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PRE-PUB VERSION

## **Competence Self-Perceptions**

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PRE-PUB VERSION

## Introduction

Elliot and Dweck (2005) concluded that competency self-perceptions were all-pervasive and powerful, “a basic psychological need that has a pervasive impact on daily life, cognition and behavior, across age and culture ... an ideal cornerstone on which to rest the achievement motivation literature but also a foundational building block for any theory of personality, development and well-being” (p. 8). Perceived competencies a key construct in most theoretical models of achievement motivation, and has been widely studied since the beginning of psychological research. The popularity of research into competence self-perceptions and associated positive self-belief constructs stems from their universal importance and multidisciplinary appeal. The importance of these constructs is highlighted by the frequency with which their enhancement is identified as a major focus of concern in diverse settings, including education, child development, mental and physical health, social services, industry, and sport/exercise. For many developmental researchers and early childhood programs (e.g., Fantuzzo et al., 1996), self-concept and competence perceptions more generally have been a “cornerstone of both social and emotional development” (Kagen, Moore, & Bredekamp, 1995, p. 18; also see Davis-Kean & Sandler, 2001; Marsh, Ellis, & Craven, 2002). Similarly, the importance of a person’s sense of competence has been widely accepted as a critical psychological construct that leads to success in educational settings (Chen, Yeh, Hwang & Lin, 2013; Marsh & Craven, 2006; Marsh & Yeung, 1997a, b), social and emotional situations (Donahue, et al., 1993; Harter, 2012; Marsh, Parada, Craven, & Finger, 2004), and daily life more generally (Elliot & Dweck, 2005). However there is a plethora of ways to conceptualize competence self-perceptions, and in this chapter we discuss the different operationalizations of competence self-perceptions and the implications for advancing theory, research, and practice.

Indeed, there is a revolution sweeping psychology (e.g., Seligman & Csikszentmihalyi, 2000) that emphasizes a positive psychology, focusing on how healthy, normal, and exceptional individuals can get the most from life. Self-perceptions of competence and associated positive self-beliefs, as emphasized in this chapter, are at the heart of this revolution (Bandura, 2008a, b; Bruner, 1996; Hunter & Csikszentmihalyi, 2003; Marsh & Craven, 2006). More generally, the phenomena of perceived competence and associated self-beliefs are widely accepted as a universal aspect of being human and as central to understanding the quality of human existence (Bandura, 2008a, b; Bruner, 1996; Harter, 1986; 1998; Marsh & Craven, 2006; Schunk and Pajares (2005). Thus, an individual’s sense of competence has become central to the field of positive psychology (Marsh & Craven, 2006; Seligman & Csikszentmihalyi, 2000). Furthermore, a person’s sense of competence in a specific domain

not only leads to a range of positive outcomes in that domain, but may influence their competence perceptions in other domains and modify how that person acts, feels, and adjusts to a changing environment.

### **Different Theoretical Conceptualizations of Competence Perceptions**

Researchers have conceptualized competence self-beliefs in different ways and from a variety of theoretical perspectives (e.g., self-concept, self-esteem, self-efficacy, expectations of success, confidence, competency, etc.). In the social sciences, particularly in the motivation and self-belief areas, researchers tend to focus on their preferred constructs, paying relatively little attention to testing how (or if) they differ from other constructs. This leads to jingle-jangle fallacies (Marsh, 1994; Marsh, Craven, Hinkley, & Debus, 2003), where two scales with similar names might measure different constructs whilst two scales with apparently dissimilar labels might measure similar constructs. In this chapter we operationalize competence perceptions as the competence component of self-concept, but also juxtapose the different terms used to represent competency self-perceptions, in an attempt to clarify some of the prevalent areas of confusion (also see Schunk & Pajares, 2005, organized around self-efficacy).

#### **Definition of Self-Concept**

The construct of self-concept has had a long and illustrious history and dates back to Socrates and Plato (see Hattie, 1992); Marsh (2007) has argued that current self-concept theories can be traced back to William James (1890/1963). In his seminal work, *The Principles of Psychology*, James proposed that the self is both multifaceted and hierarchical, “with the bodily Self at the bottom, the spiritual Self at the top, and the extracorporeal material selves and the various social selves between” (p. 313). This assertion, along with James’ distinction between the self-as-knower, the I, and the self-as-known, the Me, played an important role in developing self-concept theory. However, despite the rich beginning provided by James, advances in theory, research, and measurement of self-concept were slow, particularly during the heyday of behaviorism. Researchers in that era (e.g., Shavelson, Hubner, & Stanton, 1976; Wells & Marwell, 1976; Wylie, 1979) noted the poor quality of the theoretical models and self-concept measurement instruments leading Shavelson et al. to conclude that “it appears that self-concept research has addressed itself to substantive problems before problems of definition, measurement, and interpretation have been resolved” (p. 470). Similarly, Hattie (1992) described this period as one of “dustbowl empiricism” in which the predominant research design in self-concept studies was “throw it in and see what happens”. Thus, in her review of past, present, and future self-concept research, Byrne concluded:

Without question, the most profound happening in self-concept research during the past century was the wake-up call sounded regarding the sorry state of its reported findings, which was followed by a conscious effort on the part of methodologically oriented researchers to rectify the situation. (2002, p. 898)

In the period since the 1980s self-concept research has seen a renaissance, characterized by growth in the quality and sophistication of the theoretical models, quantitative methodology, measurement instruments, and research design. This was stimulated in part by Shavelson et al.'s (1976) seminal review article, which reviewed existing self-concept research and instruments, proposed a new theoretical model of self-concept, and provided a blueprint for the development of a whole new generation of multidimensional self-concept instruments (see review by Marsh & Hattie, 1996). Integrating key features from 17 different conceptual definitions of self-concept identified in their review, Shavelson et al. broadly defined self-concept as a person's self-perceptions formed through experience with and interpretations of his/her environment. This included feelings of self-confidence, self-worth, self-acceptance, competence, and ability. They noted that self-concept is influenced especially by the evaluations by significant others, by reinforcements, and by attributions for one's behavior. Further, self-concept was seen to be multifaceted and hierarchically organized, with perceptions of personal behavior in specific situations at the base of the hierarchy, inferences about self in broader domains (e.g., social, physical, and academic) in the middle of the hierarchy, and a global, general self-concept (also known as self-esteem) at the apex (see Figure 1). These self-perceptions influence the way one acts, and these acts in turn influence one's self-perceptions.

Self-evaluations of competence in a particular domain can be made against many standards of comparison (Marsh & Seaton, 2015; Skaalvik & Skaalvik, 2002): for example, an absolute ideal (e.g., the five-minute mile), social comparisons (e.g., results of classmates on a test), temporal comparisons (e.g., improvement over time, a personal best), or dimensional comparisons (e.g., accomplishments in one domain relative to those in others).

Widely-used multidimensional self-concept instruments, stimulated at least in part by Shavelson et al. (1976), differ in the self-concept dimensions addressed (see review by Byrne, 1996), but typically include at least one or more factors representing academic (e.g., MSC in math, and VSC in verbal domains), social (e.g., relations with friends, relations with parents), physical (e.g., physical competence, attractiveness), or emotional domains of self-concept, as well as a global self-esteem (general self-concept) scale, as posited in the Shavelson et al. (1976) model. Hence, self-concept is considered in this chapter to be a central operationalization of competence perceptions.

### **Self-Efficacy**

As emphasized by Bong and Skaalvik (2003) and others (e.g., Marsh, 2007; Schunk & Pajares, 2005), academic self-efficacy and academic self-concept (ASC) constructs have much in common: an emphasis on perceived competence, a multidimensional and hierarchical structure, content specificity, and the prediction of future performance, emotion, and motivation. Historically, self-concept was argued to be a global measure, whereas self-efficacy was seen as being very domain-specific (Bandura, 1986). However, in modern approaches to self-concept, it is reasonable to conceptualize and measure self-concept facets that are as domain-specific as typical self-efficacy measures, whilst some researchers focus on global measures of self-efficacy. Nevertheless, self-efficacy researchers have not developed or tested multidimensional, hierarchical models of self-efficacy that integrate global and increasingly specific components of self-efficacy such as those underlying self-concept theory (e.g., Figure 1). Indeed, on a theme that is similar to related discussion on the usefulness of global vs. domain-specific measures of self-concept in this chapter, Maddux (2009) suggests that global measures of self-efficacy are less useful than more specific measures, and posits their continued use as an unresolved issue for further research. Hence, this distinction between self-efficacy and self-concept would not appear to be very useful.

For the present purposes we focus on two key characteristics that do distinguish self-efficacy and self-concept. Firstly, self-efficacy responses are prospective, in terms of what one is able to accomplish in the future, relative to a specific task in a particular context. Hence, Bandura (1997) and others (e.g., Schunk & Pajares, 2005) suggest that self-efficacy refers to beliefs about “what I can do”: cognitive, goal-referenced, relatively context-specific, future-oriented judgments in relation to success in a narrowly defined task (Bong & Skaalvik, 2003; Schunk & Pajares, 2005). In contrast, although self-concept is predictive of future behavior and outcomes, it is largely based on past accomplishments. However, logically, we note that competence self-perceptions are also a reflection of past performances, which are predictive of future choices and behaviors. At least in this regard, competence self-perceptions are more logically operationalized in relation to self-concept than to self-efficacy.

Secondly, as emphasized by Bong and Skaalvik (2003) and others, paradigmatic, appropriately constructed self-efficacy items “solicit goal referenced evaluations and do not directly ask students to compare their abilities to those of others” (p. 9) and “provide respondents with a specific description of the required referent against which to judge their competence” (p. 9), whereas “assessing one’s capability in ASC relies heavily on social comparison information” (p. 9). Similarly, Bandura (1986) emphasized that self-esteem and self-concept—but not self-efficacy—are partly determined by “how well one’s behavior matches personal

standards of worthiness” (p. 410). Thus, for example, in a typical operationalization of self-efficacy, students are shown example math test items and asked the probability of correctly answering such items; their responses are based on an absolute criterion that does not require them to compare their own performances with those of other students (also see Bong & Skaalvik, 2003).

