Increasing the Chance of No Child Being Left Behind: Beyond Cognitive and Achievement Abilities

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"Too many children in America are segregated by low expectations, illiteracy, and self-doubt" (Bush, 2001)

"Accountability systems need to broaden their definitions of what counts as evidence of success" (Linn, 2003)

"Measure what is measurable, and make measurable what is not so" (Frege, 1959)

Guiding Question

What facilitators of cognitive and academic learning should be targeted as valued educational outcomes (particularly for students who are at the greatest educational risk) and also serve as levers to enhance academic achievement for all learners?

Table Of Contents

Executive Summary……..……5
I: Introduction..... ……...19
II: Background and Context..... ……20
The Current Policy Context..... ……...21
What We Know From Educational Research:
Select Illustrative Studies..... ……...22
Studies from the bench..... ……...23
A study from the trench..... ……...24
III: Purpose of Paper: What are the ESAF Characteristics?..... ……...25
IV: The Big Picture: Models of School Learning..... ….....26
Walberg's Model of School Learning: A Place to Start…..... ……...27
Models of School Learning: The Importance of Learner Characteristics…….30
Models of School Learning: The Importance of a Larger Paradigm-of-
Disability Framework..... ……...31
ESAF Characteristics: An Embarrassment of Riches in Search of
Order……..32
V: ESAF Characteristics: Valued Educational Outcomes?……...34
National Expert Panels and Reports..... ……..34
National Special Education Initiative..... ……..35
National Center on Educational Outcomes (NCEO)..... ……..35
VI: The Need for a Taxonomy of Learner Characteristics……..36
The Need for an Organizational Taxonomy..... ……..36
Learner Characteristic Taxonomies ..... ……..37
The Snow Academic Aptitude Model (SAAM)..... ……..38
VII: The Snow Academic Aptitude Model: The Broad Strokes……. 40
The Broad Strokes..... ……..40
VII: The Minnesota Adaption of the Snow Academic
Aptitude Model ..... ……..42

IX: "Do I Want to do this Activity and Why?" ..... …….44
Motivational Orientation: The Social Cognitive Model ..... …….44
The multiplicity of goals ..... …….45
Goal Hierarchies..... …….46
Key families of motivational beliefs ..... …….46
Motivational Orientation: Academic Motivation..... …….47
Definition and conceptual background ..... …….47
Implications..... …….47
Motivational Orientation: Intrinsic Motivation..... …….49
Definition and conceptual background ..... …….49
Implications..... …….50
Motivational Orientation: Academic Goal Orientation..... ……..52
Definition and conceptual background ..... ……52
Implications..... ……53
Motivational Orientation: Goal Setting..... ……..56
Definition and conceptual background ..... ……56
Implications..... ……57
X: "Can I do this Activity?" ..... ……58
Self Beliefs: Locus of Control..... ……58
Definition and conceptual background ..... ……58
Implications..... ……58
Self Beliefs: Academic Self-efficacy ..... ……60
Definition and conceptual background ..... ……60
Implications..... ……61
Self Beliefs: Academic Self-concept..... ……63
Definition and conceptual background ..... ……63
Implications..... ……65
Self Beliefs: Academic Ability Conception..... ……69
Definition and conceptual background ..... ……..69
Implications..... ……70
Interests, Values & Attitudes ..... ……72

Interests, Values & Attitudes: Academic Interests and Attitudes ..... ……73
Definition and conceptual background ..... ……73
Implications ..... ……74
Interests, Values & Attitudes: Academic Values ..... …...76
Definition and conceptual background ..... ……76
Implications ..... ……77
XI: "How do I Need to Behave Towards Others to Succeed?" ..... …...79
Social/Interpersonal Abilities: The Behavioral Component ..... ……79
Caldarella and Merrell's Taxonomy of Behaviors ..... ……80
Implications ..... ……80
Social/Interpersonal Abilities: The cognitive component ..... …...83
XII: "What do I Need to do to Succeed?" ..... ……85
Self-Regulated Learning ..... ……85
Key assumptions ..... ……86
Characteristics, processes and phases ..... ……87
Self-Regulated Learning: Planning and Activation Strategies ..... ……88
Self-Regulated Learning: Monitoring Strategies ..... ……89
Self-Regulated Learning: Control and Regulation Strategies ..... ……90
Self-Regulated Learning: Reaction and Reflection Strategies ..... ……91
Self-Regulated Learning: General Implications ..... ……92
References ..... ……95
Appendix A: Brief Definitions of Theoretical/Conceptual Foundations
Listed in Table 1 ..... …..113
Appendix B: Description of Literature Review Procedures ..... …..117
Appendix C: List of various assessment and measurement articles
Located during current project……..121

Executive Summary:

Increasing the Chance of No Child Being Left Behind: Beyond Cognitive and Achievement Abilities

Probably no environment elicits individual differences sooner in life than formal education. In classrooms teachers strive to arrange conditions to elicit optimal performance among a diverse class of unique learners. However, due to the only true "law" in psychology (viz., the law of *individual differences*), optimal learning conditions and techniques are not universal across learners. Adding to the complexity of education is the fact that today's schools face multiple and often competing demands to educate all children to their highest levels of achievement. This literature synthesis-based paper was written in response to the growing emphasis on state educational accountability systems that typically focus on raising the average or group mean level of academic outcomes, often at the expense of the recognition of individual student variability and other important academic outcomes.

NCLB and IDEA: Leaving no policy behind

Today's schools face multiple and often competing demands to educate all children to their highest levels of achievement. Currently, schools are faced with the tension produced when the requirements of a federal law (The 2001 reauthorization of the Elementary and Secondary Education Act—"No Child Left Behind [*NCLB*] Act of 2001") meets the reality of the law of individual differences. One place where this tension is realized is the differential focus on raising group and subgroup average achievement levels (i.e., NCLB) versus a focus on individual student progress and variability, as embodied by the Individuals with Disabilities Education Act (*IDEA*).

NCLB-driven state accountability systems are being designed with a near singular focus on standards-based *academic* performance. What "counts" is primarily student academic achievement (Linn, 2003). An unintended and indirect effect of the primary focus on academic achievement is the shifting of educational efforts away from other non-academic behaviors and outcomes, outcomes that might serve as useful levers by which to raise academic achievement.

The "complex educational changes demanded by current standards-based reform initiatives, combined with an increasingly heterogeneous student population largely composed of students whom schools traditionally have failed, have pushed the technology of schooling to unprecedented levels of complexity" (Borman et al, 2003, p. 126). The largely *group*-focused (NCLB) versus *individual*-focused (IDEA) policy tension has raised a number of critical questions:

- What can America's school's do to insure that *all* students meet specified performance standards in the context of an ever increasing diverse population of learners?

- Can accountability-driven reforms raise the average level of group and subgroup achievement with a concurrent recognition and respect for the variability (i.e., individual differences) of an increasingly diverse student population?

- How can the demands of two federal laws (both having the best interests of children and youth in mind), one focused more on raising group averages (NCLB) and the other focused more on individual student-based programming (IDEA), be integrated so the goals and best intent of *neither policy is left behind?*

Closing the achievement gap: The need for a broader perspective

The bipartisan NCLB educational reform initiative requires the federal government to help close the achievement gap between disadvantaged, vulnerable, and at risk students and their classmates. According to President George W. Bush (2002):

> The quality of our public schools directly affects us all as parents, as students, and as citizens. Yet too many children in America are segregated by low expectations, illiteracy, and self-doubt. In a constantly changing world that is demanding increasingly complex skills from its workforce, children are literally being left behind. It doesn't have to be this way.

In addition to an emphasis on scientifically-based interventions and programs, key NCLB components (e.g., AYP: Annual Yearly Progress) are consistent with the growing emphasis on accountability in education in general. Most current federal, state and district accountability systems demonstrate a constrained tunnel-vision view of educational success in the form of near singular focus academic achievement outcomes (Greenberg et al., 2003; Linn, 2003). However, society's educational expectations do not stop at the doorstep of academic achievement. "In addition to producing students who are culturally literate, intellectually reflective, and committed to lifelong learning, high-quality education should teach young people to interact in socially skilled and respectful ways; to practice positive, safe, and healthy behaviors; to contribute ethically and responsibly to their peer group, family, school, and community; and to posses basic competencies, work habits, and values as a foundation for meaningful employment and engaged citizenship" (Greenberg et al., 2003, p. 467).

At a time when educational reform is focused like a laser beam on raising academic achievement, what can be done to ensure that *non-academic outcomes, outcomes that facilitate school learning, and that are often the most critical for the most vulnerable learners (e.g., students with disabilities, disadvantaged students, students at risk), are valued and fully considered within current standards based accountability systems. Further, can we marshall a case that acknowledges the relevance and importance of these non-academic outcomes in enhancing students' learning and academic performance?*

Closing the achievement gap by closing the educational "bench-to-trench" gap

According to Grover J. (Russ) Whitehurst, Director, Institute of Education Sciences, U.S. Department of Education, educational research is a "field in which there is a gulf between the bench and the trench" (Whitehurst, 2003, p. 4). Much educational research has not provided applied answers to the question of "what works best for whom under what circumstances?" (Whitehurst, 2003, p.12). However, certain methodologically sound educational research projects have provided some answers and, more importantly, have suggested promising directions for future educational research and intervention for children.

Secondary analysis of a number of large scale national studies (e.g. see Byrnes, 2003; Scheerens & Boskers, 1997) has reinforced the notion that school learning is the

outcome of a complex interplay of environmental (e.g., quality and amount of instruction, opportunity) and student characteristics (e.g., cognitive ability, social skills for cooperative learning, intrinsic motivation, self-efficacy). In addition, a number of small-scale scientifically-based intervention studies (e.g., see Fuchs, Fuchs, Prentice, Burch, Hamlett, Owen & Schroeter, 2003) suggest that interventions focused on key *modifiable learner characteristics* (e.g., self-regulated learning strategies) can raise achievement levels for students with and without disabilities. Collectively, these studies suggest that attaining the goals of NCLB via scientifically-based interventions will require a focus on achievement *and*, where appropriate, more readily *modifiable non-cognitive learner characteristics associated with school learning*.

It is the primary thesis of this paper that the identification of the non-cognitive variables that facilitate academic learning (hereafter referred to as *Essential Student Academic Facilitators*, [*ESAF*]) for all students, and for students who are at the greatest educational risk (i.e., students with disabilities; disadvantaged students; "at risk" or "gap" students), is critical for achieving the goals of NCLB. *Improving academic performance for all learners should leverage all known knowledge and expertise in the area of learning, including, but not limited to, consideration of non-cognitive achievement characteristics*.

Based on a comprehensive review of the research literature, it is our conclusion that there exists a rich and important base of educationally relevant psychological and educational research related to the design of effective educational interventions. However, to date, the literature dealing with *Essential Student Academic Facilitator* (ESAF) characteristics has not been properly organized and integrated. This executive summary is part of a larger research synthesis report. The primary purpose of the final comprehensive research synthesis is to:

- Summarize the results of psychological and educational literature targeted at the identification of the essential (non-cognitive/academic) student academic facilitators (ESAF) for all students.
- Identify the key ESAF characteristics (for all students) that, in addition to facilitating academic performance, might be targeted as valued (and measured) outcomes of education.

- Identify an over-arching conceptual framework by which to organize the essential learner characteristic and outcome literature that can, in turn, inform the design and evaluation of national, state, and local efforts to identify scientifically-based effective educational practices for all students.

Building an education "bench-to-trench" bridge: The need for an organizing framework

Students, regardless of their individual characteristics, learn in a context. Cognitive and non-cognitive characteristics interact with a variety of environmental variables to produce educational outcomes. Walberg's (1981) theory of educational productivity, which is one of the few empirically tested theories of school learning based on an extensive review and integration of over 3,000 studies (DiPerna, Volpe & Stephen, 2002), served as the "jumping off" point for this comprehensive literature review. Wang et al.'s (1977) comprehensive research synthesis identified 28 categories of learning influence. Of the 11 most influential domains of variables, 8 involved social-emotional influences: classroom management, parental support, student-teacher interactions, social-behavioral attributes, motivational-affective attributes, the peer group, school culture, and classroom climate (Greenberg et al., 2003). More distant background influences (state, district, or school policies, organizational characteristics, curriculum and instruction) were less influential. Wang et al. (1997) concluded that "the direct intervention in the psychological determinants of learning promise the most effective avenues for reform" (p. 210). Wang et al.'s research review targeted *student learner characteristics (i.e., social, behavioral, motivation, affective, cognitive, and metacognitive) as the set of variables with the most potential for modification that could, in turn, significantly and positively affect learner outcomes* (DiPerna et al., 2002).

Clearly the ESAF characteristics that should be targeted for intervention, and/or that should be designated as valued outcomes of school learning, must be circumscribed and prioritized. Furthermore, the identification of the ESAF characteristics (and proposed organizing framework) must emerge from the extant empirical research and theoretical literature--not from the advocacy, policy, or political arenas. *If no child is to be left behind,*

the best evidence from science must be the driving force behind the identification of Essential Student Academic Facilitators (ESAF) and valued outcomes.[1]

The literature synthesis summarized in the larger comprehensive report reveals a burgeoning of ESAF characteristic research during the past 30 years. The primary ESAF characteristics identified during the current review are listed and briefly defined in Table 1.[2] Table 1 reveals a richness of variables lurking beneath the broad Walberg domain of *student characteristics.*

Insert Table 1 about here

Although a variety of models of school learning have been articulated (see Haertel et al., 1983, for a review), it is only recently that a model with sufficient breadth has emerged with the potential to serve as an educational and psychological bench-to-trench "bridging" mechanism. An adapted version of the Snow model of academic aptitude (see Corno, Cronbach, Kupermintz, Lohman, Mandinach, Porteus & Talbert, 2002) is also described in the main body of the final comprehensive report. Figure 1 represents our summary of the major student characteristic domains embedded in the adapted Snow model. The practical implications of the Snow organized ESAF characteristics are amplified vis-à-vis their organization as per four categories of questions (Wigfield & Eccles, 2002).

Insert Fig. 1 about here

- ***Do I (does she/he) want to do this activity and why*?** Student characteristics related to this question include, but are not limited to, achievement interests and values, intrinsic motivation, academic goal orientation, and social goals and their relations to motivation.

[1] The current emphasis on ESAF characteristics of learners should not be interpreted as reflecting a return to a "within-person" or medical model of disability. The focus of the current paper is only on the person *portion* of the person-environment interaction model that characterizes the new-paradigm-of-disability framework (U.S. Department of Education, Office of Special Education and Rehabilitative Services, NIDRR, 2000).
[2] Each ESAF characteristic is defined and discussed in detail in the main body of the comprehensive report.

- ***Can I (he/she) do this activity?*** When pondering this question, students reflect on a number of motivational self-beliefs (e.g., self-confidence, academic self-concept, and academic self-efficacy).
- ***What do I (does she/he) need to do to succeed****?* A bridge must link cognitive/academic abilities and motivation with actual behavior. The primary link is the presence of self-regulated learning strategies (e.g., study skills, cognitive and learning strategies, engagement, and adaptive help-seeking) that allow individuals to manage efforts to accomplish their goal.
- ***How do I (does he/she) need to behave towards others to succeed****?* Traditionally U.S. schools have valued student characteristics such as citizenship, conformity to social rules and norms, cooperation, and positive social behavior (Wentzel, 1993). The learner who does not know how (or who lacks the appropriate skills) to behave appropriately and responsibly is at increased risk for academic failure.

Essential Student Academic Facilitator (ESAF) behaviors are valued educational outcomes

A number of recent national expert panel reports have listed most, if not all, of the identified ESAF characteristics as valued outcomes for all students. These national reports reinforce the conclusion articulated in the main body of the comprehensive report that, in addition to a focus on academic achievement, educational reform and policy initiatives must recognize the importance of understanding the relationship between ESAF characteristics and school success for all students. Examples include:

- *Secretary's Commission on Achieving Necessary Skills (SCANS).* This commission delineated the skills young people need to succeed in the world of work (What Work Requires of Schools, 1991). A mapping of these skills to the ESAF characteristics is presented in Figure 2.
- *National Educational Goals Panel (NEGP, 2000).* This panel has recommended multifaceted school readiness assessments (Fantuzzo, 2003) that should include ESAF-related behaviors such as approaches toward learning, cooperativeness, and persistence.

- *U. S. Department of Health and Human Services Surgeon Generals National Conference on Mental Health Report (USDHHS, 1999, 2001*). This report raised concerns about the significant portion of children (approximately 20% of preschool children) exhibiting emotional and behavioral problems (USDHHS, 1999).
- *National Academy of Sciences*. A NAS report (NRC, 2000) on early childhood development concluded that for many vulnerable students, successful entrance into school is compromised by impairments in social, self-regulatory and emotional behaviors.
- *White House Summit on Early Childhood Cognitive Development*. At this summit, Grover J. (Russ) Whitehurst, Assistant Secretary of Education for Research and Improvement, U.S. Department of Education stated that "*both social-emotional competences such as the ability to interact well with peers and general approaches toward learning such as task persistence* [italics added] are important to later school success, over and above the effects of specific pre-academic skills" (July 26, 2001).
- *President's Commission on Excellence in Special Education*. In the final report, *A New Era: Revitalizing Special Education for Children and their Families (U.S. Department of Education, 2002)*, the recommendation was made to reform special education services via a greater focus on effective interventions and less emphasis on assessment for elgibility and procedural requirements. The importance of recognizing and intervening early in the treatment of student behavioral and emotional difficulties in school was recommended. An emphasis on ESAF characteristics, many which contribute to positive post-school outcomes, is consistent with the reports emphasis on the need for more effective school-to-work transition programming efforts.
- *U. S. Office of Special Education and Rehabilitative Services (OSERS) Self-determination Initiative*. In 1988 OSERS started the *self-determination* (SD) initiative. The SD initiative focuses on enhancing system-wide activities to empower people with disabilities to have more input and

decision-making in the choices that affected their own lives (Ward, 1999). A review of Figure 3 reveals a strong correspondence between the ESFA characteristics identified via the current literature synthesis and the characteristics identified by professionals and individuals with disabilities and their family members. *Clearly the ESFA embraces most all, if not all, valued self-determination outcomes for students with disabilities, including those with the most severe disabilities.*

- The *National Center on Educational Outcomes (NCEO).* Via an extensive stakeholder consensus-building process, NCEO developed a conceptual model of educational outcomes and indicators for *all* students, but with a specific focus on students with disabilities (Ysseldyke, Krentz, Elliott, Thurlow, Erickson, & Moore, 1998; Ysseldyke, Thurlow, Bruininks, Gilman, Deno, McGrew, & Shriner, 1992). The broad NCEO outcome domains are mapped to the ESAF characteristics in Figure 4. *The outcomes identified for students with disabilities by local, state, and national stakeholders are clearly represented in the ESFA characteristics identified in the current literature review*.

Insert Figures 2, 3 & 4 about here

Summary and Conclusions

The group- and subgroup-targeted achievement goals of NCLB, when combined with the individual-focused goals of IDEA, are placing ever increasing and often contradictory demands on America's schools. Most all federal and state NCLB-driven activities are focusing on raising student achievement levels, a goal few would challenge. However, the emphasis on academic achievement test scores runs the risk of ignoring essential non-academic/cognitive student academic characteristics (e.g., academic self-efficacy, self-regulated learning strategies) that have been empirically demonstrated to facilitate the achievement of the primary goal of both NCLB and IDEA (improved academic

achievement performance), and which are some of the more modifiable student-based learning characteristics.

The comprehensive report presents an extensive research literature synthesis focused on the identification of non-cognitive/achievement student learner characteristics that should be considered in the design and evaluation of national, state, and local efforts to identify scientifically-based effective educational practices for all students. These *Essential Student Academic Facilitators* (ESAFs) are some of the more instructionally relevant and modifiable student characteristics than can increase the chances of better academic outcomes (Reynolds & Lakin, 1987). In addition, most all ESAF behaviors and skills have been targeted as valued educational outcomes by national panels (e.g., NEGP, NAS, SCANs) and federally sponsored efforts at the identification of essential outcomes for all learners (e.g., OSERS Self-determination initiative; NCEO outcome and accountability framework).

Raising academic achievement levels for all students is a must. The best evidence from science reminds us that student achievement is the result of a complex interplay of multiple student and instructional characteristics. Certain non-cognitive student learner characteristics, characteristics that have consistently been identified as valued educational outcomes, must be incorporated into efforts to raise achievement levels for all students. It is important that at this time in history, when federal and state educational reforms are focused on academic achievement outcomes, that *valued non-academic student outcomes, outcomes that facilitate school learning, and that are often the most critical for the most vulnerable learners (e.g., students with disabilities, disadvantaged students, students at risk), be fully considered.*

Suggestions

The NCLB focus on student achievement goals is laudatory—if they can be attained. NCLB goals, however, focus on a narrow range of academic achievement domains. The unintended effect is a neglect of critical educational outcomes that are known to facilitate academic achievement and increase the chances of better post-school success for the widest array of diverse students. Unless current educational reform efforts broaden the focus on "what counts", the admirable academic goals for all children will likely not be attained, will leave certain subgroups marginalized in the process, and will likely demoralize, rather than

inspire, the educators who are responsible for student, school, and state success (Linn, 2003).

