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Long-term effects of primary schools on non-cognitive outcomes of students at age 17

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ABSTRACT

Educational effectiveness research has always displayed an interest in long-term effects of schools. However, over the past decades only few studies examined such effects. Moreover, investigating non-cognitive outcomes as an effectiveness indicator has been ignored for a long time in the research field. This study addresses both gaps in the research literature by investigating long-term effects of primary schools on non-cognitive outcomes of students at age 17. Moreover, it is investigated which primary school characteristics play a role in this process. The study uses data of the SiBO project, in which a cohort of 6000 Flemish pupils were intensively followed from kindergarten until Grade 7. In 2014, at the age of 17, 65% of the cohort participated in a follow-up study. Cross-classified multilevel models showed significant, but small long-term effects of primary schools on some of the non-cognitive outcomes. Also, some small long-term effects of primary school characteristics were found.

1. Introduction

Academic achievement, such as mathematics and language, has been widely studied as effectiveness criterion in the field of educational effectiveness research (EER). The research field is often criticised for having a narrow view on effectiveness criteria (Sammons, Davis, & Gray, 2015; Scheerens, Bosker, & Creemers, 2001). Increasingly, researchers plead for using other measures of educational quality besides cognitive outcomes (Creemers, Kyriakides, & Sammons, 2010; Luyten, Visscher, & Witziers, 2005; Reynolds et al., 2015). In recent years, more attention is paid to non-cognitive outcomes (Reynolds et al., 2014). Our dataset gives opportunities to make a contribution towards this plea for more research into non-cognitive outcomes by investigating school effects on non-cognitive outcomes. Below the different non-cognitive outcomes that are studied in the current study are listed. In Appendix A in Supplementay material, an overview of all items in the student questionnaire can be found.

(1) school well-being;
(2) autonomous motivation, which is characterised by an intrinsic drive, psychological freedom and choice (Ryan & Deci, 2000);
(3) controlled motivation, which is characterised by external pressure (Ryan & Deci, 2000). Both autonomous and controlled motivation are included in the student questionnaire to determine why students do their best at school. These scales are based on the self-determination theory of Ryan and Deci (2000);
(4) mastery goal orientation, which indicates whether the students purpose for engaging in academic practices is to develop competencies (Midgley et al., 2000). In this scale, the aim is on learning and self-improvement;
(5) personal performance-approach orientation, which indicates to what extent the students are driven by the wish to be able to demonstrate their competence in a performance setting (Midgley et al., 2000);
(6) personal performance-avoid orientation, which indicates whether the students purpose is to avoid to demonstrate their incompetence (Midgley et al., 2000). With this scale and scales (4) and (5), we wanted to measure the relationship between the learning environment of students on the one hand and their motivation and behaviour on the other hand. These scales were developed in relation to the achievement goal theory (Dweck & Leggett, 1988), which makes a distinction between mastery goals (scale 4) – aiming at learning new skills – and performance goals (scales 5 and 6) – aiming at doing better than other students or avoid doing worse than other students;
(7) social integration, which indicates the level of integration of the student in the class group;
(8) interest in the learning tasks;
(9) general self-concept, which is the collection of judgements of the student about him/herself as a person (Marsh, 1988); and

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(10) mathematical self-concept, which is the student's mental representation of his/her abilities in mathematics (Marsh, 1988).

Moreover, in the field of educational effectiveness, long-term effects of schools are rarely investigated. This study contributes to the research field by investigating long-term effects of primary schools on non-cognitive outcomes of students at age 17.

1.1. Cognitive and/or non-cognitive outcomes?

The goals of education reach higher and broader than only achieving cognitive outcomes. Schools also have the responsibility to foster the development of non-cognitive outcomes of students (Opdenakker & Van Damme, 2000; Van Damme et al., 2006). It is expected from schools that they contribute to the development of social skills of their students and that they prepare their students for a future life in society. By focusing on self-concept, motivation, and well-being, they can support this process. Previous studies showed that schools have larger effects on cognitive outcomes compared to their effects on non-cognitive outcomes. However, for the aforementioned reasons, it is important, besides focusing on cognitive achievement, also to focus on non-cognitive outcomes of students.

Previous research about the consistency of school effects on cognitive and non-cognitive outcomes is indecisive. When schools focus more on one type of outcomes, this could indicate a competition between cognitive and non-cognitive outcomes and possibly result in a trade-off between these educational goals. While focusing on both outcomes could indicate complementarity, i.e. that both outcomes strengthen each other so that a positive correlation between both outcomes occurs (van der Wal & Waslander, 2007). Gray (2004) argued in his review of British research that schools differ in their effects on cognitive and non-cognitive outcomes. Schools doing well in one area are not necessarily less or more effective in another area. The study of van der Wal and Waslander (2007) is inconclusive: neither a trade-off, nor complementarity could be found. Other studies found stronger connections between the different domains. According to the findings of Opdenakker and Van Damme (2000), schools effective in promoting cognitive outcomes are not necessarily less effective in promoting non-cognitive outcomes. They found that these effectiveness criteria are distinctive dimensions and that school characteristics act differently on the different outcomes. Kyriakides (2005) found positive results regarding the consistency of school effects: he found that many schools effective in one domain are also effective in another domain. While he also found some variability in effectiveness, no school was among the most effective in one domain and among the least effective in another domain.

