewed from a systems or convergent perspective, being creative just means being motivated. This is to say that original, worthwhile thinking requires autonomous motivation. Thus, creativity includes a variant of autonomous motivation but not necessarily the other way around. As we have seen SEC is a precursor for autonomous motivation. By extension, one might say that creativity presupposes at least as much SEC as is needed for autonomous action. There is also conceptual overlap between the construct of creativity and Peterson and Seligman's (2004) articulation of character strengths. In strengths-based models of character, creativity or the ability to think in new and unconventional ways is cited as one of twenty-four possible strengths of personality. Thus, creativity is not required to have character as presently defined, but rather is one of many possible manifestations of it.

Creativity is correlated with academic performance (Freund & Holling, 2008). It is not nearly as strong of a predictor of GPA as reasoning ability, but still predictive. Milgram and Hong (1993) found creativity to be an even better predictor of adult accomplishment than school grades. Beyond the role that it plays in academics, creativity seems also to be a good predictor of extracurricular achievement in school and professional contexts (Freund & Holling, 2008).

### **Explanatory Style in Theory and Practice**

Explanatory style is a construct describing how one explains past events (Seligman & Schulman, 1986; Seligman, 1990). Also termed attributional style, explanatory style focuses on how one thinks about causes. This is to say that one's explanatory style involves the degree to

which one thinks the causes of a given event is internal or external (i.e. is the cause something about me?), stable or unstable (i.e. will the cause endure through time?), and global or specific (i.e. will the cause affect many areas of my life?). Those with optimistic explanatory styles answer these questions differently than those with pessimistic explanatory styles. Regarding negative events, optimists will consider the causes to be external, unstable, and specific while pessimists will attribute the causes to be internal, stable, and global. For example, if an optimistic student fails a math test, they might think that they didn't fail the test because they were dumb but because calculus is difficult (i.e. cause is external not internal), that the cause of their underwhelming performance is something that can be changed in the future (i.e. cause is unstable not stable), and that the cause of their failing grade on the test is limited to math class (i.e. cause is specific not global). Regarding positive events, optimists will consider the causes to be internal, stable, and global while pessimists will attribute the causes in the reverse. Thus, an optimistic student who does well on a calculus test might think that they performed well because of something they did (i.e. cause is internal not external), that the cause is something that they can replicate in the future (i.e. cause is stable not unstable), and that the cause can promote success in other areas of their life (i.e. cause is global not specific). The pessimistic student, on the other hand, will explain the causes of a given success in the reverse. (N.B.: for the purposes of this exploration, we will use the terms optimism/pessimism to refer to explanatory style despite the important reasons that one might want to avoid such conflation; Peterson, 1991; Gillham, Shatté, Reivich, Seligman, 2001).

Although there are valid and reliable measures of explanatory style including the Children's Attributional Style Questionnaire (CASQ; Seligman et al., 1984), it remains difficult to get an empirical sense of how optimistic and/or pessimistic students are today. Seligman

(1990) contends that one's optimism is malleable such that it can be taught. Given that the Common Core standards (Common Core State Standards Initiative, 2010) do not mention nor call for the instruction of optimistic explanatory styles, it is also difficult to assess how much instruction for optimism's is occurring. That said, a Pew Research survey (Taylor, Parker, Morin, Patten, & Brown, 2014) showed millennials (i.e. 15-35 year olds) to be more optimistic than all other demographics in absolute and relative terms. This is to say that today's high schoolers, recent high-schoolers, and young adults are more optimistic in the current moment as well as more optimistic than their predecessors when their predecessors were similarly aged.