The following suggestions are offered as starting points for educators, federal and state policymakers, and those who design educational accountability systems, to address the challenges of raising academic performance for *all* students, while simultaneously recognizing the inherent *individual differences* of the diverse student body in the United States:

- ***Include non-academic outcomes in state and local district accountability systems***. What is measured tends to be what "counts." By also "counting" (measuring) select ESAF outcomes, which in turn can positively impact academic performance, the probability of achieving the best intents of NCLB and IDEA is enhanced. We suggest that state educational accountability systems become more "well rounded" and embrace the routine measurement of certain non-academic (ESAF) outcomes. While this is a very basic and fundamental suggestion, it is offered as an initial step in addressing the importance of these non-academic outcomes in achieving improved academic performance results. Academic accountability systems could be designed, redesigned, or be augmented with outcome measures that focus attention on research-based ESAF characteristics. The targeting of ESAF outcomes will also help educators address the implicit and explicit expectations of constituents that have repeatedly identified the importance of "non-academic/cognitive" skills for lifelong learning and successful post-school adjustment.
- ***Provide educators with professional development to enhance their ability to identify and develop Essential Student Academic Facilitator characteristics.*** University pre-service and continuing education programs should be provided guidance, technical assistance, and incentive systems to facilitate the infusion of knowledge and skills regarding the importance of broadening and including ESAF behaviors and skills in state and local district accountability systems.

- ***Consensus on "what" has been achieved—it is time to act (measure).*** Countless task forces, advisory boards, national centers, focus-groups (e.g., SCANS, NEGB, NCEO, NAS/NRS, OSERS initiatives, etc.) have produced a general consensus of valued non-academic outcomes for students. The research literature synthesis in the comprehensive report reveals a strong correspondence between consensus-based constituent valued educational outcomes and research-based ESAF outcomes. Action, specifically, action in the form of the development and implementation of measures of key ESAF outcomes is needed. The following activities, activities that will require technical assistance and incentives and funding, are suggested:
    - Use the ESAF framework proposed in the comprehensive report as the starting point for refinement. Target recognized experts in relevant domains and elicit feedback on how to better define, refine, etc., the current framework. This feedback should also include an attempt to target and prioritize those specific ESAF characteristics that are generally known to be the most related to academic achievement and post-school adjustment.
    - Using the current literature review as a starting point, commission scientifically rigorous and focused literature reviews to identify psychometrically sound measurement instruments of critical ESAF characteristics.
    - Encourage the development of new measurement instruments, preferably in the form of multiple-domain systems/batteries, for critical ESAF characteristics.
    - Provide technical assistance and incentives to state education leadership on the importance of including ESAF characteristics in their accountability systems.

- ***Identify "what works."*** The ESAF framework and research literature presented in the comprehensive report is recommended as a starting point for state and federal sponsored efforts (e.g., commissioned papers; meetings;

conferences) to identify promising educational programs and interventions (based on high-quality scientific research) that have demonstrated positive effects on ESAF characteristics, and in turn, on academic achievement. These activities should be coordinated with the *What Works Clearinghouse*

- ***Modify policies governing public funding streams.*** Local and state educational agencies need incentives and technical assistance to broaden "what counts" in their accountability systems. Policies that provide disincentives to target and measure non-academic ESAF should be revised, and new polices enacted to provide incentives for state and local policy makers to adopt a more balanced, "whole" child approach to measuring educational success.
- ***Create strategic collaborative partnerships.*** The conclusions in this report are not new. It has long been understood that addressing the needs of the whole child (physical, social and emotional as well as academic) increases their chances of higher educational attainment and successful post-school outcomes. Rather than building new programs, policymakers are encouraged to support coordinated funding and technical assistance approaches that build long-term relationships among schools and other organizations/programs that emphasize the enhancement of the ESAF characteristics illuminated in this report.

For example, the *Coalition for Community Schools* (CCS) (Blank, Melaville & Shah, 2002) emphasizes the importance of both academic and non-academic outcomes. Another example of strategic partnering would be with the *Social and Emotional Learning* (SEL) programs of the *Collaborative to Advance Social and Emotional Learning* (CASEL) (Payton, Wardlaw, Graczyk, Bloodworth, Tompsett, and Weissberg, 2000). Within the *U. S. Office of Special Education and Rehabilitative Services (OSERS)*, a number of programs and initiatives (e.g., Self-determination Initiative; NCEO conceptual model of educational outcomes for all students*)* are natural strategic partnerships for students at risk and those with

disabilities. Other possible strategic funding and technical assistance partnerships need to be identified.

Comprehensive Report

I. Introduction

"Each mind has its own method"

Emerson, 1841

"In a world as empirical as ours, a youngster who does not know what he is good at will not be sure what he is good for"

Fridenberg, 1959

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

Individual differences in academically related characteristics can make for success or failure in one of life's most important pursuits—obtaining an education. As a result, a primary focus of applied educational psychologists has been the identification of methods that allow each individual to achieve their maximum educational performance. Unfortunately, after a century of applied research on the identification of student characteristics and learning environments, "a coherent and parsimonious theory of performance is still lacking" (Corno, Cronbach, Kupermintz, Lohman, Mandinach, Porteus & Talbert, 2002).

In education, teachers strive to arrange conditions that elicit optimal performance in all students. However, the optimal learning conditions and techniques for one student may not facilitate the best performance in another student. According to Corno et al. (2002), each individual "has worked out over many years how to respond in her own way to symbol systems and social cues. Each has aptitude for particular situations. Recognizing specifically the qualities each person brings to a situation, then adjusting the situation to improve the fit—these are major tasks of those who work with people" (p. 1). Fortunately, "theoretical and technical advances in research on learning and effective schooling, particularly those which have occurred during the past decade, have greatly influenced the nature and type of information on individual differences that has been considered instructional planning and educational placement of learners with special needs" (Wang, 1987, p. 3)

II. Background and context

> **"The latter half of the 20th century was marked by recurring efforts at school reform and improvement in the United States. Yet…this cycle of reforms—like a pendulum—has continued to move from one fad to another with little evidence of national progress. As each new reform is widely disseminated and implemented, the research follows closely behind, sometimes weighing in on an issue only after schools have moved on to the next apparent innovation. Recent national reform and policy movements, however, may halt this frustrating cycle" (Borman, Hews, Overman & Brown, 2003, p. 125**

Today's schools face multiple, and often competing, demands to educate *all* children to their highest levels of achievement. Currently, schools are being faced with the tension produced when the requirements of a federal law (No Child Left Behind—NLCB) meets the reality of the law of individual differences. Concurrently, America's schools are faced with the requirement to educate an increasingly diverse student body. For example, there has been a noticeable increase in the number of children and adolescents in schools with emotional, behavior, and learning problems (Ringeisen, Henderson & Hoagwood, 2003). Approximately 5.68 million students between the age of 6 to 21 years received Special Education services (US Dept of Education, 2001) at a cost of approximately 50 billion dollars (Chambers, Parrish & Harr, 2002).

The "complex educational changes demanded by current standards-based reform initiatives, combined with an increasingly heterogeneous student population largely composed of students whose schools traditionally have failed, have pushed the technology of schooling to unprecedented levels of complexity" (Borman et al., 2003, p. 126). How can America's schools ensure that all students meet specified performance standards in the context of an increasingly diverse population of students? Can accountability-driven reforms raise the average (mean) level of achievement with a concurrent recognition and respect for the variability (standard deviation) of an ever increasingly heterogeneous student population? How can the demands of two federal laws (both having the best interests of children and adolescents in mind), one focused more on raising group averages (NCLB) and the other focused more on individual student-based programming (Individuals with Disabilities Act—IDEA), be integrated so the *intent of neither policy is left behind?*

In the context of the individual-group policy tension, educational consumers place additional expectations on schools (Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnick, & Elias, 2003). Consumers' expectations do not stop at the door of academic achievement. "In addition to producing students who are culturally literate, intellectually reflective, and committed to lifelong learning, high-quality education should teach young people to interact in socially skilled and respectful ways; to practice positive, safe, and healthy behaviors; to contribute ethically and responsibly to their peer group, family, school, and community; and to posses basic competencies, work habits, and values as a foundation for meaningful employment and engaged citizenship" (Greenberg et al., 2003, p. 467).

At a time when educational reform is focused like a laser beam on raising academic achievement, what can be done to ensure that *valued non-academic outcomes, outcomes that facilitate school learning, and that are often the most critical for the most vulnerable students (e.g., students with disabilities, disadvantaged students, students at risk), are not left behind?*

The Current Policy Context

Since the 1980's, a "variety of competing and often contradictory reforms" (Borman et al., 2003, p. 126) have been invoked in the name of educational reform. In many respects, the 1983 publication of "A Nation at Risk", a report that concluded that declining educational performance was due to significant inadequacies in America's educational process, planted the seed that blossomed into the current wave of educational reform. The bipartisan educational reform initiative reflected by the No Child Left Behind (NCLB) legislation is the result. According to President George W. Bush (2002):

> The quality of our public schools directly affects us all as parents, as students, and as citizens. Yet too many children in America are segregated by low expectations, illiteracy, and self-doubt. In a constantly changing world that is demanding increasingly complex skills from its workforce, children are literally being left behind. It doesn't have to be this way.

According to NCLB, the federal government must help close the achievement gap between disadvantaged, vulnerable, and at-risk students and their classmates. The means for closing the achievement gap include the following select elements:

- *High standards* in reading and math, plus challenging content standards in history and science.

- *Annual achievement assessments* for every child in grades 3-8. States will be required to report student assessment results to parents. In order to hold schools accountable for improving the performance of all students, these results must also be reported to the public and be disaggregated by race, gender, English language proficiency, disability, and socio-economic status.
- The establishment of *Adequate Yearly Progress* (AYP) for *all* students.
- Improved literacy. The *Reading First* initiative has the goal of *every* child reading by third grade vis-à-vis the use of scientifically based approaches to reading.
- An emphasis on research-based *early childhood reading* in Head Start and pre-school programs.

In addition to an emphasis on scientifically based interventions and programs, key NCLB initiatives (e.g., AYP) are consistent with the growing emphasis on accountability in education in general. Accountability surveys, assessments, and data collection programs are important in the evaluation of the condition and progress of education (Whitehurst, 2003). However, given society's desire for a broader vision of education, the current federal, state, and district emphasis on achievement accountability systems might produce a constrained tunnel-vision approach to gauging educational success (Greenberg et al., 2003). This narrow focus on academic achievement is reflected in most major research synthesis in education. For example, Borman et al.'s (2003) recent meta-analyses review of the effects of *comprehensive school reform* (CSR) initiatives focused on only one outcome—academic achievement.

What We Know From Educational Research: Select Illustrative Studies

"We see only what we know."

Johann Wolfgang von Goethe (1749-1832) German poet, dramatist

According to Grover J. (Russ) Whitehurst, Director, Institute of Education Sciences, U.S. Department of Education, educational research is a "field in which there is a gulf between the bench and the trench" (Whitehurst, 2003, p. 4). Much educational research has not provided applied answers to the question of "what works best for whom under what circumstances?" (Whitehurst,

2003, p. 12). However, certain methodologically sound educational research projects have provided some answers and, more importantly, have suggested promising directions for future educational research and intervention focused on the education of all children. A few select illustrative examples are summarized below.

Studies from the bench

Scheerens and Boskers (1997) scholarly review of multi-level research studies (*The Foundations of Educational Effectiveness*) provides insight into the percent of student achievement variance attributed to different variables. Briefly, student achievement variance was attributed to three major broad sources—schools attended (20%), individual classrooms and teachers (20%), and differences among the students in each classroom (60%). Scheerens and Boskers (1997) were unable to further partition the 60% of achievement variance due to student differences. In addition to inherent student characteristics, a portion of this 60% variance figure is likely attributable to socioeconomic status, prior achievement, and the effects of prior instruction.

Hints at the composition of the 60% of student variance are provided by other recent large-scale studies (e.g., National Assessment of Educational Progress: NAEP). Aside from the robust finding that prior achievement and cognitive ability (IQ) exert a significant effect on student achievement, research presented at the *Secretary's Summit on Mathematics* (2003) concluded that:

- Ability tracking should be abandoned as it negatively effects children in lower groups.
- Structured *peer* feedback and/or instruction had a positive effect on achievement.
- Learning should be *intrinsically motivated* (because it is "fun"), as motivated students will maintain the necessary persistence during repeated practice directed towards automatization of skills. This is particularly important amongst younger children.

Byrnes' (2003) recent multi-level analysis of NAEP provides additional insight into the factors predictive of achievement. Byrnes reported that nearly half of 12th-graders' math performance could be accounted for by indicators of socioeconomic status, exposure to learning opportunities, and *motivational* aspects of math (i.e., positive perceptions of one's own ability,

specifically math abilities). An important conclusion from this investigation was that important developmental outcomes are determined by a confluence of multiple variables.

Collectively, the aforementioned illustrative large-scale national studies reinforce the notion that *school learning is the outcome of a complex interplay of environmental (e.g., quality and amount of instruction, opportunity) and student characteristics (e.g., cognitive ability, social skills for cooperative learning, intrinsic motivation, self-efficacy).* In order for states and districts to achieve the NCLB goals it is important that not only scientifically-based interventions are identified, but that educational interventions include, where appropriate, *modifiable* student characteristics that facilitate school achievement.

It is the primary tenet of this paper that the identification of learning-salient facilitators of cognitive and academic learning (hereafter referred to as *Essential Student Academic Facilitators* [ESAF]) for all students, and for students who are at the *greatest risk for being left behind* (i.e., students with disabilities, disadvantaged students, "at risk" or "gap" students), can play a significant role in achieving the goals of NCLB.

Is the identification and listing of salient ESAFs sufficient? This time, a recent small-scale research intervention study is illustrative of "what works."

A study from the trench

In an experimental investigation of the effects of self-regulated learning (SRL) strategy training on mathematical problem-solving (Fuchs, Fuchs, Prentice, Burch, Hamlett, Owen & Schroeter, 2003), 24 third-grade teachers were randomly assigned to three different treatment conditions (8 per condition—one condition being a control).[3] Fuchs et al. (2003) reported that on both immediate- and near-transfer problem-solving measures, students in the problem-solving transfer treatment condition outperformed those in the control treatment. Effect sizes (ESs) were large, and ranged from 1.24 to 1.98 across different levels of initial (pre-intervention) achievement status. More importantly, the combined problem-solving transfer and SRL treatment produced stronger ESs that exceeded 2.00 standard deviations on immediate transfer, 1.81 to 2.40 on near-transfer, and between 0.81 and 1.17 on far transfer. The authors concluded that "whereas the problem-solving transfer treatment alone failed to promote reliable effects on the far-transfer

[3] As will be discussed in the main body of this report, SRL strategies comprise one of a number of important ESAF domains.

measure (the most novel, and therefore truest, measure of mathematical problem solving in this study), the combination of problem-solving transfer and SRL succeeded in effecting this challenging outcome" (Fuchs et al., 2003, p. 313).

More importantly, Fuchs et al. (2003) reported comparable growth for the students with disabilities in the study, a group for whom learning transfer effects are often negligible. On immediate-transfer measures, ESs for students with disabilities (when compared to controls) were large: 1.07 for the transfer condition; 1.43 for the transfer plus SRL condition. Although the ESs failed to achieve statistical significance, Fuchs et al. (2003) considered the ESs of 0.95 (near-transfer) and 0.58 (far-transfer) to be "notable."

In summary, the illustrative large- and small-scale research investigations briefly summarized here suggest that achieving the mandate of "leaving no child behind" has a greater probability of success if, in addition to well-designed academic performance accountability systems for all students, the identified scientifically-based, content-focused educational interventions and programs incorporate known modifiable ESAF characteristics. Improving academic performance for all students should leverage all known knowledge and expertise in the area of learning, including, but not limited to, consideration of non-cognitive achievement characteristics in intervention and reform initiatives.

III. Purpose of the Paper: What are the ESAF Characteristics?

Intrinsic motivation…self-regulated learning strategies…social skills for cooperative peer-based instruction…motivation…positive perceptions of achievement.

Do these characteristics represent the complete pool of non-cognitive and achievement based student facilitator behaviors and skills that should receive attention in efforts to raise achievement levels for all children? What are the possible *Essential Student Academic Facilitators* (ESAF) that should be included in an effort to enhance achievement?

Too often child advocates and researchers, despite good intentions, have targeted "feel good" variables with good face or consumer validity (Greenberg et al., 2003). This approach can, and has, resulted in the proposal and implementation of fragmented and faddish educational initiatives. If the "bench-to-trench" research-to-applied practice gulf is to be bridged, ESAF

characteristics should emerge from a distillation of the extant psychological and educational research.

It is our belief that much academically relevant psychological and educational research exists, but it has not been properly organized and integrated in a manner that can help bridge the bench-to-trench gulf in education.

Given the above, the primary purposes of this paper are to:

- Summarize the results of a comprehensive review of relevant psychological and educational literature targeted at the identification of quality and relevant research-based findings that describe the critical non-cognitive/academic learning-related characteristics of students (ESAF), particularly the ESAF characteristics that may facilitate higher academic performance for the most vulnerable students (e.g., students with disabilities, students at risk).[4]
- Identify the key ESAF characteristics (for all students) that, in addition to academic performance, should be targeted as valued (and measured) outcomes of education.
- Determine if an over-arching conceptual model exists that can serve as a tentative framework from which to: (a) organize the essential student characteristic and outcome literature for all students and (b) serve as an initial "rough cut" taxonomic list that can inform the design and evaluation of national, state, and local efforts to identify scientifically-based effective instruction and monitoring practices for all students.

IV. The Big Picture: Models of School Learning

Students, regardless of their individual characteristics, do not learn in vacuums. Cognitive and non-cognitive characteristics interact with a variety of environmental variables to produce various educational outcomes. A number of comprehensive models of school learning have been postulated to describe and explain the overall learning process. They are briefly described here so

[4] A description of the review methods is presented in Appendix B

the reader can view the relative contribution of student characteristic information in a "big picture" learning context.

Walberg's Model of School Learning: A Place to Start

Walberg's (1981) theory of educational productivity, which is one of the few empirically tested theories of school learning based on an extensive review and integration of over 3,000 studies (DiPerna, Volpe & Stephen, 2002), served as the "jumping off" point for the current review. "Wang, Haertel, and Walberg (1997) analyzed the content of 179 handbook chapters and reviews and 91 research syntheses and surveyed educational researchers in an effort to achieve some consensus regarding the most significant influences on learning" (Greenberg et al., 2003, p. 470). Using a variety of methods, Wang, et al. (1977) identified 28 categories of learning influence. Of the 11 most influential domains of variables, 8 involved social-emotional influences: classroom management, parental support, student-teacher interactions, social-behavioral attributes, motivational-effective attributes, the peer group, school culture, and classroom climate (Greenberg et al., 2003). Distant background influences (e.g., state, district, or school policies, organizational characteristics, curriculum, and instruction) were less influential. Wang et al. (1997) concluded that "the direct intervention in the psychological determinants of learning promise the most effective avenues for reform" (p. 210). Wang et al.'s research review targeted *student learning characteristics (i.e., social, behavioral, motivational, affective, cognitive, and metacognitive) as the set of variables with the most potential for modification that could, in turn, significantly and positively effect student outcomes* (DiPerna et al., 2002).

More recently, Zins, Weissberg, Wang and Walberg, (in press) demonstrated the importance of the ESAF domains of motivational orientations, self-regulated learning strategies, and social/interpersonal abilities in facilitating academic performance. Zins et al. reported, based on the large-scale implementation of a Social-Emotional Learning (SEL) program, that student's who became more self-aware and confident regarding their learning abilities, who were more motivated, who set learning goals, and who were organized in their approach to work (self-regulated learning) performed better in school. According to Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnick, & Elias, (2003), Zins et al. (in press) assert that "research linking social, emotional, and academic factors are sufficiently strong to advance the new term social, emotional, and academic

learning (SEAL). A central challenge for researchers, educators, and policymakers is to strengthen this connection through coordinated multiyear programming"(p. 470).

Walberg and associates' conclusions resonate with findings from other fields. For example, the "resilience" literature (Garmezy, 1993) grew from the observation that despite living in disadvantaged and risky environments, certain children overcame and attained high levels of achievement, motivation, and performance (Gutman, Sameroff & Eccles, 2002). Wach's (2000) review of biological, social, and psychological factors suggested that no single factor could explain "how" and "why" these resilient children had been *inoculated* from the deleterious effects of their day-to-day environments. A variety of promotive (direct) and protective (interactive) variables were suggested, which included, aside from cognitive abilities, such ESAF characteristics as study habits, social abilities, and the absence of behavior problems (Guttman et al., 2003).

Haertel, Walberg, and Weinstein (1983) identified 8 major models of school learning that are either based on psychological learning theory (Glaser, 1976) or time-based models of learning (Bennett, 1978; Bloom, 1976; Carroll, 1963; Cooley & Leinhardt, 1975; Harnischfeger & Wiley, 1976). Despite variations in names of constructs, Haertel et al. (1983) found that most of the 8 theories included variables representing ability, motivation, quality of instruction, and quantity of instruction. Constructs less represented in the models were social environment of the classroom, home environment, peer influence, and mass media (Watson & Keith, 2002). Haertel et al.'s (1983) review of theories, multiple quantitative syntheses of classroom research, and secondary data analyses of large-scale national surveys (Reynolds & Walberg, 1992), generally support Walberg's global model of educational productivity. Walberg's model specifies that:

> Classroom learning is a multiplicative, diminishing-returns function of four essential factors— student ability and motivation, and quality and quantity of instruction—and possibly four supplementary or supportive factors—the social psychological environment of the classroom, education-stimulating conditions in the home and peer group, and exposure to mass media. Each of the essential factors appears to be necessary but insufficient by itself for classroom learning; that is, all four of these factors appear required at least at minimum level. It also appears that the essential factors may substitute, compensate, or trade off for one another in diminishing rates of return: for example, immense quantities of time

> may be required for a moderate amount of learning to occur if motivation, ability, or quality of instruction is minimal (Haertel et al., 1983, p. 76).

An important finding of the Walberg et al. large scale causal modeling research was that nine different educational productivity factors were hypothesized to operate vis-à-vis a complex set of interactions to account for school learning. Additionally, some student characteristic variables (motivation, prior achievement, attitudes) had indirect effects (e.g., the influence of the variable "went through" or was mediated via another variable).

