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How well do parents know their adolescent children? Parent inferences of student self-concepts reflect dimensional comparison processes

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ABSTRACT

The internal/external frame of reference (I/E) model posits paradoxical relations between achievement and self-concept in mathematics and verbal domains. There is strong support for the I/E model based on student self-ratings, however, reviews of self-concept research claim that the I/E model does not apply to ratings by parents and significant others. We aimed to test these claims using parent inferred self-concepts. In contrast to widely cited claims, we found support for I/E model for both students (N = 486; aged 11–17; 57.2% female) and their parents (80.5% female). Math and verbal achievement had positive effects on self-concepts in the matching domain (e.g., math achievement predicting math self-concept) but negative effects for self-concepts in the non-matching domain (e.g., math achievement predicting verbal self-concept). Integrating conflicting claims, we found support for dimensional comparison processes for inferred self-concept ratings by parents, but not for parent perceptions of student abilities similar to the measures used that were the basis of previous claims.

Academic self-concept has been established as both a predictor of educational success and as an important outcome in and of itself in developmental and educational psychology (Marsh, 2007). Here we briefly review the Internal/External (I/E) model relating math and verbal achievement to corresponding measures of academic self-concept. Although I/E predictions are very robust for responses by students, there is little research on inferred self-concept ratings by parents despite oft-cited claims that I/E predictions do not generalize to responses by parents (e.g., Dai, 2002; Marsh, 2007; Marsh et al., 2015a,b; Marsh et al., 2014). Filling this important gap in self-concept literature, we test the I/E model on a sample of 486 dyads of Australian adolescents and their parents.

1. The role of comparative processes in self-concept formation

Since William James (1890/1960), psychologists have stressed that self-concept cannot be understood without recognizing the role that comparative processes play in perceptions of the self. Essentially, while some people may share objective characteristics or accomplishments, differing standards of comparison or frames of reference can lead to disparate self-concepts among individuals (Van Zanden, Marsh, Seaton, & Parker, 2015). Educational research has focused on three types of comparison processes: 1) social, 2) temporal, and 3) dimensional.

Festinger (1954)'s social comparison theory has been pivotal in highlighting the role of external frames of references in self-conceptions. Festinger's theory explains how self-concept can be influenced when people compare themselves against those around them. For instance, a student who performs well at school might develop low academic self-concept if they transfer to a high achieving school, despite their objectively excellent performance relative to the wider population. Albert (1977)'s work on temporal comparisons was also significant in highlighting the importance of comparison processes performed within a historical frame of reference, whereby individuals assess their current performance in the context of previous performances. For example, a student is

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likely to gain an increase in self-concept if they excel in an exam in a subject they had previously struggled in. Albert (1977)'s work on temporal comparisons was significant as it highlighted how frames of references beyond traditional social comparisons are critical to the way people self-evaluate.

However, when considered alone social and temporal comparisons fail to explain why academic self-concept is so content specific (Marsh, 2007; see Marsh & Shavelson (1985) for an overview of domain specificity of self-concept). In overcoming this limitation, Möller and Marsh (2013) focused on dimensional comparison processes as the core mechanism behind the formation of differentiated subject specific academic self-concepts. According to Möller and Marsh, dimensional comparisons take place within an internal frame of reference, whereby people compare their own abilities in one area to another, resulting in ipsative relationships between domains. For example, a student may ask, "How good am I in mathematics compared to English?" Essentially, more positive evaluations in one domain will have a suppressing effect on evaluations in other domains, leading to a decreased self-concept in the domain judged as poorer by comparison. Importantly, this process can occur even when differences in objective achievement are reasonably small.

Marsh (1986) argues that it is these dimensional comparisons that lead to the lack of correlation between mathematics and verbal self-concepts despite closely related mathematics and verbal achievement levels. These dimensional comparisons are the focus of the I/E model, which posits that internally based dimensional comparisons, in addition to external comparisons, are the core mechanisms behind the formation of differentiated subject specific academic self-concepts (Möller & Marsh, 2013). Such a model has important practical implications, as differentiated self-concepts play a role in educational and career choices (Eccles, 1992) and may help to explain lower female uptake of degrees and careers in the physical sciences, mathematics, engineering, and technology (Parker, Nagy, Trautwein, & Lüdtke, 2014).

