Noncognitive Skills in the Classroom: New Perspectives on Educational Research

Jeffrey A. Rosen, Elizabeth J. Glennie, Ben W. Dalton, Jean M. Lennon, and Robert N. Bozick

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Academic Self-Concept

Jeffrey A. Rosen

Introduction
Academic self-concept has a research history spanning decades and is often mentioned as an important factor in educational attainment. Although there appears to be some agreement on the definition of academic self-concept, issues remain unsettled. The purpose of this chapter is to provide researchers with some insight into academic self-concept; specifically, the measurement approaches employed and how this attribute relates to important educational attainment outcomes. This chapter also discusses the conceptual definition of this attribute. There is clearly an increasing interest in noncognitive attributes in the educational research community, and this chapter provides researchers with some important information to aid in decisions on whether to account for academic self-concept in their studies of educational attainment.

This review has three distinct aims. First, drawing on recent definitions offered in the literature, academic self-concept will be defined conceptually. This includes drawing important distinctions between students’ self-concept perceptions toward school and toward specific academic domains. This also includes reviewing the theory on the causal relationship between academic self-concept and achievement outcomes. Second, the approaches taken to measure academic self-concept will be reviewed. Third, the major findings on the relationship between academic self-concept and educational attainment outcomes in the most recent literature will be reviewed and suggestions for future research will be offered.

Methods
Our initial search of the literature extracted citations and abstracts that referenced the term academic self-concept. This yielded 849 citations from 1997 through 2008. We reviewed these abstracts and identified studies that focused on the relationship between academic self-concept and some aspect of academic achievement. For the review of academic self-concept, we excluded
studies that (1) focused on parents, teachers, or administrators as the unit of analysis; and (2) focused only on a psychometric evaluation of an instrument measuring academic self-concept. This process resulted in a final sample of 42 articles that serve as the basis of this review.

**Conceptual Definition in the Educational Context**

Unlike some other constructs studied in this review (e.g., motivation and effort), the underlying conceptual definition of academic self-concept seems largely settled. Academic self-concept, broadly defined, can be thought of as a student’s self-perception of academic ability formed through individual experiences and interactions with the environment (O’Mara et al., 2006; Valentine et al., 2004). Regardless of the scope of specific research, researchers generally employ this central definition of academic self-concept.

A major contribution offered by the educational literature is to distinguish the concept of academic self-concept from self-concepts in other domains of activity. In theory, a positive academic self-concept should lead to gains in academic achievement. Specifically, students with positive views of their academic abilities are likely to engage in more achievement-related behaviors, which might include completing homework, studying for tests, and participating in class activities (Valentine et al., 2004). The key to understanding self-concept in an academic context and from an applied educational perspective is to understand conceptually what academic self-concept represents and its specific relationship to numerous academic outcomes.

**Global Self-Concept and Domain-Specific Self-Concept**

One of the more important distinctions within the definition of academic self-concept is that between global and domain-specific self-concepts. Academic self-concept globally is a student’s perception of his or her general ability in school. However, many researchers have argued that academic self-concept is multidimensional and varies across school subjects. Therefore, a large number of researchers have drawn distinctions between, for example, math self-concept (i.e., students’ belief that they can do well in mathematics) and literacy self-concept (i.e., students’ belief that they can do well in reading or language arts). The educational psychology literature demonstrates that students distinguish between the various domain-specific (e.g., math, reading, science) elements of academic self-concept (see, for example, Yeung et al., 2000). A synthesis of this
literature is beyond the scope of this review, but to understand the relationship between academic self-concept and academic achievement outcomes, it is necessary to recognize that general and domain-specific self-concepts may be different.

The Causal Relationship Between Academic Self-Concept and Achievement

Importantly, academic self-concept is formed and developed through interactions with a student’s significant others (i.e., parents, teachers, or peers) and therefore is dynamic as a student progresses through schooling. The question of causality between academic self-concept and achievement outcomes has been featured prominently in the academic self-concept literature. However, the direction of causality remains somewhat unsettled; three popular models describe different causal relationships between self-concept and academic achievement: the skill-development model, the self-enhancement model, and the reciprocal effects model.

In the skill-development model, academic self-concept is a consequence of prior academic achievement. Academic self-concept, be it global or in relation to a specific academic domain, develops as a student gets feedback on academic work (Guay et al., 2003). In the self-enhancement model, prior self-concept is a strong determinant of academic achievement. The reciprocal effects model argues that prior self-concept predicts subsequent self-concept and subsequent academic achievement (Marsh & Craven, 2006). Furthermore, prior academic achievement predicts subsequent self-concept, hence reciprocal effects. Figure 6-1 shows the hypothesized self-concept-to-achievement causal relationships in all three models over three time periods.