The importance of the Walberg et al. group's findings cannot be overstated. Walberg's (1981) theory of educational productivity is one of the few empirically tested theories of school learning and is based on the review and integration of over 3,000 studies (DiPerna et al., 2002). Walberg et al. have identified key variables that effect student outcomes: student ability/prior achievement, motivation, age/developmental level, quantity of instruction, quality of instruction, classroom climate, home environment, peer group, and exposure to mass media outside of school (Walberg, Fraser & Welch, 1986). In the current context, the first three variables (ability, motivation, and age) reflect characteristics of the student. The fourth and fifth variables reflect instruction (quantity and quality), and the final four variables (classroom climate, home environment, peer group, and exposure to media) represent aspects of the psychological environment (DiPerna et al., 2002). Clearly student characteristics are important for school learning, but they only comprise a portion of the learning equation.

More recently, Wang, Haertel, and Walberg (1993) organized the relevant school learning knowledge base into major construct domains (State & District Governance & Organization, Home & Community Contexts, School Demographics, Culture, Climate, Policies & Practices, Design & Delivery of Curriculum & Instruction, Classroom Practices, Learner Characteristics) and attempted to establish the relative importance of 228 variables in predicting academic domains. Using a variety of methods, the authors concluded that psychological, instructional, and home environment characteristics ("proximal" variables) have a more significant impact on achievement than variables such as state-, district-, or school-level policy and demographics ("distal" variables). More importantly, in the context of the current paper, *student characteristics (i.e., social, behavioral, motivational, affective, cognitive, metacognitive) were the set of proximal variables with the most significant impact on learner outcomes* (DiPerna et al., 2002).

It is beyond the scope of the current paper to discuss in detail the major components of the school learning models summarized by Walberg and associates. A sampling of the breadth of the knowledge domains identified is presented in Figure 5. The student characteristic domain, which is the focus of this paper, is discussed next.

Insert Figure 5 about here

Models of School Learning: The Importance of Learner Characteristics

Inspection of Figure 5 indicates that despite differences among the major models of school learning, significant commonalities exist across the models. According to Walberg (1980), all models specify certain conditions prerequisite for effective instruction, characteristics of the teaching-learning process, and the quantifiable outcomes of schooling with which they are concerned. In addition, several theorists discuss environmental conditions which include teacher background, curriculum and institutional factors, and cultural context. All theorists recognize the contribution of certain intrinsic student characteristics in the form of cognitive (e.g., aptitude, ability to comprehend instruction, prior achievement) and attitudinal (e.g., perseverance, motivation, self-concept as a student) variables. As summarized by Wang et al. (1993, see Figure 5), the major categories of student characteristics important for academic learning are student demographics, history of educational placement, social and behavioral outcomes, motivation and affective, cognitive, metacognitive, and psychomotor abilities (Gerlach, Aaside, Humphreys, Gade, Paulson & Law, 2002).

Five of the seven learner characteristic domains (social and behavioral, motivational and affective, cognitive, metacognitive, and psychomotor) reflect intrinsic traits or states of the student. Although serving a valuable heuristic function for model-based research and literature integration, each of these five student characteristic categories refer to separate broad and complex multivariate domains of human behavior. For example, Carroll's (1993) recent meta-analysis of the extant factor analysis research on human cognitive abilities suggests that the cognitive domain alone includes, under a single general intellectual ability (*g*), at least 8 broad cognitive domains and 70 or more narrow or specialized cognitive abilities. Similar broad multivariate taxonomies have been presented in the other broad student characteristic domains. The breadth of potentially important

student characteristics (and potential valued educational outcomes) for students with and without disabilities is staggering.

Clearly the ESAF characteristics that should be targeted for intervention, or that should be designated as valued outcomes of school learning, must be circumscribed and prioritized. The remainder of this paper describes a structure for identifying the ESAF characteristics that should be targeted in order for all students to maximize their educational attainment. An assumption of the authors is that the identification of the ESAF characteristics and proposed organizing framework must emerge from the extant empirical research and theoretical literature, and not from the advocacy, policy, or political arenas. *If no child is to be left behind, the best evidence from science must serve as the driving force for the identification of Essential Student Academic Facilitators (ESAF) characteristics and valued outcomes.*

Models of School Learning: The Importance of a Larger Paradigm-of-Disability Framework

The primary focus of this paper is the salient ESAF characteristics of school learning for students with disabilities. This emphasis on ESAF characteristics should not be interpreted as reflecting a return to a "within-person" or medical model of disability. The prior discussion of the larger learning context (models of school learning), which also includes environmental factors (e.g., instructional quality), recognizes that ESAF characteristics occur within a person-to-environment context. The focus of the current paper is only on the *person portion* of the person-to-environment interaction model that characterizes the new-paradigm-of-disability framework (U.S. Department of Education, Office of Special Education and Rehabilitative Services, NIDRR, 2000).

The new social model disability paradigm defines disability as "a complex interactive process involving biological, behavioral, and environmental (social and physical) risk factors, and quality of life" (Pope & Tarlow, 1991, p. 10). Accordingly, the ESAF characteristics described in this paper, together with other individual characteristics (e.g., impairments, functional status, socioeconomic characteristics), interact with "characteristics of the natural, built, cultural, and social environments" (U.S. Department of Education, Office of Special Education and Rehabilitative Services, NIDRR, 2000, p. 2). The student characteristics enumerated in this review

must subsequently be integrated and interpreted in the larger holistic student–environment model (Olkin & Pledger, 2003).

ESAF Characteristics: An Embarrassment of Riches in Search of Order

A limitation of the Walberg model is the macro focus on monolithic domains, domains that fail to convey the richness, multivariate complexity, and specificity needed for scientifically-based applied research and intervention. Our review of the literature revealed a burgeoning of ESAF characteristic research during the past 30 years. The primary ESAF characteristics identified in the current review are listed and briefly defined in Tables 1 and 2.[5] Table 1 reveals a richness of variables beneath the broad Walberg domain of *student characteristics.*

Insert Table 2 about here

Characteristic of the "bench-to-trench" educational research-to-practice gap, most of the student characteristic related research has focused on single behaviors or traits in isolation, have studied the same characteristic at different levels of generality (e.g., motivation vs. intrinsic motivation), or have not been integrated into an overarching taxonomy or model. The diversity of behaviors and traits listed in Table 1 suggests an "embarrassment of riches" in our understanding of ESAF characteristics.

Although a variety of models of school learning have been articulated (see Haertel et al., 1983, for a review), it is only recently that a model with sufficient breadth and depth has emerged with the potential to serve as a "bridging" mechanism between educational and psychological theory/research and educational practice. Based on a systematic program of educational research, the integration of the extant literature (which included a review of 4 existing taxonomies; Snow, 1973), and an emphasis on the relatively stable constructs causally related to educational performance, Richard Snow ventured a provisional taxonomy (Corno et al., 2002; Snow, Corno, & Jackson, 1996) .

The complete Snow model is described in the main body of this report. The major student characteristic domains of the Snow model were presented previously in Figure 1. The literature reviewed for the current paper contributed to the "fleshing out" of the broad and narrow ESAF

[5] Each ESAF characteristic is defined and discussed later in the main body of this report.

characteristics listed in Figure 1. The meaning of the ESAF characteristics are amplified by the 4 categories of questions presented in Figure 1 (Wigfield & Eccles, 2002).

- *Do I (does she/he) want to do this activity and why*? Student characteristics related to this question include, but are not limited to, achievement interests and values, intrinsic motivation, academic goal orientation, and social goals and their relations to motivation. Obviously, students who have repeated consistent school failure would, as a group, be predicted to respond in the negative to this question.
- *Can I (he/she) do this activity?* When pondering this question, students reflect on a number of motivational self-beliefs (e.g., self-confidence, academic self-concept, academic self-efficacy) that have dominated social cognitive models of motivation research the past three decades. Although germane to all students, this question is particularly salient for students who have experienced repeated academic failure (e.g., students with disabilities, disadvantaged students).
- *What do I (does she/he) need to do to succeed?* High motivation and positive self-beliefs are necessary but insufficient conditions for succeeding in educational environments. A bridge must link cognitive/academic abilities and motivation with actual behavior. The primary link is the presence of self-regulated learning strategies (e.g., study skills, cognitive and learning strategies, engagement, adaptive help-seeking) that allow individuals to manage efforts to accomplish their goal.
- *How do I (does he/she) need to behave towards others to succeed?* Traditionally U.S. schools have valued student characteristics such as citizenship, conformity to social rules and norms, cooperation, and positive social behavior (Wentzel, 1993). The student who does not know how (or who lacks the appropriate skills) to behave appropriately and responsibly is at increased risk for academic failure.

V. ESAF Characteristics: Valued Educational Outcomes?

Is it safe to assume that the *Essential Student Academic Facilitator* (ESAF) characteristics identified from the current research synthesis correspond with the valued outcomes of consumers? *Yes*. A number of examples are briefly summarized below. Three are illustrated in Figures 2-4.

National Expert Panels and Reports

A number of recent national expert panel reports have listed most, if not all, of the identified ESAF characteristics as valued outcomes for students (Fantuzzo, Bulotsky, McDermott, Mosca, & Lutz, 2003). These national reports reinforce the conclusion articulated in this paper that (in addition to a focus on academic achievement) educational reform and policy initiatives must also recognize the importance of understanding the relations between ESAF characteristics and school success for all learners.

In their final report ("What Work Requires of Schools", 1991), the *Secretary's Commission on Achieving Necessary Skills* (SCANS) delineated the skills young people need to succeed in the world of work. A mapping of these skills with the ESAF characteristics is presented in Figure 2. More recently, the *National Educational Goals Panel* (NEGP, 2000) recommended multifaceted school readiness assessments (Fantuzzo, et al., 2003) that should include such ESAF-related behaviors as approaches toward learning, cooperativeness, and persistence. In addition, the *U. S. Department of Health and Human Services Surgeon General's* national conference on mental health report (USDHHS, 1999, 2001) raised concerns about the significant portion of children (approximately 20% of preschool children) exhibiting emotional and behavioral problems (USDHHS, 1999). This finding was also echoed in the *National Academy of Sciences* (NRC, 2000) report on early childhood development that concluded that for many vulnerable students, successful entrance into school can be compromised by impairments in social, self-regulatory, and emotional behaviors.

Finally, the importance of ESAF characteristics, particularly during the preschool and early school years, was recently reinforced in a speech at the *White House Summit on Early Childhood Cognitive Development* by Grover J. (Russ) Whitehurst, Assistant Secretary of Education for Research and Improvement, U.S. Department of Education. Secretary Whitehurst stated that "*both social-emotional competences such as the ability to interact well with peers and general*

approaches toward learning such as task persistence [italics added] are important to later school success, over and above the effects of specific pre-academic skills" (July 26, 2001).

National Special Education Initiatives

Given special education's focus on students who contribute significant variability to the distribution of school performance, it is not surprising that recent national special education initiatives have placed considerable focus on non-cognitive/achievement behaviors (ESAF characteristics) as important school outcomes. Two examples are presented in Figures 3-4.

Self-determination initiative. In 1988, the *U. S. Office of Special Education and Rehabilitative Services* (OSERS) started the *self-determination* (SD) initiative. The SD initiative focuses on enhancing system-wide activities to empower people with disabilities to have more input regarding the choices that affected their own lives (Ward, 1999). When examining Figure 3, it is refreshing to see the strong correspondence between the ESAF characteristics identified via the current research literature synthesis and the characteristics identified by a group of people with disabilities, family members, and professionals who were driven more by political advocacy grounded in personal experiences, and less by research. *Clearly the ESAF model presented in this paper, at least at a conceptual level, embraces most, if not all, of the valued self-determination outcomes for students with disabilities, including those with the most severe disabilities.*

National Center on Educational Outcomes (NCEO)

The early 1990s witnessed a flurry of activity focused on the identification of national educational goals, outcomes and indicators, and national databases that could be used to evaluate the quality and progress of education (National Education Statistics Agenda Committee of the National Forum on Education Statistics, 1990; National Education Goals Panel, 1991; Special Study Panel on Educational Indicators, 1991). Concurrently, reform initiatives in special education (Skrtic, 1991) produced increased interest in the analysis of existing national and state databases. The focus in special education evaluation shifted away from "process" to evaluating the outcomes of special education, or, "where's the data?" on effectiveness (DeStefano & Wagner, 1991).

The *National Center on Educational Outcomes* (NCEO) for students with disabilities was established in October of 1990 to work with state departments of education, national policy-making groups, and others to facilitate and enrich the development and use of indicators of educational

outcomes for students with disabilities. One of the four major initial strategic goals of NCEO was to *enhance the availability and use of outcomes information in decision making at the federal and state level*.

By an extensive stakeholder consensus building process, NCEO developed a conceptual model of educational outcomes and indicators. The broad NCEO outcome domains are mapped to the ESAF characteristics in Figure 4. A specific NCEO outcome domain is listed if it includes at least one specific narrow outcome domain and indicator that is conceptually similar to a student characteristic in the corresponding ESAF domain. *Similar to the conclusion reached regarding the self-determination valued outcomes, the outcomes identified for students with disabilities by local, state, and national stakeholders are clearly represented in the ESAF characteristics identified in the current literature review*.

VI: The Need for a Taxonomy of Learner Characteristics

"Nature does not make boundaries obvious."

Corno et al., 2002

"Classification is arguably one of the most central and generic of all our conceptual exercises…without classification, there could be no advanced conceptualization, reasoning, language, data analysis, or for that matter, social science research."

The Need for an Organizational Taxonomy

Since the beginning of our existence, humans have searched for order in the world. Today classification is an "activity that is essential to all scientific work" (Dunn & Everitt, 1982). The reliable and valid classification of entities (e.g., those listed in Table 1) requires a "guide" or taxonomy (Bailey, 1994; Prentky, 1994). Taxonomies guide the choice of constructs when conducting and synthesizing research and facilitate the evaluation of newly proposed constructs (Corno et al., 2002). Both taxonomic functions were judged as critical for the current paper, given the empirical research during the past century, which has provided a lengthy list of important learning-related traits, abilities, and/or behaviors (see Table 2), characteristics typically studied in isolation. *We believe that the most important contribution of the current paper is the integration of the reviewed literature from a variety of disciplines (e.g., special education, developmental*

psychology, educational psychology, individual differences psychology) within a provisional or "working" taxonomy of ESAF characteristics.

Some may ask if the specification of a provisional overarching academic student characteristic taxonomy is premature. We think not. We agree with Corno et al. (2002) who argued that "even a provisional taxonomy…is useful. Better taxonomies will come. New assessment methods, improved measurement models, advanced statistical techniques, new devices for recording events during learning and problem solving—all will contribute to better specified and more robust constructs and construct-systems" (p. 57). More importantly, the current literature review identified 2 promising contemporary and complimentary student characteristic taxonomies—one overarching in scope, the other more narrow. The integration and presentation of these models in a single framework, a framework which serves as the organizational structure for the remainder of this paper, is presented next.

Learner Characteristic Taxonomies

Model of academic competence (DiPerna & Elliott, 2002)

The most recent attempt to circumscribe the student characteristic domain is reflected in the work of DiPerna and Elliott (2000, 2002). In their Model of Academic Competence (MAC), academic competence is defined as "a multidimensional construct consisting of the skills, attitudes, and behaviors of learners that contribute to success in the classrooms" (p. 294). Academic competence includes the domains of academic skills and academic enablers. According to DiPerna and Elliott (2002), "academic skills are the basic and complex skills that are the primary focus of academic instruction in elementary and secondary schools. In contrast, academic enablers are attitudes and behaviors that allow a learner to participate in, and ultimately benefit from, academic instruction in the classroom" (p. 294).

Both the MAC academic skill and enabler domains include narrower and specific skills and behaviors. The academic domain reflects the acquired declarative and procedural knowledge domains of language-based achievement (reading and writing), mathematics, and critical thinking. DiPerna and Elliott's (2000) research led to the identification of four specific categories of academic enabling behaviors—interpersonal skills, motivation, study skills, and engagement (all four are included in Table 1).

According to Keith (2002), the MAC-based research of DiPerna and Elliott illustrates the benefits of using an over-arching student characteristic framework. As stated by Keith (2002):

> Identifying the most salient learner and environmental factors that affect achievement, specifying a comprehensive model of how these factors influence each other, and determining the specific causal mechanisms that explain the relationships between enablers and achievement will result in the development of a comprehensive assessment and intervention framework for learners experiencing academic difficulty. This framework, in turn, will allow practitioners to more efficiently prioritize learner and environmental factors that may be contributing to a learner's academic difficulty (p. 295).

Despite the promise of DiPerna and Elliott's (2002) MAC, we concur with Keith (2002) that the MAC model does not provide the necessary breadth and depth of coverage of potential academic enablers. The list of important ESAF's identified for this paper (see Table 1) far exceeds the behaviors and skills listed in the DiPerna and Elliot MAC. Although the more circumscribed scope of the DiPerna and Elliott MAC framework is necessary when operationalizing and conducting manageable research studies, a much more comprehensive ESAF taxonomic framework, including one that subsumes the major components of the MAC framework, is required.

The Snow Academic Aptitude Model (SAAM)

Psychologists (educational psychologists in particular) have been actively studying educationally-related individual difference characteristics for decades. Based on a systematic program of educational research, the integration of the extant literature (which includeds a review of 4 existing taxonomies; Snow, 1973), and an emphasis on the relatively stable constructs causally related to educational performance, Richard Snow ventured a provisional taxonomy (Corno et al., 2002; Snow et al., 1996). We believe the Snow taxonomy holds promise as a formative structure from which to begin to "see the forest *and* the major trees."

Briefly, the Snow Academic Aptitude Model (SAAM)[6] focuses on human aptitudes which represent "the characteristics of human beings that make for success or failure in life's important pursuits. Individual differences in aptitudes are displayed every time performance in challenging activities is assessed" (Corno et al., 2002, p. xxiii). Contrary to many current assumptions, "aptitude" is not the same as "ability." According to Corno et al. (2002), *ability* is the power to carry out some type of specific task and comes in many forms—reading comprehension, mathematical reasoning, spatial ability, perceptual speed, domain-specific knowledge (e.g., humanities), physical coordination, etc. According to Snow and colleagues, *aptitude* is more aligned with the concepts of readiness, suitability, susceptibility, and proneness, all which suggest a "predisposition to respond in a way that fits, or does not fit, a particular situation or class of situations. The common thread is potentiality—a latent quality that enables the development or production, given specified conditions, of some more advanced performance" (Corno et al., 2002, p. 3; see Scheffler, 1985). Academic aptitudes represent the multivariate repertoire of a student's degree of readiness (propensities) to learn and to perform well in general and domain-specific learning settings. Pivotal to the notion of academic aptitude is the recognition that aptitude is more than ability. As per the SAAM model (Snow et al., 1996):

> Aspects of personality—achievement motivation, freedom from anxiety, appropriately positive self-concept, control of impulses, and others—are aptitudes as well, contributing importantly to coping with some challenges. The opposite qualities—anxious caution or impulsiveness, for example—can also be assets (i.e., aptitude) at certain moments (p. 4).

Mirroring a message articulated by prominent psychologists for decades (for examples, see Spearman, 1927; Wechsler, 1944), a complete theory and taxonomy of academic aptitudes must include affective and conative processes in addition to cognitive and achievement abilities. There is more to knowing about an individual's propensity for academic learning than simply knowing their IQ scores. Even Alfred Binet, who is considered the father of the modern day intelligence test, recognized the importance of "non-intellectual" factors in cognitive or intellectual performance. According to Corno et al. (2002):

[6] Snow and colleagues did not provide a formal name (acronym) for their proposed taxonomy of academic aptitudes. The SAAM title is proposed for the first time by the authors of the current paper.

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

VII: The Snow Academic Aptitude Model: The Broad Strokes

"Aptitude is primarily of interest where learning is taking place"

Corno et al., 2002

The Broad Strokes

The SAAM organizes 9 academically related aptitude or propensity constructs into 4 broad domains (Corno et al., 2002).[7]

<u>Physical and psychomotor domain</u>

- Physical abilities
- Psychomotor abilities
- Sensory-perceptual abilities

<u>Cognitive domain</u>

- Procedural skills
- Declarative knowledge

<u>Conative domain</u>

- Motivations
- Volitional controls

Intellect or intelligent behavior

<u>Affective domain</u>

- Traits of temperament
- Characteristic moods

Personality

[7] The alert reader will recognize obvious similarities to all or parts of the SAAM and Greenspan's Model of Personal Competence, the over-arching model of AAMR 2002 classification manual, the Association for Retarded Citizens (ARC) model of Self-Determination, and the consensus-based National Center on Educational Outcomes (NCEO) Framework for Accountability.

The SAAM cognitive domain, which will not be discussed in detail in this paper, subsumes the cognitive and achievement abilities typically referred to as cognitive ability, intelligence, and academic achievement. Although Corno et al. (2002) provide a "rough cut" of the cognitive domain in terms of procedural skills (the "how" of thinking and learning) and declarative knowledge (the "what or that" of thinking and learning), contemporary models of cognitive abilities specify up to one general intellectual ability, 8 to 10 broad abilities (e.g., fluid or abstract reasoning, visual-spatial, or auditory processing), and at least 70 narrower or specific abilities (see Carroll, 1993; Carroll, 1997; McGrew & Flanagan, 1998). Without a doubt, cognitive abilities and prior achievements are the variables most frequently associated with, and invoked to explain, school achievement. However, as will be seen in this paper, a cognitive only model is incomplete. Furthermore, physical and psychomotor abilities will not be discussed in this paper; the interested reader is referred to Fleishman and Reilly (1992) for a delineation of this domain.