Consistently with this distinction, Marsh (2015; Marsh, Walker, & Debus, 1991; also see discussion by Marsh, 2007) found that relatively pure measures of self-efficacy are much less affected by frame of reference effects and social comparisons than are self-concept responses. For example, being in an academically selective school with other academically gifted classmates should not have much effect on academic self-efficacy measures, but does have a negative effect on ASC. However, in discussion of this distinction, Marsh (2007) argued that much of the power of self-beliefs to motivate and predict future behavior depends on the evaluation one makes of a purely performance expectation. Whereas the self-efficacy belief that I can run 100 meters in 13 seconds in the next school track meet might be descriptive in nature, the self-evaluation of this outcome—whether this represents a great result or a terrible one—has important implications. Relatedly, Bong and Clark (1999) acknowledge that “self-concept is judged to be more inclusive... because it embraces a broader range of descriptive and evaluative inferences with ensuing affective reactions” (p. 142).

Nevertheless, even these distinctions between self-concept and self-efficacy depend on how the constructs are measured. Thus, when comparing the self-concept and self-efficacy measures typically used in applied research (as opposed to relatively pure self-efficacy measures, consistent with the design features originally posited by Bandura and colleagues), Marsh et al. (1991) also note that measures purporting to measure self-efficacy are sometimes based on stimuli likely to invoke social comparisons with other students (e.g., “I’m certain I can do an excellent job on assignments and tests”, where the term “excellent” might imply a comparison with the work of others). Hence, the empirically demonstrated distinction between self-concept and self-efficacy responses is likely to depend on the nature and wording of the items, rather than on the label assigned to the construct. Thus, for example, Marsh, Trautwein et al. (2008) argue that the generalized self-efficacy items in PISA2000 were more like self-concept items, in that the criterion of successful performance was not an explicit part of these items. It is for this reason that they found a negative effect of school-average ability (the big-fish-little-pond effect, BFLPE) for self-efficacy responses, albeit one that was smaller than for ASC responses. Apparently for reasons such as this, the Valentine et al. (Valentine & DuBois, 2005; Valentine, DuBois & Cooper, 2004) meta-analysis of how well self-belief constructs predict future academic achievement found that

there were no differences between domain-specific ASC and self-efficacy measures, although both did systematically better than did more global measures of these constructs or self-esteem.

### **Self-Confidence**

The *Oxford Advanced Learner's Dictionary* defines self-confidence as a feeling of trust in one's abilities, qualities, and judgment—as in confidence in yourself and your abilities. In a sporting context, Horn (2004) defined self-confidence as positive self-beliefs about abilities or expectations about being able to achieve success. She distinguishes between self-confidence in relation to winning (outcome), performance in relation to standards, self-regulation of thoughts, emotions, and resilience; and physical skills. In psychology more generally, self-confidence is often operationalized as self-esteem, self-efficacy, self-concept, positive self-beliefs, and optimism. In a recent series of studies, Stankov (see overview by Stankov & Lee, 2015) developed an alternative perspective of confidence, as a mindset of having done well on a previously completed task (e.g., “I am sure that I have done this correctly”), in contrast to perceptions of self-efficacy (“I can do this” in relation to a future activity). This notion of confidence in relation to an activity that has already been performed, such as the likelihood or subjective probability that you correctly answered each question on an achievement test, is different to notions predicting what you might be able to accomplish on a specific task.

In marked contrast to domain-specific measures of self-concept, Stankov presents evidence that confidence is a global construct that generalizes over diverse activities, somewhat akin to the “big-G” factor for cognitive tasks, and that it is empirically distinguishable from other self-belief constructs such as self-efficacy, self-concept, and anxiety. Not surprisingly, perhaps, confidence in relation to each item on a test more accurately predicts test performance than do other self-belief items, but confidence remains a significant predictor of subsequent school grades three months later, even after controlling for test scores and other self-belief constructs. However, although more research into confidence as defined by Stankov and colleagues is clearly warranted, it seems to be conceptually and operationally distinct from other self-belief constructs that are used to represent competence self-perceptions.

### **Effectance**

Effectance is, perhaps, the most rudimentary of competence perceptions. Indeed, much current research on competence perceptions stems from White's (1959) concept of effectance, in which a sense of competence is the most fundamental source of motivation. Thus, Elliot, McGregor and Thrash (2002) argue that that, as operationalized in Deci and Ryan's (1991) Self-Determination Theory (see subsequent discussion), “the terms ‘competence’ and ‘effectance’ are used interchangeably in explanations of need for competence” (p. 361).

Building on White, from a developmental perspective, Harter (1998, 2012) posited the need for successful mastery of challenging tasks that leads to a sense of competence and intrinsic motivation. However, it is only with age and life experience that young children become more realistic about competence self-perceptions. Particularly for Harter, competence self-perceptions are operationalized as domain-specific self-concept responses. More generally, much of the work on intrinsic motivation and interest stems from White's seminal work. In this respect White was also highly influential in the development of expectancy-value theory (EVT; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992), although effectance motivation or need for competence can be thought of as a value component in EVT, rather than the expectancy component that represents competence perceptions.

### **Competence Expectancy in Expectancy-Value Theory (EVT)**

The construct of competence expectancy has been important since early theoretical work by Tolman (1932), who studied cognitive representations of habit in early animal learning studies, and Lewin, Dembo, Festinger, and Sear's (1944) concept of level of aspiration, which individuals set for themselves in task performance. These notions were subsequently incorporated into Atkinson's model of achievement motivation (1964), which emphasized that motivation is a function of expectations of success in a given situation and the value placed on the outcome (e.g., Atkinson, 1964; Feather, 1982). In particular, Atkinson posited that expectancy and value interact such that motivation is maximized when both are high.

Modern versions of EVT, based substantially on the work of Eccles and colleagues (e.g., Eccles & Wigfield, 2002) have greatly expanded on this historical theoretical framework, incorporating a wide variety of psychosocial and sociocultural variables. Of particular relevance, Eccles initially posited ASC to be distinct from expectations of success; whereas ASCs were posited as domain-specific competence beliefs, expectations of success were operationalized as more narrowly defined task-specific expectations of the likelihood of success on an upcoming task. Schunk and Pajares (2005) noted that this conceptualization of expectancy is similar to that used in self-efficacy research, but also emphasized that expectancy-value theorists have subsequently concluded that expectations of success (which are like the self-efficacy construct) and ASC are not empirically separable (Eccles & Wigfield, 2002; Wigfield & Eccles, 1992). Furthermore, Wigfield, Eccles, et al. (2006) emphasized that competence beliefs in EVT, as in self-concept research (e.g., Harter, 1998; Marsh, 1990), are defined in relation to how good one is at a particular activity and other activities, relative to other individuals, an approach that is somewhat different to that used in self-efficacy research. Indeed, many recent EVT studies use ASC responses to operationalize expectations of success (e.g., Eccles, 2009; Guo, Marsh, Morin et al., 2015; Guo,

Parker et al., 2015; Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002; Nagengast, Marsh, et al., 2011; Trautwein, Marsh et al., 2012).

EVT also makes an important distinction between ASC and value that clarifies an issue of confusion in ASC research, in which these constructs are sometimes combined to form a single construct. Thus, EVT theorists (e.g., Eccles, 2009) argue for the conceptual distinction between ASC as a relatively pure measure of competence self-perceptions, and multiple components of value (attainment, intrinsic, utility, and cost). Interestingly, this conceptual distinction is in accord with recent self-concept theory and research, which has delineated the cognitive and affective components of the self-concept construct whereby cognitive self-competence perceptions (e.g., “I am good at maths”) may be conceptualized and operationalized as separate from affective self-perceptions (e.g., “I like maths”; Arens et al., 2011; Marsh, Craven, & Debus, 1999; Pinxten, Marsh, et al., 2013).

The work of Harter (1986, 1998, 2012) in particular has focused on students’ perceptions of their own competence. However, like Eccles and Wigfield (2002), and similarly to the perspective taken in this chapter, Harter operationalized competence perceptions as self-concept responses. Thus, Pintrich and Schunk (1996) argue that Harter's definition of self-perceptions of competency is isomorphic with task-specific self-concept in EVT (Wigfield, Eccles, et al., 2002). In this respect, competency self-beliefs are operationalized as self-concept responses in research by Harter, Marsh (1990), and in EVT (Wigfield, Eccles, et al., 2002).

### **Need for Competence Satisfaction in Self-Determination Theory (SDT)**

Self-perceptions of competence, operationalized as self-concept, are closely related to the need for competence satisfaction in SDT which postulates that this need is a major reason why people seek out optimal stimulation and challenging activities (Deci & Ryan, 1985; 2012). However, there is possibly a subtle distinction between competence self-perceptions and competence need satisfaction. It would seem to be difficult to maintain high self-perceptions in a particular domain if competence need satisfaction continues to be low. In order to have competence need satisfaction, individuals need to evaluate their performance in relation to some standard, which could be:

- social comparisons with others in their context (e.g., classmates in schools);
- externally established standards of excellence (which are probably based on a form of social comparison against a “generalized” other (Marsh, Trautwein, Lüdtke & Köller, 2008);
- temporal comparisons based past performances in the same domain which may or may not involve social comparison (i.e., a personal best; Marsh & Martin, 2011; Martin & Liem, 2010);

- relative to performances in another domain (dimensional comparison; e.g., I am not really great at sport but I am a LOT better at sport than school work; although even this probably involves a complex form of social comparison);
- Feedback from significant others that probably involves one of the above.

Although competence need satisfaction might be posited to lead to self-concept, it is more likely that they are reciprocally related (see related discussion below of the reciprocal effects model of relations between academic achievement and self-concept, in which each is a cause and an effect of the other); need satisfaction/dissatisfaction is likely to result in increased/decreased self-concept but increased/decreased self-concept is likely to result in higher/lower need satisfaction. Furthermore, perhaps, the distinction might be like the distinction between self-concept and expectations of success in EVT; the conceptual distinction is difficult to operationalize in relation to empirical research.