Figure 6-1. Hypothesized causal relationships in the skill-development, self-enhancement, and reciprocal effects models
Measurement Approaches

In this section, we discuss the specific approaches researchers have used to measure academic self-concept. Given the subjective nature of self-concept, a student self-report measurement approach is most appropriate. There are a few well-known survey instruments that are widely used to measure self-concept: the Self-Description Questionnaire (SDQ), the Academic Self-Description Questionnaire (ASDQ), and the Self-Perception Profile for Children/for Adolescents (SPP-C and SPP-A).

Self-Description Questionnaire and Academic Self-Description Questionnaire

The SDQ-I (preadolescent), SDQ-II (adolescent), and SDQ-III (late adolescent) instruments appear to be the most widely used measures of general self-concept in this literature. The SDQs measure multiple domains of self-concept, including some academic domains such as math and verbal abilities. From these instruments, the more scholastically focused ASDQ (see Marsh, 1990, 1992; see also Byrne, 1996) was developed for use in school-aged child populations. The ASDQ is a multidimensional (i.e., more than one academic domain) self-concept instrument based on prior SDQ research. A review of the psychometric properties of the ASDQ can be found in Byrne (1996), who noted that the basic structure is patterned after the SDQ, and it is reasonable to assume that the ASDQ will yield the same high-quality data.

Like the SDQ family of measures, the ASDQ is a series of age-based instruments. The ASDQ-I is intended for preadolescents, the ASDQ-II is intended for adolescents, and the ASDQ-III is intended for late adolescents. The ASDQ items tap into self-concepts in multiple academic areas, as well as a student’s overall self-concept. Examples of items used to tap into specific academic areas include the statements “I get good marks in ENGLISH LANGUAGE classes,” “Work in HISTORY classes is easy for me,” “I am hopeless when it comes to MATHEMATICS classes,” “I have always done well in ENGLISH LITERATURE classes,” and “I get good marks in SCIENCE classes.” Examples of items that tap global self-concept include “Overall, I have a lot to be proud of” and “I can do things as well as most people.”

The ASDQ uses an 8-point Likert scale with the following labels: definitely false (1), false (2), mostly false (3), more false than true (4), more true than false (5), mostly true (6), true (7), and definitely true (8).
Self-Perception Profile for Children (and Adolescents)

Harter’s (1982) SPP-A and SPP-C are also commonly used instruments in this research. Like the SDQ, both versions of the SPP measure multiple domains, including academic self-concept, athletic competence, social acceptance, physical appearance, job competence, close friendships, romantic appeal, behavioral conduct, and global self-worth. However, unlike the ASDQ, academic domains (e.g., math, science) are not individually measured.

The standard format for the SPP-A/C asks students to choose which of two statements is more true for them and then to indicate whether that statement was “sort of true” or “really true.” Example statements include the following: (1) “Some kids feel that they are very good at their schoolwork, but other kids worry about whether they can do the schoolwork assigned to them”; (2) “Some kids feel like they are just as good in their class work as other kids of their age but other kids aren’t so sure and wonder if they are as good”; (3) “Some kids are pretty slow in finishing their schoolwork but other kids can do their schoolwork quickly”; (4) “Some kids do very well at their class work but other kids don’t do well at their class work”; and (5) “Some kids have trouble figuring out the answers in school but other kids can almost always figure out the answers.”

The standard questions above are not academic domain-specific. They tap general attitudes toward school. Researchers including Bouchey and Harter (2005) have adapted these scales to assess domain-specific academic attitudes about skills such as math and science. They assessed adolescents’ perceived math and science competence by modifying the five academic subscale items of the SPP-A (Harter, 1985). For example, “I am smart for my age in math/science” and “I am pretty slow at finishing work in math/science” replace the more global measures normally used in the SPP-A.

