



The importance of self-regulation and negative emotions for predicting educational outcomes – Evidence from 13-year olds in Swedish compulsory and upper secondary school



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ABSTRACT

The purpose of the study was to investigate the predictive validity and relative importance of students' self-regulation and negative emotions for school work and learning for Grade Point Average in 9th Grade and graduation from upper secondary school. Students' levels of self-regulation and negative emotions in school were measured by a questionnaire in 6th Grade. In order to answer these questions, multivariate techniques were used. The data derive from the Evaluation Through Follow-Up longitudinal project, and the subjects were 9115 students born in 1992. Confirmatory factor analysis and structural equation modelling were used. The results showed that students' negative emotions had strong predictive validity to Grade Point Average in 9th Grade and graduation from upper secondary school, while students' self-regulation had non-significant relations to the outcomes. One of the most interesting results concerns students' negative emotions about school work and learning was not fully explained by their lower cognitive ability. Gender and family educational background had only negligible influences on the relation between negative emotions and the outcome variables.

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1. Introduction

In recent years, research has emphasized the importance of students' socio-emotional competencies for their success in school (Bandura, 1986; Duckworth & Seligman, 2005; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Jones, Greenberg, & Crowley, 2015). Early measures of socio-emotional competencies seem to be important to predict social and economic outcomes (Heckman, Stixrud, & Urzua, 2006; Heckman et al., 2011; Heckman & Kautz, 2012; Levin, 2012) as well as academic achievement and educational attainment later in life (Duckworth & Seligman, 2005; Duckworth & S.M., 2013). Socio-emotional competencies develop through an adjustment process based on temperament, personality and traits which include both genetics and those experiences individuals make during childhood and adolescent (Rothbart & Bates, 2006; Rueda, Checa, & Rothbart, 2010). The socio-emotional adjustment processes influence a large number of different competencies such as self-confidence and motivation. Temperament, personality and traits thus seem to regulate students' cognitive, emotional and behavioural activities which in turn seem to predict school

and life outcomes. According to research within the temperament field, three broad dimensions of temperament exist and they are extraversion, negative emotions, and effortful control (Rothbart & Bates, 2006). Effortful control (EC) is argued to be a higher-order dimension that contributes to self-regulation, self-discipline and conscientiousness later in life (Almlund, Duckworth, Heckman, & Kautz, 2011; Rothbart & Bates, 2006). Self-regulation is thus one aspect of the dimension while reactivity is another. Self-regulation is understood as “processes such as effortful control and orienting that function to modulate reactivity” and reactivity is understood as “responsiveness to change in the external and internal environment” (Rothbart & Bates, 2006, p. 100). Yet, in the Big Five taxonomy (Almlund et al., 2011), personality is categorized into five personality traits (openness, agreeableness, extraversion, conscientiousness and neuroticism) of which conscientiousness and neuroticism have been shown to best predict achievement in school (Duckworth & S.M., 2013; Jones et al., 2015; MacCann, Duckworth, & Roberts, 2009; Poropat, 2009).

Research on the impact of negative emotions on educational outcomes has consistently shown that students' negative emotions seem to cause problems to adjust to school procedures (Nelson, Martin, Hodge, Havill, & Kamphaus, 1999), and students with low cognitive self-control on school tasks have been found to achieve poorly which is explained by their negative emotions such as anxiety (Normandeu

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& Guay, 1998). The association between bad school adjustment and poor achievement seems to be consistent over time and age (Rueda et al., 2010).

Even though we know from research that students' socio-emotional competencies seem to predict success within the educational system, much is still unknown of the importance of different socio-emotional competencies for different educational outcomes (Poropat, 2009), and for different groups of students (Lundgren, 2013). Besides, the mediating effects of background characteristics need to be better understood (Strenze, 2007). Thus, the need for large-scale studies with nationally representative samples of younger students is large for investigating the effect of socio-emotional competencies on different educational outcomes. Different academic outcomes have often been used as synonymous measures in previous research but it is reasonable to believe that measures of grades, Grade Point Averages (GPA), course grades and graduation are far from synonymous (Duckworth & Seligman, 2005; Poropat, 2009).

The overall aim of the present study is to use a 10% national representative sample of students in 6th Grade to investigate the predictive validity and relative importance of self-regulation and negative emotions about school work and learning for two academic outcomes: teacher assigned grades in 9th Grade at the end of compulsory school and graduation from upper secondary school.