Conceptually, explanatory style is related to other non-cognitive constructs. A component of SEC is self-awareness, which refers to one's ability to recognize one's thoughts and feelings. Relatedly, a component of cognitive behavioral interventions like PRP is to help people become more intrapersonally aware, which includes how they explain the causes of past events (Gillham et al., 2007). In this way, the self-awareness facet of SEC becomes relevant for explanatory style in the sense that both imply the capacity to intrapersonally reflect with accuracy. While explanatory style is about how one explains events in the past, locus of control is concerned with one's sense of control over future events. Self-efficacy is similarly future oriented. The three constructs are nevertheless related. Evidence suggests that having a high self-efficacy predicts internal loci of control, save for those instances in which one experiences failure (Judge, Erez, Bono, & Thoresen, 2002). This is to say that if one believes in their ability to accomplish a goal and they do not accomplish said goal, they will attribute this to external factors. Similarly, if an individual has low self-efficacy and experiences success, research suggests that they will also attribute it to external factors. Given that externalization is an important component of optimism (Seligman, 1990), it seems that self-efficacy is a precursor to optimistic explanatory styles. In

other words, optimism includes a particular type of self-efficacy and a particular type of loci of control. The aforementioned example also reveals self-efficacy and locus of control to be related but distinct constructs.

In addition to explanatory style's relationship to self-efficacy and locus of control, there is also conceptual overlap with Peterson and Seligman's (2004) character strength of hope. Hope, in part, refers to one's expectation of a bright future as well as one's effort to achieve it. This character strength has clear conceptual parallels with optimism. Moreover, the Hopelessness Model (Abramson, Metalsky, & Alloy, 1989) proposes that pessimistic explanatory styles – especially stable and global attributions for negative events - predict hopelessness, which is to say the absence of hope. In addition, there is important conceptual overlap between explanatory style and resilience. Many of the skills taught in resilience-training programs like PRP were also taught in the organization's optimism-training precursor called the Penn Optimism Program (POP; Shatté, Reivich, Gillham, & Seligman, 1999). This suggests that the skills of resilience are related if not the same as the skills of optimistic explanatory styles.

Pessimism is linked with anxiety and depression (Kamen & Seligman, 1987). Optimism, on the other hand, protects against depression (Tindle et al., 2009), is associated with better immune functioning (Kohut, Cooper, Nickolaus, Russell, & Cunnick, 2002), and correlated with longer living (Maruta, Colligan, Malinchoc, & Offord, 2000). In addition to the positive health outcomes of optimism, a study of the efficacy of POP revealed that explanatory style training yielded significantly fewer depressive symptoms in middle schoolers who were deemed at risk for depression (Shatté, Reivich, Gillham, & Seligman, 1999). Compared to the control group, the experimental group (i.e. those who received POP's explanatory-style training) maintained reduced levels of depressive symptoms after two years. This reveals explanatory style to be

malleable as well as practically pertinent for those individuals (e.g. students) who are depressed. On the flip side, optimism is also important for individual wellbeing (Seligman, 1990).

### **Grit in Theory and Practice**

Grit refers to passion and perseverance for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). As a construct, grit requires both that one is passionate about a specific objective and that one sustains effort toward that objective over an extended period of time. As a trait, grit is relatively stable given that the gritty individual, by definition, is able to endure “disappointment or boredom” (Duckworth et al., 2007, p. 1088). One’s grittiness does seem to be internally and externally mutable over time, however. Duckworth (2016) suggests that via interest clarification, deliberate practice, purpose recognition, and hope cultivation one can internally grow grit just as supportive parenting and a supportive culture can promote grit externally.

The Grit Scale represents a valid and reliable assessor of one’s interest in and perseverance toward long-term goals (Duckworth et al., 2007). Using this measure, grit scores correlate with age such that older participants self-report higher levels of grit than younger participants (Duckworth et al., 2007). This is not to say, however, that one gets grittier as they age. This correlational finding could result from external environmental differences between generations and/or internal maturation over time (Duckworth, 2016). Nevertheless, the malleable nature of grit suggests that it can be taught. Like many of the non-cognitive skills examined, however, grit is neither explicitly referenced in the Common Core standards (Common Core State Standards Initiative, 2010). This suggests that while it may be valuable, it is not valued enough to be included in curriculum. The Knowledge is Power Program (KIPP) charter schools are an example that incorporate grit into the curriculum (kipp.org, 2016; Tough, 2013). Although



each KIPP school looks a bit different, they each share a common commitment to the building of certain character traits, including grit. Currently, KIPP serves nearly 70,000 students across 20 states.