Other Instruments

A few other instruments are used in the literature, but less widely so. For example, the Perception of Ability Scale for Students (PASS) (Boersma & Chapman, 1992) has been used to measure academic self-concept in a limited number of studies. The PASS measure of academic self-concept contains 70 yes/no, domain-specific items related to perceptions of ability in reading, spelling, language arts, math, and writing. Examples of items included in the scale are “I am a good reader,” “I make many mistakes in school,” and “I like math.” These items are similar in directness and complexity to that of the ASDQ items. Several independent evaluations suggest that the PASS has good psychometric properties (e.g., Byrne, 1996).
Several other self-concept instruments include academic subscales but were not used in any of the reviewed studies. However, they are used frequently enough in self-concept research that they warrant a brief mention here. The Multidimensional Self-Concept Scale (MSCS) (Bracken, 1992) includes an academic self-concept subscale, along with self-concept scales in other domains. Questions on the academic subscale of the MSCS include “I frequently feel unprepared for class,” “I am good at mathematics,” “I am proud of my school work,” and “I work harder than most of my classmates.” The

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Data Source</th>
<th>Subscales or Components</th>
<th>No. of Items</th>
<th>No. of Studies Using This Measure</th>
<th>Intended Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Description Questionnaire (SDQ) (Marsh, 1992)</td>
<td>Student</td>
<td>Academic domain-specific measures of self-concept</td>
<td>Varies</td>
<td>6</td>
<td>Multiple ages</td>
</tr>
<tr>
<td>SDQ-I: preadolescents; SDQ-II: adolescents; SDQ-III: late adolescents/young adults</td>
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<tr>
<td>Academic Self-Description Questionnaire (ASDQ) (Marsh, 1990, 1992; also see Byrne, 1996)</td>
<td>Student</td>
<td>Academic domain-specific measures of self-concept</td>
<td>Varies</td>
<td>4</td>
<td>Multiple ages</td>
</tr>
<tr>
<td>ASDQ-I: preadolescents; ASDQ-II: adolescents; ASDQ-III: late adolescents</td>
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</table>
Piers-Harris Self-Concept Scale (Piers & Harris, 1969) includes an Intellectual and School Status subscale that assesses a child's perceived abilities with respect to intellectual and academic tasks. Finally, the Tennessee Self-Concept Scale, Second Edition (TSCS:2) (Fitts & Warren, 1996), includes an overall self-concept rating as well as six subtest scores, one of which is academic self-concept. The total self-concept score measures the degree to which a person views him- or herself as competent and valuable. Table 6-1 outlines some key features of self-concept measures.

