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Are multiple goals in elementary students beneficial for their school achievement? A latent class analysis

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ABSTRACT

The present study investigates how students' achievement goal profiles are associated with school achievement in elementary school. We used latent class analysis to identify achievement goal profiles in a sample of $N = 4387$ Grade 4 students in Germany. Three qualitatively and quantitatively different achievement goal profiles (i.e., mastery-oriented, high multiple, and low mastery) emerged and were compared with regard to standardized test scores in German and mathematics. Students with a mastery-oriented profile clearly outperformed students in the other profiles. In contrast, students with a high multiple profile showed the lowest test scores. Mediation analyses revealed that basic cognitive abilities and gender being equal, the underachievement of students with a high multiple profile when compared with students with a mastery-oriented profile can be partially explained by their higher level of test anxiety.

1. Introduction

Achievement goals have an important influence on students' school achievement (Linnenbrink-Garcia, Tyson, & Patall, 2008; Elliot, 2005). Initially, two primary goals were emphasized in achievement goal theory: mastery goals, which focus on developing one's knowledge and competence, and performance goals, which focus on demonstrating one's competence relative to others (Dweck, 1986; Nicholls, 1984; Ames & Archer, 1988). Mastery goals are generally considered to be more advantageous for learning than performance goals (Ames, 1992). However, with the distinction between approach and avoidance components of performance goals, researchers (Elliot & Church, 1997; Elliot, 1999) have pointed out that performance-approach goals can affect achievement favorably. Subsequently, the multiple goal perspective became an intriguing issue within achievement goal theory. According to the multiple goal perspective, the endorsement of both mastery and performance-approach goals might be beneficial for students' motivation and achievement (Barron & Harackiewicz, 2001; Pintrich, 2000a). Following this perspective, a growing body of research has been conducted to compare the effects of pursuing multiple goals and pursuing one dominant goal with the samples of college and secondary school students (e.g., Pastor, Barron, Miller, & Davis, 2007; Luo, Paris, Hogan, & Luo, 2011). However, for elementary students, it remains unclear whether (or to what extent) these younger students have already endorsed multiple goals (i.e., mastery and performance-approach goals) and whether multiple goals can have an impact on learning. Accordingly, in the present study, based on a representative sample of German fourth graders, we aim to identify achievement goal profiles associated with students' mastery, performance-approach, and performance-avoidance goals by utilizing latent class analysis (LCA; McCutcheon, 1987). Moreover, we also aim to investigate which achievement goal profile is most beneficial for students' learning and achievement in the final year of elementary school.

1.1. Achievement goals and school achievement in elementary students

Achievement goals can be defined as the purpose for engaging in achievement behavior (Maehr, 1989). In the traditional goal framework, mastery goals focus on learning and self-improvement, whereas performance goals focus on the demonstration of competence in relation to others (Ames, 1992; Dweck & Leggett, 1988). Later on, Elliot and colleagues (Elliot, 1999; Elliot & Harackiewicz, 1996) further distinguish between approach (i.e., an approach toward desirable outcomes) and avoidance (i.e., an avoidance of undesirable outcomes) components of performance goals.[1] This trichotomous achievement goal model is well-established and has been commonly used with elementary students. Across studies, mastery goals are generally positively related to

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[1] In the more recent 2 × 2 achievement goal framework, researchers also differentiate mastery goals by incorporating an approach and avoidance component (Elliot & McGregor, 2001; Pintrich, 2000b). In the present study, we focus on mastery (i.e., mastery-approach), performance-approach, and performance-avoidance goals, because the relatively novel construct of mastery-avoidance goals requires further empirical testing and is also considered to be less applicable to young learners (see Bong, 2009; Carr & Marzouq, 2012).

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school achievement (e.g., Spinath & Schöne, 2003; Lau & Nie, 2008), whereas performance-avoidance goals, on the contrary, mostly show negative associations (e.g., Middleton & Midgley, 1997; Mägi, Lerkkanen, Poikkeus, Rasku-Puttonen, & Kikas, 2010). As for performance-approach goals, research has revealed a less consistent pattern of findings, including positive (e.g., Spinath & Schöne, 2003; Shih, 2005), negative (e.g., Paulick, Watermann, & Nückles, 2011), and even zero correlations (e.g., Lau & Nie, 2008; Finsterwald, 2006) with achievement.

Later research has offered a revision of achievement goal theory, which postulates that each individual may be motivated by more than one goal simultaneously, and favoring both mastery and performance-approach goals would be most beneficial for school achievement (i.e., *multiple goal perspective*, Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Pintrich, 2000a).[2] However, there is also continued support which favors a sole focus on mastery goals (i.e., *mastery goal perspective*, Midgley, Kaplan, & Middleton, 2001; Brophy, 2005), which suggests that social comparison concerns might distract attention away from task demands and thus undermine students' learning and achievement (i.e., task distraction argument, Brophy, 2005; Midgley et al., 2001; Vansteenkiste, Matos, Lens, & Soenens, 2007). According to both perspectives, mastery goals yield a variety of beneficial effects and should be encouraged by teachers and practitioners, while these two perspectives differ with regard to performance-approach goals (Harackiewicz et al., 2002). Research findings for these two perspectives have been mixed and are almost exclusively focused on college and secondary school contexts (e.g., Pastor et al., 2007; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011; Luo et al., 2011), while for students in elementary school limited empirical research exists.