Conceptually, grit is related but distinct from several other non-cognitive skills. SEC includes a self-management component, which incorporates the perseverance component of grit. To persevere through the doubts and disappointments inherent to any long-term commitment requires a certain degree of self-management. This is to say that traversing the proverbial peaks and valleys of life implies the capacity to intrapersonally regulate. Thus, a key skill associated with SEC overlaps with a key skill associated with grit. Grit also requires autonomous motivation (Duckworth et al., 2007). This is a matter of definition. After all, one is intrinsically motivated to pursue passions and grit refers to the combination of persistence and passion. Grit is also often and easily conflated with resilience. Resilience refers to all the processes involved by which one adapts to adversity; it requires a stressful, negative event. Grit does not require such adversity, although as a quality it is perhaps most easily recognized in those individuals who are able to sustain their effort on behalf of a passion in the face of significant challenges (Duckworth, 2016). There is also considerable overlap between the construct of grit and two character strengths: perseverance and zest. For Peterson and Seligman (2004), perseverance refers to the quality of working hard to finish what you start. Grit, then, represents a trait or instance of perseverance. Zest refers to approaching life with enthusiasm. When deployed on behalf of a singular task for an extended period of time and when combined with perseverance, zest represents another key dimension of grit. The construct of self-control is also closely connected to grit. Although correlated, there is a conceptual distinction between the two constructs (Duckworth & Gross, 2014). One can be self-controlled in the short-term but not

especially so on behalf of a long-term goal. This is to say that being an exemplar of self-control does not necessarily mean that you have both passion and perseverance for a single goal in the long-term. Grit also seems related to certain mindsets. Having a growth mindset represents an important precursor to persevering in the face of adversity (Duckworth as cited in Perkins-Gough, 2013).

Grit accounts for significant variance in performance in a range of settings (Duckworth et al., 2007). As an individual difference trait, grit predicts long-term success. In the context of schools, grit is predictive of higher GPAs at the notorious rigorous University of Pennsylvania, retention at the notoriously demanding West Point Academy, and success at the notoriously competitive National Spelling Bee. A recent report of KIPP schools, which included the teaching of grit in their curricula, found that their program has a positive, statistically significant impact on reading and math achievement at the elementary level as well as reading, math, science, and social studies achievement at the middle school level (Tuttle et al., 2015). The KIPP program also has a positive, statistically significant impact on achievement at the high school level for those students who did not matriculate from KIPP middle schools. Although grit is a core component of the KIPP curriculum, one cannot conclude from these findings that grit – individually - caused or even correlates to achievement gains in primary school students. Rather, these studies imply that KIPP curriculum promotes the aforementioned, academic improvements.

### **Connecting Wellbeing and Non-Cognitive Skills**

#### **SEC and PERMA**

We have seen how various non-cognitive skills are conceptually related to the construct of SEC. A final question for this analysis is whether this is a relationship between SEC and PERMA (Seligman, 2011). It is difficult to imagine how an individual high in SEC would not

also experience high levels of wellbeing just as it difficult to imagine how an individual low in SEC would not experience low levels of wellbeing. The learning goals of SEL programs map closely, though imperfectly, onto the elements of PERMA. The intrapersonal constructs of self-awareness and self-management intuitively relate to generating positive emotions (i.e. P), entering flow states (i.e. E), identifying one's purpose (i.e. M), and pursuing intrinsically-valued goals (i.e. A). By making visible one's thoughts/emotions, one can plausibly and more deftly bring to life these elements of PERMA. Take, for example, a student whose improved SEC helps him identify a passion for flute and not football. One can envision how such a discovery early in life might lead to more joy, flow, meaning, and achievement. The interpersonal constructs of social awareness and relationship management within the larger construct of SEC potentially help individuals better relate (i.e. R) to others. To the extent that one learns how to manage one's thoughts, emotions, and behaviors, it makes sense that one's relationships would improve. In the previous example, one can imagine how quitting the football team so as to permit more time to play the flute might lead to some push-back from friends, coaches, even parents. One can also envision how improved interpersonal savvy would in the short and long-term lead to greater wellbeing.

