Personality as a moderator of context effects on academic achievement[☆]

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ABSTRACT

We investigated whether personality moderates group influence of classmates on academic achievement and whether these so-called context effects can be attributed to peer pressure. The sample consisted of 2498 students in their first year of Dutch secondary education. The data were analyzed by a two-level (students within classes) analysis, separately for boys ($n = 1033$, in 92 classes) and girls ($n = 1465$, in 119 classes). For both sexes, we found a context effect on Dutch language achievement but not on mathematics achievement. Emotional Stability appeared a moderator of this context effect but for girls only. The results suggest further that peer pressure is not a likely mechanism of group influence of classmates on academic achievement.

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1. Introduction

A successful school career is an important step towards success in later life (Ceci & Williams, 1997). So, one of the main challenges in educational settings is to optimize the learning environment and learning processes in order to prevent dropout and to help students to achieve at their maximum level. Not surprisingly, therefore, much research addresses the question of differential effectiveness of schools and classes with respect to academic achievement and which variables account for these differences. In The

Netherlands, dropout is a serious problem, particularly at lower levels of education. Although precise figures are hard to give, because of a fallible student tracking system until recently, it has been estimated that a substantial amount of Dutch students leave school without a starting qualification, which is the minimum level needed to enter the labor market properly equipped (Van der Steeg & Webbink, 2006).

It is common knowledge that motivation for school and academic achievement declines in early adolescence and that an important challenge for educators is that students "choose" to become cognitively engaged in their classroom academic work and get the notion that classroom tasks are interesting and worth learning (Pintrich & De Groot, 1990; Van de Gaer et al., 2009; Van der Werf, Opdenakker, & Kuyper, 2008; Wigfield & Eccles, 2002). Students spend much time together, so group influence could well play a role in students' attitude towards school and academic attainment. Classmates' positive or negative school engagement and their attitude towards academic achievement may well be contagious. Put differently, consciously or unconsciously, there may be classroom norms (Chang, 2004). On the other hand, not all people do what others do, so it seems reasonable to assume that students differ in the extent to which they accommodate to perceived classroom norms, because of differences in personality. These considerations inspired our exploratory study on group influence on academic achievement.

Educational data are hierarchical in nature. Students are clustered within classes and schools, so the total variance in an outcome variable is a combination of between-group differences (between classes and schools) and within-group (between students) differences (e.g., Snijders & Bosker, 1999). It follows that explanatory variables, which explain to a certain extent the variance in an outcome variable, can also be operating at three different levels: of students (level one), classes (level two), and schools (level three). Modern techniques of multilevel data analysis have revealed that some 40–70% of the variation in academic achievement exists between students and some 30–60% of the variation exists between classes and schools (e.g., De Fraine, Van Damme, Van Landeghem, Opdenakker, & Onghena, 2003; Dumay, 2009; Hill & Rowe, 1996; Muthén, 1991; Opdenakker & Van Damme, 2000, 2001; Opdenakker, Van Damme, De Fraine, Van Landeghem, & Onghena, 2002). Group means like the class average level of achievement or the school average level of achievement are, thus, an important type of explanatory variable. A significant incremental contribution of the group mean of an explanatory variable over and above its level-one predictive contribution is called a *context* effect (Snijders & Bosker, 1999). We explored whether the average achievement level of classmates exerts a context effect on students' academic achievement and whether personality moderates this context effect.

1.1. Context effects on academic achievement

Variables that have been found to exert a context effect on academic achievement are class composition variables such as (a) the proportion of female, ethnic minority, or low socioeconomic status students in a class and (b) the average initial cognitive ability level of a class (e.g., De Fraine et al., 2003; Nuttall, Goldstein, Prosser, & Rasbash, 1989; Opdenakker et al., 2002). It appeared, for instance, that in classes with a high initial cognitive ability level mathematics achievement and language achievement are higher (De Fraine et al., 2003; Opdenakker et al., 2002). De Fraine et al. (2003) also found that in classes with a high proportion of girls, language achievement was higher. These authors concluded that with whom one is taught is more important than how one is taught.

An influential line of research on context effects investigates the consequences of *ability grouping* and *tracking* on academic attainment (e.g., Ansalone, 2003; Fiedler, Lange, & Winebrenner, 2002; Gamoran, 1992a, 1992b; Hallinan, 1990; Hattie, 2002; Slavin 1987, 1990a, 1990b). Both terms denote the separation of students into groups based on measured capabilities or previous attainment. However, tracking is mostly used to refer to separating groups for all academic subjects, whereas ability grouping is mostly used to refer to within-class separation of students for certain tasks or assigned special work (Gamoran, 1992a). The advantages and disadvantages of ability grouping and tracking are still subject to debate (e.g., Fiedler et al., 2002). One of the arguments against ability grouping and tracking is the *big-fish–little-pond effect* (BFLPE), which refers to the typical negative effect on academic self-concept found for attending high-achieving schools (e.g., Marsh, 1991; Marsh & Hau, 2000). It has been found that a low academic self-concept, in turn, is predictive of subsequent decisions concerning further education and career aspirations, resulting in under-achievement (Davis, 1966; Marsh et al., 2008). So, BFLPE studies would lead one to conclude that a student is better off in less well-performing environments, in contrast to the results from