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Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence

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ABSTRACT

The present study investigated the relation between self-esteem, self-efficacy and implicit theories of intelligence (entity and incremental) in a sample of 6th and 8th grade Norwegian students (N = 2.060) in order to test the factor structure of these variables, how they may differ according to gender and grade level, and how they may predict academic achievement level. The results showed positive relations between self-esteem, self-efficacy and incremental theories of intelligence, and a negative relation between entity and incremental theories of intelligence, but this latter relation was significantly stronger among 8th graders. Despite better academic achievement among 8th grade girls, they had lower levels of self-esteem, self-efficacy, and incremental views of intelligence than boys. In conclusion, evaluative components of self-beliefs (self-esteem and self-efficacy) and implicit theories of intelligence constitute separate, but related factors, and there are age and gender specific differences which are of theoretical and practical importance.

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1. Introduction

Self-beliefs among students have traditionally been studied as a multidimensional phenomenon (Marsh & Shavelson, 1985) ranging from e.g. general self-esteem to domain specific self-efficacy. However, there has also been an increasing interest to investigate the degree to which students perceive their abilities as relatively fixed entities or as possible to improve by means of effort (Dweck, 1999). These implicit theories of intelligence have been related to several self-regulatory variables in previous research, including goal setting, goal operating and goal monitoring across several achievement domains (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013).

The present study aims at expanding the scope of research on implicit theories of intelligence further by investigating their relations to evaluative components of self-beliefs in terms of self-esteem and self-efficacy. For example, it has been suggested that students with an entity view of intelligence may have a more vulnerable self-esteem (Molden & Dweck, 2006). However, previous research has typically failed to support this assumption (Hong, Chiu, Dweck, Lin, & Wan, 1999).

Furthermore, the transition from primary to secondary school may be indicative of a decrease in students' general self-beliefs (Arens, Yeung, Craven, Watermann, & Hasselhorn, 2013), especially regarding self-esteem among girls (Robins & Trzesniewski, 2005). Hence, the current study will compare subsamples representing these grade level and gender differences. In short, the current research enables an investigation of how evaluative aspects of self-beliefs (self-esteem and self-efficacy) are related to implicit theories of intelligence across grade level and gender, and how they are related to achievement.

1.1. Self-beliefs and implicit theories of intelligence

At a general and primarily affective level of self-concept, self-esteem constitutes the evaluative component of self-knowledge, which is defined by how much value people place on themselves (Baumeister, Campbell, Krueger, & Vohs, 2003). Self-esteem is a relatively stable aspect of individual differences, especially beyond the childhood years of development (Robins & Trzesniewski, 2005). However, there is a general decline in students' self-concept, particularly self-esteem, during elementary school, especially in the transition to secondary school (Arens et al., 2013; Wigfield & Eccles, 1994). This decline in self-esteem during adolescence is particularly strong for girls (Robins & Trzesniewski, 2005).

Students' conception of themselves at a more cognitive and specific level has been described by self-efficacy theory in terms of the capacity to execute courses of action required to produce desired outcomes (Bandura, 1997). Efficacy expectations refer to the perceived ability to perform actions, while outcome expectancies are defined as "…a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1997, p. 193). Pintrich and De Groot (1990) studied self-efficacy within a theoretical framework of expectancy beliefs, and

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operationalized self-efficacy by means of items describing expected learning outcomes and learning effectiveness. The current study will investigate self-efficacy accordingly.

It may be argued that self-esteem and self-efficacy appear to be rather different constructs, as capabilities to execute specific courses of action may not necessarily be important for self-esteem. On the other hand, both constructs measure evaluative aspects of self-appraisal. Accordingly, research has shown a relation between self-efficacy and self-esteem (e.g. Lane, Lane, & Kyprianou, 2004). However, the extent to which outcomes of self-efficacy in terms of actual performance are important for self-esteem probably depends on whether success and failure are tied with self-worth (Bandura, 1997; Lane, Jones, & Stevens, 2002).

As regards grade level and gender differences in self-efficacy, Gungoren and Sungur (2009) observed higher levels of self-efficacy among 6th graders than among 7th and 8th graders. Also, Guvercin (2008) reported a decline in students' self-efficacy beliefs from 6th to 8th grade. Whereas this study also indicated that girls were more self-efficacious, other studies have observed the opposite (e.g. Anderman & Young, 1994).

Self-esteem and self-efficacy constitute evaluative components of self-beliefs, but they do not specify whether the students evaluate their abilities as relatively stable or possible to improve. This latter distinction is described as students' implicit theories of intelligence (Dweck, 1999). An entity theory of intelligence implies that although it is possible to learn new things, the underlying intelligence remains the same. In contrast, students holding an incremental view of intelligence believe that it is possible to become more intelligent through effort (Dweck, Chiu, & Hong, 1995).