### **SEC as Necessary but Insufficient**

One can infer from our conceptualizations of SEC and wellbeing (i.e. PERMA; Seligman, 2011) that the former is an important precursor to the latter. This is, in part, a matter of how the constructs have been defined. Nevertheless, there are important differences between the constructs that suggest that SEC is a necessary but insufficient precondition for wellbeing. Wellbeing theory (Seligman, 2011) calls for a critical mass of positive emotion (i.e. P) to be experienced in one's life. The exact amount of positive emotion is not specified; this is by

theoretical design. There is not one way to cultivate wellbeing and each individual may be different in the moment and across the span of their lives (Seligman, 2011). As such, the question is not “how much positive emotion does wellbeing require” so much as “how much positive emotion does wellbeing require for you?” Wellbeing theory calls for the generation of new positive emotions via positive interventions (e.g. three blessings exercise, gratitude visit, savoring; Seligman et al., 2005; Seligman, 2011) Generating positive emotions becomes an important part of wellbeing, perhaps not for everyone but for almost everyone. This is where SEC can be seen to be important but inadequate for flourishing. SEC provides an individual with the skills to accurately identify and artfully manage existing emotions. As defined, the construct does not include the content/skills needed to generate positive emotions. This is not a failing of the construct but rather indicates its conceptual borders. In this way, SEC can be seen as a necessary but insufficient precondition for wellbeing.

A similar point might be made about the other components of PERMA. In addition to positive emotions, wellbeing theory calls for engagement, positive relationships, meaning, and positive achievement. Again, it may be that one’s circumstances are such that flow (i.e. E) and friends (i.e. R) abound. If this is not the case, wellbeing requires one to rearrange the inputs in one’s life to change the outputs. After all, wellbeing is not accidental (Seligman, 2011). Finding a positive purpose (i.e. M) and/or identifying ends to which one is intrinsically motivated (i.e. A) is, at least in part, a matter of choice. Having the skills of SEC is an essential start but does not assure that one will find flow, friends, purpose, and achievement. This requires something more.

As defined, SEC gestures toward a construct of wellbeing. This is to say that the theoretical construct of PERMA includes SEC, not the other way around. All students high in PERMA would be high in SEC, though not all students high in SEC would necessarily be high in

PERMA. As in the example above, it is entirely plausible that an SEL program might support a student discover and nurture a positive purpose (i.e. M). SEL programs might not accomplish this, however. And it is not as though if a student had not identified their life calling at the end of a SEL program, their SEL teacher would have failed. As such, wellbeing does not necessarily follow from successful teaching/learning of SEC via SEL programs. Nevertheless, for the purposes of this project, the skills associated with SEC can be seen as a necessary but insufficient components of wellbeing.

### **Conclusion**

It has been the task of this project to clarify the conceptual dimensions of the constructs commonly characterized as “non-cognitive.” Their theoretical dimensions, empirical correlates, and practical classroom-value have been explicated so as to redress the cognitive dissonance one might experience when invoking a construct of such remarkable educational value in flawed, misleading, and self-limiting terms. We created a name for the experience of cognitive dissonance in regards to the current state of non-cognitive skills: non-cognitive dissonance. Our logic model and accompanying discussions strive to relieve non-cognitive dissonance by clarifying the construct. To this end, SEC was explicated as a conceptual, empirical, and/or practical relative of self-control, emotional intelligence, motivation, character strengths, mindset, resilience, metacognition, creativity, self-efficacy, locus of control, explanatory style, and grit. A case was also made for SEC being a necessary but insufficient precursor for wellbeing. If correct, there is reason to think that non-cognitive skills, poorly named as they are, can play an important role in wellbeing of teachers and students.

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