Although systematic investigations of conative and affective processes have enjoyed relatively short histories when compared to cognitive abilities, the cognitive and affective domains can now be roughly circumscribed. More importantly, the definition, nature, and importance of many of the narrower and specific conative and affective skills and behaviors subsumed within the broader domains have recently come into focus (as summarized in the remainder of this paper). Briefly, the conative domain circumscribes 3 broad subdomains: motivation or orientations toward self; social ability or orientations toward others; volitional controls. These are largely concerned with maintaining goal-oriented effort for school learning via "a crescendo of commitment [that] runs from wishing to wanting to intending to acting" (Corno et al., 2002, p. 87). Volitional controls conceptually reference conscientiousness- and self-regulation, and refer to a student's "state in planning for and during the action, and the controls used to sustain the intention (Gollwitzer, 1996)" (Corno et al., 2002, p. 90).

Finally, the affective domain subsumes the subdomains of temperament traits and characteristic moods. Although a person's moods are often considered transient, educators have long recognized that students often display considerable day-to-day consistency in their moods and feelings (Tellegen, 1985). Traits of temperament refer to constitutional and biologically based predispositions to display certain styles of action and reaction (e.g., sociability, activity level,

impulse control, emotionality) that may, in the educational contexts, influence educational performance.

Although affective traits and behaviors do influence academic achievement, collectively, the domain of affective characteristics is associated more with inherent constitutional and biological predispositions that are less amenable to modification via instruction and intervention. Thus, the affective domain is not covered in the remainder of this paper. In contrast, the domain of conative abilities is rich in skills, behaviors, and/or traits that have been empirically linked to educational performance for students with and without disabilities. More importantly, many of the conative subcomponents have been demonstrated to be modifiable (to a certain degree) via direct instruction or intervention or the creation of specific instructional environments and educational settings (Reynolds & Lakin, 1987). According to Reynolds and Lakin (1987), the modifiable individual characteristics can be roughly grouped under the categories of ability, motivation, attention, and attribution. All but the cognitive characteristics mentioned by Reynolds and Lakin (1987) fall within the conative component of the SAAM.[8]

VIII: The Minnesota Adaptation of the Snow Academic Aptitude Model

Figure 6 presents a proposed and adapted version of the SAAM (the Minnesota-SAAM or M-SAAM). Although the broad strokes of the M-SAAM are drawn primarily from the writings of Snow and colleagues, based on the current literature review, we found it necessary to modify portions of the model and/or the model's terminology. For example, Corno et al. (2002) describe and present *learning orientation* under the subdomain of motivational orientation. Most contemporary motivation research refers to this construct as *academic goal orientation* (see Anderman, Austin, & Johnson, 2002). In this paper we adopted the more contemporary *achievement goal orientation* terminology. Where necessary and appropriate, we modified the original SAAM terminology to reflect contemporary research and writings. In addition, our literature review uncovered specific behaviors and/or skills not included in the broad-stroke SAAM. In such cases, we reviewed the definitions of the major SAAM domains and subdomains and placed these "newcomer" characteristics under the category with the most consistent definition. For example, the relatively new research surrounding the construct domain of *thinking dispositions*

[8] Throughout the remainder of this paper Essential Student Academic Facilitators (ESAF) will be used instead of the more theoretical term "conative."

(Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000) has implicated a student's *ability conception* (Dweck, 2002) as an important contributor to academic success.

Insert Figure 6 about here

Finally, the most recent version of the SAAM makes little mention of the domain of social ability, an ability touched on in earlier articulations of the SAAM (under the category of *orientation towards others*). As noted by Snow et al. (1996), psychologists have historically displayed a strong interest in the construct of social intelligence, which is typically defined as the ability to act wisely in interpersonal relations and being sensitive towards others (Thorndike, 1920). As will be apparent later in this paper, educators and researchers have consistently demonstrated the importance of prosocial behavior and social skills to student success (O'Sullivan & Guilford, 1975; Wentzel, 1989). Social ability has 2 primary dimensions: "the ability to decode social information, including the ability to understand nonverbal cues and make accurate social inferences, and the ability to behave adaptively and effectively in social situations" (Snow et al., 1996, p. 278). These 2 dimensions roughly correspond to the *cognitive* (internal mental processes) and *behavioral* (observable behaviors) components of social functioning. As presented in Figure 6, we make a cognitive-behavioral social ability distinction in the M-SAAM.

The remainder of this review will focus on defining the domains, subdomains, and specific student characteristics of the M-SAAM (primarily the conative model in Figure 6). Although the relevant theoretical and conceptual literature will be reviewed, the primary focus is on summarizing the research literature that focuses on the importance of each student characteristic for school learning. Finally, as discussed previously, we borrowed the 3 organizing questions from Wigfield and Eccles (2002) (and added a fourth question in the domain of *orientations towards others*) to provide a pragmatic framework from which to organize the literature on ESAF abilities.

IX. "Do I Want to do this Activity and Why?"

"Motivation enhances orientations such as willingness to master tasks; goals, interests, and attitudes; and various beliefs about oneself. Each of these fosters investment of effort or task avoidance."

Corno et al. (2002)

Motivational Orientation: The Social Cognitive Model

There is little doubt that the constructs of cognitive ability (intelligence) and motivation are the most commonly mentioned and researched determinants of school learning (Gagne & StPere, 2002; Linnenbrink & Pintrich, 2002b). The "common belief within the general population is that both factors exert approximately equal causal influences on talent development" (Gagne & StPere, 2002, p. 71). Research generally supports the importance of motivation in academic achievement (DiPerna & Elliott, 2000; Stinnett, Oehler-Stinnet, & Stout, 1991). Although meta-analysis research has not supported the equal stature of both constructs, an average correlation of 0.34 has been reported between various indices of motivation and school learning (Parkerson, Lomax, Schiller, & Walberg, 1984). Thus, although not as powerful a predictor as cognitive ability (IQ), motivation is an important causal contributor to academic success.

Most contemporary research regarding the construct of motivation is based on a social cognitive model (Covington, 2000; Eccles & Wigfield, 2002). Contemporary motivation models differ from the traditional and layperson view of motivation where students are classified as either motivated or not, or where motivation is viewed as a single continuum. Motivation is currently viewed as a multifaceted dynamic phenomenon where "learners can be motivated in multiple ways and that it is important to understand the how and why of learner motivation. This change in focus implies that educators should not label learners as 'motivated' or 'not motivated' in some global fashion" (Linnenbrink & Pintrich, 2002b, p. 313).

According to the social cognitive model, motivation is not necessarily a stable trait of an individual and may vary as a function of the setting (e.g., prevailing classroom reward structures) (Covington, 2000) and specific subject matter domain (Bong, 2001). Also, understanding a student's

motivation requires knowing more than descriptive characteristics of the student (e.g., personality characteristics or cultural demographics) or the student's specific contextual environments. Understanding an individual's motivation requires a recognition and understanding of "the individual's active regulation of his or her motivation, thinking, and behavior that mediates the relationships between the person, context, and eventual achievement" (Linnenbrink & Pintrich, 2002b, p. 314). In other words, understanding a student's motivation requires an attempt to peer into the "black box" of a student's mind to understand their "thinking" about the what, where, why, and how of goal attainment. The interaction of *social* and academic motivation goals is addressed in the *orientations towards others* section of this paper. Clearly, contemporary social cognitive motivation models differ dramatically from earlier models of motivation that focused on drives and reinforcement (Covington, 2000; Wigfield & Eccles, 2002).[9]

The Multiplicity of Goals

Contemporary motivation research suggests that students often try to achieve multiple goals that can be differentiated by content, or, the "cognitive representation of what it is that an individual is trying to achieve in a given situation" (Wentzel, 1999, p. 77). Ford (1992) delineated 3 general categories of individual goals—task goals, self-assertive social relationship goals, and integrative social relationship goals. According to Ford (1992), task goals are of five major types:

- Mastery – trying to meet a challenging standard of achievement or improvement.
- Task creativity – engaging in activities that invoke artistic expression or creativity.
- Management – maintaining a productive and organized structure and order in daily life tasks.
- Material gain – increasing the amount of material/tangible goods (or money) one has.

[9] The interested reader is referred to Covington (2000) for a brief treatment of how contemporary social cognitive models of motivation evolved from, and how they differ from, earlier "drive" based models of achievement motivation.

- Safety – seeking an environment where one is secure, free from risk, and free from harm.

Goal Hierarchies

Not only may students have multiple goals, different students may have different implicit or explicit goal hierarchies (Bandura & Schunk, 1981; Wentzel, 1999). Bandura and Schunk (1981) suggested that, in the academic domain, the setting and linking of explicit near-term (proximal) sub-goals to larger long-term (distal) goals can produce greater task persistence, enhanced self-efficacy, and increased intrinsic interest in learning. It is hypothesized that students who perceive their present academic-related behavior as linked to long-term goals and objectives (indicating a linked hierarchical goal structure) tend to display more positive motivational and academic outcomes than students who do not maintain a positive future-oriented goal perspective (Wentzel, 1999). Hierarchical belief and goal systems appear important for sustaining (or undermining if not present) academic performance over time.

Key Families of Motivational Beliefs

In Figure 6, no less than 13 different types of achievement-oriented beliefs, values, and characteristics are listed collectively under the 3 subdomains of Motivational Orientation, Interests and Attitudes, and Self-Beliefs. A variety of theorists have proposed similar, yet different, models of achievement motivation. For example, Linnenbrink and Pintrich (2002a) suggest that there are 4 key families of motivational beliefs—self-efficacy, attributions, intrinsic motivation, and goal orientations. According to Wigfield and Eccles (2002), the proliferation of slightly different models has resulted in a "proliferation of terms for constructs that on the surface are relatively similar. The clearest examples of this are the variety of related-to perceptions of ability and self-efficacy, and the variety of terms for different goal orientations" (Wigfield and Eccles, 2002, p. 4). The constructs listed under the broad umbrella of *orientations towards self (motivations)* represent our best (and acknowledged imperfect) attempt to provide a reasonable summary of this ESAF characteristic domain. Each of the 13 different motivational constructs is described and defined below. Where information is available, implications for schooling and instruction are summarized.

Motivational Orientation: Academic Motivation

Definition and Conceptual Background

Academic motivation is a student's desire (as reflected in approach, persistence, and level of interest) regarding academic subjects when the student's competence is judged against a standard of performance or excellence (DiPerna & Elliott, 1999; McClelland, 1961; Wigfield & Eccles, 2002). Academic motivation is a subtype of the general construct of *effectance motivation,* which is defined as the "need" to be successful or effective in dealing with ones environment (Gresham, 1988).

"In the classroom, some degree of success and interest must accompany learning in order for learners to pursue academic tasks willingly" (Rivera, O'Shea, O'Shea, & Algozzine, 1998, p. 44). Academic motivation is hypothesized to influence academic achievement via its indirect causal influence on certain volitional control mechanisms (e.g., the use of self-regulation in learning via engagement, learning strategies, adaptive help-seeking) (DiPerna et al., 2002). However, strong academic motivation is a necessary, but not sufficient, characteristic for producing achievement. Highly motivated individuals may not engage effectively in a task due to a lack of effective self-regulatory strategies (Boekaerts, Pintrich, & Zeidner, 2001; Covington, 2000; Zimmerman, 2000).

Implications

Although much has been written about academic motivation (and its conceptual grandfather/mother—Need for Achievement), until recently little long-term developmental research had been conducted (Covington & Dray, 2002). Longitudinal research helps to answer the question of "which factors, singly and in combination, influence the willingness to learn for its own sake, and whether these factors change in number and saliency as individuals move from one level of schooling to another throughout their educational careers" (Covington & Dray, 2002, p. 34). A review of the relevant literature (Gresham, 1988, 1987; Reschly, 1987; Rivera et al., 1988; Wigfield and Eccles, 2002) suggests that:

- Most students begin school with a *global* sense of competence and interest/motivation in learning. *As early as first grade,* students begin developing a more differentiated and complex set of goals, values, and beliefs that influence their academic achievement

motivation. *Children, in general, do not come to school lacking academic motivation*.

- A student's motivation changes across the school years. Although most young students enter school with an optimistic view of their personal abilities, and are generally positively motivated to learn, academic achievement motivation decreases over time due to child-specific and school environment changes. For most students this change is normative and not problematic. However, students "at risk" for, or actually experiencing frustration with learning (e.g., students with disabilities), are at greater risk for decreased academic motivation. For example, Gresham (1997) concluded that "the effects of repeatedly failed mastery attempts are increased dependence on external approval, a perceived lack of competence of self-esteem, anxiety in mastery situations, and decrements in effectance motivation. By the time a learner with learning disabilities is identified and labeled, he or she has a well-established pattern of responding to mastery situations" (p. 288). The consequences of decreased academic achievement (effectance) motivation can result in a variety of nonproductive behaviors (e.g., noncompliance on new tasks, self-doubt, dependency on others, loss of interest). Researchers have also demonstrated that a lack of motivation plays a critical role in the achievement of students with learning disabilities. According to Reschly (1987), "there is considerable agreement, supported by reasonably strong, but not definitive, evidence, that mildly retarded persons are more subject to failure-set phenomena (involving reduced motivation and less efficient learning even on simple tasks subsequent to experiencing failures…" (p. 43)
- A student's motivation and behavior become more closely linked with age. As students mature, the goals they set and their academic-related beliefs and values begin to mesh with their actual performance—they become more reality-based. Questions still

remain regarding the direction (unidirectional or bi-directional/reciprocal) of the "cause" of this change. Nevertheless, it is clear that a student's academic motivation and actual academic performance cannot be treated separately.

- Utilization of evaluative feedback improves with age. As students move through school they develop more accurate and sophisticated understandings of the evaluative feedback received from their educational environment. Concurrently, the environmental feedback changes as reflected by transitions to letter grades, differentiated group instruction, and more frequent standardized testing. *A student's greater sensitivity (with increasing age) to direct and indirect sources of performance feedback can influence a student's motivations in a number of positive and/or negative ways.*

Motivational Orientation: Intrinsic Motivation

Definition and Conceptual Background

Intrinsic motivation describes an individual who engages in an activity because they are interested in and enjoy the activity (e.g., they perform the activity for the sake of doing it—for the enjoyment, fun, or pleasure) and not because the activity will produce a reward or result in the avoidance of a negative consequence (Eccles & Wigfield, 2002; Grolnick, Gurland, Jacob, & Decourcey, 2002; Linnenbrink & Pintrich, 2002a; Snow et al., 1996; Standage, Duda, & Ntoumanis, 2003). The converse (*extrinsic motivation*) is present when an individual engages in an activity for other (e.g., reward) or instrumental reasons (e.g., means to an end).[10] Intrinsic motivation "energizes important growth-fostering behaviors, such as seeking out challenges, exercising skills, and pursuing one's interests (Deci & Ryan, 1985)" (Reeve, Nix, & Hamm, 2003, p. 375). As such, intrinsic motivation is frequently mentioned as a causal contributor to self-

[10] It is beyond the scope of this paper to present and describe the pattern of hypothesized relations between and among the various constructs listed in Figure 6. Where appropriate, the reader is referred to other sources that summarize the components of various theoretical causal models. For example, Vallerand (1997, 2001) has proposed a hierarchical model of intrinsic-extrinsic motivation that operates at three levels of social factors, psychological mediators, motivation, and consequences (see Standage et al., 2003). The reader is also referred to Eccles and Wigfield (2002) for a comprehensive treatment of various models and theories (See Appendix A).

determination. High intrinsic motivation orientation is often considered as an indicator of the highest levels of self-determination (d'Ailly, 2003; Reeve et al., 2003; Standage et al., 2003).

Early motivation research suggested that intrinsic motivation was not trait-like in nature, but rather, was situation-specific and alterable (Harter, 1981). This "state" interpretation of intrinsic motivation suggests that a student's intrinsic motivation is amenable to environmental manipulation. Researchers are now treating intrinsic motivation as less of a situation-specific state and more of a trait-like characteristic (Eccles & Wigfield, 2002). The highly correlated components of the trait-intrinsic motivation (as would be described in an academic context) are: (a) academic learning driven by curiosity and interest; (b) a preference for hard or challenging academic tasks; and (c) a striving for competence and independent mastery (Eccles & Wigfield, 2002; Harter, 1981; Newman, 2000). Of the 3 characteristics, the first (curiosity-driven learning) is the core concept of intrinsic motivation.

Implications

The intrinsic motivation literature (Covington & Dray, 2002; Eccles & Wigfield, 2002; Gresham & Elliott, 1984; Grolnick et al., 2002; Newman, 2000; Wehmeyer, 1996; Wehmeyer, 1999) suggests the following general implications:

- Intrinsic motivation has been argued to be of particular salience for students with disabilities given that, historically, the special education delivery service model has been grounded primarily in efforts to identify and remediate student *deficits*.
- High levels of trait-like intrinsic motivation have been associated with a variety of positive student behaviors and educational outcomes. It is hypothesized that high intrinsic motivation helps students care about their learning, which subsequently increases their striving towards high achievement. High intrinsic motivation has also been associated with positive emotional experiences, higher levels of cognitive engagement, lower levels of anxiety, higher perceptions of competence, and a higher use of a variety of positive self-regulatory behaviors (e.g., adaptive help-seeking, learning

strategies, meta-cognitive strategies). Clearly, students low in intrinsic motivation are at risk for educational failure.

- According to stage-environment fit theory, when students enter a developmental stage characterized by a greater need for autonomy (e.g., pre-adolescence), the typical educational environment actually reduces opportunities for self-initiated behavior and independent thinking vis-à-vis a greater emphasis on external (e.g., teacher) control. The result can be a reduction in subject matter interest and intrinsic motivation. A logical extension is that education/learning environments should strive to provide the best possible "fit" between a student's learning environment and their developmental and level of intrinsic motivation.
- According to stage-environment fit theory and research, the use of *normative* grading (an emphasis on tangible rewards that are limited in quantity), during a time when a student is entering a stage characterized by a need for autonomy, may produce increased social comparison and feelings of competitiveness. The net result is a hypothesized reduction in intrinsic motivation.
- *Absolute* evaluation or grading standards, which increase the explicit link between degree of expended effort and achievement rewards, tend to increase a student's sense of intrinsic motivation. Merit-based grading systems are postulated to be more desirable when a student transitions into a stage characterized by the need for more autonomy and independence.
- Additional learning environment characteristics associated with higher levels of intrinsic motivation include (Grolnick et al., 2002):
    - Learning tasks should be optimally challenging—"just above the current level of ability" (Grolnick, 2002, p. 155).

- Learning should minimize excessive use of "rewards" which tend to shift the focus from an internal to external cause of behavior.
- Learning environments that provide for autonomy, involvement, and support in a non-controlling manner (in contrast to an environment with strong external controls) are associated with students who display greater intrinsic motivation, which in turn influences the development of more self-regulated learning via internalization.
- Learning environments should minimize external (adult) pressure to behave in particular ways and to solve problems for others (e.g., for teacher, mom, or dad). A focus on helping students to solve problems and tasks for themselves (with support) is more desirable. Students should not be motivated to perform out of sense of obligation or coercion (Wehmeyer, 1992).

Motivational Orientation: Academic Goal Orientation

Definition and Conceptual Background

Academic goal orientation is based on contemporary "goal-as-motives" theory where it is posited that "all actions are given meaning, direction, and purpose by the goals that individuals seek out, and that the quality and intensity of behavior will change as these goals change" (Covington, 2000, p. 174). Achievement goal theory is particularly important in education as it is believed that by differentially reinforcing some goals (and not others), teachers can influence (change) the reasons why students learn—that is, change their motivation (Covington, 2000).

Different groups of researchers have converged on strikingly similar findings regarding the importance of academic goal orientation for academic success (Snow et al., 1996). The resultant *achievement goal theory* has received considerable attention during the past decade (Eccles &

Wigfield, 2002; Linnenbrink & Pintrich, 2002b).[11] Goal theory focuses on the role that "purpose" plays in motivation attitudes and behavior (Anderman & Maehr, 1994; Eccles & Wigfield, 2002; Maehr, 1999; Snow et al., 1996; Urdan & Maehr, 1995). Goal orientation focuses on the student's *reasons* for taking a course or wanting a specific grade (Anderman et al., 2002). In this paper, *academic goal orientation is defined as an individual's set of beliefs that reflect the reasons why they approach and engage in academic tasks* (Eccles & Wigfield, 2002; Linnenbrink & Pintrich, 2002a; Pintrich, 2000b; Skaalvik & Skaalvik, 2002; Wentzel, 1999).

Although the specific terminology may differ amongst researchers, goal theory typically proposes two general goal orientations (Covington, 2000; Linnenbrink & Pintrich, 2002a). Nicholls and colleagues (e.g., Nicholls, Cobb, Yackel, & Wood, 1990) classify goals as either *ego-* or *task-involved* (Eccles & Wigfield, 2002). Dweck and colleagues (see Dweck, 1999) distinguish between *performance* (such as ego-involved goals) and *learning* goals (such as task-involved goals). Ames (1992) refers to *performance* and *mastery* goals. A *performance goal orientation*[12] is characterized by self-questions such as "Will I look smart?" and/or "Can I out-perform others?" which reflect a concern for personal ability, a normative social comparison with others, preoccupation with the perception of others, a desire for public recognition for performance, a need to avoid looking incompetent, and "outperforming others as a means to aggrandize one's ability status at the expense of peers" (Covington, 2000, p. 174). In contrast, a student with a *learning goal orientation* would more likely ask the questions "How can I do this task?" and "What will I learn?" The learning goal orientation reflects a focus on task completion and understanding, learning, mastery, solving problems, developing new skills, and an appreciation for what one learns (Covington, 2000; Eccles & Wigfield, 2002; Linnenbrink & Pintrich, 2002b; Skaalvik & Skaalvik, 2002).

Implications

Research has consistently suggested that the 2 types of academic goal orientations produce significantly different adaptive or nonadaptive learning-related behaviors (Maehr, 1999).