As regards the relation between implicit theories of intelligence and self-beliefs, researchers have assumed that entity theorists may have vulnerable self-esteem because their self-worth is contingent on external validation (Burhans & Dweck, 1995; Dweck, 1999; Molden & Dweck, 2000; Mueller & Dweck, 1998). However, implicit self-theories have typically been uncorrelated with self-esteem in previous research (Hong et al., 1999). Nevertheless, Robins and Pals (2002) found that entity theorists declined in self-esteem during college, while the self-esteem of incremental theorists increased, although there was no change in the level of implicit self-theories from high school through college. Furthermore, a study of Russian undergraduate students showed that academic self-concept predicted academic achievement, but there was no significant relation between academic self-concept and implicit theories of intelligence (Kornilova, Kornilov, & Chumakova, 2009).

This was also the conclusion in a study which showed that implicit theories of intelligence were unrelated to perceived academic competence (Cury, Elliot, Da Fonseca, & Moler, 2006). However, as students' self-beliefs often comprise affective elements it is also relevant to mention a study by King, McInerney, and Watkins (2012), in which entity theory of intelligence was positively related to negative emotions among students.

Regarding gender differences in implicit theories of intelligence, there appears to be few previous studies. However, research on an adult sample showed a small, but significant positive correlation ($r = .09$, $p < .05$) with incremental theory of intelligence for women (Spinath, Spinath, Riemann, & Angleitner, 2003). But this finding is weak, and may not necessarily apply to the present sample.

Also, previous research seems to be inconclusive regarding the organization of incremental and entity factors. For example, Dweck et al. (1995) described these constructs as a single factor, in which high scores reflected an incremental theory, whereas Cury et al. (2006) found two negatively correlated factors, similarly to Bråten and Strømsø (2005). Hence, this issue will be further investigated in the present study.

1.2. Academic achievement

Both general self-beliefs and more specific academic self-efficacy are related to actual academic performance, although their relative importance and the directions of causality are debated. For example, Baumeister et al. (2003) concluded that self-concept appears to be a consequence rather than a cause of high achievement. A review of previous research showed that when controlling for initial achievement, there was a small, favorable influence of positive self-beliefs remaining as predictors of academic achievement (Valentine, DuBois, & Cooper, 2004), but with stronger effects of self-beliefs when they were assessed specific to the academic domain.

A meta-analysis of 128 studies concluded that self-esteem accounted for 4–7% of the variance in academic performance (Hansford & Hattie, 1982). Rosenberg, Schooler, and Schoenbach (1989) found a modest causal relation from grades to self-esteem, but not from self-esteem to grades. Accordingly, Skaalvik and Hagtvet (1990) found that academic achievement predicted subsequent level of self-esteem, but the reverse effect (self-esteem → achievement) was not present. Marsh and Craven (2006) concluded that academic achievement is substantially related to academic self-concept, but nearly unrelated to self-esteem.

Whereas the relation between self-esteem and academic achievement is rather weak, self-beliefs within the academic domain are a strong predictor of academic achievement. For example, a study that investigated the distal and proximal measures of self-efficacy and self-esteem across three performance trials (academic course exams) showed that self-efficacy had greater predictive validity than self-esteem (Mone, Baker, & Jeffries, 1995). Academic self-efficacy is regarded as one of the most powerful predictors of students' achievement (Multon, Brown, & Lent, 1991), because students' beliefs about their academic capabilities become an inner resource of their academic engagement and performance (Levpuscek & Zupancic, 2009). The relation between self-efficacy and academic achievement has been described as interactive and reciprocal (Valentine et al., 2004).

Implicit theories of intelligence have typically been regarded to have an indirect effect on achievement, via achievement goals (cf. Dupeyrat & Mariné, 2005). However, they may also be considered as a proximal determinant of academic achievement (Harackiewicz & Elliot, 1995). For example, a study showed that entity theory of intelligence was negatively related and incremental positively related to academic achievement (Cury et al., 2006). Finally, a study of 7th graders showed that incremental theory predicted an upward trajectory in grades over the two years of junior high school, while entity theory predicted a flat trajectory (Blackwell, Trzesniewski, & Dweck, 2007). A meta-analysis by Burnette et al. (2013) concluded that implicit theories of intelligence are moderately related to achievement in some studies, but that the effect is mostly considered to be indirect.

1.3. The present study

Taken together, the above theoretical assumptions and previous research findings call for further investigation of the relation between self-esteem, self-efficacy, implicit theories of intelligence, and academic achievement, and to investigate grade level and gender differences regarding these variables. It should be mentioned that Norwegian students do not receive school grades at the primary school level. Hence, school grades are only available for the current subsample of 8th grade lower secondary school students.

The following problems will be addressed in the current study:

1. How may self-esteem, self-efficacy and implicit theories of intelligence can be represented by latent factors, and how are these factors related?
2. Are there grade and gender differences in the mean level of self-esteem, self-efficacy, implicit theories of intelligence, and academic achievement?
3. How may the abovementioned variables be related to academic achievement among the 8th grade students?

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