Central to the I/E model are the findings of Marsh (1986). In accordance with the hierarchical aspect of self-concept, Marsh found that correlations between mathematics and verbal self-concepts are typically weak or even negative. Furthermore, it was demonstrated that correlations between domain specific achievement (e.g., mathematics or English) and their corresponding self-concepts were substantial and positive. Meanwhile, paths from mathematics achievement to verbal self-concept, and vice versa, were significant and negative (see Fig. 1). Essentially, people tend to see themselves as either a math or verbal person, but rarely both.

Despite the fact that people typically see themselves as either mathematically or verbally oriented, Marsh (1986) found that objective measures of academic performance actually paint a different picture. That is, while a significant distinction between mathematics and verbal self-concepts exists for students, objective measures of academic performance in mathematics and English are typically closely correlated to one another. In essence, Marsh demonstrated that individuals, who perform well in mathematics, also perform well in subjects emphasizing verbal skills (and vice versa), despite the fact that mathematics and verbal self-concepts are almost uncorrelated. In sum, there is a paradoxical relationship that exists between academic self-concepts and their corresponding measures of academic performance.

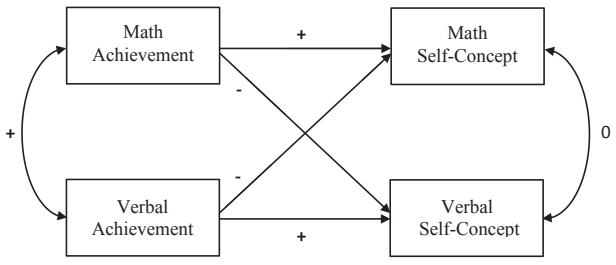

Fig. 1. Expected student I/E model pathways relating verbal and math achievement to verbal and math self-concepts.

2. Empirical support for the I/E model

Following the original Marsh (1986) demonstration, there has been consistent, widespread support for the I/E model and its related dimensional comparison processes, making it one of the robust findings in educational psychology and psychological research more generally (see Helm, Mueller-Kalthoff, Nagy, & Möller, 2016; Marsh & Hau, 2004; Marsh, Lüdtke, Nagengast, Trautwein, Abduljabbar, Abdelfattah, & Jansen, 2015; Möller & Husemann, 2006; Möller & Köller, 2001; Möller, Pohlmann, Köller, & Marsh, 2009, Pohlman & Möller, 2009). For example, in a large cross-cultural study, Marsh and Hau (2004) demonstrated that support for the I/E model generalized over large, nationally representative samples of 15-year-olds from each of 26 countries using PISA data. In a subsequent meta-analysis of 69 datasets Möller et al. (2009) reported that math and verbal achievements were highly correlated ($r = 0.67$), while self-concepts were nearly uncorrelated ($r = 0.10$). The horizontal paths from achievement to self-concept in the matching domains were positive ($r = 0.61$ for math, 0.49 for verbal), but cross-paths were negative ($r = -0.21$ for math achievement predicting verbal self-concept; -0.27 for verbal achievement predicting math self-concept).

Furthermore, Möller and Köller (2001) found support for the causal hypothesis of the model by showing that experimental manipulation of feedback in achievement in one subject resulted in a positive effect of academic self-concept in the matching domain, but a negative effect on self-concept in a contrasting domain. Moreover, qualitative student diary studies have provided evidence that students spontaneously undertake dimensional comparisons on a day-to-day basis (Möller & Husemann, 2006), thereby providing support for the I/E model as an externally valid perspective on self-concept. Finally, there is emerging longitudinal evidence suggesting that I/E model predictions have implications for student self-concept development (Möller, Retelsdorf, Köller, &, Marsh, 2011; Möller, Zimmermann, Köller, 2014; Niepel, Brunner, & Preckel, 2014; Parker, Marsh, Morin, Seaton, & Van Zanden, 2015).

3. Generalizability to self-other agreement between parents and students

Despite consistent support for the I/E model based on student self-concept ratings, there is surprisingly little research evaluating the generalizability of the IE model to inferred self-concept ratings by significant others (e.g., parents, teachers, peers). There is, however, a substantial body of literature on self-other agreement in self-concept ratings. Inferred self-concept ratings by significant others are used to determine how accurately self-concept can be inferred by external observers, to validate interpretations of responses to self-concept instruments, and to test a variety of theoretical hypotheses such as those derived from the symbolic interactionist perspective.

Early reviews (e.g., Shrauger & Schoeneman, 1979) concluded that "there is no consistent agreement between people's self-perceptions and how they are actually viewed by others" (p. 549). However, recent research paints a more complex picture of the degree to which others can interpret internal states and self-perceptions of another person – it seems that the type of relationship and the type of measure is crucial to determining another's