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[11] Anderman and Maehr (1994) have presented a goal theory model that hypothesizes the mediating role of goals and self-processes between perceptions of the academic environment and affective and behavioral outcomes (Maehr, 1999). A review of theoretical models that integrate a variety of conative constructs (e.g., attribution, self-beliefs) together with motivational orientation are summarized in Eccles and Wigfield (2002). A detailed overview of Eccles, Wigfield, and colleagues' expectancy-value theory of achievement motivation can be found in Wigfield and Eccles (2002).

[12] In this paper we adopt the terminology of performance vs learning goals.

According to Covington (2000), "one's achievement goals are thought to influence the quality, timing, and appropriateness of cognitive strategies that, in turn, control the quality of one's accomplishments" (p. 174). In general, the research suggests (Anderman et al., 2002; Covington, 2000; Eccles & Wigfield, 2002; Kaplan & Maehr, 1999; Linnenbrink & Pintrich, 2002b; Maehr, 1999; Newman, 2000; Pintrich, 2000b, 2000c; Skaalvik & Skaalvik, 2002; Snow et al., 1996):

- A performance goal orientation is associated with nonadaptive learning behaviors which include hiding self-perceived incompetence, self-handicapping, greater worry and anxiety, increased behavior problems, a concern for establishing superiority relative to others, a focus on obtaining grades for grades' sake or other external reasons, less adaptive subsequent motivation, negative self-evaluations and affect, poorer and disorganized strategy use, and poorer academic performance. A performance goal orientation has been associated with students demonstrating a pattern of "helplessness" and the avoidance of challenging situations in order to maintain positive self-perceptions of ability (when compared to others). "Success…is evaluated in social comparison terms. In terms of developing self-esteem, this is a decidedly hazardous situation. By definition, success is a limited commodity. Only a few, at best, can win a competitive game" (Maehr, 1999, p. 331).
- A learning goal orientation is associated with more adaptive learning behaviors: positive affect (e.g., pride and satisfaction), higher levels of efficacy, interest, task effort and engagement, the use of more creative and deep self-regulatory learning strategies, and better academic performance. When learning results in stress and frustration, learning goal oriented students tend to view the situation as a challenge, are often energized by the challenge, maintain a positive and optimistic outlook, persevere, and demonstrate the ability to be strategically flexible in their problem solving strategies.
- The adoption of a particular learning goal orientation is predictive of, and related to, the attainment of important and valued educational

outcomes for children and adolescents. According to Covington's (2000) review, "the accumulated evidence overwhelmingly favors the goal-theory hypothesis that different reasons for achieving, nominally approach and avoidance, influence the quality of achievement striving via self-regulation mechanisms" (p. 178). A learning goal orientation is a key student attribute that should be assessed and fostered in learning environments. A learning goal orientation is associated with environments that define success as progress and improvement, value effort and learning, and accept mistakes as an inherent component of learning. Learning goal oriented environments stress personal goals, internal comparisons, and a focus on past performance as a frame of reference. In contrast, educational practices that encourage normative ability social comparisons (comparisons that highlight and accentuate competency differences) are believed to foster performance goal orientations and associated maladaptive learner behaviors. Classroom and school incentive systems, which specify how students are evaluated and how rewards (e.g., grades, praise) are distributed, can have a significant impact on a student's adoption of a specific academic goal orientation.[13]

- Recently, some goal achievement research has differentiated between two subtypes of performance goal orientation. Performance-*approach* goals are hypothesized to be present when a student's purpose for learning is focused on demonstrating their competence and abilities. Performance-approach orientations have been associated with both adaptive and maladaptive learning outcomes. It is hypothesized that for some students, a focus on doing better than others and publicly demonstrating their competence (performance-approach) can contribute to higher levels

[13] The reader is referred to Covington (2002) for a summary of the research on the two major categories of classroom incentive structures (ability vs. equity game structures).

of motivation, task engagement, and academic success, particularly when the student also displays intrinsic interest in the task. However, there is disagreement in the field regarding the positive and negative consequences of a performance-avoidance goal orientation (Eccles & Wigfield, 2002). A performance-*avoidance* goal orientation is present when a student's purpose or goal for achievement is to avoid the demonstration of incompetence (i.e., avoid looking stupid). Performance-avoidance goals have been linked with maladaptive educational and behavioral outcomes.

- Developmental research has revealed significant differences and changes in a student's goal orientation over time, largely in response to students adapting to new environments. In general, the developmental goal orientation research literature suggests that changes occur more as a function of changing learning environment, and not enduring personality traits (Anderman et al., 2000).

Motivational Orientation: Goal Setting

Definition and Conceptual Background

Goal setting is the ability to set, prioritize and monitor progress towards appropriate and realistic short-term (proximal) and long-term (distal) goals that serve to direct attention, effort, energy, and persistence toward goal-relevant activities (and away from goal-irrelevant activities) (Locke & Latham, 2002). Goals (e.g., academic goals) are the object or aim of an action or behavior and typically include a specified time limit and standard of proficiency. The act of setting goals is based on the assumption, supported by approximately 4 decades of research, that conscious goals will affect action or behavior (Locke & Latham, 2002). According to goal-setting theory, goal-setting facilitates higher levels of academic performance via: (a) *direction* of attention and efforts toward goal-relevant activities; (b) *energizing* effort; (c) increasing *persistence* and more sustained effort; and (d) indirectly leading to the discovery and *use of task-relevant strategies* (Locke & Latham, 2002).

Implications

Locke and Latham's (2002) review of the goal-setting research suggest the following implications:[14]

- Specific and difficult goals lead to higher performance than do simple admonitions to students to "do their best." Research suggests that "do-your-best" goals have "no external referent and thus are defined idiosyncratically. This allows for a wide range of acceptable performance levels, which is not the case when a goal level is specified" (Locke & Latham, 2002, p. 706).
- Goal setting is a key variable in self-regulated learning (see section on volitional controls).
- The goals set, or endorsed by a student, are hypothesized to play an important role in the student's subsequent satisfaction or dissatisfaction vis-à-vis the provision of a criterion point for the performance standard.
- Specific academic goals are a necessary but insufficient condition for maintaining effort. Students need formative and summative feedback on their progress toward goals. Consistent feedback allows students the opportunity to adjust their strategies and/or the direction or level of their effort.
- Self-efficacy (see next section) enhances goal setting and commitment behavior.

[14] See Locke and Latham (2002) for theoretical models that describe the hypothesized relations between assigned goals, self-set goals, self-efficacy, and performance, and the essential elements of Goal-Setting Theory and a "high performance cycle."

X: "Can I do this Activity?"

Self Beliefs: Locus of Control

Definition and Conceptual Background

Locus of control is an individual's beliefs about the perceived causes (internal or external) for personal success or failure on a task. According to attribution theory, when a student fails or succeeds at a task (e.g., failing a reading exam or a particular assignment), the student analyzes the situation to determine the causes for the outcome. An *internal* attribution orientation is inferred when a student perceives personal success or failure as contingent on their behavior and relatively permanent personal characteristics. An *external* orientation is present when a student views academic success or failure as being under the control of others, unpredictable, and/or the result of luck, chance, or fate (Elliott, 1997; Linnenbrink & Pintrich, 2002b; Rotter, 1966). Causal attributions are categorized as per the dimensions of stability (the stability of the cause), locus (internal or external), and controllability (can the perceived cause be controlled).

Implications

The locus of control construct (and attribution theory) has a lengthy history in psychology. Locus of control is a popular and important concept in many theories of individual differences "because it has consistently shown a difference between 'normal' and 'special' populations" (Elliott, 1997, p. 27). The research literature has consistently associated a high internal locus of control (vs low external) with a wide array of positive outcomes. Briefly, research (Beirne-Smith, Ittenbach, & Patton, 1998; Borkowski, Weyhing, & Carr, 1988; Elliott, 1997; Linnenbrink & Pintrich, 2002b; Rivera et al., 1998; Snow et al., 1996) has suggested the following:

- Level of internality is correlated with academic achievement (teacher grades and tests) and the degree of effort a student invests in free-time intellectual and learning activities. The positive effect of being a "high internal" on academic achievement may not be direct, but rather, may be mediated through other academic facilitators.

- High internals are better able to defer gratification, adopt a long-term future-oriented perspective, and are more persistent when faced with difficult and challenging tasks.
- The positive effect of causal attributions varies as a function of the primary characteristics of causality. In general, positive adaptation and outcomes occur when success or failure is attributed to stable internal characteristics (e.g., ability). Within-person trait-like characteristics are hypothesized to be viewed by the student as being readily available when faced with future learning tasks. Attributions to more unstable but *controllable* internal characteristics can also be adaptive. For example, motivation and persistence are characteristics that tend to fluctuate over time (therefore are not reflective of an unchangeable stable trait). These more fluid personal characteristics can be modified by the student. Finally, the negative effects of failure can be buffered when the causal attribution focuses on more unstable, uncontrollable, and external factors (e.g., bad luck).
- There is a large body of attribution theory/locus of control literature focused on students with behavior and learning problems. This is not unexpected given that: (a) a student's beliefs about the causes of success and failures impacts future learning; and (b) attribution beliefs can be environmentally influenced (Linnenbrink & Pintrich, 2002b). For example, students with learning disabilities often develop significant motivation and social problems due to inaccurate perceptions of stable within-person characteristics that are often the focal point of causal success or failure (ability and skills). Attributing unsuccessful learning to personal inabilities has been associated with a more passive learning style and learned helplessness (where many students with disabilities develop a failure expetancy and a dependence on others to solve their problems). Research involving students with mental retardation has reported that these individuals may often display an external locus of control

that, in turn, is often associated with learned helplessness and lower levels of personal responsibility, self-reliance, and self-regulatory learning. Locus of control is an important ESAF characteristic and a valued outcome for students with a checkered history of academic success and failure.

Self Beliefs: Academic Self-Efficacy

Definition and Conceptual Background

Students who are confident in their capability to organize, execute, and regulate their problem-solving or task performance at a designated level of competence are demonstrating high self-efficacy. Self-efficacy is generally regarded as a multidimensional construct differentiated across multiple domains of functioning. *Academic self-efficacy refers to an individual's belief (conviction) that they can successfully achieve at a designated level on an academic task or attain a specific academic goal* (Bandura, 1997; Eccles & Wigfield, 2002; Elias & Loomis, 2002; Gresham, 1988; Linnenbrink & Pintrich, 2002a; Schunk & Pajares, 2002).

Academic self-efficacy is grounded in self-efficacy theory (Bandura, 1977). According to self-efficacy theory, self-efficacy is an "individual's confidence in their ability to organize and execute a given course of action to solve a problem or accomplish a task" (Eccles & Wigfield, 2002, p. 110). Self-efficacy theory suggests that academic self-efficacy may vary in strength as a function of task difficulty—some individuals may believe they are most efficacious on difficult tasks, while others only on easier tasks. Furthermore, self-efficacy is believed to be situational in nature rather than being viewed as a stable trait (Linnenbrink & Pintrich, 2002a). Students make reliable differentiations between their self-efficacy judgments across different academic domains which, collectively, form a loose hierarchical multidimensional structure. Self-efficacy should not be confused with self-esteem or self-concept. Self-efficacy is a task-specific evaluation while self-esteem and self-concept reflect more general affective evaluations of self (Linnenbrink & Pintrich, 2002a).[15]

[15] See Bong and Skaalvik (2003) and Lent, Brown, and Gore (1997) for a detailed treatment of the similarities and differences between self-efficacy and other conative constructs (self-concept, self-competence, effectance motivation, need for cognition).

Two general categories of academic expectancy beliefs have been postulated. *Academic outcome expectations* are a student's beliefs that specific behaviors will lead to certain outcomes (e.g., "If I do homework my grades will improve"). *Academic efficacy expectations* are a student's beliefs in their ability to perform the necessary behaviors to produce a certain outcome (e.g., "I have enough motivation to study hard for this test"). Understanding the difference between these 2 forms of expectancy beliefs is important as "individuals can believe that a certain behavior will produce a certain outcome (outcome expectation), but may not believe they can perform that behavior (efficacy expectation)" (Eccles & Wigfield, 2002, p. 111).

Implications

The self-efficacy research literature (Bong & Skaalvick, 2003; Eccles & Wigfield, 2002; Elias & Loomis, 2002; Gresham, 1988; Prout, Marcal, & Marcal, 1992; Schunk & Pajares, 2002; Wentzel, 1999) suggests the following general implications:

- Of all the "self" constructs, self-efficacy may be the most important and powerful for predicting and explaining specific behavior and outcomes.[16] Research has demonstrated that self-efficacy is associated with a broad range of positive outcomes, including academic achievements, athletic performance, social skills, career choices and aspirations, efficient study habits, pain tolerance, coping with feared events, and recovery from heart attacks. Academic self-efficacy has a significant causal influence on academic motivation, learning, and achievement vis-à-vis a student's effort, cognitive engagement, use of self-regulatory strategies, goal setting and pursuit, adoption of a learning goal orientation, higher intrinsic motivation, persistence, self-esteem, and expectation of future success.
- It is hypothesized that the predictive power of self-efficacy stems from the fact that it is a relatively narrow and pure construct that does not include the intermixing of other "self" constructs (e.g., competence, esteem). Instead of focusing on a global or omnibus

[16] It is important to note that self-efficacy has been found to be a stronger predictor of *domain-specific achievement* (e.g., math, reading) while other research suggests that more general and omnibus constructs like self-concept and self-esteem may be superior predictors of global or aggregate academic performance (e.g., overall GPA) (Lent et al., 1997).

view of self, self-efficacy focuses on more circumscribed self-processes (e.g., self-regulation). As a result, research has found that it is easier to change a student's self-efficacy toward specific academic domains than it is to change a student's general self-concept.

- Students who doubt their ability to successfully complete a task often participate less readily, do not work as hard, and give up quickly when faced with difficulty. Due to repeated failures in the classroom, it is hypothesized that students with disabilities may feel that they cannot adequately perform certain behaviors and tasks to achieve a desired outcome. The resultant negative outcome may be lower academic self-efficacy, which in turn, can generalize to low effectance motivation, feelings of learned helplessness, and difficulties in peer acceptance and interpersonal relationships.
- Although important for academic performance, positive self-efficacy by itself will not produce competent performance in the absence of prerequisite skills and knowledge (Wentzel, 1999). If a student anticipates failure due to a lack of abilities and skills (a negative outcome expectation), they are less likely to engage in the learning activities.
- A student's initial sense of academic self-efficacy develops largely via a function of prior learning experiences and perceived ability on similar tasks. Academic self-efficacy is subsequently refined through continued success and/or failure on similar tasks and feedback from the environment (e.g., adults, other students). The early years of academic learning are critical; once a specific domain of academic self-efficacy beliefs are developed, they can be difficult to change.
- Success (vs repeated failure) strengthens self-efficacy. Other variables associated with increased positive self-efficacy are peer social models, near-term (proximal) and attainable learning goals,

self-regulatory strategy instruction, rewards contingent on performance, tasks calibrated to the student's instructional level, and evaluative feedback and verbal persuasive communication from a credible other. Learning environments characterized by high levels of student competition, norm and social-referenced grading, and less emphasis on individual attributional effort-based progress feedback have been associated with detrimental effects on self-efficacy, particularly among low achieving students. Almost all of these instructional and environmental variables share a common focus of providing information to the student about their abilities and progress.

- Positive and caring learning environments that provide accurate feedback and praise (vs inaccurate and superfluous praise) foster the development of accurate self-efficacy beliefs. As students move through the school grades, they become more accurate in their self-assessments vis-à-vis repeated task experience and normative peer comparisons. In college populations, students with disabilities may report academic self-efficacy equal to or higher than students without disabilities.[17]

Self Beliefs: Academic Self-Concept

Definition and Conceptual Background

"Self-concept as a construct has had a long history within psychology and education because it provides a gauge to determine the effects of academic and social functioning on the emotional well-being of the individual" (Vaughn et al., 2001, p. 54). Self-concept is generally viewed as a valued educational outcome. Self-concept is typically defined as a person's general composite view

[17] Blake and Rust (2002) hypothesized that this finding may be a function of the nature of their university sample which was characterized by students with more severe disabilities. The authors hypothesized that these students had historically been unable to hide their disabilities and, thus, may have learned to be more open about their capabilities during their formative years. In addition, the sample was small (n=44) and may represent a select group of students with disabilities (i.e., those with higher skills and abilities).

of themselves, based on self-knowledge and evaluation of value or worth of one's own capabilities across multidimensional sets of domain specific-perceptions (Byrnes, 2003; Snow et al., 1996).

The construct of self-concept is grounded primarily in self-worth theory (Covington, 1992; Covington, 1998; Covington, 2000; Covington & Dray, 2002; Eccles & Wigfield, 2002). Briefly, self-worth theory suggests that all individuals have a motivational "tendency to establish and maintain a positive self-image, or sense of self-worth" (Eccles & Wigfield, 2002, p. 122). Since children spend a significant portion of their lives being evaluated in school classrooms, self-worth theory postulates that a key to developing and maintaining self-worth is to develop and maintain a positive academic self-concept.

Historically, self-concept research has emphasized a general omnibus self-concept, while contemporary research focuses on a multidimensional construct with distinct facets or domains. Although the consensus is not unanimous (Harter, 1990), in general, it is believed that domain-specific self-concept perceptions (e.g., academic, physical, social) are organized in a hierarchical structure with the general omnibus self-concept at the apex of the hierarchy (Bong & Skaalvik, 2003; Bornholt & Goodnow, 1999a; Byrne, 2002; Shavelson, Hubner, & Stanton, 1976; Skaalvik & Skaalvik, 2002). The Shavelson hierarchical model (Shavelson et al., 1976), a model that splits global self-concept into academic and nonacademic branches, has received the greatest empirical scrutiny (Byrne, 2002).[18] In the current paper, *academic self-concept is defined as an individual's perception of self-efficacy in academic subjects* (Bong & Skaalvik, 2003; DiPerna & Elliott, 1999; MacMillan, Gresham & Bocian, 1998; Snow et al., 1996).

The terms self-concept and self-esteem are frequently (and incorrectly) used interchangeably (Ehrlich & DeBruhl, 1996). The cognitive or descriptive component of self-concept ("I'm good at math") differs from the affective or evaluative self-esteem component ("I feel good about how I do my math"), with the latter emphasizing self-worth and self-respect (Snow et al., 1996). Thus, global self-worth or self-esteem is a distinct component of self-concept (Bear, Minke, Manning, & George, 2002). The literature on self-concept is voluminous and is beyond the scope of the current paper (see Byrne, 2002; Bong & Skaalvik, 2003; and Skaalvik & Skaalvik, 2002 for recent

[18] According to Byrne (2002), the Shavelson model has recently been refined in the form of the Marsh/Shavelson and internal/external frame of reference (I/E) models. The reader is referred to Byrne (2002) for a summary of the refinements provided by these models, refinements that occur primarily below the level of the academic vs. nonacademic self-concept constructs. In the current paper, self-concept is not differentiated beyond the basic academic and nonacademic self-concept dichotomy.

reviews). One important finding from the research literature is the significant role that different "frames of reference" play in the development of academic self-concept (Byrne, 2002; Skaalvik & Skaalvik, 2002). *External frames of reference* include comparisons with school/class averages or other learners. An *internal frames of reference* includes comparisons with the self in different academic domains at a given time, comparisons with self in the same academic domain across time, and comparisons to self-generated goals and aspirations (Byrne, 2002; Skaalvik & Skaalvik, 2002).

Implications

A review of the voluminous self-concept and self-esteem literature (Bong & Skaalvik, 2003; Bornholt & Goodnow, 1999b; Byrne, 2002; Cosden & McNamara, 1997; deCharms, 1968; DiPerna & Elliott, 1999; Dusek, 2000; Gresham, 1988; Guay, Marsh, & Boivin, 2003; Harter, 1990; Kaplan & Lin, 2000; Martin, Marsh, & Debus, 2003; Nurmi, Aunola, SalmelaAro, & Lindroos, 2003; Skaalvik & Skaalvik, 2002; Vaughn et al., 2001) suggests the following implications:

- Self-concept is related to many other developmental accomplishments. For example, the affective component of self-concept (i.e., self-esteem) has been empirically associated with positive social development, ethnic identity development, positive peer and parent interactions and relationships, insulation against the development of a deviant identity and delinquent behaviors, less anxiety and depression, and greater satisfaction with life.
- Although the size and direction of the relationships (as well as the measurements and methods used in the research studies) have sometimes been argued and criticized, in general, academic self-concept has been consistently linked to positive academic outcomes. This finding is not surprising given that the high value placed on academic competence by society typically results in positive academic competence feelings for learners who are successful in their academic endeavors. These positive academic affective self-evaluations are believed to influence future academic motivation. Part of the disagreement with the self-concept research findings stems from the use of different "achievement" indicators. Academic self-concept is more consistently correlated with grades and less

consistently correlated with test scores. It has been hypothesized that academic self-concept exerts more influence on grades (vs test scores) as grades are believed to be more influenced by motivation and volition (Snow, et al., 1996).