From a developmental perspective, young children tend to hold incremental beliefs concerning their intelligence, and believe intelligence is malleable through effort and learning (Dweck & Leggett, 1988; Dweck, 2002). Meanwhile, they are not fully able to conceptualize ability as a stable capacity that is separate from effort (Nicholls, 1984). This suggests that they are more inclined to be motivated by mastery goals (focusing on temporal comparisons) rather than performance goals (focusing on social comparisons) in their school learning. Furthermore, in elementary school, the way students perceive the learning environments and school tasks also generally invokes mastery goals (Anderman & Midgley, 1997; Midgley, Anderman, & Hicks, 1995). However, empirical studies found that even Grade 2 students are already capable to conduct social comparisons in learning contexts (e.g., Ruble, Boggiano, Feldman, & Loebl, 1980; Zeinz & Köller, 2006; Gabriel, Kastens, Poloczek, Schoreit, & Lipowsky, 2010). These findings indicate that elementary students might to a certain degree already be driven by performance goals in their goal pursuing. This raises the question whether final grade elementary students already endorse both mastery and performance-approach goals simultaneously and whether they reap the benefits.

Few person-centered studies addressed this question by examining how different achievement goals are combined within each individual, as well as the relations of different goal combinations with learning and achievement in elementary school. In general, a predominantly mastery-oriented profile is considered to be the most beneficial for learning and achievement. For example, students with this profile more often display adaptive learning strategies, show higher academic self-concept, higher academic performance, while also showing less negative emotions (Wilson, Zheng, Lemoine, Martin, & Tang, 2016; Meece & Holt, 1993; Seifert, 1995; Turner, Thorpe, & Meyer, 1998; Tapola & Niemivirta, 2008). In contrast, students characterized by high avoidance goals (e.g., low mastery/low performance/high avoidance, Meece & Holt, 1993; Tapola & Niemivirta, 2008), high performance goals (e.g., low mastery/high performance, Turner et al., 1998), and low motivation (e.g., low mastery/low performance-approach/low performance-avoidance, Wilson et al., 2016) were found to exhibit a particularly maladaptive pattern of learning (e.g., lower self-esteem, lower academic performance, higher negative affect, and higher level of academic withdrawal). Additionally, in very few studies, a combined high mastery and high performance-oriented profile in elementary students was identified. These studies provided mixed results regarding the identification and effects of this profile. Using cluster analysis, Meece and Holt (1993) clustered 257 fifth and sixth grade students based on task mastery, ego social, and work avoidant goals. Students with a combined mastery-ego profile showed higher superficial learning engagement and lower academic performance than students with a high-mastery profile. By using cluster analysis as well, Wilson et al. (2016) found that third graders with a multi-goal profile (above average in mastery, performance-approach, and performance-avoidance goals) received the lowest teacher-reported academic competence as compared to other students. In a German study, Schwinger and Wild (2012) found that fourth graders ($N = 302$) with a high multiple profile (who scored high on mastery, performance-approach, and performance-avoidance goals) showed similar test performance, school grades, interest, and effort expenditure as students who were primarily mastery-oriented. By using a median split, Shih (2005) found that students (Taiwanese sixth graders) with a high mastery and high performance-approach profile displayed an equally adaptive pattern for grades, intrinsic motivation, cognitive and metacognitive strategies, and self-handicapping, as compared to students who endorsed high mastery and low performance-approach goals. Therefore, although the benefits of mastery goals in elementary school have been well documented, the evidence for achievement-related consequences for multiple goals is rather inconclusive. To date, it remains unclear whether a multiple goal profile (i.e., high mastery when coupled with high performance-approach and low performance-avoidance goals) can be identified and whether it is as beneficial for school achievement as a primarily mastery-oriented profile in elementary students.

Despite the growing attempts to investigate the different role of achievement goal configurations in facilitating or hindering students' learning and achievement in elementary school, there are still several limitations. First, to our best knowledge, there are only three studies (i.e., Schwinger & Wild, 2012; Shih, 2005; Wilson et al., 2016) that have used performance goals which included both approach and avoidance components. Thus, the absence of such distinction would have limited previous research on the identification of multiple goals. Second, with respect to the techniques used for the classification of goal profiles, almost all previous studies utilized traditional techniques, such as median split (e.g., Shih, 2005) and cluster analysis (e.g., Seifert, 1995; Turner et al., 1998; Wilson et al., 2016). However, latent variable mixture modeling (Muthén, 2001, e.g., latent class analysis, latent profile analysis, mixed Rasch model) should be more appropriate for a person-centered analysis, because it provides statistical tests to compare models with a different number of classes and takes into account the measurement error of the classification (Lubke & Muthén, 2005; Vermunt & Magidson, 2002). Third, to the best of our knowledge, there are only four studies (i.e., Wilson et al., 2016; Meece & Holt, 1993; Shih, 2005; Schwinger & Wild, 2012) that investigated relations between students' achievement goal profiles and their school achievement (test scores, grades, or teacher reported academic competence) in elementary school. Lastly, prior studies usually relied on convenience samples, which often had relatively small sample sizes. Investigations based on a much larger and more representative sample are especially required, as they could enable researchers to generalize achievement goal results better than prior studies.

[2] In addition to the oft-examined mastery and performance goals, there is also research that have included social goals and studied the impact of students' multiple goals (i.e., mastery, performance, and social goals) on their school achievement particularly in non-Western cultures (e.g., Watkins & Hattie, 2012; King, McInerney, & Watkins, 2012). However, our focus here is on the simultaneous goal pursuit of mastery and performance goals.