### **Perceived Competence and Recent Advances in Achievement Goal Theory**

Recent extensions of achievement goal theory represent another perspective that is relevant to perceived competence. Achievement goals represent a mastery and performance distinction (Elliot, 2005). Mastery goals involve striving to develop competence and attain task mastery, whereas performance goals involve striving to attain or demonstrate competence relative to others (Elliot, 2005). Subsequent theorizing has emphasized bifurcating mastery and performance goals into an approach-avoidance distinction, with the predominant representation in terms of 2 x 2 achievement goal models comprising mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals (Elliot & McGregor, 2001). The need to be seen as competent and to avoid being seen as incompetent is directed through goals to achieve more specific outcomes in relation to self (e.g., previous performance), the task (task mastery), or levels of competence displayed by others (e.g., social comparison). Indeed, early work emphasized the role of perceived competence in achievement goals. For example, perceived competence has been identified as a moderator of performance goal effects by Dweck (1986) and as an antecedent of achievement goal adoption by Elliot (1999).

More recently, achievement goal theory has been expanded to include self-based goals. In a recent Special Issue of *British Journal of Educational Psychology* (Martin, 2015b) focusing on academic growth (including trajectories in self-concept; Parker, Marsh, Morin, Seaton, & Van Zanden, 2015), Elliot et al. (2015) explored self-based (growth) goals (i.e., using one's own personal trajectory as a standard of evaluation), with a particular focus on potential-based goals. This emanated from their earlier expansion of the 2 x 2 achievement goal framework to the 3 x 2 framework, which included self-based (growth) goals alongside task-based and other-

based goals (Elliot, Murayam, & Pekrun, 2011). In an article in that Special Issue, Martin (2015b) also explored growth goals but with a focus on personal best (PB) goals that are directed at outperforming one's previous best efforts or performance.

As work into growth goals and the 3 x 2 framework expands, three questions to address are centrally connected to perceived competence. First, it has been suggested that positive perceptions of self-competence are required for a student to raise the bar on him/herself and to set a goal that exceeds his/her best level of effort or performance (Martin, 2011). To what extent is this the case? Second, to the extent that perceived competence does play into one's self-set growth goals, what is the impact of attaining a personally-set growth goal on one's perceived competence? Presumably it is positive—but REMs to test this are now needed (Martin & Liem, 2010). Third, Martin (2015a, b) has raised questions about the impact on perceived competence if one fails to attain one's self-set growth goal. Relative to failing to attain a mastery or performance goal, could it be more damaging to perceived competence to fail to attain one's own personal standards? Clearly, advances and future directions in goal theory and growth goals bring into sharp focus and highlight the relevance of, the role of perceived competence.

### **Unidimensional versus Multidimensional Models of Self-Concept**

As noted earlier, in this chapter we operationalize competence perceptions as the competence component of self-concept—a multidimensional, hierarchical construct. Although James (1890/1963) originally conceived of self-concept as a multidimensional construct, there has been much debate on the value of unidimensional perspectives that emphasize a single, global domain of self-concept, often referred to as self-esteem, versus multidimensional perspectives based on multiple distinct components of self-concept (Marsh & Craven, 2006). Early self-concept research was generally dominated by a unidimensional perspective where self-concept was represented by a single, general self-esteem score (Rosenberg, 1979). Indeed, the difference between self-esteem and self-concept has long been a source of confusion and controversy. Particularly since the development of the Shavelson et al. (1976) model, researchers (e.g., Hattie, 1992; Marsh, 2007; Kernis, 2006) have viewed general self-esteem as a global construct that appears at the apex of the hierarchy, thus reflecting the broad view that an individual has about oneself (see Figure 1). Marsh (2007) argued that self-esteem items such as those on the widely used Rosenberg's Self-Esteem instrument (1979) are specifically constructed so that they do not refer to any specific domain. Historically, some theoretical models distinguished between self-esteem as the evaluative component of self-concept, and self-concept—posited to be the descriptive component. However, following Shavelson et al., it is generally accepted that self-concept is both descriptive and evaluative (e.g., Byrne, 1996;

Marsh, 2007), so that this is not a useful distinction (Marsh & Craven, 2006). Consistently with the Shavelson et al. model, in this chapter, we refer to self-esteem as the global component of self-concept, and discuss it further in relation to advances in self-concept theory, research, and practice emanating from unidimensional vs. multidimensional conceptualizations of the self-concept construct.

### **Support for a Multidimensional Perspective Of Self-Concept**

Marsh and Craven (1997) argue that:

If the role of self-concept research is to better understand the complexity of self in different contexts, to predict a wide variety of behaviors, to provide outcome measures for diverse interventions, and to relate self-concept to other constructs, then the specific domains of self-concept are more useful than a general domain. (p. 191)

Marsh and Craven (2006; Marsh, Xu & Martin, 2012) note that in many psychological disciplines (e.g., educational, developmental, and sport psychology) the multidimensional perspective of self-concept is now widely accepted. However, support is strongest in educational psychology research, where diverse academic outcomes are systematically related to academic components of self-concept but are nearly unrelated to self-esteem and non-academic components of self-concept. This extreme multidimensionality was highlighted by Marsh, Trautwein et al. (2006; also see Marsh, Trautwein et al. 2005), who showed that nine academic outcomes (standardized test scores, school grades, and coursework selection in different school subjects) were systematically related to corresponding ASCs. For example, math self-concept (MSC) was substantially related to math school grades ( $r = .71$ ), math standardized achievement test scores ( $r = .59$ ), and taking advanced math courses ( $r = .51$ ). In contrast, the academic outcomes were nearly unrelated to global self-esteem ( $r$ s ranging from  $-.03$  to  $.05$ ), as well as nine other nonacademic specific domains of self-concept.

The need for a multidimensional perspective on self-concept and competence beliefs more generally, is evident in other psychological disciplines as well (see review by Marsh & Craven, 2006; Marsh, Xu & Martin, 2012). For example, in developmental psychology, research has shown differentiation between multiple domains of self-concept in children as young as five (Marsh, Craven, & Debus, 1998; Marsh, Ellis, & Craven, 2002). In mental health research, Marsh, Parada, and Ayotte (2004) demonstrated that relations between 11 self-concept factors and seven mental health problems varied substantially ( $r$ s  $+.11$  to  $-.83$ ; mean  $r = -.35$ ), demonstrating an a priori multivariate pattern of relations that supported a multidimensional perspective. In sport psychology, Marsh and Peart (1988) demonstrated that the results of a physical fitness intervention, and physical fitness indicators, were substantially related to physical self-concept but nearly uncorrelated with non-physical components of self-

concept. Gender differences in self-esteem are small (Wylie, 1979), but these small gender differences mask larger, counterbalancing gender-stereotypic differences in specific components of self-concept (e.g. boys have high MSCs, girls have higher MSC) that are reasonably consistent from early childhood to adulthood (e.g. Crain, 1996; Eccles, Wigfield et al., 2002; Jacobs, et al., 2002; Marsh, 1989; 2007). In social psychology and sociology there is a rich theoretical literature on the agreement between self-ratings of self-concept and inferred self-concept ratings by significant others. However, support for the convergent and discriminant validity of these ratings is good when both participants and significant others make ratings on specific self-concept factors based on multi-item scales with strong psychometric properties. In summary, across many disciplines there is growing support for a multidimensional perspective of self-concept.

### **Support for a Global Self-esteem Construct**

It is also important to emphasize that we are not claiming that self-esteem is never a useful construct (see Kernis, 2006). Rather, to be consistent with the specificity matching principle (Swann et al., 2007), we conclude that when the focus of a study is on educational outcomes, for example, it is important to focus on academic components of self-concept. Swann et al. (2007) also reviewed other research consistent with the specificity-matching principle, showing that self-esteem significantly but weakly predicted specific outcomes and more strongly predicted global outcomes. For example, using a prospective, longitudinal design based on a large birth cohort study, Trzesniewski et al. (2006) reported that adolescents with low self-esteem subsequently (10 years later) had poorer mental and physical health, worse economic prospects (more likely to leave school early and to have money problems; less likely to attend university), and higher levels of criminal behavior during adulthood, compared to adolescents with high self-esteem—even after controlling for adolescent depression, gender, socioeconomic status, IQ, and body mass index. However, recognizing that many of the effect sizes were modest, they concluded that low adolescent self-esteem was one of many potentially modifiable risk factors for a wide variety of adult adjustment problems.

### **The Relation of Competence to Achievement: Causal Ordering of Self-Concept and Performance**

#### **The Reciprocal Effects Model (REM)**

ASC and academic achievement are substantially correlated, but this does not answer the critical question of the temporal ordering of these two constructs. This question is important not only because of the theoretical implications for self-concept theory but also because of the practical implications for determining the teaching practices that are most effective in enhancing student educational outcomes and beliefs, given that ASC has motivational properties that contribute to achievement (Byrne, 2002). Traditional approaches to this issue (Calsyn

& Kenny, 1977) took an “either-or” approach—either prior achievement leads to subsequent ASC (a skill development model) or prior ASC leads to subsequent achievement (a self-enhancement model). However, integrating theoretical and statistical perspectives, Marsh (1990) argued for a dynamic reciprocal effects model (REM) that incorporates both the skill development and self-enhancement models, such that both ASC and achievement are causes and also effects of each other (see Figure 2).

### **Generalizability**

Subsequent to Marsh (1990), there have been increasingly sophisticated developments in the statistical methodology measures used to test the REM, and substantial support has been garnered for the generalizability of the findings over age, nationality, different self-concept instruments, and different ways of measuring achievement (Marsh, 2007; Marsh & Craven, 2006; also see meta-analyses by Huang, 2011; Valentine, DuBois, & Cooper, 2004). In particular, Valentine and colleagues (Valentine & DuBois, 2005; Valentine, DuBois & Cooper, 2004) reported that the effect of prior self-beliefs on subsequent achievement, after controlling for the effects of prior achievement, was highly significant overall and positive in 90% of the studies they considered. Furthermore, and consistent with a multidimensional perspective, the effects of prior self-beliefs were significantly stronger when the measure of self-belief was based on a domain-specific measure of self-concept, and achievement measures were matched in terms of subject area (e.g., mathematics achievement and MSC). In contrast, they reported little evidence of the effects of generalized self-beliefs such as self-esteem, on academic achievement. They concluded that the REM relating academic self-beliefs and achievement is consistent with theories of learning and human development that view the self as a causal agent (e.g., Bandura, 2008b; Carver & Scheier, 2002; Deci & Ryan, 1985; 2012). Indeed, Valentine and DuBois conclude that support for the REM is equally strong for domain-specific ratings of ASC and self-efficacy. Based on similar findings in a subsequent meta-analysis, Huang (2011) concluded that: “As high self-concept is related to high academic performance and vice versa, intervention programs that combine self-enhancement and skill development should be integrated” (p. 505). Demonstrating the importance of the separation of competence and affect, Pinxten et al. (2013) showed that whilst competence and intrinsic motivation, and competence and achievement, were reciprocally related over time, intrinsic motivation had no positive effects on subsequent achievement in their REM study.

