



Differentiation of academic self-concept in primary school students with mild learning difficulties: A factor mixture analysis approach

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ABSTRACT

This study analyzed the latent structure of academic ability self-concepts of primary school students with mild learning difficulties (MLD) cross-sectionally at three time points. We sought to explore (a) whether MLD students at the end of primary school already show a differentiated, domain-specific self-concept, (b) whether there are subgroups of students with different degrees of self-concept differentiation, and (c) whether belonging to any of these subgroups depends on attending inclusive vs. exclusive school settings. Factor analyses with a sample of > 400 students from mainstream (inclusive) and special (exclusive) primary schools revealed clearly differentiated academic self-concepts for reading, writing, and math. There was no further differentiation at later time points. In factor mixture analyses, two latent classes emerged which showed equal factorial structures of their academic self-concepts but differed in the level of mean self-concept factor scores. Students from inclusive schools were more likely to belong into the class with lower mean academic self-concept scores. Overall, our findings provide useful insights into the structure and level of academic self-concepts of primary school students with MLD which, in turn, may contribute to the debate on more inclusive schooling of these students.

1. Introduction

Academic self-concept represents one of the most important predictors of school performance (e.g., Hattie, 2009; Steinmayr & Spinath, 2009). It reflects the cognitive representations of one's abilities, thereby referring mostly to the estimated capacities in specific school domains such as math, language, and science (e.g., Marsh & Hocevar, 1985). Numerous studies have shown that realistic, subject-specific academic self-concepts are a pivotal element for students to manage their task choice, effort, and achievement (Huang, 2011; Marsh & Craven, 2006; Wigfield & Eccles, 2002). However, the ability to differentiate one's talents across domains still needs to be developed during the first grades at school. In this regard, several authors have stated that students develop at a different pace and that students showing an earlier differentiation of academic self-concepts are better prepared for new challenges at school (e.g., Wigfield & Eccles, 2002). Although academic self-concept development and factors influencing it have been investigated in various populations, little is known about its development in young students with mild learning difficulties (MLD). Such knowledge, however, could be very helpful for successfully including MLD students in regular classrooms.

In the light of nearly 25 years since the Salamanca Statement (UNESCO, 1994), many efforts have been made towards the inclusion of

students with special needs into regular school systems. Most importantly, after ratifying the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2009), 174 countries have acknowledged this as a human right which needs to be implemented with greatest care. This process fueled preexisting debates on effects inclusive schooling might have on students with and without MLD regarding achievement and psychosocial outcomes, such as academic self-concept (Krull, Wilbert, & Hennemann, 2014). In order to provide adequate support to persons with special needs in regular schools, enhancing our understanding of when and how MLD students develop a differentiated conceptualization of their presumed strengths and weaknesses in certain school subjects constitutes an important endeavor for practitioners, policy makers, and researchers.

In the present article, we seek to determine the degree of differentiation in MLD students' academic self-concepts for reading, writing, and math. Similar to previous research on this topic (e.g., Marsh, 1990), we examine the degree of self-concept differentiation by comparing the relative fit of unidimensional, multidimensional, and hierarchical factor models. As a second research question, we want to explore whether there are latent subgroups of students that differ in the structure of their academic self-concept and in certain covariates such as gender, age and school setting (inclusive vs. exclusive; exclusive schools refer to schools which are attended by children with special educational needs only,

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whereas in inclusive schools, children with and without special educational needs are educated together). Given the large diversity of students with MLD, it is plausible to assume variability in the structure of their academic self-concept because not all students will show the same developmental progress. Overall, our analyses aim at contributing to a more refined understanding of the development of academic self-concept in students with MLD.

1.1. Definition and measurement of academic self-concept

Definitions and conceptualizations of academic self-concept vary and have often been used interchangeably with other constructs (Bong & Clark, 1999). Therefore, a precise and empirically supported definition of academic self-concept is important. In the present article, we define academic self-concept as the collective, multidimensional and organized cognitive representations of one's capabilities in the academic domain such as "I am good at mathematics" (Dickhäuser, Schöne, Spinath, & Stiensmeier-Pelster, 2002). There is broad consensus that academic self-concept is highly domain-specific as it is represented by multiple subordinate subject-specific self-concepts such as, for example, in mathematics and English (Marsh, 1990; Marsh & Hocevar, 1985). Academic self-concept develops over time regarding its structure and level. Shavelson, Hubner, and Stanton (1976) proposed self-concept to become more differentiated with age, reflecting one's personal strengths and weaknesses as a consequence of life experience. This has been widely supported by several cross-sectional and longitudinal studies which found decreasing correlations between math and reading academic self-concept and increasingly better fits for domain-specific factor models as students progressed through primary school. The differentiation process seems to take place during childhood and preadolescence and finishes around the age of twelve (Marsh, 1989; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Craven, & Debus, 1998; Marsh & Hocevar, 1985). The level of young students' self-concept is optimistic but declines as a consequence of cumulative life experience over relative strengths and weaknesses and hence becomes more realistic. This decline seems to continue from primary school to adolescence (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Marsh, 1989; Wigfield & Eccles, 2002).