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Data Source</th>
<th>Subscales or Components</th>
<th>No. of Items</th>
<th>No. of Studies Using this Measure</th>
<th>Intended Population</th>
<th>Psychometric Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Description Questionnaire (SDQ)</td>
<td>(Marsh, 1992)</td>
<td>Student Academic domain-specific measures of self-concept</td>
<td>Varies 6</td>
<td>Multiple ages</td>
<td>Pietsch et al. (2003)</td>
<td>Content validity: Based on Shavelson et al. (1976) multifaceted, hierarchical model of self-concept. Construct validity: Exploratory and confirmatory factor analysis provides strong empirical foundation for the measures. Evidence for relationships with academic achievement, self-efficacy for academic success/failure, age, gender, reading ability, study skills, test anxiety, study processes, and masculinity/femininity. Reliability: High levels of alpha internal consistency reliability estimates for all scales, ranging from .76 to .90. Stability estimates range from .61 to .80s. (Source: Impara &amp; Blake, 1998)</td>
</tr>
<tr>
<td>Academic Self-Description Questionnaire (ASDQ)</td>
<td>(Marsh, 1990, 1992; also see Byrne, 1996)</td>
<td>Student Academic domain-specific measures of self-concept</td>
<td>Varies 4</td>
<td>Multiple ages</td>
<td>Marsh &amp; Yeung (1997b)</td>
<td>Content validity: ASDQ based on the Self-Description Questionnaire developed from the Shavelson et al. (1976) model (see descriptions by Marsh, 1990, 1992). The SDQ has demonstrated high-quality psychometric properties (Marsh &amp; Yeung, 1997b). The self-esteem scale was an 8-item scale adapted from the SDQ instruments (Marsh, 1990, 1992) that was based on the Rosenberg (1965) scale. Reliability estimates were .90 and .85 for the school esteem and self-esteem scales, respectively, and varied from .88 to .95 (median = .93) for the school-specific scales. Exploratory and confirmatory factor analyses (Marsh, 1990) provided a well-defined solution for a priori ASDQ factors, thus providing support for the ASDQ responses. Internal consistency: Marsh &amp; Yeung (1997b) found high omega estimates of reliability for Waves 1, 2, and 3: (a) English self-concept was .90, .92, and .89; (b) math self-concept was .95, .94, and .94; and (c) science self-concept was .95, .94, and .94.</td>
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<tr>
<th>Measure Name</th>
<th>Data Source</th>
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<th>No. of Items</th>
<th>No. of Studies Using This Measure</th>
<th>Intended Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Perception Profile for Children and for Adolescents (SPP-A and SPP-C)</td>
<td>Student</td>
<td>Scholastic competence, athletic competence, social acceptance, physical appearance, job competence, close friendship, romantic appeal, behavioral conduct, and global self-worth</td>
<td>Varies</td>
<td>5</td>
<td>Multiple ages</td>
</tr>
<tr>
<td>Perception of Ability Scale for Students (PASS)</td>
<td>Student</td>
<td>Reading, spelling, language arts, math, and printing/writing</td>
<td>70</td>
<td>1</td>
<td>Upper elementary school, grades 3 through 6</td>
</tr>
<tr>
<td>Reading Self-Concept Scale (RSCS)</td>
<td>Student</td>
<td>Academic domain-specific measures (competence, difficulty, attitude subscales)</td>
<td>30</td>
<td>1</td>
<td>Multiple ages</td>
</tr>
<tr>
<td>Example Articles</td>
<td>Psychometric Properties</td>
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| **Bouchey & Harter (2005)** | **Construct validity, SPP-C:** Exploratory and confirmatory factor analyses examining the five domain-specific subscales show mixed results, with some studies finding evidence to support the developers’ factor structure (Granleese & Joseph, 1993, 1994; Van Dongen-Melman et al., 1993) and other studies finding only partial support (Gavin & Herry, 1996; Schumann et al., 1999; Van den Bergh & Van Ranst, 1998; Veerman et al., 1996).  
**Reliability, SPP-C:** Internal consistency reliabilities reported for subscales ranging from .71 to .84 (Harter, 1985), .62 to .74 (Hess & Petersen, 1996), and .86 to .92 (Eapen et al., 2000). Test-retest correlations reported by Muldoon (2000) over a 2-year period for all subscales except social acceptance were statistically significant, ranging from .35 to .47.  
**Internal consistency, SPP-A:** Bouchey & Harter (2005) measured adolescents’ perceived academic competence using modifications of the five academic subscale items from the What I Am Like scale of the SPP-A (Harter, 1988) and found Cronbach’s alpha to be .80. (Source: Shevlin et al., 2003) |
| **Chapman et al. (2000)** | **Construct validity:** Factor analysis, item difficulty, and item discrimination (point biserial correlations) reduced 143 items down to 70 and helped identify subscales in a standardization sample of 310 Canadian children in grade 3. These analyses were repeated on a second standardization sample of 642 children from middle-income families in grades 3 through 6 in Canada using the 70-item PASS test; findings were consistent with the initial standardization sample results. Evidence of content, criterion, and construct validity are also reported in the manual.  
**Internal consistency:** For the full scale, α = .91 for the standardization sample of N = 310; α = .92 for the standardization sample of N = 642; and α = .93 for a third standardization sample of 831 children from middle-income families in grades 3 through 6 in the United States. The confidence subscale produced an alpha of .69, and the other subscales had an alpha greater than .75.  
**Test-retest reliability:** For the full scale and subscales, correlations ranged between (a) .71 and .83 over a 4- to 6-week period in a sample of 603 children, (b) .55 and .75 over a 1-year period for a sample of 932 children, and (c) .49 and .67 over a 2-year period in the same sample of 932 children. (Source: Conoley & Impara, 1995) |
| **Chapman & Tunmer (1995)** | **Construct validity:** Chapman & Tunmer (1995) found evidence of validity and reliability in a series of cross-sectional studies of elementary school children from New Zealand across 5 years (n ranged from 267 to 771). Confirmatory factor analysis resulted in three subscales. Significant relationships were found between subscales and reading performance, especially among older children (r = .40 to .65).  
**Internal consistency:** Cronbach’s alpha ranged from .81 to .89 across age groups for the full scale, .79 to .81 for the attitude subscale, .70 to .80 for the difficulty subscale, and .63 to .82 for the competence subscale. (Source: Chapman & Tunmer, 1995) |

(continued)
Table 6-1. Measures of academic self-concept: Key features (continued)