1.1. The associations between self-regulation, negative emotions and educational outcomes

Self-regulation (used interchangeably with self-discipline and self-control) is defined as a conscious effort to suppress overpowering responses in order to reach a higher goal (Duckworth & Seligman, 2005). Self-regulation is the ability to begin tasks and carry on to completion even if the task is boring and difficult, to listen to the teacher rather than daydreaming, the ability to organize work and plan actively, and choosing homework over computer games and TV (Duckworth & Seligman, 2005; Eisenberg, Duckworth, Spinrad, & Valiente, 2014). In the research on temperament, effortful control (EC) is a higher-order broad dimension of skills, viewed as the basis of self-regulation, including several subscales such as self-regulation, self-control and self-discipline (Simonds, Kieras, Rueda, & Rothbart, 2007; Valiente et al., 2011). Eisenberg et al. (2014) conclude in a literature review that EC is a temperament dimension partly having a genetic basis, partly developed from early age by the specific demographics and experiences individuals have. Temperament and personality is distinguished by the fact that temperament is an affective, activational and attentional core of personality while personality is individual differences in thinking, feelings, and values that have been developed and learned (Caspi & Shiner, 2006; Rothbart & Bates, 2006). The EC is therefore argued to be a higher-order dimension predicting self-regulation which in turn seems to predict conscientiousness in adult life (Derryberry & Rothbart, 2001; Eisenberg et al., 2014). The ability to make effortful control choices such as to choose schoolwork before leisure time, thus to behave self-regulated has been shown to predict academic achievement, especially teacher-assigned grades (Blair & Razza, 2007; Tangney, Baumeister, & Boone, 2004; Valiente, Lemery-Chalfant, & Swanson, 2010; Wolfe & Johnson, 1995). Previous research has found that teacher assigned grades at the end of compulsory school measure students' subject knowledge as well as their socio-emotional competencies such as showing interest in learning (Klapp Lekholm & Cliffordson, 2009). Duckworth and Seligman (2005) found that self-discipline (used interchangeably with self-regulation) predicted academic achievement better and more robustly than IQ scores and that girls' higher levels of self-discipline contributed to their higher report card grades, compared to boys, whereas girls' self-discipline was of less importance for predicting results on achievement tests and intellectual aptitude tests (Duckworth & Seligman, 2005). Hence, depending on which measures of academic outcomes that are being used, self-regulation seems to be

of different importance for success (Willingham & Cole, 1997; Stricker, 1993). The trait conscientiousness in the Big Five taxonomy of personality is similar to self-regulation and Eisenberg et al. (2014) argue for a close relationship between self-regulation and conscientiousness and that self-regulation predicts conscientiousness later in life. Several studies have found positive associations between self-regulation and college GPA and self-reported grades at university level (Wolfe & Johnson, 1995; Tangney et al., 2004). Self-regulation is considered by some researchers to be identical with conscientiousness in the Big Five theory (Moffitt et al., 2011), while other researchers propose that self-discipline relates to emotional stability, extraversion or agreeableness (Proctor et al., 2011; Whiteside & Lynam, 2001). Students with good ability to regulate themselves seem to have the ability to regulate their attention, behaviour and emotions which make them successful in school.

Another main dimension of temperament is negative emotions that seem to affect educational outcomes (Rueda et al., 2010). Negative emotions combined with motivational aspects of personality converge into the construct labelled *approach* and *avoidance* (Elliot & Thrash, 2010), where the avoidance construct is defined as students avoiding negative outcomes such as being looked upon as stupid or not understanding the material in courses (Derryberry & Rothbart, 1997; Rothbart, Derryberry, & Hershey, 2000; Rothbart, Ahadi, Hershey, & Fisher, 2001). In the Big Five taxonomy, neuroticism is one dimension of personality traits and it has several facets of which vulnerability is one. Vulnerability is defined as difficulties to cope with stress and feelings of unease in difficult situations (Almlund et al., 2011). Vulnerability is argued to be closely related to students' work-avoidant orientations (Derryberry & Rothbart, 1997) and the lack of resilience and perseverance. Students who are focusing on their emotional state, and having negative emotions such as worrying and feeling anxious, have the risk of paying less attention to school work and academic tasks which may lead to reduced academic performance (De Raad & Schouwenburg, 1996; Robbins et al., 2004). Students who have negative emotions such as feelings of disadvantage in school have a greater risk of lacking confidence, avoiding classroom activities and approaching tests and examinations with the expectation of failure. They have greater risks of difficulties in their social relations and develop low career aspirations (Meece & Holt, 1993). Work-avoidant students have the most negative attitudinal, motivational and cognitive strategy profiles of all students (Meece & Holt, 1993). Thus, students with a work-avoidant attitude may develop self-handicapping strategies that minimize activity in instruction and learning while maximizing the likelihood that their failures in school may be externalized to factors outside their control (Covington, 2000). In a systematic review (Gustafsson et al., 2010), researchers found that students who were successful in learning to read and write during the first years in school had a lower risk of mental disorder such as depression in adolescence. The researchers concluded that it is essential that young students develop their confidence and experience a positive development in their school work and learning in order to avoid mental disorders and academic failure. De Raad and Schouwenburg (1996) suggest that emotional stability becomes more important for academic achievement for older students in primary education, compared to younger ones.

1.2. Student background characteristics

The relatively moderate associations between socio-emotional competencies such as the traits in the Big Five taxonomy and academic educational outcomes may be due students' background characteristics such as cognitive ability, gender and age (De Raad & Schouwenburg, 1996; Laidra, Pullman, & Allik, 2007; Poropat, 2009). From primary to secondary education there is a decline in strength of the relationship between socio-emotional competencies and academic achievement, apart from conscientiousness (Poropat, 2009). Research has also shown that there seems to be a negative association between being conscientious

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