



The big-fish–little-pond effect on academic self-concept: The moderating role of differentiated instruction and individual achievement☆



Amélie Roy *, Frédéric Guay *, Pierre Valois *

Département des fondements et pratiques en éducation, Université Laval, Québec, Québec, Canada

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ABSTRACT

The big-fish–little-pond effect (BFLPE) postulates that class-average achievement has a negative effect on students' academic self-concept. We hypothesized that teachers' use of differentiated instruction strategies would attenuate the BFLPE on French self-concept (FSC). We also explored whether this moderation effect depended on children's individual achievement (i.e., a three-way interaction among class-average achievement, individual achievement, and differentiated instruction). Using hierarchical linear modeling, we tested this moderation effect in a sample of 422 elementary students nested in 27 classrooms. The results showed that the three-way interaction was significant. Simple slopes indicated a significant BFLPE only for students with low individual achievement and for whom teachers reported less frequent use of differentiated instruction strategies. Our findings provide insights into which students may be the most affected by the BFLPE and which teaching practices can attenuate its negative consequences on students' FSC. We discuss results in relation to the literature on the BFLPE and on differentiated instruction.

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Students often compare themselves to other students to find out how well they perform in various school subjects (Buunk, Kuyper, & van Der Zee, 2005). Marsh (1984, 1987) and Marsh & Parker (1984) propose the big-fish–little-pond effect (BFLPE) to capture social comparison effects in schools. According to the BFLPE, students compare their individual achievement with the average achievement of their peers in the same school or classroom to develop their academic self-concept (ASC). Thus, school-average or class-average achievement serves as a reference standard. The BFLPE proposes that students who attend schools or classes with less-able peers should make more favorable comparisons and develop a more positive ASC than their equally able peers educated in high-ability schools or classrooms (Marsh, 1984, 1987; Marsh & Parker, 1984). Because ASC has been associated with educational benefits, such as school persistence and achievement (Guay, Larose, & Boivin, 2004; Guay, Marsh, & Boivin, 2003; Guay, Ratelle, Roy, & Litalien, 2010; Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005; Marsh & Yeung, 1997), it is important to assess whether some characteristics of the school environment can attenuate the BFLPE. In this study, we investigated a pedagogical teaching practice that could attenuate the BFLPE on ASC, namely differentiated instruction.

This research contributes to the existing knowledge in two ways. First, although recent research has studied students' individual characteristics (e.g., motivation, behavior, social adjustment) that might moderate the negative effect of school-average achievement on ASC (Seaton, Marsh, & Craven, 2010), few studies have assessed characteristics of the school environment. Yet, identifying school moderators would provide insights into teaching practices that may attenuate the BFLPE. Second, most researchers have conducted studies among adolescents with limited attempts to test this effect among younger students (see Marsh et al., 2008). Thus, we do not know whether elementary school children may use their classmates' achievement to develop their ASC. Below, we present the BFLPE and related research, a rationale for why differentiated instruction strategies should moderate the BFLPE, and evidence supporting the BFLPE.

1. Big-fish–little-pond effect (BFLPE)

ASC refers to students' self-perceptions of their abilities developed through experience and interpretations of the school environment (Marsh & Craven, 1997; Shavelson, Hubner, & Stanton, 1976). ASC is domain-specific, because students may have different views of their abilities in different school subjects (Arens, Yeung, Craven, & Hasselhorn, 2011; Marsh, 1986; Marsh, Byrne, & Shavelson, 1988). In this study, we selected French because students spend a lot of time studying this subject in the French–Canadian educational system (Formation Program of the Quebec School, 2006). Moreover, this subject has been the focus of inquiry in previous BFLPE studies (Huguet et al., 2009).

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* Corresponding authors at: Département des fondements et pratiques en éducation, Université Laval, Québec, 2320 rue des Bibliothèques (local 922), Québec G1V 0A6, Canada.

E-mail addresses: amelie.roy@fse.ulaval.ca (A. Roy), frederic.guay@fse.ulaval.ca (F. Guay), pierre.valois@fse.ulaval.ca (P. Valois).

The BFLPE is rooted in students' perceptions of their abilities compared to those of their classmates (Huguet et al., 2009). According to this model, ASC should be predicted positively by individual achievement (students have higher self-perceptions when their own performance is high), but negatively by class-average achievement (students have lower self-perceptions when their peers' average performance is higher than their own).

Many studies have supported the BFLPE (see Marsh & Hau, 2003). For example, in a longitudinal study, Marsh, Trautwein, Lüdtke, and Baumert (2007) showed that the BFLPE was obvious among adolescents from selective high schools and that its effect persisted for years after graduation. Their results also showed the BFLPE at different levels of individual achievement for boys as well as girls. Moreover, Marsh and Hau (2003) tested BFLPE predictions for nationally representative samples of adolescents attending academically selective schools from 26 countries. The effect of class-average achievement on ASC was consistently negative, suggesting that the BFLPE is generalizable across cultures. The cross-cultural generalizability of the BFLPE was further supported in a recent study by Seaton, Marsh, and Craven (2009), who found a consistent negative effect of class-average achievement on ASC in students attending high-achievement schools from 41 culturally and economically diverse countries.