Recently, not only educational effectiveness research started investigating non-cognitive outcomes more often. In the research field of economics of education, also a focus has been put on non-cognitive outcomes. Several researchers concluded that non-cognitive outcomes are important determinants of later life outcomes, such as success on the labour market, health, schooling decisions, life satisfaction, reduction of crime, wages etc. (Campbell et al., 2014; Frijters, Johnston, & Shields, 2014; Heckman, 2000; Heckman, Stixrud, & Urzua, 2006). For instance, academic self-concept is found to have an impact on the achievement of students later on (Pinxten, De Fraine, Van Damme, & D'Haenens, 2013). Gagné and Deci (2005) found that intrinsic motivation and autonomous extrinsic motivation are connected to performance, satisfaction, and well-being at work. Moreover, several researchers concluded that the childhood circumstances of children have an important long-term influence and that interventions in these environments are, regarding their long-term consequences, better implemented as early as possible (Heckman & Masterov, 2007; Heckman, 2000; Kautz, Heckman, Diris, Ter Weel, & Borghans, 2014). Interventions in and before early childhood education have been found much more effective compared to interventions during secondary education (Cunha, Heckman, Lochner, & Masterov, 2006).

1.2. Effects of schools on non-cognitive outcomes

In contrast to the widely studied academic achievement, effects of schools on non-cognitive outcomes are less often investigated. This is partly because − in contrast to the consensus that it is the responsibility of schools that their students attain good mathematics and language results − no international consensus exists on which non-cognitive outcomes a school has to attain (De Fraine, 2003). One of the frequently investigated non-cognitive outcomes is school well-being of students. Konu, Lintonen and Autio (2002) found a between-school variance of 1% on this outcome in Finland. This small intraclass correlation might reflect the rather homogeneous school conditions in Finland. Van Landeghem, Van Damme, Opdenakker, De Fraine and Onghena (2002) studied effects of secondary schools on non-cognitive outcomes of students in Flanders and found a variance component of 4.1% for school well-being in the empty model. In the study of Opdenakker and Van Damme (2000), significant effects of the secondary school on the well-being of students were also found. However, the effect of schools on mathematics achievement was much larger. De Bilde (2013) investigated the effects of primary schools on autonomous and controlled motivation of students. She found a variance at primary school level on controlled motivation of 2.9% and a primary school variance on autonomous motivation of 9.8%. Regarding another non-cognitive outcome, social integration, Van Landeghem et al. (2002) investigated the raw effects of secondary schools in an empty cross-classified model with students in seventh and eighth grade classes in secondary schools. They found a raw effect of the secondary school of 3.6% on the social integration of students at the end of eighth grade. Opdenakker and Van Damme (2000) found in their study a raw secondary school effect of 2.4% on students' interest in the learning tasks at the end of seventh grade, when also taking the class level into account. Some studies investigated the effect of schools on academic self-concept. Van de gaer, De Fraine et al. (2009) found significant effects of secondary schools on academic self-concept of students during secondary education. Moreover, they also concluded that schools effective in the development of academic self-concept of students, were also effective in motivation towards learning tasks. Van Landeghem et al. (2002) found a raw effect of 2.1% of the secondary school on the academic self-concept of the students at the end of Grade 8. No previous studies on the effects of schools on the mastery goal orientation and the personal performance approach and avoid orientation using the 'Patterns of Adaptive Learning Scales' (PALS) (Midgley et al., 2000) were found. Reynolds et al. (2014) listed three hypotheses to explain the small effects of schools on non-cognitive outcomes of their students. First, a smaller focus is put on non-cognitive outcomes in the curriculum, compared to cognitive outcomes. Second, it is more difficult to measure the non-cognitive outcomes as accurately as cognitive outcomes. Third, during the out-of-school time, more focus is put on non-cognitive outcomes and less on cognitive outcomes.

1.3. Long-term effects of schools

School effectiveness research most often investigates school effects on outcomes in the short term, i.e. at the end of a certain school year. Previous research has only seldom investigated school effectiveness in the long run (Creemers et al., 2010). Teddlie and Reynolds (2000) refer to long-term effects, or continuing school effects, as effects on students from one phase of schooling to another. Other authors use the concept 'long-term effects' when reporting a more limited period of time, for instance the effect of schools or teachers after one or after several school years (Bressoux & Bianco, 2004; Kyriakides & Creemers, 2008). In our study, the following definition of long-term school effects is used: the effects of schools (or teachers) at a particular moment of a student's educational career, on the outcomes of a student after at least one year,