- An important finding (across a diverse range of students—gifted and talented; disadvantaged; students with learning disabilities or mild intellectual disabilities) regarding the development of academic self-concept is the *big-fish-little-pond effect*. According to the big-fish-little-pond effect, "learners compare their own academic ability with that of their peers and then use this social comparison impression as one basis for the formation of their academic self-concept" (Byrne, 2002, p. 901). The big-fish-little-pond effect occurs when students compare their personal academic performance/ability with that of their peers (an external frame of reference). For example, "a negative big-fish-little-pond effect is evidenced when learners of equal ability exhibit lower academic self-concepts after comparing themselves with more able learners, albeit they exhibit higher academic self-concepts following comparison with less able learners. The big-fish-little-pond effect exemplifies external frame of reference effects and, as a consequence, lends itself well to academic environments that involve selective school placement or choice" (Byrne, 2002, p. 901). Social comparison theory is the basis for the big-fish-little-pond effect. Social comparison theory suggests that students in educational settings where the average reference group is higher in ability, often experience a decrease in academic self-concept. According to social comparison theory, this decrement in academic self-concept occurs as the less capable students (e.g., students with disabilities) judge themselves as less capable than their more competent peers.
- The developmental trajectory of self-concept tends to mirror that described previously for self-efficacy. In general, young children

initially develop very positive self-concepts that tend to be biased (inflated) when compared to external reference indicators. With increasing age, self-concept becomes more differentiated (i.e., multidimensional), reality-based, less positive, and more aligned with external indicators and sources of evaluation (e.g., adult evaluations of performance). Disagreement exists on the causal mechanisms of the developmental changes in academic self-concept and the resulting appropriate interventions. Research has suggested that the development of positive and healthy academic self-concepts can result from early interventions that either focus on fostering young children's academic self-beliefs (self-enhancement methods) or interventions focused on developing academic skills (skill enhancement methods).[19]

- The reaction of significant adults (teachers and parents) to a learner can have a positive or negative impact on the development of academic self-concept. Research has demonstrated that individuals tend to perceive themselves as they are perceived by others. The reflected perceptions and appraisals of significant others play an important role in the development of a student's academic self-concept.
- Students with learning disabilities frequently (and spontaneously) compare themselves to their non-disabled peers, and as a result, often suffer negative decrements in academic self-concept. Although the research findings have, at times, been inconsistent regarding global self-concept and self-esteem, the evidence is relatively clear that students with learning disabilities, as a group, display decreases in academic self-concept over time. Interestingly, some studies have reported that students with learning disabilities may compare themselves favorably to their peers in the intellectual ability domain, but not the academic abilities domain. These

[19] See Guay et al. (2003) for a recent treatment of academic self-concept early intervention literature.

findings suggest that students with learning disabilities may make relatively accurate self-evaluations of their personal strengths and weaknesses.

- Some research reviews have estimated that students with learning disabilities, in general, display academic self-concepts approximately 1.3 standard deviations lower than students without disabilities. In addition, research suggests that academic self-concept may vary as a function of the specific education setting of the student with a learning disability. For example, "studies have tended to show that children with LD who receive special education services in either segregated (i.e., self-contained) or mainstreamed (i.e., resource) settings have more favorable general self-concepts and self-perceptions of academics than children with LD in regular classrooms who receive no special education or remedial services" (Bear, Minke, & Manning, 2002, p. 406). This latter finding, however, as well as other findings synthesized in integrative reviews, has not been consistently replicated.[20] Clearly, some students with learning disabilities (and most likely students with other forms of disabilities that adversely affect school performance) pay a high emotional and social price for their poor achievement (Gresham, 1988). Further evidence for the price paid for low achievement is the finding that samples of college students with learning disabilities (who likely represent some of the higher functioning and more motivated portions of the learning disability population at this age range) report lower academic self-concepts when compared to their university peers.
- The adverse impact of repeated academic failure can threaten a student's academic self-concept and general self-worth. As a result, a student may develop a need to protect both their private and public

[20] See Bear et al. (2002) for a recent meta-analysis of research studies on the self-concepts of students with learning disabilities and a discussion of prior research synthesis and the various methodological issues bearing on the inconsistencies reported across reviews.

sense of perceived academic competence or self-worth from failure. The need for self-worth protection can result in the development of maladaptive defensive strategies that include *defensive pessimism* (e.g., maintaining unrealistically low expectations for success, discounting the importance of success), *self-handicapping* (creating an impediment that serves as an excuse for possible failure—e.g., procrastination, poor health), and *self-worth protection* (a general approach of not expending effort so that failure can be attributed to ambiguous causes rather than personal inadequacies). As is the case with most defensive coping strategies, there may be an immediate near-term protection of feelings of self-esteem and self-concept. However, research indicates that the adoption and repeated use of failure-avoidant defensive protective strategies can produce poor and inconsistent long-term achievement, lower academic interest and motivation, negative affective consequences (e.g., increased anxiety, decreased life satisfaction), and less self-regulated learning. It has been suggested that defensive failure-avoidant strategies may be most prevalent in competitive (vs cooperative) learning environments.[21]

Self Beliefs: Academic Ability Conception

Definition and Conceptual Background

Research suggests that "a person's view of how intelligence works determines how persistently the person will invest in a challenging intellectual task" (Perkins et al., 2000, p. 285). Contemporary goal setting theory suggests that the development of adaptive or maladaptive learning patterns, vis-à-vis the adoption of different academic goal orientations, may be mediated by a student's perception and beliefs about their personal skills and abilities (Kaplan & Midgley, 1997). *<u>Academic ability conception</u> is an individual's beliefs and self-evaluation regarding the*

[21] See Covington (2000), Martin et al. (2003), and Nurmi et al. (2003) for a contemporary overview of the defensive strategy research literature.

nature of their academic-related skills and abilities. This includes the student's personal view on how their skills and abilities operate or work (Dweck, 2002; Kaplan & Midgley, 1997; Perkins et al., 2000).

Although related to academic self-efficacy, academic ability conception is concerned with the student's personal beliefs about the nature and level of their academic competence. Academic self-efficacy focuses on the student's conviction or belief that they can succeed at a given academic task. Ability conception is hypothesized to play an important role in the development of academic motivation. Once students "have developed a clear and coherent understanding of ability, the *particular* conception of ability they adopt will determine a great deal about their motivational patterns. It will influence such things as whether they seek and enjoy challenges and how resilient they are in the face of setbacks" (Dweck, 2002, p. 59).

Implications

The academic ability conception literature is less well-developed than the other self-belief constructs reviewed in this paper. Dweck (2002) has provided one of the most thorough reviews of the ability conception theoretical and research literature. Dweck's (2002) review, with minor augmentations from Kaplan and Midgley (1997) and Perkins et al. (2000), suggests the following implications:

- Although it was once thought that the ability conceptions of preschool and kindergarten children were relatively immune to the effects of learning failure, recent research "has shown that a sizable proportion of these young children show clear signs of impairment when they encounter a series of salient, visible failures (such as jigsaw puzzles they cannot complete) or when they meet with criticism for their performance" (Dweck, 2002, p. 60). However, when compared to older students (ages seven and above), the failure experience during the preschool years must be particularly obvious and powerful in order to exert a long-term impact on motivation via academic ability conception formation. Buffering young children, particularly those at risk for significant and powerful early learning failure experiences (e.g., students with disabilities), would appear to be an important educational goal.

- When students are at an approximate seven-to-eight year level of developmental functioning, significant changes in ability conception occur. The student's conception of ability now becomes defined more as an internal quality, more consistent with external sources (adults), and is the result of greater self-criticism and social normative comparisons. It is during the seven-to-eight year developmental period that students become more concerned about their abilities, especially in response to negative feedback and evaluation.
- Two general ability conceptions emerge at approximately the seven-to-eight year developmental level and become crystallized at approximately the ten-to-twelve year level. The least adaptive ability conception is a "trait-oriented system" (*entity* view of ability) where students view their abilities as relatively fixed internal quantities. When encountering academic failure, it is hypothesized that a trait academic ability conception increases the chances that the student will view themselves as deficient on a stable inherent characteristic and, thus, they will anticipate and predict future failure. Since the trait is fixed, there is a self-belief that it cannot be changed via effort. The result can be a decrease in academic and intrinsic motivation, the devaluation of effort, and the interpretation of academic outcomes as reflecting on an internal personal trait. In contrast, a "process-oriented system" (*incremental* view of ability) conception is more adaptive as it focuses on the view that ability can be developed and that effort and strategies are important for success. The process-oriented ability conception is postulated to be more adaptive as the student sees room for improvement in personal ability via effort and work. An incremental or process view is associated with higher levels of intrinsic motivation and academic self-efficacy.

- Of particular relevance to students with disabilities is the finding that when students are low in skills and abilities (in a social normative comparison sense), there is an increased probability of effort-avoidance. An individual who is low in academic skills and abilities, and who also holds an entity or trait view of ability (a view that fosters the belief that effort or motivation is not helpful), is hypothesized to view any attempt at increasing effort as risky. Increased effort that results in failure can only reinforce the belief that "I am dumb."
- Social normative grading and evaluation systems tend to foster the more vulnerable and maladaptive view of academic ability as a fixed trait. In addition, students with an entity view of academic abilities tend to choose the less desirable academic *performance* goal orientation rather than a *learning* goal orientation (which is associated with the incremental view of abilities). Entity-oriented students also tend to attribute their failure (locus of control) more to ability rather than effort. The ability conception research suggests that educational environments that place a greater relative value on changes in skills and knowledge (vs. an emphasis on relative standing in a group) may influence the development of the more adaptive and positive incremental/process view of academic abilities.
- Research has suggested that friendships which, in part, are formed based on perceived psychological similarity in academic competence, exert a modest influence on the adoption of academic and ability self-competence beliefs.

Interests, Values, & Attitudes

Circumscribing the constructs of academic interests, attitudes, and values is particularly difficult (Corno et al., 2002). As noted by Corno et al., values and attitudes are often classified as affective, interests as both motivational and affective, and beliefs as having both cognitive and

volitional characteristics. Furthermore, values and career orientations are often discussed in the context of personality factors. For example, Holland (1973, 1985) developed a theory of personality based on the importance of 6 general career theme orientations (investigative, social, realistic, conventional, artistic, and enterprising).

In this paper, we subscribe to Corno et al.'s (2002) decision to group these diverse domains together. Although Corno et al. (1996) included general values and career orientations in their aptitude taxonomy, they are dropped from the M-SAMM taxonomy due to the paucity of evidence in support of their ability to predict academic or occupational outcomes (Cronbach, 1990).

Interests, Values, & Attitudes: Academic Interests and Attitudes

Definition and Conceptual Background

"In the minds of many, a person's interest is linked to his or her achievement with a particular subject content such as ballet, mathematics, etc." (Renninger & Hidi, 2002, p. 173). Theoretically, interests are often defined as the focused interaction between an individual and an object (or class of objects, ideas, etc.) that results in an enduring affective disposition or orientation towards the object(s) (Corno et al., 2002; Eccles & Wigfield, 2002). Individual interests are conceptualized as consisting of feeling- and value-related valences. "Feeling-related valences refer to the feelings that are associated with an object or an activity—feelings such as involvement, stimulation, or flow. Value-related valences refer to the attribution of personal significance or importance to an object or activity" (Eccles & Wigfiled, 2002, p. 114). In the context of school learning, the development, maintenance, and enhancement of positive student-academic content domain relationships (i.e., interests) can improve the quality of learning and promote intrinsic motivation. Thus, academic interests should not only be considered important facilitators of academic outcomes, but also as valued educational outcomes in their own right (Corno et al., 2002).

Recently, interest theory research has postulated a differentiation between individual and situational interest. *Individual interest* reflects a relatively stable or enduring predisposition, evaluative orientation, and tendency to persevere when working on certain specific content or task domains. In contrast, spur-of-the-moment interests, often triggered "in the moment," are classified as *situational interests* (Eccles & Wigfield, 2002; Renninger & Hidi, 2002). Examples of situational interests would be a momentary interest in a topic after observing a television show,

hearing a speaker, or catching a portion of a video clip while strolling through an electronics store. Situational interest is not necessarily positive (e.g., a child's focused attention on graphic violence on the evening news) and typically requires little knowledge of the content domain or experience. Situational interests can evolve into more stable individual interests (Renninger & Hidi, 2002). In contrast, an individual interest in geology is inferred when a student has acquired a stored geology knowledge base and a positive affective feeling towards geology that "leads to informed reengagement and the ability and desire to work with difficulties that might arise" (Renninger & Hidi, 2002, p. 174). Individual academic content or procedural interests, characteristics that reflect the enduring and stable aspects of a student's interests, are the focus in this paper.

The value-laden component of interests can also be conceptualized as *attitudes* which are overt or covert expressions of positive or negative internal states (Corno et al., 2002). Although the theoretical and research literature on the structure of attitudes and beliefs could argue for the separate treatment of academic attitudes, we blend interests and attitudes together since individual interests can be thought of as positive attitudes towards a topic. In this paper, ***academic interests and attitudes*** *are defined as a student's relatively stable or enduring predisposition, positive affective orientation, and tendency to persevere when working on certain specific academic content or task domains* (Corno et al., 2002; Eccles & Wigfiled, 2002; Renninger & Hidi, 2002).

Implications

Reviews of contemporary academic interest and attitude research (Corno et al., 2002; Eccles & Wigfield, 2002; Renninger & Hidi, 2002) suggests that positive academic interests and attitudes contribute towards positive academic outcomes. The following implications and conclusions have been gleaned from this research literature:

- Positive academic interests and attitudes are likened to deep-level (vs surface-level) learning and understanding (e.g., recall of main ideas, coherently organized recall, better transfer, more elaborate information knowledge structures). It is believed that higher positive academic interests and attitudes result in the greater use of metacognitive learning strategies, positive affect, heightened attention, and concentration.

- Positive academic interests and attitudes may be associated with the use of more imagery during learning and the development of more personalized information knowledge structures.
- Individual students are not always self-aware of their individual interests and, thus, may not use this self-awareness information in academic goal setting. Positive peer or adult feedback and support is believed to help students crystallize and stabilize their academic interests and attitudes.
- Weak academic interests and attitudes can be strengthened by engaging students in tasks and subject matter that: (a) encourages the student to commit some effort to connecting with the task or content; (b) results in success; and (c) has built-in supports (expert-others and peers). "Tasks that fit this description are typically complex, may focus on real problems, and lead learners to use and develop skills through work with multiple resources, including peers" (Renninger & Hidi, 2002, p. 180).
- How a student perceives or "filters" the outcome of a negative learning experience influences the impact of the experience on academic interest and attitude. Negative feedback on the heels of failure or frustration can negatively impact academic interests and attitudes. Conversely, positive feedback and support for a learner's positive feelings and willingness (effort) can mitigate against a decrement in academic interest and attitude.
- As per self-determination theory, less personal choice via constraints on school curricula, particularly during the middle and junior high school years, may produce less positive academic interest and attitudes. Although the degrees of freedom in school curricula are typically governed by external constraints, providing

students a sense of some control and/or choice in their academic content (via sharing perceptions of interest and personal relevance) has been suggested as a means to maintain and increase academic interest and attitudes.

Interests, Values & Attitudes: Academic Values

Definition and Conceptual Background

Historically, the construct of values in the field of psychology has had both broad and narrow definitions (Wigfield & Eccles, 2002). In broader conceptualizations, theorists and researchers have attempted to outline the basic set of values necessary for all humans. *Achievement* (broadly defined) has been included in most comprehensive lists of essential human values (Schwartz, 1992). In the current context, *achievement values* play a central role in contemporary expectancy-value models of motivation (Eccles & Wigfield, 2002; Graham & Taylor, 2002; Wigfield & Eccles, 2002). Similar to academic goals, academic values influence the purposes for individuals to engage in different academic tasks and activities.

In simple terms, "motivation is determined by some combination of the perceived likelihood that a goal will be attained (the expectancy component) and how much that goal is desired or wanted (the value component)" (Graham & Taylor, 2002, p. 121). The value component of academic motivation is conceptualized, in turn, to consist of 4 components: attainment value, intrinsic value, utility value, and cost.[22] Collectively these value components contribute to a student's desires and preferences for learning as reflected in the perceived desirability, importance, and usefulness of academic tasks (Graham & Taylor, 2002). Academic values are important for school learning. As early as first grade, and increasing in strength with age, achievement task values predict both a student's intention and decisions to engage in specific activities or domains (Wigfield & Eccles, 2002). *In this paper, <u>academic values</u> are defined as a student's desire, preference, or "wanting" for certain academic goals and outcomes.*

[22] A detailed description of the 4 value components of tasks, as well as the role they play in contemporary expectancy-value models of motivation, can be found in Eccles and Wigfield (2002) and Wigfield and Eccles (2002).

Implications

Although a complete understanding of why students come to value different academic activities and domains is illusive (Brophy, 1999), the available research (Graham & Taylor, 2002; Wigfield, 1994; Wigfield and Eccles, 1992) suggests the following implications:

- Academic values impact achievement outcomes via the choices students make to become engaged (or not engaged) in certain tasks or domains. Even students who are competent in a domain may choose not to engage in a learning activity if it has no personal value.
- The development of positive competence beliefs, vis-à-vis success during learning activities, is important for the formation of positive values toward learning tasks and activities. That is, academic success increases the probability of the student placing greater value on the specific academic domain or class of activities.
- Although longitudinal research on the development of academic values is limited, the available research suggests that educators and adults should be sensitive to the fact that even during the early elementary grades, students begin differentiating between academic competence beliefs and academic values. As children move through the grades, specific task values in the academic domain become more differentiated and crystallized.
- Although the motivational constructs of academic goal orientation and academic values both focus on a student's *purpose* for differential engagement in academic activities and domains, these two related constructs have been demonstrated to be empirically distinct. In general, the development and enhancement of intrinsic positive academic values increases the probability that a student will adopt a more adaptive mastery goal orientation. In contrast, students who, via their learning experiences, start to value tasks or activities for utilitarian reasons, tend to adopt the less desirable academic performance goal orientation.

- Research suggests that the influence of academic values on learning may not be immediate. Values may exert their influence on achievement *indirectly* via student. When a student values a particular academic activity or domain, they tend to study more diligently and effectively. Furthermore, students who have "synchronized" academic values (i.e., positive intrinsic reasons for engaging across academic domains) demonstrate higher academic motivation than students with asynchronous academic values (i.e., high intrinsic interest in some domains coupled with only a utilitarian value in other domains).
- Although the research literature is limited, academic values are hypothesized to play a role in adaptive self-regulated learning, particularly during the pre-engagement phase of planning and preliminary decision-making. The role of academic values in self-regulation is believed to be more significant for older versus younger students.
- Classroom learning activities that are personally meaningful, more authentic, and tied to the student's "real-world," are suggested as contributing to the development of positive academic values toward such learning activities. Furthermore, depressed academic values have been associated with lowered performance-based environmental expectations and feedback.
- Related to the construct of locus of control, students may place less value on effort and academic success if they perceive that external factors (outside of their personal control) are capable of affecting their educational or long-term occupational outcomes.

XI. "How do I Need to Behavior Toward Others to Succeed?"

"Social skills are the foundation for friendship making and in interacting successfully with others both at school and in the workplace."

Vaughn et al., 2001

The social worlds of children are challenging and complex. Each day at home, children are expected to learn and follow family rules, interact with their parents and siblings in an appropriate manner, and generally contribute to family processes that support emotional health and safety. Similarly, children must negotiate their way through the school day, adhering to classroom rules, maintaining and making new friendships, and seeking out situations that allow them to thrive as members of the school community (Wentzel, 2002).

The student who does not know how (or who lacks the appropriate skills) to behave appropriately and responsibly is at increased risk for academic failure. Educators and researchers have consistently demonstrated the importance of pro-social behavior and skills to successful learning (O'Sullivan, Guilford, & de Mille, 1965; Wentzel, 1989). This is particularly true for students with disabilities, who as a group, tend to display a greater proportion of social and/or behavioral difficulties (Gresham & MacMillan, 1997). The presence of pro-social behaviors (e.g., cooperation, communication, rule following) and the absence of problem or maladaptive behaviors (e.g., hitting, poor attention, over-activity) are obvious components of a model of ESAF characteristics.

As described earlier in this paper, social ability has been conceptualized to consist of 2 primary dimensions: "the ability to decode social information, including the ability to understand nonverbal cues and make accurate social inferences, and the ability to behave adaptively and effectively in social situations" (Snow et al., 1996, p. 278). These two dimensions roughly correspond to the *cognitive* (internal mental processes) and *behavioral* (manifest observable behaviors) components of social functioning. Each broad social dimension is treated separately below.

Social/Interpersonal Abilities: The Behavioral Component

The social skill behavioral literature covering the definition, assessment, and treatment of

social abilities is massive.[23] For the purposes of the current review, an attempt was made to identify, from the myriad of social skill taxonomies and models, a taxonomy with an evidence-based foundation. Although other taxonomies may serve this function just as well, we adopted Caldarella & Merrell's (1997) "Taxonomy of Behaviors" as the framework for organizing the literature on the behavioral component of social/interpersonal abilities.

Caldarella and Merrell's Taxonomy of Behaviors

Briefly, Caldarella and Merrell (1997) completed a qualitative meta-analysis of the research literature that had investigated the classification of the dimensions of children's problem behaviors and social skills. These researchers coded and analyzed the empirically based (e.g., factor and cluster analyses) behavior dimensions that had been identified in the research literature from 1974 to 1994. According to Caldarella and Merrell (1997), "more than 22,000 subjects were represented in the research analyzed through this review" (p. 264). The review captured, and included, information from 19 different social skills behavior rating scales.

Caldarella and Merrell identified 5 dimensions of positive behavior and 5 negative (i.e., problem/maladaptive) behavior counterparts. The problem behavior dimensions were drawn from DSM-IV and a meta-analysis of child and adolescent psychopathology (Quay, 1986). The 5 positive and 5 problem behavior dimensions, with some modifications and adaptations, are briefly defined in Table 3.

Implications

A comprehensive review of the implications of the social skills research literature is beyond the scope of the current paper. Summarized below are the broad stroke implications drawn from representative social skills research publications (Bryant & Zimmerman, 2002; Caldarella &

[23] The social skills literature makes a number of different distinctions regarding the definition of this domain. According to Gresham and Elliott (1984) the three prominent definitional approaches focus on peer acceptance, behavioral, or social validity. The peer acceptance definition "suggests that social skills are those behaviors of children and adolescents who are accepted by or are popular with their peers" (p. 264). The behavioral definition states that social skills serve to elevate the possibility of positive reinforcement while decreasing the possibility of punishment. In addition, the behavioral definition states that social skills are situation-specific. The social validity definition "indicates that social skills are situation-specific behaviors which predict and/or correlate with important social outcomes such as peer acceptance, popularity, and the judgment of behavior by significant others" (p. 264). Similar and related definitions of social skills (Gresham, 1988; Kolb & HanleyMaxwell, 2003; Mellard & Hazel, 1992; Vaughn et al., 2001), social behavior, social competence (Gresham & MacMillan, 1997), self-awareness, and self-control (Kolb & Hanley-Maxwell, 2003), peer acceptance and social validity (Gresham, 1988), and adaptive behavior (Weller, Watteyne, Herbert, & Crelly, 1994) can be found in other sources.