2. Moderators of the BFLPE

Until recently, the question as to whether the BFLPE varies across diverse student characteristics or educational settings had received little attention. The most widely studied moderator is individual achievement. However, the findings have been inconsistent (Seaton et al., 2010). For example, some studies found a negative BFLPE for high achievers in high-achievement schools (Seaton et al., 2009), while others indicated that students of average ability were the most affected (Marsh & Rowe, 1996). In addition, the majority of studies found non-significant interaction effects, suggesting that the BFLPE was generalized at different individual achievement levels (Marsh & Hau, 2003; Marsh et al., 2007).

The first systematic attempt to address the issue of BFLPE moderation was by Seaton et al. (2010), who evaluated BFLPE generalizability across a variety of individual characteristics (e.g., socioeconomic status, intrinsic and extrinsic motivation, and individual achievement). Although many moderating effects were too small to be relevant, others were far-reaching. More precisely, the results suggested that the BFLPE was more pronounced for students who were intelligent, were anxious, used memorization as a learning strategy, and had a cooperative orientation. These results provide important insights into which students may be the most affected by the BFLPE.

Seaton et al. (2010) examined individual differences that could affect the size of the BFLPE. However, few studies have explored such variables as teachers' pedagogical practices. Marsh and Craven (2002) proposed some classroom strategies (e.g., provide individualized feedback and focus on improvement) to reduce the BFLPE, but they did not test their assumptions. Meanwhile, Lüdtke, Köller, Marsh, and Trautwein (2005) examined the influence of teachers' reference frames on the BFLPE. They hypothesized that the negative effect of class-average achievement on students' ASC would be smaller for teachers who used an individual reference standard (i.e., focus on improvement, effort, and learning) than those who used a social reference standard (i.e., focus on comparisons between students). The results revealed that when teachers used an individual reference standard, students had higher academic self-concept. Yet, this pedagogical practice did not moderate the negative effect of class-average achievement on ASC. The authors inferred that the BFLPE was robust in most school environments, as students naturally compare themselves with their peers. Nonetheless, further research is needed to explore other teaching strategies that may offset the BFLPE (Dai & Rinn, 2008). Therefore, the present study explores teachers' use of differentiated instruction strategies,

which involve providing individualized feedback and varying teaching to match students' learning needs.

3. Differentiated instruction as a potential moderator of the BFLPE

The need to provide school environments that respond to individual differences has been a longstanding concern (Ainscow, Booth, & Dyson, 2006; Glaser, 1977; Thomas & Loxley, 2001; Wang, 1992). Now that regular classrooms have become even more diverse in terms of children's abilities, teachers are encouraged to carry out instructional practices that allow both advanced and weaker learners to succeed and develop their competencies (Corno, 2008). Researchers and practitioners recognize differentiated instruction as a promising practice. Differentiated instruction can be defined as an approach by which teaching is varied and adapted to match students' abilities using systematic procedures for academic progress monitoring and data-based decision making (Roy, Guay, & Valois, 2013). According to this definition, differentiated instruction has two distinct components: instructional adaptations and academic progress monitoring.

First, researchers have identified instructional adaptations as a key to academic success (Fuchs & Fuchs, 1998; Fuchs, Fuchs, & Bishop, 1992; McLeskey & Waldron, 2002). Through instructional adaptations, teachers can provide various learning choices to students (Randi & Corno, 2005; Scott, Vitale, & Masten, 1998). They develop judgments on children's abilities and adjust their instruction to promote optimal learning. Possible adaptation strategies include 1) altering the curriculum (e.g., change goals and expectations), 2) varying assignments and assessment methods (e.g., vary the complexity of tasks), and 3) providing alternative materials (e.g., use books below and above grade levels) to match students' abilities.

Second, teachers should carry out academic progress monitoring so that they can make appropriate decisions on teaching adjustments (Fuchs & Fuchs, 1993; Scott et al., 1998; Ysseldyke et al., 2003). The match between instructional practices and students' capacities must be based on students' level of competence and the task to be performed (Randi & Corno, 2005; Wang & Lindvall, 1984). Academic progress monitoring procedures include: analyzing data on students' improvement rates, using students' data to decide on teaching adjustments, and evaluating the effectiveness of teaching adjustments by monitoring students' subsequent progress and achievement (Roy et al., 2013).

We expected the use of instructional adaptations to attenuate the negative effect of class-average achievement on ASC. As mentioned above, through instructional adaptations, teachers provide students with materials below and above grade levels, vary the complexity of assignments, and adapt assessment methods to match abilities. Therefore, we assumed that students might pursue different individual goals or take different routes to achieve common goals, depending on their abilities. In this perspective, students are encouraged to develop self-assessments of their academic progress and accomplishments (internal reference frame) rather than using peer performance as a comparison (external reference frame). Like teachers' individual reference frames, instructional adaptations focus on individual achievement rather than competition and social comparison, and they should thus foster self-perceptions of ability. We thus hypothesized that the use of instructional adaptation strategies would lessen the negative effect of class-average achievement on ASC in French class.

As mentioned above, differentiated instruction also involves the use of academic progress monitoring. However, academic progress monitoring is not expected to be associated with academic self-concept or to moderate the BFLPE, because it does not target the students directly. Instead, the aim of academic progress monitoring is to support teaching while ensuring a more effective use of instructional adaptations.

4. Developmental effects on the BFLPE

Marsh (1989) proposed that young children's academic self-concepts are usually positive and not correlated with external indicators

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