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<tbody>
<tr>
<td>Multidimensional Self-Concept Scale (MSCS) (Bracken, 1992)</td>
<td>Student</td>
<td>Academic domain-specific measures of self-concept</td>
<td>150 items (25 items per scale)</td>
<td>0</td>
<td>Grades 5 through 12</td>
</tr>
<tr>
<td>Piers-Harris Self-Concept Scale (Piers &amp; Harris, 1969)</td>
<td>Student</td>
<td>Intellectual and School Status subscale</td>
<td>60 items</td>
<td>0</td>
<td>7 to 18 years</td>
</tr>
<tr>
<td>Tennessee Self-Concept Scale, Second Edition (TSCS:2) (Fitts &amp; Warren, 1996)</td>
<td>Student</td>
<td>Overall self-concept rating, six subtest scores including academic self-concept</td>
<td>76-item child form and 82-item adult form</td>
<td>0</td>
<td>Multiple ages (child form ages 7 to 12, adult form ages 13 and older)</td>
</tr>
<tr>
<td>Measure Name</td>
<td>Data Source</td>
<td>Subscales or Components</td>
<td>No. of Items</td>
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</table>
| Tennessee Self-Concept Scale, Second Edition     | (Fitts & Warren, 1996)                             | Student Overall self-concept rating, six subtest scores including academic self-concept | 76-item child form and 82-item adult form                 | 0 Multiple ages     | (child form ages 7 to 12, adult form ages 13 and older) | NA       | Normed in 1960 on 1,183 students in grades 4 through 11 in a single Pennsylvania school district.<br><br>**Test-retest reliability:** Generally .70 or higher.<br><br>**Internal consistency:** Cronbach’s alpha ranged from .73 to .93 for the subscales and total score on the adult and child forms.<br><br>**Test-retest:** $r$ ranged from .47 to .82 for the adult form and .55 to .83 for the child form for the subscales and total score, over a period of 1 to 2 weeks.<br><br>**Construct validity:** Principal component analyses provide adequate evidence of construct validity in terms of separation of positive and negative items. Factor analyses support two factors based on positive and negative items for the academic and family subscales on the child form; and for the physical, moral, family, and academic subscales on the adult form.<br><br>(Source: Impara & Plake, 1998)

The research reviewed here suggests that the correlational relationship between self-concept and academic outcomes is overwhelmingly positive. Studies show that students feel more competent in academic areas in which they achieve well (Denissen et al., 2007). Both global and academic domain-specific self-concept are positively related to academic achievement, measured by grades and test scores. Given the consistency of this finding, the remainder of this section focuses on the causal ordering of academic self-concept and achievement, mediators of academic self-concept and achievement, sex issues in academic self-concept development, and how academic self-concept may change through schooling.1

Evidence on Causality

As stated previously, the issue of causality—whether academic self-concept demonstrates a causal relationship to achievement or vice versa—is an often-studied and unsettled issue in academic self-concept research. Overwhelmingly, the evidence suggests that academic self-concept and achievement are positively related. The causal ordering question, however, is very much in doubt, and strong evidence exists to suggest that academic self-concept cannot play a simple causal role in explaining academic achievement.

In a series of studies spanning nearly 10 years, Marsh and colleagues (Guay et al., 2003; Marsh & Yeung 1997a, 1997b, 1998; Marsh et al., 2005) consistently reported that academic self-concept causes subsequent changes in academic achievement. However, they also reported that the reverse is true: achievement causes changes in academic self-concept. Therefore, they suggest support for the reciprocal effects model.

In a sample of Australian upper-middle and high school students, Marsh and Yeung (1997b) provided early evidence supporting the reciprocal effects model. In the path models they estimated, they found that academic achievement (reading, science, and math) positively predicted subsequent academic self-concept. This predictive relationship was slightly stronger than the predictive relationship between academic self-concept and subsequent achievement; however, these data appear to support the idea that both academic self-concept and achievement can influence the other. Testing

1 These represent the major themes present in the literature reviewed here.
students at two points in time during the same school year, Marsh and colleagues (2005) again found reciprocal effects between math self-concept and achievement. In this longitudinal research, the strongest correlate of math self-concept in the middle of 7th grade was math self-concept at the beginning of 7th grade. Math self-concept at the beginning of 7th grade was also significantly related to math grades in the middle of 7th grade (effect size of .24) and math test scores in the middle of 7th grade (effect size of .09), even after controlling for the effects of other measures, including 6th grade achievement. In contrast to Marsh and Yeung's (1997b) study, in the Marsh and colleagues (2005) study, the effects of academic achievement on academic self-concept were smaller than the effects of self-concept on academic achievement, which partially supports the reciprocal effects model.

Guay and colleagues' (2003) findings also support a reciprocal effects-type link between prior academic self-concept and subsequent academic achievement at the early and middle elementary grades. In this study, students in grades 2, 3, and 4 were measured annually over 3 years, and there was stronger support for the self-enhancement model (academic self-concept predicts subsequent achievement) than for the skill-development model (academic achievement predicts subsequent academic self-concept) for all three age cohorts. The researchers' conclusions were all based on the size of the path coefficients they estimated. Table 6-2 outlines approaches to the study of academic self-concept.