Generalizing support to the physical arena, Marsh, Papaionannou et al. (2006) demonstrated the REM in a study investigating the causal ordering of physical self-concept and exercise behavior, whilst Marsh, Chanal and Sarrazin (2006) found support for a REM of self-concept and gymnastics performance. These findings are further supported by Marsh and Perry’s (2005) study of self-concept and performance in a large sample of many of the

top-ranked swimmers in the world, showing that prior self-concept was a significant positive predictor of subsequent performance in international championships, beyond what could be explained by previous personal best performances.

### **Challenges to the REM**

The REM is consistent with positive psychology perspectives in that positive self-beliefs are posited to be associated with enhanced life outcomes. Baumeister et al. (2003) challenged this premise in an influential review commissioned for *Psychological Science in the Public Interest*, arguing “that efforts to boost people’s self-esteem are of little value in fostering academic achievement or preventing undesirable behavior” (p. 84). In a critique of these claims, Marsh and Craven (2006) argued that these conclusions were problematic in the context of recent advances in methodological and theoretical understandings of self-concept. In particular, Baumeister et al. relied on a unidimensional perspective that emphasized self-esteem, largely ignoring the research based on a multidimensional perspective focusing on ASC. From a multidimensional perspective it is reasonable that esteem would have little or no relation with academic achievement, even though ASC and achievement are reciprocally related (Marsh & Craven, 2006). Marsh and O’Mara (2008) subsequently provided clear support for this theoretical claim by juxtaposing the negligible effects of self-esteem with the substantial effects of ASC, in a reanalysis of the classic Youth in Transition study that was used by Baumeister et al. in support of their claims (in relation to self-esteem) and by Marsh and Craven in support of their REM (in relation to ASC). This conclusion is also consistent with meta-analytic research that found consistent support for a reciprocal relation between ASC and achievement, but little to no reciprocal effect between achievement and self-esteem (Valentine & Du Bois, 2005; Valentine et al., 2004; also see Huang, 2011). Importantly, the apparent controversy and the challenge to the REM are easily resolved when they are placed within the appropriate multidimensional perspective of self-concept theory (Marsh, Xu & Martin, 2012) supported by more appropriate statistical evidence.

In summary, the REM has been a critical development in self-concept theory. Firstly, the REM established that positive self-concept and achievement are mutually reinforcing. Secondly, this finding supports the notion that positive self-concept is an integral part of success and achievement. Finally, these findings have important implications for educators. Since self-concept and achievement are mutually reinforcing and reciprocally related, interventions aimed at improving performance should not only strive to promote skill development, but should also seek to simultaneously enhance self-concept, to encourage achievement.

### **Competence and Frame of reference models: Internal Comparison Processes**

#### **Theoretical Background**

Shavelson et al. (1976) posited that different domains of ASC should be substantially correlated and form a single higher-order ASC factor, consistent with similar theoretical models of achievement and the substantial positive correlations routinely observed between achievements in different school subjects (Marsh, 2007).

However, subsequent research revealed that MSC and VSC in particular, were nearly uncorrelated. This led to the Marsh/Shavelson revision, in which Marsh and Shavelson (1985; Marsh, Byrne & Shavelson, 1988) posited two higher-order ASC factors (math and verbal) and a continuum of core ASC factors ranging from MSC at one end to VSC at the other end (Figure 1). From these findings the internal/external frame of reference (I/E) model was developed to explain why MSC and VSC are almost uncorrelated (Marsh, 1986). However, it was subsequently expanded to incorporate a more general framework, in the form of Dimensional Comparison Theory (DCT; Marsh, Möller et al., 2015; Marsh, Parker & Craven, 2015; Möller & Marsh, 2013).

The I/E model posited what initially seemed to be a paradoxical effect: that while achievement in each domain has a positive effect on self-concept in the matching domain (e.g., mathematics achievement on MSC), there is a negative (contrast) effect on self-concept in the non-matching domain (e.g., mathematics achievement on VSC). Theoretically, the external comparison process predicts assimilation; that good math skills lead to higher MSCs and that good verbal skills lead to higher VSCs. According to the internal dimensional comparison process, however, good math skills lead to lower VSCs once the positive effects of good verbal skills are controlled: The better I am at mathematics, the poorer I am at verbal subjects, relative to my good math skills. Similarly, better verbal skills lead to lower MSCs once the positive effects of good math skills are controlled. Summarizing the results of 13 studies, Marsh (1986) reported that in the I/E process (Figure 3a), the (horizontal) paths from math achievement to MSC and from verbal achievement to VSC, are substantial and positive. However, the (cross) paths from math achievement to VSC and from verbal achievement to MSC are significant and negative.

### **Support and Generalizability**

Subsequent research provides strong support for the generalizability of I/E predictions. For example, in a large cross-cultural study, Marsh and colleagues (Marsh & Hau, 2004; Marsh, Hau, Artelt, Baumert, & Peschar, 2006) demonstrated that support for these theoretical predictions generalized over large, nationally representative samples of 15-year-olds from 26 countries based on PISA data. In a meta-analysis of 69 data sets Möller, Pohlmann et al. (2009) reported that math and verbal achievements were highly correlated ( $r = .67$ ), but self-concepts were nearly uncorrelated ( $r = .10$ ). The horizontal paths from achievement to ASC in the matching domains were positive ( $\beta = .61$  for math,  $\beta = .49$  for verbal), but cross paths were negative from math

achievement to VSC ( $\beta = -.21$ ) and verbal achievement to MSC ( $\beta = -.27$ ).

There is also experimental research in support of the causal hypotheses of the I/E model. For example, Möller and Köller (2001) found that manipulation of feedback on achievement in one subject area had an inverse effect on self-concept in the subject at the opposite end of the verbal-mathematics continuum. Furthermore, diary studies have also confirmed that students spontaneously undertake dimensional comparisons on a day-to-day basis. Importantly, these dimensional comparisons have been shown to predict post-school education and career pathways (Parker, Schoon et al., 2012, Parker, Marsh et al., 2014; Parker, Nagy et al., in press). The I/E model has also been heuristic in relation to other major theoretical models, such as Pekrun's (2006) control-value theory of achievement emotions and Eccles' expectancy-value theory for the prediction of gender differences in academic and career choice (e.g., Eccles, Vida, & Barber, 2004; Parker et al., 2012). Extensions of the I/E model also shows how it is integrated with some of the major theoretical models of ASC (see Marsh, Parker & Craven, 2015): the Marsh/Shavelson multidimensional, hierarchical model of ASC (Figure 1), the longitudinal reciprocal effects model (REM) of the causal ordering of relations between self-concepts and accomplishments (Figure 2), and the big-fish-little-pond effect (BFLPE) model of negative (contrast) social comparison effects associated with attending academically selective schools and classes (see discussion below).

Commenting on ongoing debates about how self-concept and self-efficacy are impacted by different frames of reference in relation to the meta-analysis of I/E studies, Möller, Pohlmann et al. (2009) found that the correlation between math and verbal self-efficacy measures ( $r = .50$ ) is much higher than the correlation between self-concept measures (between  $r = -.09$  and  $.17$ ), and nearly as high as the corresponding achievement correlation ( $r = .70$ ). More generally, strong support for the generalizability of the I/E predictions led Möller, Pohlmann et al. to conclude: "The results of our meta-analyses indicate that the relations described in the classical I/E model are not restricted to a particular achievement or self-concept measure or to specific age groups, gender groups, or countries" (p. 1157).

### **Domain-specificity**

A salient, and critical feature of the self-concept construct and of competence perceptions more generally, is the domain-specificity that underpins the I/E model and DCT more generally. Support for domain-specificity is based on the low positive (or even negative) correlations among self-concepts in different domains (e.g, MSC and VSC). To what extent does this domain-specificity, so evident in self-concept responses, generalize to other motivation constructs?

To address this question, Marsh, Martin and Debus (2001) evaluated the domain-specificity of 22 academic motivational constructs (e.g., self-concept, attributions, persistence, academic plans, self-regulation, motivational orientation, self-handicapping, defensive pessimism, implicit theories). For each of these 22 constructs, separate scales were constructed for the math and verbal domains. There was clear support for the domain-specificity of self-concept and, to a lesser extent, self-concept-like constructs (e.g., future plans; ability attributions for success and failure), in that correlations were modest. However, many other constructs were domain-general, in that correlations between the math and verbal scales were extremely large (e.g., external attributions to success and failure; entity and incremental implicit theories, self-handicapping, avoidance orientation, ego orientation).

Partly on the basis of constructs from PISA 2000 (see Marsh, Hau, et al., 2006), Xu, Marsh et al. (2013) reached similar conclusions with Hong Kong secondary students: in a study of 17 motivational constructs in math, Chinese and English domain-specificity (evidenced by low correlations) was evident for self-concept, interest, and self-efficacy constructs, while the other constructs were all more domain-general. In terms of domain-specificity these results have important implications for theory, methodology, applied research, and practice. Of particular relevance to our chapter, they suggest that support for the I/E model is likely to be specific to competence constructs such as self-concept, but may not generalize to other motivational constructs.

### **Dimensional Comparison Theory**

Möller and Marsh (2013; Marsh, Möller et al., 2015; Marsh, Parker & Craven, 2015) extended the I/E model to incorporate a more general theoretical framework that they called Dimensional Comparison Theory (DCT). In the broader psychological literature, the two most frequently posited frames of reference for forming self-perceptions are temporal comparisons (how current accomplishments compare with past performances) and social comparisons (comparison with the accomplishments of others in one's immediate context; e.g., classmates in one's school or class). However, in DCT, Möller and Marsh proposed an additional comparison process, dimensional comparisons, based on how accomplishments in one domain compare with those in different domains—an extension of the internal comparison process in the I/E model.

