Teacher judgment accuracy regarding students' self-concepts: Affected by social and dimensional comparisons?

Friederike Helm*, Hanno Müller-Kalthoff, Rebecca Mukowski, Jens Möller

Christian-Albrechts-University of Kiel, Germany

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ABSTRACT

Research on teacher judgment accuracy is connected with the Internal/External frame of reference model. Social and dimensional comparisons between achievements are central to the formation of students' mathematical and verbal self-concepts. Inferring self-concepts, teachers often ignore dimensional comparisons. Two studies tested whether information about students' achievements in two subjects can help teachers to comprehend students' social and dimensional comparisons, and to judge students' mathematics and German self-concepts more accurately. In Study 1 ($N = 35$ teachers, $N = 578$ students), informed mathematics teachers judged mathematics self-concepts more accurately and showed stronger social comparison effects. Neither informed nor uninformed teachers showed contrastive dimensional comparisons. Study 2 ($N = 47$, $N = 746$ students) replicated the central results of Study 1 for German teachers. Our results speak against contrastive dimensional comparisons in teachers' self-concept inferences. Yet, information about achievements can improve judgment accuracy through triggering stronger use of social comparison information.

1. Introduction

Positive self-concepts are important for students' social and emotional development (Kagan, Moore, & Bredekamp, 1995). As academic self-concepts moreover influence motivation and effort in various domains (Eccles, O'Neill, & Wigfield, 2005), they are seen as a major factor influencing subsequent learning (e.g., Marsh & Craven, 2006; Möller, Retelsdorf, Köller, & Marsh, 2011; Retelsdorf, Köller, & Möller, 2014; Valentine, DuBois, & Cooper, 2004). Promotion of domain-specific academic self-concepts thus is a central research topic in educational psychology, a major objective for effective schooling (Brookover & Lezotte, 1979) and, accordingly, a central task for teachers. If achievement suffers, teachers should be able to identify the correct reason for this decreased achievement, which might be a decrease in self-concept. Based on their correct diagnosis, teachers will then be able to take appropriate measures to support students in developing a more positive self-concept and to subsequently improve their achievement (Spinath, 2005). Thus, as it constitutes a factor preceding the promotion of students' self-concepts, teachers' ability to correctly judge students' evaluations of their own abilities has also gotten into the focus of research in recent years. It seems to be more difficult for teachers to adequately assess students' academic self-concepts than to assess students' abilities (Kaiser, Retelsdorf, Südkamp, & Möller, 2013; Spinath,

2005). Moreover, when estimating students' mathematical and verbal self-concepts, teachers seem to miss one central process that students themselves carry out when forming their self-concepts in these areas: contrastive dimensional comparison. Therefore, the present studies aim at analyzing teachers' judgment accuracy regarding students' mathematical and verbal self-concepts to reveal whether teachers' judgment accuracy is affected by information teachers have about students' achievements in the two areas. It is assumed that informed teachers will use students' achievements more strongly to derive self-concepts from these achievements, leading to stronger hints on social comparisons (Festinger, 1954), and, centrally, on contrastive dimensional comparisons (Möller & Marsh, 2013) in their estimations of students' self-concepts. Hence, the present studies provide a contribution to research about teacher judgment accuracy, as they assess teachers' judgment accuracy in the estimation of students' mathematical and verbal self-concepts. Moreover, they pose the question whether judgment accuracy can be increased by providing teachers with the possibility to carry out social and especially dimensional comparisons that students themselves draw when forming their subject-specific self-concepts. On the other hand, the present studies provide relevant findings for dimensional comparison theory (Möller & Marsh, 2013), as they examine whether hints on dimensional comparisons can be found when teachers are asked to assess students' self-concepts, and, whether the effects hinting

on dimensional comparisons can be influenced by informing teachers about students' achievements in the two subjects judged. In the next paragraphs, firstly, the state of research on teachers' diagnostic accuracy with regard to students' academic ability self-concepts is depicted, secondly, research on social and dimensional comparisons in the formation of students' self-concepts is outlined, and thirdly, findings on possible social and dimensional comparisons in the formation of teachers' inferences of students' self-concepts are presented.