1.2. Studying Academic Self-Concept in Young Students with MLD: Why is it important?

Academic self-concept is among the most researched constructs in educational psychology since it has been found to play a tremendous role for students' motivation and achievement at school (e.g., Hattie, 2009; Wigfield & Eccles, 2002). Due to its importance for achievement-related processes and outcomes, researchers have thoroughly examined the structure and development of academic self-concept from the primary school years on and they have also tried to establish the generalizability of these findings across diverse subpopulations. It is important to note, however, that studies examining the development of academic self-concept in the subpopulation of students with MLD are still scarce. Therefore, we cannot be sure about the degree to which we can transfer our general knowledge about self-concept development – which is largely based on research with mainstream students – on students with MLD. Against this background and in light of the international debate on successful inclusion of students with special educational needs, we deem it imperative to provide rigorous empirical evidence on the development of academic self-concept in students with MLD.

1.3. Development of academic self-concept in students with MLD

Results from the few studies examining self-concept in students with MLD are mixed. Using self-concept subscales for math, reading, and school in general, Tracey and Marsh (2000) found the same factorial

structure as for mainstream students in a sample of students from grades 2 to 6 with IQs ranging between 56 and 75, indicating a similar degree of differentiation and structure. In another study, seven to thirteen year old students with MLD showed the proposed eight-factor structure for the SDQI-IA (a self-concept questionnaire distinguishing math, reading, and school in general as academic self-concept domains as well as physical ability, physical appearance, parent relationships, peer relationships, and self-esteem as non-academic self-concept domains), with only moderate correlations between factors (Marsh, Tracey, & Craven, 2006). Full measurement invariance across school placement groups was found, which indicates that the factorial structure in students with MLD does not differ from their average performing peers. These findings resemble results from Weber and Freund (2016) who adapted a similar self-concept questionnaire including academic and non-academic domains to German. They found strict measurement invariance for different school types including special schools for students with MLD. In addition, a clear distinction between math and verbal factors was given. However, the students in their sample were between 12 and 18 years of age, so no direct inference can be made to primary school students, whose self-concepts may still be developing. Elias, Vermeer, and Hart (2005) found the four (for average performing students) proposed scales of the Dutch version of the PSPCSA (Pictorial Scale of Perceived Competence and Social Acceptance for Young Children) to be also valid for eight-year old students with intellectual disabilities. Silon and Harter (1985), on the contrary, did not find the factorial structure proposed for the general population in a sample of 126 nine to twelve year old students with IQs ranging between 55 and 85 using the Perceived Competence Scale for Students. Although this was not a test of the internal structure of academic self-concept components, it points to a smaller degree of differentiation and less multidimensionality of self-concept in these students. However, more studies explicitly testing academic self-concept structure and its development in primary school students with MLD are lacking.

1.4. Differentiation of academic self-concept in students with MLD

During the primary school years, students further differentiate their self-concept due to changes in their cognitive abilities and/or environmental changes. Several developmental psychologists have assumed that during early adolescence, maturation processes trigger neuro-cognitive changes, which may subsequently lead to qualitative changes in students' motivation (Nicholls, 1984; Stipek & Mac Iver, 1989). Specifically, young children do not have a clearly differentiated definition of academic competence (Wigfield & Eccles, 2002). Moreover, they are merely interested in their own intraindividual improvement and they do not use social comparative feedback to judge their ability until about third grade (Ruble & Frey, 1991). Most important in this regard, young children do not differentiate between effort and ability in the same way that older children and adults do. Until the age of six, for instance, they see effort as the main cause of outcomes. Specifically, they have not yet developed an understanding of ability as a stable trait that limits the effectiveness of effort (Stipek & Mac Iver, 1989). This final differentiation level is reached at about 11 or 12 years (Nicholls, 1989). However, contextual and/or individual factors (e.g., socioeconomic status, intelligence) can moderate the speed of development of a differentiated concept of ability (Nicholls, 1989).

Overall, it seems reasonable that self-concept differentiation in students with MLD is as much influenced by neuro-cognitive and environmental changes as in regular students. For example, several studies have shown that students with MLD also use social comparisons for evaluating their own capabilities (Marsh et al., 2006; Renick & Harter, 1989; Tracey & Marsh, 2000). However, both the speed and the nature of these changes may be different for students with MLD which, in turn, may lead to more diverse developmental patterns in this group of students. With respect to neuro-cognitive changes, it seems plausible to assume that changes take place at a later time point as cognitive

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