Extending the traditional tests of the I/E model, DCT predicts strong contrast effects only for contrasting domains that are at opposite ends of the theoretical continuum of ASC (far comparisons; e.g., the negative effect of math achievement on VSC), but much weaker negative contrast or even positive assimilation effects for complementary domains that are close to each other (near domains; e.g., positive effects of math achievement on physics self-concept; positive effects of native language on foreign language self-concept). This ordering of school subjects along an a priori verbal-to-math continuum is based on theoretical and empirical research that led

to the Marsh/Shavelson revision (Figure 1), thus integrating DCT with established self-concept theory and empirical results. Recent studies (Jansen et al., 2015; Marsh, Kuyper et al., 2014; Marsh, Lüdtke et al., 2015) were explicitly designed to test DCT theoretical predictions based on a comprehensive range of academic domains. All these studies provide clear support for the critical prediction that paths from achievement to ASC, based on near comparisons, were less negative than those based on far comparisons. These results have important implications for theory, research, and practice. The results extend self-concept theory in new and nuanced ways and provide a fertile foundation for further research. More broadly, DCT theory posits dimensional comparison as a critical basis for the formation of self-perceptions, in addition to temporal and social comparisons. The results imply that educators, parents, and significant others need to be aware of these effects when attempting to shore up students' ASCs, and need to discourage comparisons in which good achievement in one results in poorer self-concepts in contrasting domains.

### **Competence Perceptions and Frame of Reference Models: The Big-Fish-Little-Pond Effect**

#### **Theoretical Background**

As noted earlier, psychologists from the time of William James (1890/1983) have recognized that objective accomplishments are evaluated in relation to frames of reference. Here the focus is the widely studied BFLPE model, which emphasizes the frame of reference of the relative performance of classmates, and the negative effect of school- or class-average achievement on ASC (Figure 4). Although the initial inspiration came from psychophysical research (Marsh, 1974), Marsh (1984; see also Marsh & Parker, 1984; Marsh, Seaton, et al., 2008) proposed the BFLPE to capture frame of reference effects on ASCs, based on an integration of theoretical models and empirical research from diverse disciplines: relative deprivation theory, sociology, psychophysical judgment, social judgment, and social comparison theory (Festinger, 1954). According to the BFLPE, students compare their own academic abilities with the abilities of their classmates, and use this social comparison as the basis of their ASCs (Huguet, et al., 2009). In the BFLPE, students who attend high-ability classes and schools tend to have lower ASCs than equally able students who attend mixed- or low-ability classes and schools. Thus, the BFLPE explains how students with equal ability can have differing ASCs as a result of their educational setting.

#### **Support and Generalizability**

Since the initial BFLPE study (Marsh & Parker, 1984) there has been a wealth of support for BFLPE predictions, based on studies that used differing experimental and analytical approaches (Alicke et al., 2010; Marsh, 1987; Marsh & Craven, 1997; see reviews by Marsh, Seaton et al., 2008; Marsh & Seaton, 2015; Marsh,

Xu & Martin, 2012). Indeed, based on a very large sample of UK schools, Tymms (2001) reported support for the BFLPE in seven-year-old students. Furthermore, Marsh (1991) demonstrated that students attending higher-ability high schools were likely not only to suffer from depleted ASCs, but also to have lower GPAs, lower educational aspirations, lower occupational aspirations and lower standardized test scores. They were also more likely to select less demanding coursework than their equally able peers attending schools with lower average abilities. These findings are significant, as they have important implications for parents, teachers, and policymakers; they counter the commonly held belief that it is advantageous to send students to schools where the average ability level is high. Instead, Marsh argues, the BFLPE findings indicate that many students attending such schools are not reaching their full academic potential.

### **Local Dominance Effects: Class vs. School Social Comparison Processes**

BFLPE studies typically are based either on the class or the school, but almost none have contrasted the two in the same study. Alicke, Zell and Bloom (2010) provided support for the BFLPE by experimentally manipulating the frame of reference in relation to the feedback given to participants about their performances compared to others. When they pitted “local” against more “general” comparison standards, participants consistently used the most local comparison information available to them, even when they were told that the local comparison was not representative of the broader population and when they were provided with more appropriate normative comparison data. Extending this theoretical research on the local dominance effect, because class-average achievement is a more proximally relevant frame of reference than the school-average achievement, class-average achievement should be more locally dominant. Based on new (latent three-level) statistical models and theoretical predictions integrating BFLPEs and local dominance effects, Marsh, Kuyper, et al. (2014) found that significantly negative BFLPEs at the school level were largely eliminated and were absorbed into even larger BFLPEs at the class level. Students accurately perceived large achievement differences between different classes within their school and across different schools. However, consistently with the local dominance effect, ASCs and the BFLPE were largely determined by comparisons with students in their own class, not by objective or subjective comparisons with other classes or schools. Because the majority of BFLPE studies have been conducted at the school rather than the class level, these results suggest that many studies have underestimated the size of the BFLPE.

### **Cross-Cultural Generalizability**

Further support for the BFLPE was also found in the quasi-experimental setting that arose after the fall of the Berlin Wall (Marsh, Köller et al., 2001). Essentially, the fall provided researchers an opportunity to compare

the effects of attending school systems that differed in the extent that they segregated students by ability. While West German students had previously attended academically differentiated schools, East German students had not been exposed to an academically differentiated school system. Results of the study supported the BFLPE predictions. The BFLPE was significantly larger for West German students at the start of reunification of the schooling systems. Importantly, as time passed, the difference in the size of the BFLPE between East and German students was reduced, and eventually disappeared after the East German students had been exposed to the West German schooling system for a year. According to Marsh, Köller et al. these findings are a testament to how national educational policy differences impact upon the ASCs of individual students.

In research reviewed by Marsh, Seaton et al. (2008; Marsh, Abduljabbar et al., 2014), there is consistent cross-cultural support for the BFLPE, based on studies from many different countries. Three successive PISA data collections (Marsh & Hau, 2003: 103,558 students from 26 countries; Seaton, et al., 2009; 2010: 265,180 students from 41 countries; Nagengast & Marsh, 2012: 397,500 students from 57 countries) showed that the effect of school-average achievement on ASC was negative in all but one of the 123 samples, and significantly so in 114 samples.

### **Moderation and generalizability: Two sides of the same coin**

One approach to testing the generalizability of the BFLPE is to evaluate potential moderators—particularly those of sufficient strength to eliminate the BFLPE or even to change its direction (i.e., positive effects of school-average achievement for students with certain characteristics). Moderation is of course, an important focus for research: (a) significant moderators contribute to understanding the nature of the BFLPE and are potentially heuristic in terms of reducing the negative consequences and (b) conversely, the failure to find substantial moderators argues for the broad generalizability and robustness of the effects.

Based on PISA2003 (41 countries, 10,221 schools, 265,180 students), Seaton et al. (2010; also see Marsh & Seaton, 2015) found that the BFLPE was not substantially moderated by any of 16 individual student characteristics (e.g. SES, individual ability, intrinsic and extrinsic motivation, self-efficacy, study methods, anxiety, competitive and cooperative learning orientations, sense of school belonging, and teacher-student relationships). They concluded “that the BFLPE was an extremely robust effect” (p. 390). Jonkman et al. (2012) evaluated whether the BFLPE was moderated by personality factors (big-five traits and narcissism). They found that students high in narcissism had exaggerated ASC and smaller BFLPEs, while noting of course that enhancing narcissism to reduce the negative consequences of the BFLPE would be counterproductive. In contrast, students

high in neuroticism experienced more negative BFLPEs. However, these moderation effects were modest, in that they did not change the direction of the BFLPE; this again supports the robustness of the BFLPE.

**Achievement goal theory.** Achievement goal theory, and related theoretical approaches, might suggest that the BFLPE would be accentuated by performance, ego, or competitive orientations, but be lower for students who have a mastery or learning approach. However, results by Seaton et al. (2010; also see Marsh & Seaton, 2015) failed to support these suggestions. In a particularly strong test of these predictions, Wouters et al. (2015) evaluated the extent to which the BFLPE varied as a function of individual student and class-average constructs from achievement goal theory (mastery, performance-approach, and performance-avoidance;  $N=2,987$  grade 6 students from 174 elementary school classes). There was clear support for the BFLPE (class-average  $ES = -.34$ ). However, there were also small moderating effects of each of the individual goal constructs, such that students who more strongly endorsed any of these goals experienced larger BFLPEs ( $ESs = -.07$  to  $-.10$ ). The authors suggested that students who are more academically engaged are more susceptible to BFLPEs, regardless of their reasons for being engaged. However, somewhat surprisingly, when all three academic goals were included in the same model, mastery was the only goal that significantly interacted with class-average ability ( $ESs = -.07$ ) and the direction of this effect was in the opposite direction that one might anticipate. Cheng, McInerney, and Mok (2014) also evaluated whether the BFLPE was moderated by any of seven goal orientations (intrinsic: task, effort, social concern, affiliation; extrinsic: competition, social power, praise and token;  $N = 7,334$  Hong Kong high school students from 201 math classes). Again they found a substantial BFLPE ( $ES = -.62$ ). Although all but one of the goal orientations (affiliation) interacted significantly with the negative effect of class-average ability, they concluded that the sizes of these moderating effects were very small ( $-.05$  to  $-.09$ ) and consistently negative. Similar to Wouters et al. (2013), they suggested that “students who were more motivated in general, irrespective of the types of goal constructs, experienced stronger BFLPE” (pp. 575–576). In summary, there is little evidence that goal theory orientations at either the individual student, the class- or school-level, moderate the BFLPE.