1.1. Teachers' judgment accuracy regarding students' self-concepts

Teachers' ability to accurately judge their students with regard to various characteristics is considered an important precondition for the adequate planning and implementation of instruction in school (Südkamp, Kaiser, & Möller, 2012). The average judgment accuracy regarding student achievement is good, as the meta-analysis by Südkamp et al. (2012) indicates (mean correlation between teacher judgment and student achievement: $r = .63$). Besides teachers' ability to judge students' achievement accurately, teachers' diagnostic accuracy regarding other student characteristics, like student anxiety, motivation, and self-concept, has been the object of several studies (e.g., Givvin, Stipek, Salmon, & MacGyvers, 2001; Kaiser et al., 2013; Spinath, 2005). It shows that teachers' ability to judge these aspects generally is lower than their ability to judge students' achievements: For example, Spinath (2005) found teachers' judgments regarding students' learning motivation and school anxiety to be correlated with students' actual motivation and anxiety to a rather low degree ($r = .20$ and $r = .15$). Studies examining teacher judgment accuracy concerning students' self-concepts mostly show low to moderate correlations between students' self-concepts and teachers' inferences: Spinath (2005) found a moderate correlation ($r = .39$) between students' self-concept and teacher judgments of students' self-concepts in primary schools. Similar results were obtained by Marsh, Smith, and Barnes (1984), for reading ($r = .34$) and mathematics ($r = .29$) (see also Marsh, Parker, & Smith, 1983). Pohlmann, Möller, and Streblow (2004) assessed mathematics teachers' inferences of their students' mathematics and German self-concepts. As expected, correspondence between teachers' inferences and students' self-concepts was higher for mathematics ($r = .49$) than for German ($r = .10$). Marsh and Craven (1991) found positive moderate to average correlations between primary teachers' inferences and students' self-concepts at two points in time during a school year (for reading at time 1: $r = .39$, at time 2: $r = .50$; for mathematics at time 1: $r = .47$, at time 2: $r = .52$). Similar, but on average slightly higher correlations were obtained between students' self-concepts and self-concepts inferred by their parents ($rs = .46–.60$). This finding is cautiously explained by Marsh and Craven (1991) with parents being likely to talk more often about their children's school experiences, achievements and school-related feelings with their children than teachers do with their students. Therefore, parents might take the obtained information into account very strongly when inferring their children's self-concepts. They might also consider their children's feelings and experiences in different subjects, when estimating their children's self-concepts (see Van Zanden et al., 2017), whereas teachers might base their estimates of students' self-concepts on students' achievements in the subject they teach to a bigger amount.

Studies examining teachers' diagnostic accuracy while judging different characteristics of students thus attest teachers a lower ability to judge students' academic self-concepts than to judge students' achievements. This difference may partly be caused by the fact that teachers frequently measure students' achievements with relatively objective achievement measures like exams, hence receiving a more or less clear picture of students' strengths and difficulties with regard to ability and achievement. In contrast, it is harder to judge students' self-concepts accurately. One reason may be that teachers, as proposed by Marsh and Craven (1991), mainly base their inferences on students' achievement in the regarding domain, because this achievement is the

most accessible information for them. In doing so, teachers might fail to consider certain central processes students themselves use while forming their academic self-concepts: For example, teachers might not consider students' achievements in other subjects and domains, and therefore might miss a central process that students themselves carry out when forming their self-concepts: contrastive dimensional comparison. The exact information on which teachers base their judgments on students' self-concepts has not yet been exhaustively explored. The present study aims to contribute to the closure of this research gap.

1.2. Determinants of students' academic self-concepts: social and dimensional comparisons

Within the effect that achievement has on students' subject-specific self-concepts, two very important comparison processes manifest themselves: social (Festinger, 1954) and dimensional comparisons (Möller & Marsh, 2013). Social comparisons comprise a comparison of the student's own achievements in a domain (mathematical or verbal) with other students' achievements in the regarding domain. The effects of social comparisons are expressed in positive achievement-self-concept relations – students with better-off grades develop higher self-concepts within the domain. Dimensional comparisons are comparisons of students' own achievement in a domain (mathematical or verbal) with their own achievement in another domain (verbal or mathematical). Effects of dimensional comparisons are expressed in negative achievement-self-concept relations across domains: A student with better achievement in the mathematical domain will develop a worse self-concept in the verbal domain, compared to a student with equal verbal but worse mathematics achievement. Both effects, those of social and those of dimensional comparisons, are considered in the internal/external frame of reference model (I/E model; Marsh, 1986): Social comparisons lead to positive effects of achievements on self-concepts in the corresponding domain, whereas dimensional comparisons lead to negative effects of achievements on self-concepts in the non-corresponding domain. Fig. 1 depicts the meta-analytic findings by Möller, Pohlmann, Köller, and Marsh (2009) on the relations between achievements and self-concepts in the mathematical and the verbal area across 69 studies from different countries and with different student age groups. It can be noted that the positive effects of social comparisons exceed the negative effects of dimensional comparisons.

Besides the meta-analysis, various path-analytic (e.g., Marsh et al., 2014, 2015; Zimmermann, Möller, & Köller, 2018), introspective diary studies (Möller & Husemann, 2006) and experimental studies (Dickhäuser, Seidler, & Kölzer, 2005; Helm, Müller-Kalthoff, Nagy, & Möller, 2016; Möller & Köller, 2001; Müller-Kalthoff et al., 2017; Pohlmann & Möller, 2009; Strickhouser & Zell, 2015) have replicated the contrastive effect of dimensional comparisons between the verbal area and the mathematical area on self-concepts.

1.3. Determinants of teachers' inferences of students' self-concepts

The interplay of social and dimensional comparisons can be assumed to be a regular process for students in the formation of their self-
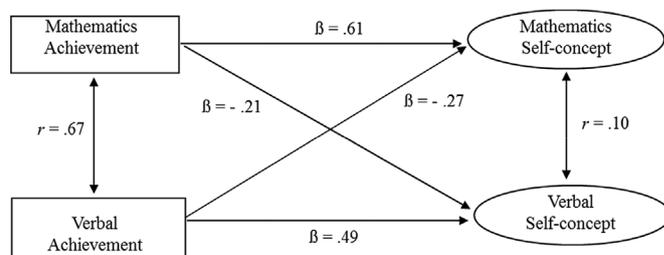

Fig. 1. Path-analytic findings in the meta-analysis by Möller et al. (2009) across all 69 included studies.