The self-enhancement model has some empirical support in the reviewed studies. Buhs (2005) examined the relationships between change in academic achievement (dependent variable) and academic self-concept, classroom engagement, victimization, peer rejection, and exclusion. Higher victimization scores were associated with lower academic self-concept. Higher levels of exclusion significantly predicted lower academic self-concept and lower classroom engagement scores. Lower academic self-concept was linked to both lower classroom participation and to lower values on the change in achievement dependent variable. Academic self-concept was linked to engagement, but also linked directly to achievement change. Engagement did not fully mediate the relationship between academic self-concept and

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2 The authors used the following items to measure victimization: “How often do the kids in your class pick on you at school?”; “How often do the kids in your class say mean things to you at school?”; “How often do the kids in your class say bad things about you to other kids at school?”; and “How often do the kids in your class hit you at school?”
achievement. Effect sizes were low to moderate. Although this study only investigated achievement changes over a short time (fall to spring of 5th grade), it provides some support for the self-enhancement model and points to potentially important moderators (e.g., engagement).

The skill-development model was often empirically supported in the studies reviewed here. In a longitudinal study of young children just beginning school, Chapman and colleagues (2000) presented evidence that academic self-concepts form in response to early learning experiences. The authors selected 60 5-year-olds (from an original sample of 152 5-year-olds) who started school in 1993 and completed the PASS self-concept instrument. The students were stratified in three tiers: the top 15 percent represented the study’s positive
academic self-concept group, the bottom 15 percent represented the negative academic self-concept group, and the modal 15 percent represented the typical academic self-concept group. At the first measurement point (beginning of schooling), the authors attempted to predict academic self-concept group membership (top, bottom, or typical) using letter-name knowledge, phoneme deletion, and sound matching. Positive self-concept and negative self-concept group memberships were predicted 80 percent and 65 percent of the time, respectively. Typical group membership was predicted 40 percent of the time. Reading-related skills and performance seem to be predictive of positive and negative academic self-concept status, but less so of typical academic self-concept status. However, these data do suggest that early reading experiences are likely driving academic self-concept formation.

Chapman and colleagues went on to show how academic self-concept, particularly a negative self-concept, can remain intact throughout early schooling. At the completion of their first year of schooling and again during the middle of their third year of schooling, children with negative academic self-concept read lower-level books in class and performed at lower levels on several reading measures than did children with positive academic self-concept. Furthermore, differences emerged between children with negative and typical (modal) academic self-concept. At the end of their first year of schooling, children with negative academic self-concept had poorer reading skills than children with typical academic self-concept. And, by the middle of their third year, children with negative academic self-concepts had poorer reading word recognition and reading comprehension skills than children with typical academic self-concept.

Gonida and colleagues (2006) provided evidence that emphasizes the significance of school achievement in formulating subsequent responses. In a sample of 187 5th and 6th graders, students completed self-concept measurements twice, 1 year apart. Thus, 5th graders were retested when they were 6th graders, and 6th graders were retested when they were 7th graders and had moved from elementary to high school. The authors tested multiple causal models of self-concept and achievement, finding the strongest evidence for the model where school achievement influences academic self-concept.

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3 The authors only examined reading.

4 This is a sample of Greek students; in Greece, elementary school lasts 6 years, followed by high school starting in the 7th grade.
For the simple relationships tested, Time 1 school achievement significantly predicted Time 2 academic self-concept.

Herbert and Stipek (2005), in a sample of 345 elementary school students, found that student achievement (measured with standardized test scores) was strongly predictive of children's judgments of their literacy skills. In this longitudinal study of children from kindergarten or 1st through 5th grades, child competency ratings were gathered in kindergarten or 1st grade and again in 3rd grade and 5th grade. Using the child's self-competency ratings, the authors examined self-concept in literacy and in math and its relationship to achievement in literacy or math, parents' ratings of their child's competency in the relevant area, teachers' ratings of students' competency in the relevant area, and sex. In all grades (except 3rd- to 5th-grade math), achievement in the previous grade predicted children's ratings of their own academic ability. Interestingly, parent ratings in 3rd grade predicted children's ratings of literacy and math skills in 5th grade. In sum, academic skills were the most consistent predictors of children's judgments of their academic competence.