**Individual student ability.** Perhaps the most extensive research on moderators of the BFLPE has focused on individual student ability, exploring whether high ability is a protective factor in relation to the BFLPE. Indeed, the theoretical debate regarding the substantive issue of whether the BFLPE is moderated by individual student achievement (e.g., Coleman & Fults, 1985; Marsh, Kuyper et al., 2014; Marsh, Seaton et al., 2008) has important policy/practice implications for gifted education research. However, according to the theoretical model underpinning the BFLPE (Marsh, 1984; 2007; also see Marsh & Seaton, 2015; Marsh, Seaton et al., 2008) the frame of reference is largely determined by class/school-average achievement, which is necessarily the same for

all students within a given school or class. This theoretical rationale is similar to that in classical psychophysical models, such as Helson's (1964) adaptation level theory. Thus, the BFLPE should be similar for the brightest and the weakest students within a given class or school. Consistently with these theoretical predictions, a growing body of empirical research (Marsh, 1984; Marsh, Kuyper, Morin et al., 2014; Marsh & Seaton, 2015; Marsh, Seaton et al., 2008) shows that interactions between school- or class-average achievement and individual student achievement are consistently small or non-significant, and not even consistent in direction—that bright, average, and less bright students experience negative BFLPEs to a similar extent.

### **Explicit Tracking: BFLPEs for Gifted and Academically Disadvantaged Students**

Much of the support for the BFLPE is based on de facto selection processes that result in naturally occurring differences between schools and classes in terms of school- or class-average achievement. However, a number of studies have also considered explicit tracking, in which students are specifically selected to attend special schools, classes, or programs for academically gifted or disadvantaged students. Hence, a critical issue with important theoretical, substantive, and policy implications is whether these results based on de facto selection generalize to settings in which students are specifically selected to be in classes and schools with other students of similar abilities—as in the case of ability grouping, streamed classes, and academically selective schools. In addressing this issue in relation to gifted and talented primary school classes, Marsh, Chessor et al. (1995) used pre-test data (age, sex, IQ) collected prior to an intervention to match students who subsequently moved to gifted and talented classes, with students from mixed-ability classes. In two separate studies, students in the gifted program experienced significant declines in all three domains of ASC over time and in relation to matched comparison students. In both studies this general pattern of results was reasonably consistent across gender, age, and initial ability. Also consistent with a priori predictions, participation in gifted programs had little or no effect on non-ASC or global self-esteem.

BFLPE studies have mostly focused on the negative effects of ability grouping, tracking, and school/class-average achievement on the ASC of high-ability students who attend high-ability schools and classes. However, the BFLPE also has important theoretical and practical implications for less-able students in low-ability tracks or special schools/classes for academically disadvantaged students. Marsh, Tracey, and Craven (2006; see also Tracey, Marsh, & Craven, 2003) contrasted predictions from two different theoretical perspectives: labeling theory predicts that special class placement with other disadvantaged students undermines self-concept; the BFLPE predicts that mainstreaming disadvantaged students into regular classes with more able students will have negative effects that are specific to ASC. They found that, compared to mainstreamed students,

those in the special classes had significantly higher ASCs (consistent with BFLPE predictions) but also had higher peer self-concepts. Thus, disadvantaged students in regular mixed-ability classes did not feel as included as proponents of the inclusion movement would have hoped. In their subsequent review of research in this area from different countries, Marsh and Seaton (2015) concluded that “mainstreaming has potentially negative consequences for the academic and social self-concepts of academically disadvantaged students, suggesting that integration policies should be reconsidered. Appropriate strategies are needed to counter these negative effects of inclusion on ASC rather than accepting the largely unsupported inference from labeling theory that the effects of inclusion on ASC are positive” (p. xx).

### **Juxtaposition of School-Average Achievement and Year in School**

The BFLPE effect is based on the assumption that the academic accomplishments of classmates form a frame of reference or standard of comparison that students use to form their own academic self-concepts. However, being in a school environment with highly able students, as operationalized by school-average achievement, is not the only way in which a student’s frame of reference can be altered. For a variety of reasons, such as acceleration, or starting school at an early age, students can find themselves in classes with older, more academically advanced students who form a potentially more demanding frame of reference than would same-age classmates. Similarly, due to starting school at a later age or being held back to repeat a grade, students can find themselves in classes with younger, less academically advanced students. Based on the logic of the BFLPE, Marsh (2015) posited and found that relative year in school (being one or more years ahead of or behind the year in school of same-aged students) had a negative effect on ASC; the effects on ASC were negative for de facto acceleration (e.g., starting early and skipping grades) and positive for de facto retention (e.g., starting late and repeating grades). Based on PISA2003 (276,165 fifteen-year-old students from 10,274 schools, 41 countries) the negative effects of relative year in school were:

- cross-culturally robust across the 41 PISA countries;
- neither substantially explained nor moderated by a diverse range of control variables (e.g., gender, school starting age, repeating grades, home language, immigrant status, SES, achievement); and
- independent of the negative BFLPEs also demonstrated with these data.

The negative effects of de facto acceleration and the positive effects of de facto retention are consistent with a priori predictions based on the logic of the BFLPE and the social comparison processes upon which it is based. The results also have important policy implications in that the findings are apparently inconsistent with some popular beliefs about policy/practice in relation to acceleration and retention.

## Addressing Measurement Issues

Particularly for responses by young children, the failure to identify the intended factors may reflect problems with the particular instrument, or the inability of children to accurately reflect their self-concepts with conventional paper-and-pencil tests. Marsh, Craven and Debus (1998) have suggested the problem might be resolved by the development of better measurement procedures. They described a new, adaptive procedure for assessing multiple dimensions of self-concept for children aged 5–8, using an individual interview format. At each age level, CFA identified all a priori self-concept factors. In their study of even younger pre-school children, aged 4 and 5 years, Marsh, Ellis and Craven (2002) reported good psychometric properties in that the self-concept scales were reliable (ranging from .75 to .89;  $Md = .83$ ), first and higher-order confirmatory factor analytic models fitted the data well, and correlations among the scales were moderate ( $r_s$   $-.03$  to  $.73$ ;  $Md = .29$ ). Achievement test-scores correlated modestly with academic self-concept factors ( $r_s$   $.15$  to  $.40$ ), but were non-significantly or significantly negatively related to non-academic self-concept scales.

## Changes in Self-Concept During Early Childhood

Shavelson et al. (1976) hypothesized that the domain-specificity of self-concept would increase with age (i.e., correlations among multiple domains of self-concept would decrease with age). Marsh and Ayotte (2003) reviewed previous tests of this hypothesis, but suggested that the results were more complex than initially posited. In particular, they proposed and found support for a differential distinctiveness hypothesis; with increasing age and cognitive development, there are counterbalancing processes of self-concept integration and differentiation. Integration occurs when closely related areas of self-concept become more strongly related; differentiation refers to the increasing differentiation of disparate areas of self-concept (math and verbal self-concepts). Interestingly, this distinction is similar to the distinction between “near” and “far” domains posited in DCT.

A host of theories aim to explain the changes in self-concept that occur across the lifespan. According to Marsh and Craven (1997), children’s self-concepts decrease with age, as the result of increased exposure to situations that challenge the high self-concepts of childhood. Other researchers argue that the tumultuous transitions during puberty lead to radical decreases in self-perceptions (see Harter, 1998). Furthermore, others have posited that improved social skills, autonomy, and maturity may lead to increased self-concept (Hart et al., 1993). Based on empirical evidence, Marsh (1989) described a curvilinear relation between age and self-concept, whereby self-concept declines during preadolescence and early adolescence, levels out in middle adolescence, and then increases in late adolescence through to at least early adulthood. This curvilinear relation was subsequently replicated by Cole et al. (2001) and by Jacobs, et al. (2002), but the findings were more nuanced,

depending in part on the specific domain and also on the potential confounding between age and transition to different levels of schooling.

### **Support for the REM with Young Children**

Guay, Marsh & Boivin (2003) tested the developmental generalizability of the REM of the causal ordering of academic self-concept and academic achievement. Participants were young children in Grades 2, 3, and 4; three age cohorts, each tested once a year over a three year period. Through the use of a sophisticated multicohort (cross-sectional) multioccasion (longitudinal) design, Guay et al. found support for the of the reciprocal effects model for three age groups.

In summary, research with young children supports the feasibility and validity of appropriately constructed self-report instruments for young children as the basis for validating claims based on theoretical models of self-concept development, and suggests that children as young as four and five years of age should be able to distinguish among multiple dimensions of self-concept. The combination of more appropriate measurement tools, better methodology, and stronger statistical procedures should facilitate a resurgence of good-quality self-concept research with young children, as has been the case for self-concept research with older children, adolescents, and adults.

### **Self-concept Interventions**

According to a multidimensional perspective of self-concept, interventions should impact in ways that map onto specific, relevant dimensions of self-concept. Hence, intervention studies provide a strong test of the construct validity of a multidimensional perspective on self-concept. To the extent that an intervention has the predicted pattern of effects on multiple dimensions of self-concept, there is even stronger support for the construct validity of interpretations of the intervention. This construct validation approach is evident in academic interventions in which successful interventions impact ASCs more than non-academic and global components (e.g., Marsh, Martin & Hau, 2006; Craven, Marsh, et al., 1991), and physical interventions in which the effects are greater for physical components of self-concept (Marsh & Peart, 1988). This construct validity approach was highlighted in the juxtaposition of two Outward Bound studies, in which students experienced a residential wilderness intervention. The “standard” outdoor wilderness course focused largely on non-academic outcomes (Marsh, Richards, et al., 1986a, 1986b); effects were significantly larger for domains posited a priori to be most relevant to the intervention, were consistent across 27 different programs, and were maintained over 18 months. The Outward Bound “bridging” course (Marsh & Richards, 1988) was designed to produce significant gains in the academic domain for underachieving adolescents; ASC effects were significantly more positive than non-

academic effects, and there were corresponding effects on math and reading achievement. If these studies had taken a unidimensional perspective and only measured global self-esteem, both interventions would have been judged much weaker, and a rich understanding of the match between specific intended goals and actual outcomes would have been lost.