Merrell, 1997; DiPerna et al., 2002; Gresham & MacMillan, 1997; Herrenkohl, Guo, Kosterman, Hawkins, Catalano, & Smith, 2001; Hughes, 1999; Kolb & HanleyMaxwell, 2003; Laird, Pettit, Dodge, & Bates, 1999; Malecki & Elliott, 2002; Scheier, Botvin, Diaz, & Griffin, 1999; Vaughn et al., 2001; Wentzel, 1993; Wentzel & McNamara, 1999).

- The prosocial behaviors of interacting and responding appropriately with others, displaying appropriate nonverbal language, conforming to social rules and norms, cooperation, problem-solving and decision making, assertion, and peer management are associated with positive school learning.
- Problem behaviors that can adversely affect school learning include uncooperativeness, shyness, bullying, unresponsiveness, lack of motivation for academic tasks, unwillingness or inability to complete tasks, unwillingness or inability to follow directions, lack of respect for authority, increase in drug and alcohol use, and truancy.
- Poor social skills and/or a high frequency of problem behaviors have also been demonstrated to result in little or no positive social support from teachers and peers, and possibly even from parents.
- Overall, individuals with limited pro-social behaviors and high frequency or intensity of problem behaviors tend to display a higher incidence of violent behavior, truancy, depression, alcohol use, drug use, rejection by their peers, lower academic motivation, lower standardized test scores and increased academic failure.
- A number of subgroups of students have been identified as being at risk for the development of poor pro-social behaviors and/or increased problem behaviors. These groups include students who: (a) come from low SES families; (b) have low neighborhood attachment; (c) come from families with positive attitudes toward violence; (d) have experienced repeated academic failure; (e) have involvement with antisocial peers; and/or (f) are students with disabilities.

- The dimensions of pro-social and problem behaviors appear salient to many students with disabilities. For example, Kavale & Forness (1996) reported that 75% of students with learning disabilities had social skills that were rated lower compared to peers without learning disabilities. As a group, students with disabilities have been reported to display a lower frequency of pro-social behaviors and higher frequencies of problem behaviors. Students with mild disabilities, as a group, have been reported to display poor social competence in the form of difficulty interacting with teachers and peers. Some research studies have reported minimal social interaction occurring among high school students with and without mental retardation in the absence of programming or supports. Also, researchers have reported that for some students with disabilities, a focus on academic areas has often overshadowed the need for improved social skills. In addition to students with learning disabilities and mental retardation, groups commonly identified as displaying poor social skills are students with attention deficit disorder and/or emotional and behavior disorders.
- Children who have little parental support or involvement, or who are highly stressed, experience depression, or have low academic self-efficacy, are also likely to display poor social skills.
- Social competence beliefs appear related to social competence indicators (e.g., peer acceptance).
- The lack of a supportive social network of friends, or primarily associating with friends who display antisocial behaviors, has been linked to increased antisocial behaviors in students.
- Given the critical role of pro-social behaviors in learning and learning environments, most investigators point toward early intervention to train and increase pro-social behaviors and to decrease problem behaviors. The periods of pre-adolescence and

adolescence have also been identified as a key transition points where social skills should be taught and reinforced.

Social/Interpersonal Abilities: The Cognitive Component

In the area of cognitive social abilities, Stephen Greenspan's theoretical/conceptual model of personal competence has been most prominent. Building on the tradition of Edgar Doll's (Doll, 1941) definition of mental retardation, which included "social incompetence" as one of six criteria, Greenspan (Cunningham, 1997; Greenspan & Driscoll, 1997; Greenspan & Granfield, 1992) has argued that the components of personal competence associated with social awareness or intelligence have been overlooked in definitions of individuals with mental retardation.

Greenspan's "Model of Personal Competence", first articulated in 1981, emphasizes the need for individuals working with individuals with disabilities to pay as much attention to social awareness as is paid to cognitive abilities (i.e., intelligence) and adaptive behavior. Although Greenspan's taxonomy has undergone a number of revisions over a span of approximately 25 years (including revisions back to prior models), the basic structure remains a powerful influence on the work of researchers in the area of social competence and cognitive social ability. For example, the Greenspan model has played a prominent role in recent professional and scholarly attempts to define mental retardation (Conyers et al., 2002; Jacobson & Mulick, 1996; Schalock & Braddock, 1999; Thompson, McGrew, & Bruininks, 2002). Although Greenspan's conceptualization of social competence, social awareness, and/or social intelligence has morphed in various directions over the years, we use his 1985 model of social awareness as the cognitive dimension of social/interpersonal ability in this paper. A schematic representation of an adapted Greenspan social awareness model is presented in Figure 7.

Insert Figure 7 about here

"*Social awareness* [italics added] may be defined as the individual's ability to understand people, social events, and the processes involved in regulating social events. The emphasis on interpersonal understanding as the core operation in social awareness indicates that this construct is a cognitive component of human competence" (Greenspan, 1981a, p. 18). Greenspan's social

awareness taxonomy is divided into the 3 broad domains of social sensitivity, social insight, and social communication.

Greenspan views *social sensitivity as a person's ability to correctly interpret the meaning of a social object or event*. Subsumed under the umbrella of social sensitivity are the subdomains of *role-taking (ability to understand the viewpoint and feelings of others) and social inference (ability to correctly interpret social situations). Social insight "may be defined as the individual's ability to understand the processes underlying social events and to make evaluative judgments about such events" (Greenspan, 1981a, p. 20).* Subsumed under social insight are the narrower abilities of *social comprehension ("ability to understand social institutions and processes" [Greenspan, 1981a, p. 20]), psychological insight (ability to interpret and understand one's personal characteristics and motivations), and moral judgment (ability to evaluate and make judgments about another individual's social actions in relation to moral and ethical principles). Social communication, the final broad social awareness domain in Greenspan's model, is defined as "the individual's ability to understand how to intervene effectively in interpersonal situations and influence successfully the behaviors of others" (Greenspan, 1981a, p. 21).* Components of social communication include *referential communication (ability of an individual to relate his/her feelings, thoughts, and perceptions to others) and social problem-solving (ability to understand how to influence the behavior of others in order to attain a desired outcome).*

Greenspan's taxonomy, which in reality is more of a working model, provides much needed structure to a domain (social competence) that has often been marked by confusion and debate over what social competence encompasses, how best to define it, and what to call it. Given that the "hardening of the categories" in the social awareness domains has yet to occur, we have added, based on the current literature review, an additional social cognitive ability to the Greenspan model represented in Figure 7.

Drawing from the previously discussed literature on social-cognitive models of motivation, social goal-setting has been identified as an important student characteristic related to school learning. According to Wentzel, (2002), the day-to-day experiences of children raise many socially related questions (e.g., How and why children strive to achieve social outcomes?, What type of social goal setting occurs?).

Social goal setting is defined as the setting of goals to achieve specific social outcomes (e.g., making friends) or to interact with others in certain ways (e.g., assisting someone with a task). A

major social cognitive challenge for children, particularly for some children with disabilities, is the setting of social goals in pursuit of peer acceptance and avoidance of social conflict (Parkhurst & Asher, 1985). This is a challenging task given the inherently ill-defined, complex, and nuanced world of social situations (e.g., classrooms). Research linking pro-social goal-setting and school success and adjustment indicates that social goal-setting should be considered as one of the many ESAFs (Covington, 2000; Wentzel, 2002).

At this time, the cognitive component of social ability (social awareness) is primarily of heuristic value. Although psychologists have been theorizing and studying the construct of social intelligence for decades, practical implications have been hampered by an inability to develop valid psychological measures of these largely internal cognitive processes.

XII: "What do I Need to do to Succeed?"

"The term "volition" refers to both the strength of will needed to complete a task, and the diligence of pursuit (Corno, 1993)."

Self-Regulated Learning

Motivation is a necessary but insufficient condition for positive academic outcomes. Motivation results in a decision to act, a decision that then must be implemented via engagement in action. Once a student engages in the pursuit of an academic goal, volition (self-regulation) is critical to ensuring that the myriad of variables that might derail the student from his/her intent do not interfere (Eccles & Wigfield, 2002). When tasks require high information processing demands (e.g., academic learning) in the presence of distractions or competing goals, self-regulated cognitive strategies help the student maintain his/her focus on completing the intended action(s).

As defined earlier in this paper, volitional controls reference conscientiousness and self-regulation and the student's "state in planning for and during the action, and the controls used to sustain the intention (Gollwitzer, 1996)" (Corno, et al., 2002, p. 90).[24] The ability to self-regulate one's motivation, cognition, affect, and behavior is critical to adaptive development and growth (Corno et al., 2002; Pintrich & Zusho, 2002; Snow et al., 1996). Most educators would agree, and

[24] The breadth of the volitional domain has been conceptualized as being much broader than just self-regulation. For pragmatic reasons, and to retain a focus primarily on educationally related learner characteristics, the current paper focuses only on the self-regulation component of volition. See Tellegen (1985) and Corno and Kanfer (1993) for further treatment.

the research literature supports the conclusion that a student who can monitor and regulate their own learning in the face of distractions and frustrations learns and performs better than students who are weak in self-regulation (Pintrich, 2000c; Schunk & Zimmerman, 2003).[25]

Key Assumptions

The theoretical and empirical self-regulation research, which includes linkages to literature in such domains as self-efficacy, academic goal setting, academic goal orientation, knowledge (domain-specific, strategy) and causal attribution, has been considerable during the past 2 decades (Puustinen & Pulkkinen, 2001).[26] Briefly, literature syntheses have identified 5 primary models of SRL (advanced by Boekaerts, Borkowski, Pintrich, Winne, and Zimmerman) (Puustinen & Pulkkinen, 2001) and 7 prominent theoretical perspectives (operant, phenomenological, information processing, social cognitive, volitional, Vygotskian, and cognitive constructivist) (Zimmerman, 2001). Although a number of differing models of self-regulated learning exist, most models define *academic self-regulation* as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition" (Pintrich & Zusho, 2002, p. 250).

Most SRL models share a number of common assumptions. According to Pintrich (2000c), these assumptions are:

- The *active, constructive assumption*, which views "learners as active constructive participants in the learning process" (p. 452).
- The *potential for control assumption* which assumes that "learners can potentially monitor, control, and regulate certain aspects of their own cognition, motivation, and behavior as well as some features of their environment" (p. 454).
- The *goal, criterion, or standard assumption* which assumes that "there is some type of criterion or standard (also called goals or

[25] It is important to note that "study skills" is a term that is often used interchangeably with self-regulated learning. See DiPerna and Elliott (1999) and Gettinger and Seibert (2002).

[26] See Boekaerts et al. (2001), Corno (2001), Eccles and Wigfield (2002), Winne (1995), Winne (1996), Winne (1997), Winne (2001), Winne and Hadwin (1998), Winne and Jamieson-Noel (2002), and Zimmerman, Schunk, and their colleagues Schunk (2001), Schunk and Zimmerman (1994), Schunk and Zimmerman (2003), Zimmerman (1989), Zimmerman (2000) for a more detailed treatment of this literature.

reference value) against which comparisons are made in order to assess whether the process should continue as is or if some type of change is necessary" (p. 452).

- The *mediation assumption* which states that "self-regulatory activities are *mediators* between personal and contextual characteristics and actual achievement and performance" (p. 453).

Characteristics, Processes, and Phases

Self-regulated students possess 3 major characteristics and employ 3 major processes (Eccles & Wigfield, 2002; Zimmerman, 2000). Self-regulated students typically use a variety of self-regulated strategies, believe they can perform well (positive self-efficacy), and set multiple and varying personal goals. Furthermore, "self-regulated learners engage in three important processes: self-observation (monitoring of one's activities); self-judgment (evaluation of how well one's own performance compares to a standard or to the performance of others); and self-reactions (reactions to performance outcomes)" (Eccles & Wigfield, 2002, p. 124). Of particular importance to students who experience repeated failure (e.g., students with disabilities) is the finding that students who receive positive feedback from their self-observations and judgments tend to continue to engage in positive goal-directed learning. Conversely, self-observation and judgment that provides frequent unfavorable evaluations and reactions increases the probability of disengagement from learning.

According to Pintrich's (Pintrich, 2000c; Pintrich & Zusho, 2002) framework for self-regulated learning, most SRL models include 4 major phases (which do not necessarily occur in an a strict linear sequence): (a) planning and activation; (b) monitoring; (c) control and regulation; and (d) reaction and reflection.[27] These 4 phases are conceptualized to operate in all major domains of human behavior—cognition, motivation and affect, and behavior. As a result, in the most general sense, there are at least 12 major SRL "cells" (4 phases-by-3-behavior domains). This level of conceptual breadth produces a quandary in the identification, definition, and listing of the

[27] For pragmatic reasons, only one model of SRL (viz., Pintrich's) is used as the SRL framework for the remainder of this paper. This decision does not necessarily indicate an endorsement (by the authors of the current paper) of Pintrich's model as "the" superior or preferred model. A single framework was necessary to constrain the length of the current work. Also, the Pintrich model is based on the same social cognitive theory that was the primary foundation for the "motivation" section in this paper. This linkage provides some degree of conceptual harmony in the text.

implications of the wide array of potential SRL ESAF characteristics. Furthermore, many of the ESAF characteristics described previously in this paper (e.g., goal setting, self-efficacy) are targets of SRL strategies. Given the resultant complexity of the SRL literature and the necessary decision to refrain from in-depth descriptions of the nuances of different underlying theories in this paper, a pragmatic decision was made to only define and describe, in general terms, the 4 major phases of SRL that operate across cognitive, motivation and affect, and behavior. Examples of specific cognitive, motivation and behavior strategies are included for illustrative purposes. Finally, the relatively small amount of research on classroom-based SRL investigation is surprising given the frequent lament from teachers regarding the importance of a student's "study habits or skills" (Pintrich & Zusho, 2002).

Self-Regulated Learning: Planning and Activation Strategies

Effective self-regulated students use forethought when approaching a task in order to develop a plan and to activate relevant prior knowledge necessary for successful task performance. *Planning and activation is defined as the processes of: (a) setting initial task specific goals (goal setting); (b) activating (often automatically without conscious thought) prior relevant knowledge in the relevant task domain; and (c) activating task relevant metacognitive strategies (e.g., rehearsal, elaboration, comprehension monitoring)* (Pintrich, 2000b; Pintrich & Zusho, 2002).

Similar to planning and activation is Snow et al.'s (1996) concept of "action-oriented" individuals. *Action-oriented* individuals are those who, when faced with a task or activity, take immediate steps to develop and activate a plan. According to Snow et. al. (1996), action-orientated individuals "are able to attend successively or even simultaneously to the present state, some future state, discrepancies between present and future states, and appropriate actions that will transform the present state into the desired future state" (Kuhl, 1987, p. 273). This contrasts with "*state-oriented*" individuals who "tend to focus on past difficulties and situationally inappropriate intentions. The behavior of state-oriented learners is marked by over-maintenance of intentions that are either unrealistic or should be postponed" (Snow et al., 1996, p. 273).

State-oriented students might be described as procrastinators. *Academic procrastination* is defined as "knowing that one is supposed to, and perhaps even wanting to, complete an academic task but, failing to perform the activity within the expected or desired time" (Wolters, 2003, p. 179), might be considered as reflecting deficient planning and activation strategies in the motivational domain (e.g., goal orientation adaptation, efficacy judgments). Poor planning and activation (e.g.,

procrastination) has been linked to negative learning and academic outcomes in the form of higher levels of anxiety and depression, lower levels of self-esteem, cramming before exams, and greater frequency of missing or incomplete assignments (Wolters, 2003).

In the motivational domain, planning and activation may "invoke judgments of efficacy as well as the activation of various motivational beliefs and value and interest" (Pintrich, 2000a, p. 462). Such judgments regarding the student's self-beliefs (e.g., academic self-concept), motivational orientation (e.g., academic goal orientation), and interests and values, set the stage for a student's initial feelings, effort, and persistence when engaging in the task. For example, if a student has a strong interest in mathematics and a positive sense of academic (math) self-efficacy, it is hypothesized that they are likely to approach and positively engage in new math tasks. In the behavior domain, SRL planning and activation might be demonstrated via time (e.g., making personal study schedules) and effort (e.g., increasing effort for important tests, record keeping) management.

Self-Regulated Learning: Monitoring Strategies

After a student implements their plan for a specific task, they can draw upon 2 sources of information to monitor their performance—real world performance and cognitive representations of that performance (Winne & Jamieson-Noel, 2002). Drawing largely on the research of Nelson and Narens (1990), a variety of metacognitive judgments have been postulated to occur during performance monitoring (Pintrich, 2000a; Winne & Jamieson-Noel, 2002). According to Pintrich (2000b), *judgments of learning* (JOLs) encompasses a variety of monitoring activities such as the student: (a) becoming aware that they are not comprehending what they have just read or heard; (b) becoming aware they are reading or studying too quickly or slowly; (c) engaging in self-questioning to self-check understanding; and (d) performing a self-memory test on material to check on readiness for an exam, etc. *Feelings (judgments) of knowing* (FOK) describe the metacognitive process of the student assigning a probability to the "information that is believed to be stored in memory but that the learner cannot recall at the moment" (Winne & Jamieson-Noel, 2002, p. 552). One classroom example could be a student having some recall of an instructional experience (e.g., teacher lecture, class discussion), but being unable to recall the specific material on a formal exam (Pintrich, 2000b). In SRL, *<u>monitoring</u> includes the metacognitive components of being aware of one's personal cognition and the monitoring of various aspects of one's cognition during task performance* (Pintrich, 2000b).

The research literature on monitoring motivation and affective domains is limited when compared to that for cognition (metacognitive awareness of monitoring). According to Pintrich (2000b), the primary focus has been on interventions designed to make students more aware of their motivational beliefs and modifying them in a more positive direction (e.g., attributional retraining interventions). In the behavioral domain, where time and effort management behaviors were described for the planning and activation stage, monitoring might consist of "tweaking" a student's original time management plan (e.g., changing from the original plan to study 1 hour to 3 hours). Self-observation is a behavioral skill important for determining when the self-evaluative feedback information requires a "tweak" of the original plan.

Self-Regulated Learning: Control and Regulation Strategies

Control and regulation processes are largely dependent on the information gained during metacognitive monitoring activities. For example, if a student is listening to a teacher lecture and engages in self-questioning to test their personal understanding, a discrepancy between their learning goal and progress may indicate the need to change their strategies. SRL *control and regulation activities are defined as the activation of metacognitive strategies for selecting, adapting, and changing cognitive strategies to reduce the relative discrepancy between immediate student goals and self-generated performance feedback judgments* (Pintrich, 2002a).

The list of possible control strategies is relatively large and represents the most researched component of SRL. Example control and regulation strategies include paraphrasing, outlining, summarizing, rehearsal, question generating, visualizing (imagery), drawing of cognitive or semantic maps, note taking, and using mnemonic devices to name but a few. The research literature suggests that many students who perform poorly on tasks (e.g., students with disabilities) often fail to spontaneously invoke SRL control and regulation strategies. However, when trained, especially when training is embedded in activities similar to real world performance environments, an improvement in metacognitive abilities can result (Gettinger & Seibert, 2002).

As per theories of SRL, the target of control may also lie outside of the student. For example, a student might seek to renegotiate certain task characteristics (e.g., topic, deadline) or leave the specific environment. These control strategies represent an attempt on the part of the student to "control and regulate the context" (Pintrich & Zusho, 2002).

Examples of control and regulation of academically related motivational beliefs include students using positive self-talk (to control self-efficacy), promising themselves rewards (e.g., a meal, a movie) when they complete a task to increase extrinsic motivation, and/or embedding the task in the context of their lives or future goals (to increase task value). A specific example of behavioral control and regulation that has been the subject of research is *academic help-seeking*. According to Pintrich (2000), "good learners and good self-regulators know when, why, and from whom to seek help" (p. 468). This differs from maladaptive help-seeking, which is characterized by seeking short-cuts in order to complete a task with little concern for understanding or learning. Adaptive academic help-seeking involves cognitive (knowing when to ask and how to frame a request), social (knowing how to make a socially appropriate request, and to whom), and motivational (possessing goals, attitudes, and self-beliefs that allow the person to admit personal difficulty) competencies (Newman, 2002). Space does not allow for a detailed exploration of the theoretical and research literature on the nature and development of academic help-seeking in this paper.[28]

Self-Regulated Learning: Reaction and Reflection Strategies

The final SRL phase involves a student evaluating and judging their performance and making causal attributions for their performance. Students who do not self-evaluate their performance or who are not cognizant of the importance of self-evaluation, tend to engage in surface (vs deep) processing in learning and also tend to display more negative affect and lower effort (Pintrich, 2002). Taking time to reflect on one's learning and learning processes is associated with more successful academic outcomes. Stated briefly, SRL *reaction and reflection strategies are defined as a student's self-judging their performance and making causal attributions for their performance*.