Although the studies referenced above hint at the importance of prior achievement in explaining academic self-concept, one recent and important study by Stringer and Heath (2008) provided very strong evidence that the predictive ability of self-concept becomes modest when measures of prior achievement are included in analyses. In a sample of 155 students (mean age of 10 years, 7 months), the authors found that, initially, self-perceptions of academic competence were moderately predictive of academic performance 1 year later, accounting for roughly 16 to 25 percent of academic achievement. But, when measures of prior achievement were included, the amount of the variance explained by self-concept dropped dramatically. The strongest contribution this study makes to the causality argument is the inclusion of measures of change in achievement. Stringer and Heath argued that if self-concept were causally related to academic performance and not simply related, we would expect that self-concept should not only predict achievement, but also predict changes in achievement. In the authors' words,

"We would expect that perceptions of competence at time 1 would predict not just later achievement, but also the change in achievement over time, that is, the performance of those participants who rated themselves as very competent would be more likely to improve over time, while the performance of those who rated themselves as less competent would be likely to decline over time. This relationship was not evident (p. 338)."
The evidence reported by Stringer and Heath suggests that academic self-concept may not play a simple role in helping to explain academic achievement.

**Mediators of Academic Self-Concept and Achievement**

A few studies reviewed here point to some potentially important mediating variables. Bouchey and Harter (2005) and Herbert and Stipek (2005) suggested that *adult perceptions of competence* and *scholastic behavior* may help explain the relationship between self-concept and achievement. Bouchey and Harter presented data indicating that students’ perceptions of what adults think and do predict their own self-perceptions and their current performance, even when prior academic achievement is controlled. Herbert and Stipek found that parents’ perceptions of their child’s competence were a particularly strong predictor of their child’s judgment of their skills in math. So adult perceptions appear important, but they are not often included in self-concept studies.

Scholastic behavior may also help explain the self-concept–achievement relationship. In one model tested by Bouchey and Harter, scholastic behavior (e.g., whether a student completed homework on time and how much energy was put into the school work) was significantly predicted by academic self-concept. In this model, scholastic behavior also predicted school grades. Although the data were not longitudinal, and only a small set of potential relationships between self-concept, scholastic behavior, adult perceptions of competence, and achievement were tested, this study points toward additional potential mediators not often included in studies of academic self-concept.

As noted in a prior section, Buhs (2005) suggested that *classroom engagement* could be an important factor in understanding the self-concept–achievement relationship. Although engagement did not fully mediate the relationship between self-concept and achievement in the Buhs study, the connection among self-concept, engagement, and achievement is well documented in this study. Buhs found relatively strong relationships between academic self-concept and classroom engagement. Buhs also found a strong relationship between classroom engagement and changes in academic achievement, something that has considerable support in the literature (e.g., Furrer & Skinner, 2003; Stipek, 2002). But Buhs found a much weaker direct relationship between academic self-concept and changes in academic achievement. So, classroom engagement could prove quite important in understanding how academic self-concept and achievement are linked.
Sex and Self-Concept

Sex differences in self-concept development are well documented and generally point to similar conclusions. The literature suggests that girls have a lower self-concept than boys (Young & Mroczek, 2003), but this may vary across different subjects. In math, several studies reviewed here found that boys had significantly higher math self-concepts (Ireson & Hallam, 2005; Marsh & Ayotte, 2003). Some researchers have identified a sex gap through grade 10 and a subsequent narrowing thereafter (De Fraine et al., 2007). Furthermore, girls often score higher on achievement tests than boys, although this does not translate into higher self-concepts in math or language (Hay et al., 1998; Herbert & Stipek, 2005; Marsh et al., 1985).

Linver and Davis-Kean (2005) showed how self-concept ability can help protect against grade declines, which are experienced by many students in high school. For high-ability girls, a higher self-concept of ability was associated with a less steep decline in grades over time.

Changes in Self-Concept Over Time

Research has provided significant evidence about how self-concept changes over time. Many studies find that children (especially girls) have a declining academic self-concept through their adolescence (De Fraine et al., 2007; Eccles et al., 1993; Gonida et al., 2006; Stipek & Maclver, 1989; Zanobini & Usai, 2002). But, as children grow older, academic self-concept may also become more stable and reliable (Guay et al., 2003). On the question of the relationship between self-concept and achievement, specifically on the strength of the association over time, the results appear mixed. Guay and colleagues (2003) suggested that self-concept becomes more strongly associated with academic achievement outcomes over time, but this contrasts with De Fraine and colleagues (2007) who found that the association between academic self-concept and language achievement becomes weaker with age. In this study, the association between academic self-concept and achievement at the individual level is rather strong at the start of high school. By the end of high school, however, this relation is much weaker, especially for girls. These discrepant findings suggesting that academic self-concept changes over time are an area for future research.
Discussion

This chapter has examined conceptual definitions of academic self-concept, the major instruments used to measure self-concept, and some important findings that could have practical implications for educational practice. Conceptually, academic self-concept has distinct components. One component, often called global self-concept, describes a student's self-beliefs about his or her overall ability in school. A second component of self-concept describes a student’s domain-specific feelings of competence in a particular subject matter. Math and reading are studied most, but recently, a small number of researchers may have identified a science domain, as well. Not surprisingly, academic self-concept, be it global or domain specific, is positively related to important academic outcomes like test scores and grades. Still, both in terms of the causal ordering of self-concept and achievement and the actual strength of the relationship, the results are not conclusive.