Haney and Durlak's (1998) meta-analysis of self-concept interventions found significantly positive effect sizes, leading to the conclusion that:

it is possible to significantly improve children's and adolescents' levels of SE/SC [self-esteem and self-concept] and to obtain concomitant positive changes in other areas of adjustment. There is even the suggestion that SE/SC programs do at least as well as other types of interventions in changing other domains. (p. 429)

Consistent with typical approaches to meta-analysis, Haney and Durlak considered only one effect size per intervention—the mean effect size averaged across different self-concept dimensions, where more than one had been considered—an implicitly unidimensional approach. Taking a multidimensional perspective, O'Mara et al. (2006) updated and extended this meta-analysis to embrace a multidimensional perspective, coding the relevance of each self-concept domain in relation to the aims of the intervention. Similarly to Haney and Durlak, they found interventions were significantly effective ( $d = .51$ , 460 effect sizes) overall. However, in support of a multidimensional perspective, interventions targeting a specific self-concept domain and subsequently measuring that domain, were much more effective ( $d = 1.16$ ). O'Mara et al. also found that studies designed to enhance global self-esteem were much less successful compared to those that targeted specific components of self-concept. These results demonstrate that the Haney and Durlak meta-analysis substantially underestimated the effectiveness of self-concept interventions and provide further support the usefulness of a multidimensional perspective of self-concept in intervention research.

### Summary

In a fast-changing world, the development of learners' sense of competence may be more beneficial than developing specific and specialized skills that could be obsolete in the next decade. Thus, for example, Marsh and Yeung (1997a, b) demonstrated that whereas self-concepts in specific school subjects and matching school grades were substantially correlated, the specific components of academic self-concept predicted subsequent coursework selection better than did school grades or more general components of self-concept (e.g., self-esteem). Similarly, Marsh and O'Mara (2008) showed that ASC formed in high school contributed to the prediction of long-term educational attainment eight years later, beyond the effects of school grades, standardized achievement tests, IQ, and socioeconomic status. More generally, the behavioral implications of having higher

levels of perceived competence include a reduction in test anxiety (e.g., Zeidner & Schleyer, 1999), taking advanced course work (e.g., Marsh, 1993; Marsh & Yeung, 1997a, b), lower levels of school attrition (e.g., House, 1993), and higher levels of long-term educational attainment (Marsh & O'Mara, 2008). This is because a sense of competence is dynamic in facilitating a range of other psychological attributes that may benefit personal development in various ways (e.g., happiness, academic motivation, career aspiration, resilience when faced with difficulty, etc.) Hence, competence perceptions serve as an influential platform for facilitating life potential and getting the most out of life.

Competence perceptions as operationalized in the self-concept construct have had a long and distinguished history. Research over the last 35 years has demonstrated that self-concept, once conceptualized as unidimensional, is indeed a multidimensional construct. As Marsh and Hattie (1996) aptly declared, in relation to academic outcomes, “there appears to be no support at all for the unidimensional perspective of self-concept or, apparently, even a unidimensional perspective of academic self-concept” (p. 44). Indeed, self-concept research has blossomed in this period; it spans from issues as varied as developmental perspectives, to gender differences, the effects of differing frames of reference on self-concept, self-concept’s association with personality, and the reciprocal relation that it has with achievement. These advances in self-concept are exciting, and augur well for the future of the discipline. Perhaps more importantly, they demonstrate how crucial a positive self-concept is in many areas of human functioning, and endorse Marsh and Craven’s (2006) description of self-concept as a “hot variable that makes good things happen, facilitating the realization of full human potential in a range of settings” (p. 134).

We conclude with a set of questions and issues for future research:

1. Further jingle-jangle studies on the distinction/non-distinction between similar self-belief constructs that have been posited to reflect competence self-perceptions.
2. Positive competence self-perceptions and related self-beliefs are important in facilitating and, perhaps, mediating diverse positive outcomes, but more work is needed on the psychological processes underlying change; what is the role of goals, different types of value, intentions, and other sources of motivation.
3. Are there situations or research questions for which global competence self-perceptions (e.g., self-esteem) are more useful than relevant specific competence self-perceptions, or should global measures only be considered in combination with domain-specific measures (consistent with a multidimensional, hierarchical perspective)?

4. Do “collective” competence perceptions have a role in relation to organizational and societal change, as posited in self-efficacy research and positive psychology more generally (Bandura, 2008a, b; Maddux, 2009; what are the implications for organizational contextual and climate research (Marsh, Lüdtke et al., 2012)?
5. In EVT there is a need for further development of the value components (Gaspard et al., 2015): what they are, whether they can be discriminated, their domain-specificity, and how they are related to competence self-beliefs.
6. DCT—more research is needed on the nature of dimensional comparisons in relation to assimilation and contrast effects in competence self-perceptions; the nomographic and idiographic bases of what constitutes “near” and “far” comparisons; and the generalizability of results based largely on academic domains, to non-academic domains of competence.
7. How do the reciprocal relations among competence self-perceptions, interest, extrinsic motivation, autonomy and reinforcement from significant others, develop and vary across the life span from early childhood to old age?
8. Competence self-perceptions can be made through various processes: social comparisons (in relation to performances by others), temporal comparisons (in relation to one's own previous performances in the same domain), dimensional comparisons (in relation to one's own previous performances in the different domains), or absolute standards (external standards of excellence or task-specific criteria). However, more research is needed that will juxtapose these alternative processes, the extent that they vary as a function of context, and how they can be optimally used to enhance outcomes.
9. Exploring perceived competence in recent extensions of achievement goal theory and growth goals; in particular, the role of perceived competence in self-based goals, potential-based goals, and personal best (PB) goals. This would investigate not only the extent to which perceived competence underpins students' inclination to set more demanding growth goals for themselves, but also the extent to which meeting (or failing to meet) these self-set growth goals enhances (or reduces) perceived competence.
10. Recent research suggests that relative year in school (being a year ahead or behind same-age students) has negative effects on academic self-concept and related psycho-social constructs that have a similar theoretical rationale as the BFLPE, but further research is needed to tease out the effects of starting age, repeating a school year, and skipping a school year, as well as the implications for academic achievement.

11. More research is needed on the measurement and development of self-concept with young children.
12. Some interventions can enhance actual competence (e.g., academic achievement), whereas other interventions can enhance competence perceptions (e.g., ASC). However, there is insufficient research—or even appropriate methodology—to evaluate underlying processes in interventions designed to enhance both in a way that is reciprocally beneficial to competence and competence perceptions.

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PRE-PUB VERSION

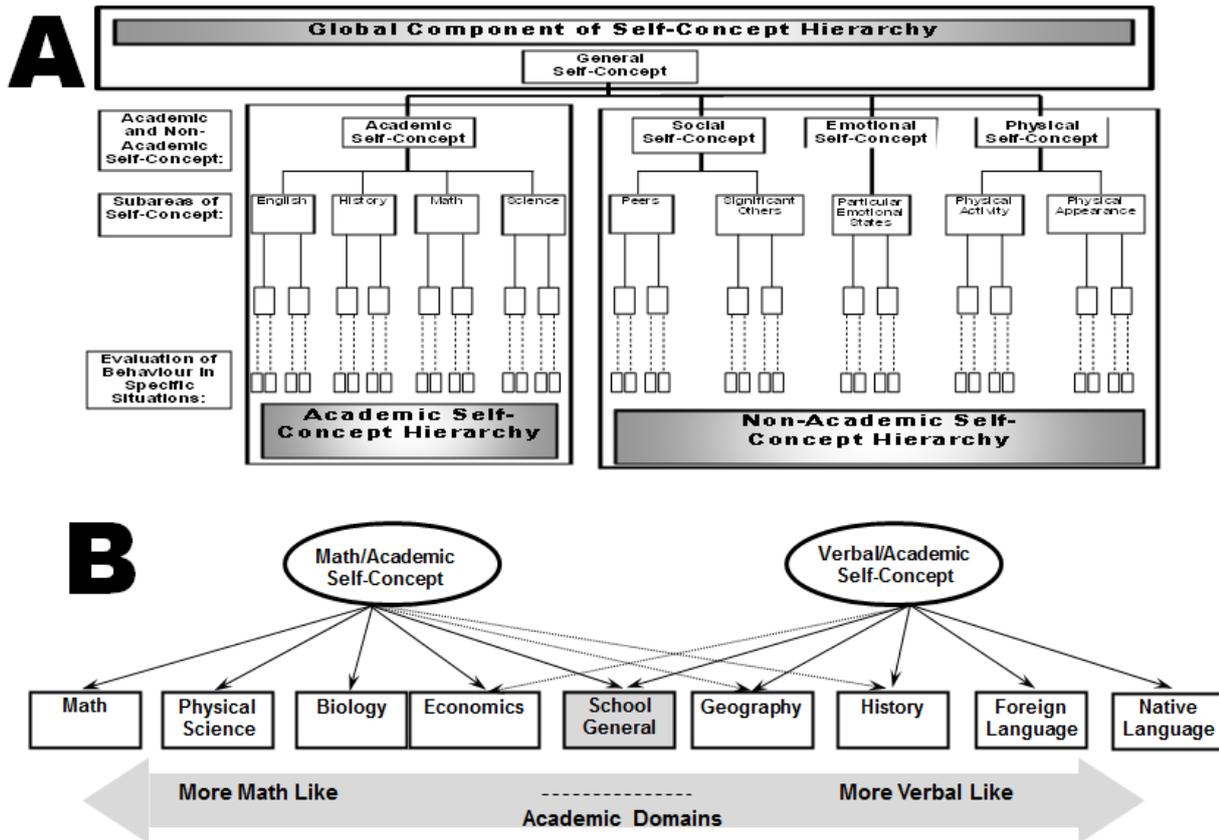


Figure 1. Juxtaposition between the original Shavelson Model (A) depicting self-concept as a multidimensional, hierarchical model and the Marsh/Shavelson revision (B) of the original Shavelson model for the academic component of the self-concept hierarchy, in which there are two higher-order academic self-concepts (math self-concept and verbal self-concept) rather than just one (academic self-concept). The revision was brought about by the finding that math and verbal self-concepts are nearly uncorrelated. The revised model posits a continuum of academic domains that vary along a continuum, ranging from more math-like academic domains to more verbal-like academic domains. The model also posits that relations between all these core academic domains can be explained in terms of just two higher-order academic components.