Upon completion of an academic task, a student may reflect on the outcome and experience an affective reaction. If the outcome was successful goal attainment, happiness may result. Conversely, academic failure may produce anger or sadness. The specific causes the student attributes to their success or failure (causal attribution) are hypothesized to impact the development of future levels of motivational beliefs (e.g., academic self-efficacy, academic self-concept), and thus, future learning (Pintrich, 2000). Finally, a student's thoughts about their behavior (e.g., amount of actual study time vs. planned study time) is important for SRL via the mechanism of

[28] The reader is referred to Newman (2000, 2002) for an overview of the academic help-seeking literature.

choice. For example, "they may decide that procrastinating studying for an exam may not be the most adaptive behavior for academic achievement. In the future, they may decide to make a different choice in terms of their effort and time management" (Pintrich, 2000, p. 469).

Self-Regulated Learning: General Implications

"Learners who can regulate their own cognition, motivation-affect, behavior, and their environment, are more likely to be successful in academic settings" (Pintrich & Zusho, 2002, p. 277). Corralling the implications of the diverse SRL literature is well beyond the scope of the current paper. The extant literature has demonstrated that changes in classroom environments, instructional strategies, or interventions targeted at specific groups of students with disabilities (e.g., see meta-analyses for students with and without learning disabilities by Schunk & Zimmerman, 2003) can facilitate the development of SRL capabilities (Boyer-Shick, 1997; Eilam & Aharon, 2003; Eshel & Kohavi, 2003; Fuchs et al., 2003; Meyer & Turner, 2002; Pfister, 2002; Robinson, 2002; Ruban, McCoach, McGuire, & Reis, 2003; Zimmerman & Schunk, 2001).

Listed below are a few key general implications drawn primarily from the work of Pintrich and colleagues (Pintrich, 2000; Pintrich & Zusho, 2002):

- Helping all children become adaptive self-regulated students would appear to be a valued outcome of education.
- The processes and strategies involved during the monitoring and control phases of SRL typically occur during the developmental periods that coincide with a student's course of formal schooling. Helping students develop, maintain, and/or change (in the case of maladaptive strategies) monitoring and control strategies should be a focus of part of most children's educational careers. For most students, these processes and strategies develop more-or-less automatically as a result of indirect learning. For students who do not spontaneously develop adaptive monitoring and control processes and strategies, formal intervention via education appears warranted.
- Developmentally, students develop and use more strategic cognitive and metacognitive strategies with increasing age. However, the

development of the "capability" to use SRL strategies does not ensure that the strategies will be invoked in real world learning. Research has demonstrated that students as late as high school and college may be "aware" of different strategies, but may not use them during their learning. Educators need to ensure that strategies are not only taught, but that efforts are made to ensure spontaneous implementation or "use" in real world academic learning. Although SRL capabilities are related to general development, each individual also contributes additional variance to their SRL capabilities via their learning experiences and the development of expertise (well developed domain-specific knowledge base).

- Little developmental research exists regarding volitional control strategy development (i.e., strategies for controlling motivation and affect).
- Research has found that novice users of a strategy (regardless of age) may demonstrate less benefit when using a new strategy than more capable students. This is often referred to as the "utilization deficiency," and should be anticipated and planned for when working with students with limited or inefficient SRL strategies. Repetition and practice is recommended in the research literature.
- Given that SRL is a cognitive process that involves the complex manipulation of multiple sources of information during learning, it is not surprising that certain cognitive abilities have been associated with ease of learning and using SRL strategies. SRL strategy use has been associated with higher working memory functioning (and associated processes of attention and executive control) and a well developed network of prior knowledge in the domain of learning. These findings suggest that, in general, younger students or students with significant cognitive disabilities (especially in working memory and prior knowledge), may experience more difficulty learning and using SRL strategies, as more of their cognitive resources are unable

to be “freed up” for SRL strategy use. This results in a more "other-regulated" orientation which can be approached vis-à-vis more initial teacher coaching and supports and adult scaffolding during learning.

- Recently, a resource depletion model has been postulated that suggests that SRL is based on a limited set of cognitive resources that can be depleted over time. This model suggests that periods of rest, or the insertion of unrelated tasks during a break from the current learning task, may be necessary to replenish the store of SRL energy. This model also suggests that as a student becomes more proficient with SRL strategies the amount of available SRL resources available may increase, thus, resulting in fewer periods of SRL resource depletion.
- A key skill in SRL is the inhibition or avoidance of behaviors (e.g., watching TV), thoughts (e.g., negative thoughts), or feelings (e.g., frustration) that may interfere with the key control processes, unwanted behavior, cognitions, and emotions. Students experiencing problems with SRL may need training in basic cognitive inhibitory processes and strategies.

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Appendix A: Brief Definitions of Theoretical/Conceptual Foundations Listed in Table 2

Need for Achievement Theory. Originally proposed by McClelland (McClelland, Atkinson, Clark, & Lowell, 1953), this theory hypothesizes that all humans have a distinct internal motive to seek achievement, attainment of realistic (but challenging) goals, and advancement. Individuals are believed to posses a strong need for feedback regarding their achievement and progress, and a need for a sense of accomplishment.

Intrinsic Motivation Theory. Intrinsic motivation theory postulates that "when individuals are intrinsically motivated, they engage in an activity because they are interested in and enjoy the activity. When extrinsically motivated, individuals engage in activities for instrumental or other reasons, such as receiving a reward" (Eccles & Wigfield, 2002, p. 112).

Self-determination Theory. According to Deci and Ryan (1985), self-determination theory explains 2 main components of human motivation—"(*a*) humans are motivated to maintain an optimal level of stimulation (Hebb, 1955), and (*b*) humans have basic needs for competence (White, 1959) and personal causation or self-determination (deCharms, 1968)" (Eccles and Wigfield, 2002, p. 112). Deci and Ryan argue that self-determination plays a role in both intrinsic and extrinsic motivation. The basic premise of the theory, is that a person will feel a sense of self-determination when they are able to determine the activities they will engage in and feel competent with during task performance.

Goal Theory. Researchers have proposed a number of models to describe how individuals develop and display goal-directed behavior. Bandura (1997) and Shunk's (1990) research suggests that "specific, proximal, and somewhat challenging goals promote both self-efficacy and improved performance" (Eccles & Wigfield, 2002, p. 115). Cognitive goal theory is based on the hypothesis that "all actions are given meaning, direction, and purpose by the goals that individuals seek out, and that the quality and intensity of behavior will change as these goals change" (Covington, 2000, p. 174). Goal theory focuses on the role that "purpose" plays in motivation attitudes and behavior (Anderman & Maehr, 1994; Eccles & Wigfield, 2002; Maehr, 1999; Snow et al., 1996; Urdan & Maehr, 1995). In an academic context, a person's achievement goal orientation deals with a student's *reason* for taking a course, wanting a desired grade, etc. (Anderman et al., 2002).

Although the specific terminology may differ across researchers, goal theory typically proposes 2 general goal orientations (Covington, 2000; Linnenbrink & Pintrich, 2002a). The underlying commonality among the different models is a distinction between a goal orientation driven by a concern for personal ability and normative social comparison (*performance goal orientation*) versus an orientation with a focus on task completion, understanding, developing and learning new skills, and mastery (*learning goal orientation*).

Goal Setting Theory. According to Locke and Latham (2002), goal-setting theory, which is largely an inductively derived theory (emerged from empirical research), is based on the premise that conscious goals affect action. Goal setting theory focuses on understanding the relationship between conscious performance goals and subsequent levels of task performance.

Interest Theory. Contemporary interest theory makes a distinction between *individual* and *situational interest*. "Individual interest is a relatively stable evaluative orientation towards certain domains; situational interest is an emotional state aroused by specific features of an activity or a task" (Eccles & Wigfield, 2002, p. 114). The domain of individual interest is often differentiated further into the categories of *feeling-related* (based more on feelings) and *value-related* (based more on personal significance of a situation) interests (Eccles & Wigfield, 2002). For the most part, research on situational interest has focused on "characteristics of academic tasks that create interest (e.g., Hidi & Baird, 1986)" (Eccles & Wigfield, 2002, p. 115). Research on individual interest, on the other hand, has focused more on the quality of learning and how it is related to interest.

Expectancy and Value Theory. Contemporary expectancy-value theories of motivation are based in Atkinson's (1964) expectancy-value model, in that they link achievement performance, persistence, and choice most directly to an individual's expectancy-related and task-value beliefs. The expectancy component of the theory focuses on an individual's beliefs about their competence, efficacy, expectations for success and failure, and feelings of control over the outcomes of situations. The value component focuses on an individual's incentives, motivations, and reasons for engaging in activities. Most contemporary expectancy-value theories believe that expectancies and values are positively related.

Self-efficacy Theory. Self-efficacy theory can be traced to Bandura's social cognitive model of motivation. "Bandura defined self-efficacy as individuals' confidence in their ability to organize and execute a given course of action to solve a problem or accomplish a task; he characterized it as a multidimensional construct that varies in strength, generality, and level (or difficulty)" (Eccles &

Wigfield, 2002, p. 110). The focus of self-efficacy theory is on expectations for success (*outcome expectations*—a belief that certain behaviors will result in certain outcomes) and *efficacy expectations* (beliefs of whether one can perform the behaviors necessary to attain a certain outcome).

Attribution Theory. Attribution theory deals primarily with an individual's interpretation of their achieved outcomes, rather than how specific motivational dispositions or realized outcomes affect subsequent achievement strivings (Eccles & Wigfield, 2002). "Attribution models include beliefs about ability and expectancies for success, along with incentives for engaging in different activities, including valuing of achievement (see Graham & Taylor, 2001)" (Eccles & Wigfield, 2002, p. 117). The key achievement attributes, as identified by Weiner and associates, are ability, effort, task difficulty, and luck (Eccles & Wigfield, 2002). These attributes are further described along the dimensions of locus of control, stability, and controllability.

Control Theory. Control theory is another type of expectancy-value theory and focuses on the hypothesis that an individual can only be successful to the extent they feel they have control over a situation (Eccles & Wigfield, 2002). Connell & Wellborn (1991); have also integrated control beliefs into a broader framework that includes 3 basic psychological needs: competence, autonomy, and relatedness. This theory posits a link between control beliefs and competence needs—individuals who believe they are in control of their achievement outcomes will feel more competent.

Self-worth Theory. Self-worth theory seeks to link motivational behavior to ability-related and valued-related constructs, as well as focusing on mental health "as a key determinant of the relation of expectancies and values to achievement behaviors" (Eccles & Wigfield, 2002, p. 122). Covington (1992, 1998) hypothesized that establishing and maintaining a positive self-image (i.e., a positive view of self-worth) is a primary human motive.

Social Awareness Theory. According to Greenspan (1981a), "the term social awareness may be defined as the individual's ability to understand people, social events, and the processes involved in regulating social events. The emphasis on interpersonal understanding as the core operation in social awareness indicates that this construct is a cognitive component of human competence" (p. 18). Social awareness is a multidimensional hierarchical construct that includes: social sensitivity (which subsumes the subdomains of role-taking and social inference); social insight (subdomains of social comprehension, psychological insight, and moral judgment); and

social communication (subdomains of referential communication and social problem-solving). Social awareness is one component of a larger all-encompassing model of personal competence that also includes emotional competence, physical competence, conceptual intelligence, and practical intelligence.

Social Cognitive Theories of Self-Regulation, Volition, & Motivation. In general terms, social cognitive theories of self-regulation focus on "how motivation gets translated into regulated behavior, and how motivation and cognition are linked" (Eccles & Wigfield, 2002, p. 124). A self-regulated student would be described as an individual who is "metacognitively, motivationally, and behaviorally active in their own learning processes and in achieving their own goals" (Eccles & Wigfield, 2002, p. 124). Multiple determinants of self-regulation have been suggested and include environmental, personal, and behavioral components, as well as context. The primary processes hypothesized to occur during self-regulation include self-observation, self-judgment, and self-reactions (Eccles & Wigfield, 2002).

Appendix B: Description of Literature Review Procedures

The literature included in this paper was located via a three-phased search strategy. Phase I involved the casting of a wide net (both in terms of years and keywords covered) via an examination of electronic databases. Three primary electronic databases were used: (a) PsychInfo, which indexes journals for the American Psychological Association's *Psychological Abstracts*; (b) ERIC, which indexes journals and technical resources from *Resources in Education* and *Current Index to Journals in Education*; and (c) Current Contents: Social and Behavioral Sciences Index. In addition, internet based searching via the Google search engine, Education Full Text, and general searches through the University of Minnesota's library web page were completed.

The sheer number of references returned (e.g., approximately 3,000+ references alone were returned for the term "adaptive behavior") during Phase 1 resulted in the decision to limit the search to articles published since 1980. Phase II involved searching the 3 electronic databases using the keywords listed below. The search process could best be described as an iterative "search-review-search-review, etc." process. With the completion of each successive search-review iteration, the search parameters became more specific.

Phase III involved the targeting of key summative literature reviews (e.g., reviews in the *Annual Review of Psychology* and *Review of Educational Research*) located during Phase II, and the ancestral tracing of key references included in these reviews. Ancestral searches for articles in key non-review articles were also completed.

The primary search keywords (often used together with modifying terms) during Phase II are listed below. These keyword terms were often used in combination with each other to further narrow a specific search (e.g., *self-esteem* and *individuals with disabilities*). The primary keywords were:

- adaptive behavior
- maladaptive behavior
- self-determination
- motivation
- interests
- attitudes
- self-concept

- self-esteem
- beliefs, values, and goals
- goal orientation
- academic enablers
- non-academic skills/behaviors
- social skills, social intelligence
- disabilities
- students with disabilities
- college students with disabilities
- individuals with disabilities
- metacognitive strategies
- self-regulated learning
- learning disability
- mental retardation
- personal competence

Figures A-1 and A-2 provide descriptive information on the scope of the literature included in the current paper. Figure A-1 reveals that the majority of the references (61.1%) were original research articles (published in journals). Research syntheses or reviews (which also included book chapters) comprised 37.2% of the articles referenced in the paper. Information from other sources (e.g., web pages, technical grant reports) comprised 1.7% of the final references.

A review of Figure A-2 indicates that the current paper is based extensively on the integration of recent research. Over 1/3 (35.6%) of the cited references were published during the past 3 years (2001-2003) and approximately 2/3 (62.8%) of all cited references were published since 1995.

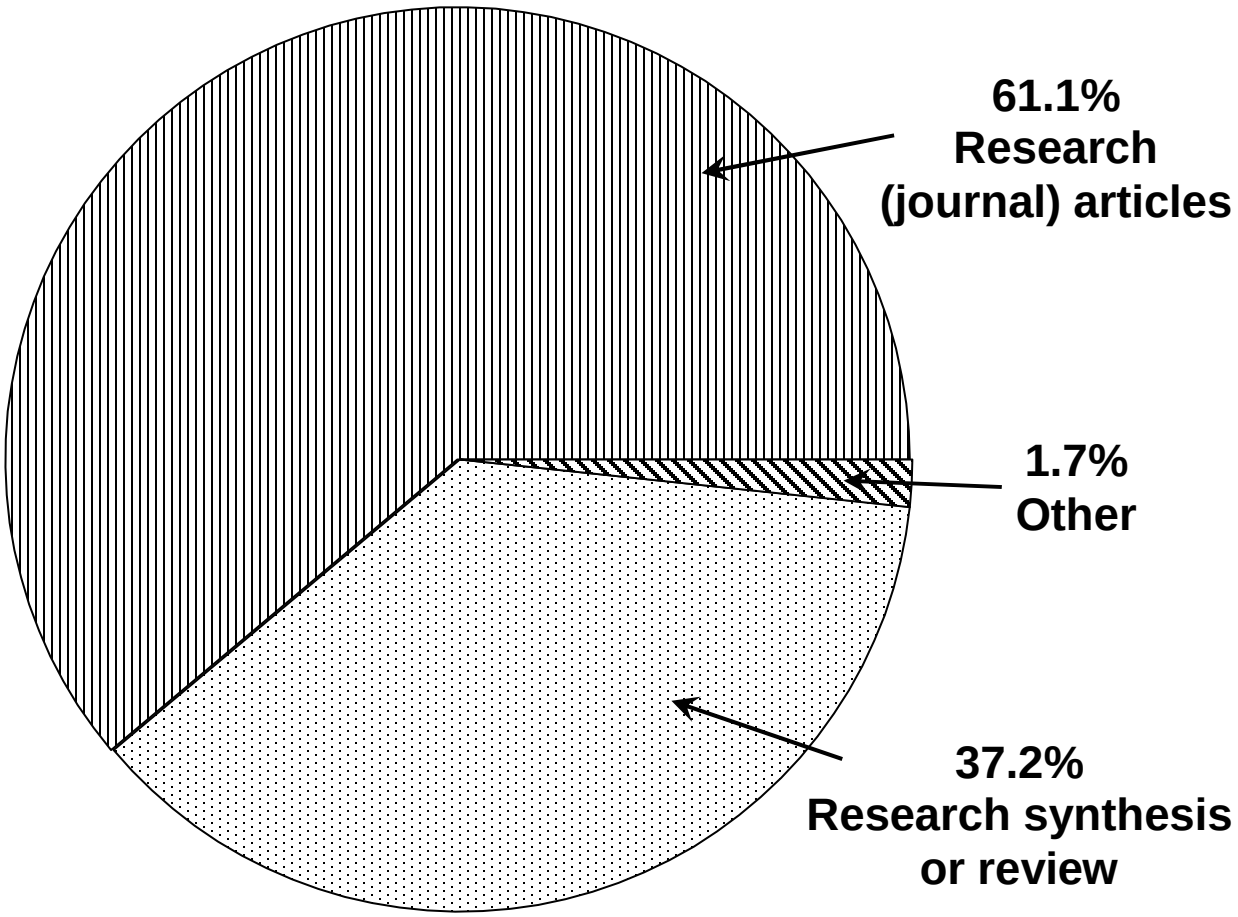

Figure A-1: Percent of literature by source and type of publication

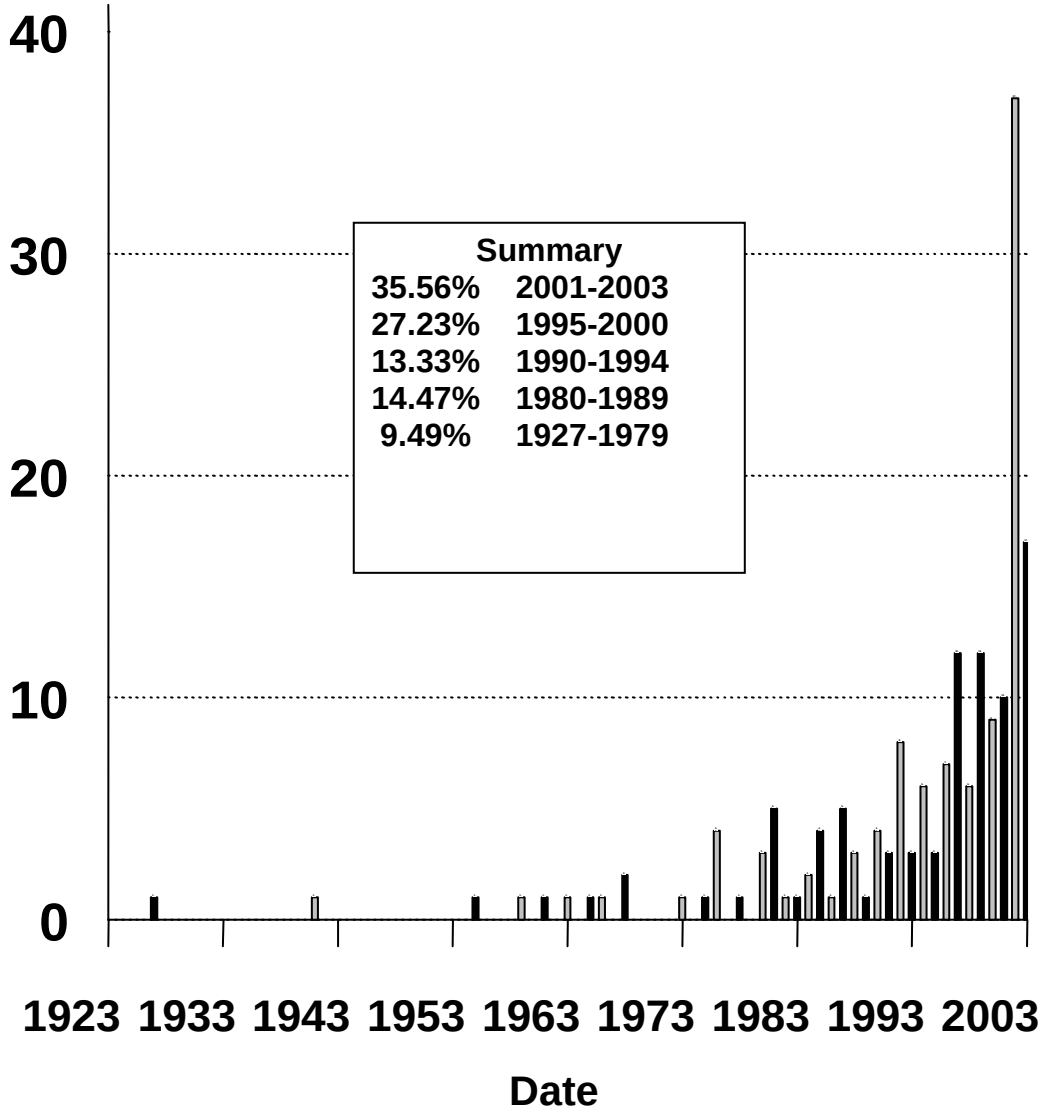

Figure A-2: Frequency and percent of publications reviewed by publication date

Appendix C: Assessment and measurement-related references

During the literature review for the current paper, manuscripts were encountered that appeared to deal (based on their title) with topics and issues related to the measurement of Essential Student Academic Facilitators (as defined in the body of this report). These references are listed below. This reference list is NOT the result of a systematic search for assessment or measurement literature in this area. With a few exceptions, none of these manuscripts were read for the current paper. This list is presented "as is" to serve as a potential starting point for future efforts to address the measurement of ESAFs.

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