First, from the studies reviewed here, it is difficult to find strong support for a causal relationship between academic self-concept and achievement for at least two reasons: (1) the analytic approach (path analysis) chosen by most researchers in this area and (2) a potential specification issue with models predicting academic achievement. Marsh and Yeung (1998) investigated the causal ordering of self-concept and achievement over a series of studies, often concluding that evidence exists for the reciprocal effects model—the causal pathways work from academic self-concept to achievement and vice versa. But the choice of path analysis, which Marsh and colleagues exclusively chose in the studies reviewed here, makes it very difficult to answer questions about causal ordering. Although path models do reflect hypotheses about causation, ultimately path analysis deals with correlation, not causation of variables. Path analysis suggests which of the multiple theoretically derived models are most consistent with the pattern of correlations found in the data. This is not to say that the path coefficients, which Marsh and colleagues used to draw inferences about the strength and direction of relationships, are uninteresting. In fact, they are quite interesting, but they do not provide very conclusive evidence about causation. Stringer and Heath (2008) recently showed how academic self-concept is a weak predictor of change in achievement. The existence of a causal pathway from self-concept to academic achievement is equivocal.

Second, in the studies reviewed here, there are few strong tests of the relationship between self-concept and achievement because of a lack of sufficient control variables. In educational research, a long history of studies...
exists on the covariates of academic achievement, but few control variables are included in the studies reviewed here. A few exceptions exist (some measures of family influences, for example), but for the most part, the models attempting to explain achievement with self-concept as an independent variable do not include some fundamental covariates of student-level academic achievement. However, it is laudable that many studies in this review do control for prior achievement, which usually accounts for a large part of the variability in student-level achievement. This is clearly an area in need of improvement in this literature. Including more statistical controls would go a long way toward determining whether academic self-concept strongly influences student achievement or whether it simply exerts small influences.

Finally, the lack of a wide range of academic outcomes, other than grades and test scores, compromises the literature's ability to illuminate the true relationship between academic self-concept and academic achievement. Test scores and grades are the academic outcome of choice, and with good reason. But it makes good theoretical sense to argue that other important academic outcomes, like dropout rates, retention rates, and postsecondary entry rates, might be the outcomes on which you could expect self-concept to have strong influences. Logically, the better students feel they perform in school, the less likely they might be to drop out. This seems to be a testable proposition, and surely other testable propositions on academic outcomes other than grades and test scores could be developed. Such hypotheses have not been examined in the literature thus far, perhaps because the educational outcomes literature is not well integrated into the academic self-concept literature. Integrating the two disciplines is a worthy goal.

Measurement issues in this literature appear fairly uncontroversial. A few instruments are used widely and, although beyond the scope of this review, appear to have strong psychometric support in the wider literature. Even researchers who do not use the most common instruments choose items to measure self-concept that are nearly identical or very closely related to items on, for example, the SDQ. Furthermore, although the nature of academic self-concept probably necessitates a self-report measurement approach, student self-reports appear to be used exclusively in this literature. No research reviewed here attempts to measure self-concept behaviors, likely because self-concept is a judgment about oneself and does not lend itself to be behaviorally demonstrated.
Finally, the link between self-concept and achievement might be better explained if other noncognitive constructs were considered in this relationship. Although many possible connections could be investigated, one that seems to hold promise would be that between achievement, self-concept, and the expectancy-value theory of motivation. Expectancy-value theory emphasizes that as a child's expectations to do well in school improve, so will the child's academic achievement in school. Self-concept may have an important role to play in explaining how expectations for success relate to academic outcomes. Academic self-concept and expectations for success are often measured in surprisingly similar ways. For example, a common expectancy-value question might be, “I expect to do well in math.” A common math self-concept question might be, “I am hopeless at math.” These questions are clearly related so, for some, the distinction between the two may be unclear. But, if self-concept and expectations for success are distinctly separate constructs, they could very well work together to explain academic outcomes. For example, Eccles and Wigfield (2002) hypothesized that the self-concept of one's abilities is an important precursor of expectations of success, and expectations of success are directly related to academic achievement outcomes. Although more work is necessary, there does appear to be a clear overlap between self-concept and important elements of achievement motivation.

References
(References marked with an asterisk indicate studies included in the review.)