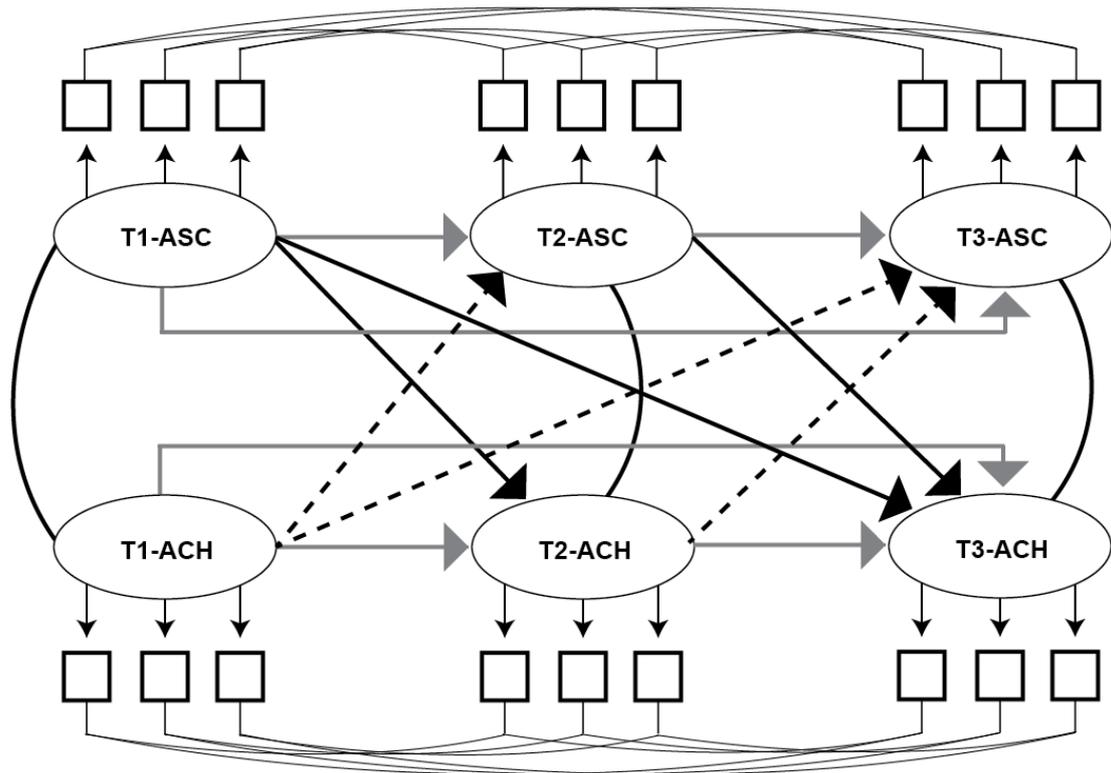


Figure 2. In this full-forward, multiwave, multivariable model, multiple indicators of academic self-concept (ASC) and achievement (ACH) are collected in three successive waves (T1, T2, and T3). Each latent construct (represented by ovals) has paths leading to all latent constructs in subsequent waves. Within each wave, academic self-concept and achievement are assumed to be correlated; in the first wave, this correlation is a covariance between two latent constructs, and in subsequent waves, it is a covariance between residual factors. Curved lines at the top and bottom of the figure reflect correlated uniquenesses between responses to the same measured variable (represented by boxes) collected on different occasions. Paths connecting the same variable on multiple occasions reflect stability (the solid gray paths), but these coefficients typically differ from the corresponding test-retest correlations (which do not include the effects of other variables). Dashed lines reflect effects of prior achievement on subsequent self-concept, whereas solid black lines reflect the effects of prior self-concept on subsequent achievement.

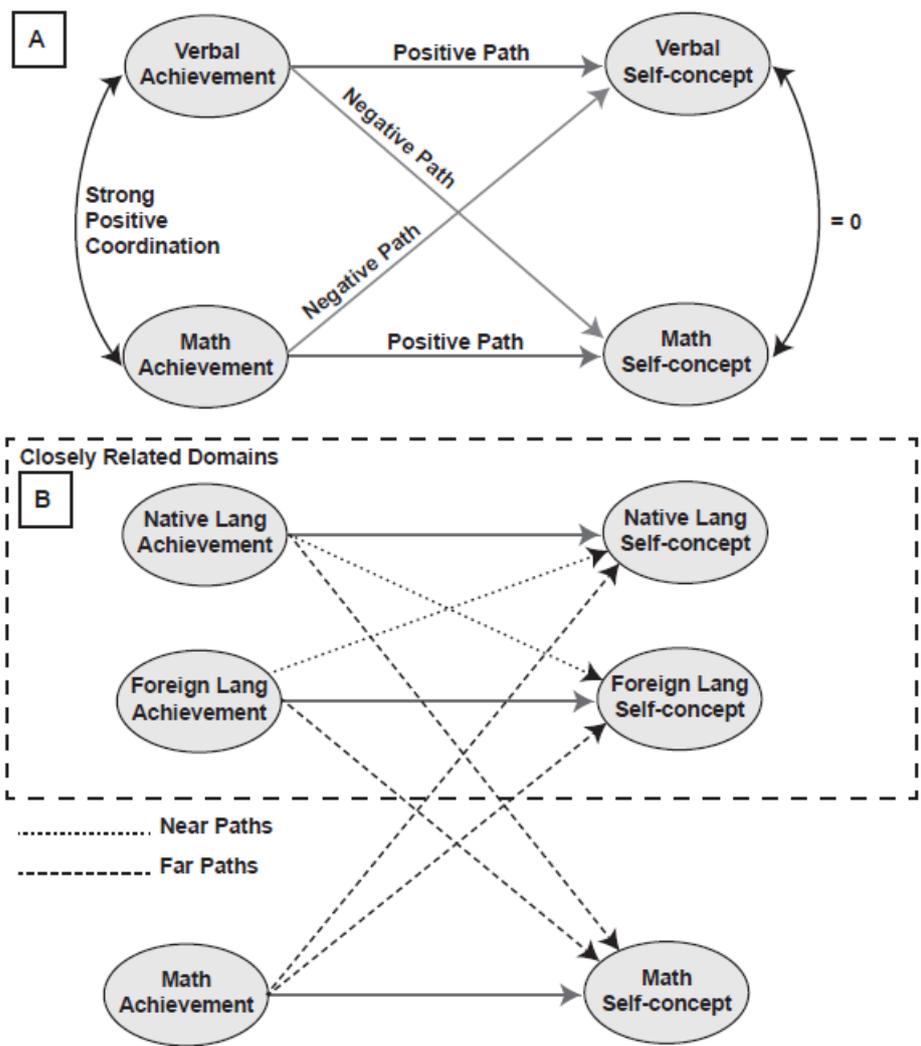


Figure 3. Juxtaposing the Internal/External Frame of Reference (I/E) Model (A) and the Dimensional Comparison Theory (DCT) Model (B). The 'Classic' I/E Model relates verbal and math achievement to verbal and math self-concept. According to predictions from the I/E model, the horizontal paths from achievement to self-concept in the matching domains (content area) are predicted to be substantial and positive, whereas the cross paths from achievement in one domain area to self-concept in a non-matching domain are predicted to be negative (i.e., contrast). In the DCT Model the I/E model is extended to include two closely related verbal domains. Far cross paths (relating math and the two verbal domains) are again predicted to be negative. However, the near cross paths (relating the two verbal domains) are predicted to be significantly less negative, non-significant, or even positive (assimilation).

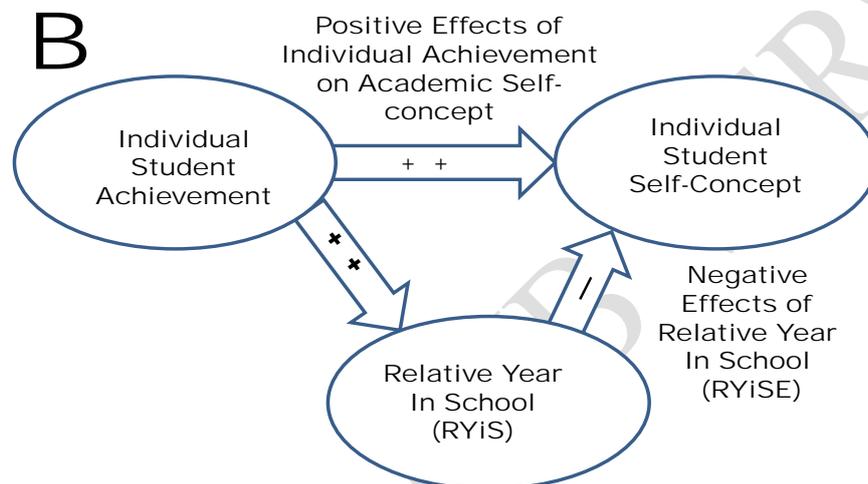
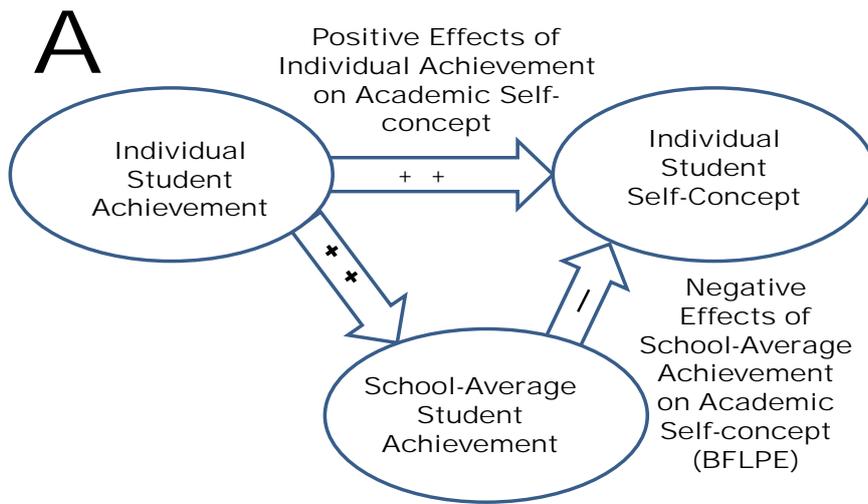


Figure 4. A. Conceptual model of the Big-Fish-Little-Pond Effect. [Adapted with permission from Marsh, H. W. (2007). *Self-concept theory, measurement and research into practice: The role of self-concept in Educational Psychology*. Leicester, UK: British Psychological Society.] B. Conceptual Model of the Relative Year in School Effect (RYiSE)