**Образование. Текст 1.**

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**Calibration of self-evaluations of mathematical ability for students in England aged 13 and 15, and their intentions to study non-compulsory mathematics after age 16** [**☆**](http://www.sciencedirect.com/science/article/pii/S0883035513001298#item1)

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**Highlights**

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Calibration of self-evaluated mathematics ability is explored in school students.

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Students with accurate calibration have the highest intentions to study mathematics.

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Under-confident students at age 13 report the lowest self-beliefs and attitudes.

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Findings suggest benefits of accurate calibration, and costs of under-confidence.

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Gender differences are also present.

**Abstract**

Calibration of mathematics self-evaluations (mathematics task confidence compared against ability) was longitudinally explored through 2490 students from England. Students with accurate task calibration at Year 10 (age 15) reported the highest intentions to study mathematics in Years 12 and 13 (when mathematics is not compulsory), and also generally gave the highest self-reports for further mathematics self-beliefs and attitudes including task-level enjoyment, ease, and interest, and subject-level self-concept. Earlier at Year 8, no differences in intentions were found; over-confident students generally gave the highest self-reports at Year 8, while under-confident students generally gave the lowest self-reports. Gender differences also emerged: girls showed no differences in self-beliefs of ability across calibration groups at Year 10, while accurate boys reported the highest self-beliefs.

**Keywords**

* Calibration;
* Confidence;
* Post-16;
* Self-beliefs;
* Self-concept;
* Subject choice

**1. Introduction**

**1.1. Self-beliefs**

Self-beliefs are influential factors in education. Students’ self-concepts (academic subject-specific beliefs of prior ability; [Bong & Skaalvik, 2003](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0035)), for example, have been linked to attainment ([Huang, 2011](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0165) and [Marsh et al., 2005](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0215)) and associated with academic interest ([Marsh & Martin, 2011](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0205)). Self-beliefs have strong influences on students’ subject choices, together with past attainment, perceptions of subjects, and numerous other factors ([Blenkinsop et al., 2006](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0020), [Crombie et al., 2005](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0100) and [McCrone et al., 2005](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0225)).

Girls have frequently been observed to have lower self-concepts than boys ([Fredricks and Eccles, 2002](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0140), [Marsh, 1989](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0195), [Rhodes et al., 2004](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0300), [Wigfield et al., 1991](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0340) and [Young and Mroczek, 2003](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0355)). Boys have generally reported higher mathematics self-concepts than girls, even though girls often attain slightly higher ([Marsh and Yeung, 1998](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0210) and [Skaalvik and Skaalvik, 2004](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0320)). Boys have additionally reported higher mathematics self-efficacy (self-beliefs of being able to successfully perform in the future) and intrinsic motivation for mathematics (interest in and enjoyment associated with doing mathematics) compared to girls ([Chen, 2003](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0080), [Nagy et al., 2006](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0250), [Pajares and Miller, 1994](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0280) and [Skaalvik and Skaalvik, 2004](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0320)). Some variations have been found, however, such as when girls valued mathematics higher than boys in Grade 12 after controlling for their perceived mathematics ability ([Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0170)).

**Образование. Текст 2.**

**1.2. The accuracy of self-beliefs**

Educational research frequently, and often unavoidably, considers self-reported beliefs from participants, introducing a potential discrepancy: self-beliefs may or may not reflect actual abilities. ‘Calibration’ can be considered as the degree to which beliefs or evaluations (such as self-concept) reflect an actual situation (such as ability evidenced through attainment in examinations); it can measure the overall accuracy of beliefs and the bias or direction of any discrepancy ([Hacker et al., 2008](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0160) and [Lichtenstein et al., 1982](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0190)). Calibration may also be considered an (indirect) indicator of metacognition or the awareness of cognitive processes and related areas, including assessment of personal abilities, knowledge, and task-factors, integral to many theories of learning and self-regulation ([Zimmerman, 2000](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0360)).

Two main theoretical perspectives concerning calibration have arisen (see e.g. [Bouffard & Narciss, 2011](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0050)): self-regulated learning models and social-cognitive motivational theories. Self-regulated learning models ([Butler & Winne, 1995](http://www.sciencedirect.com/science/article/pii/S0883035513001298#bib0065)) promote accurate calibration as integral to personal well-being and functioning, where self-evaluation has important implications to students’ studying approaches and motivation. For example, students may study less if they believe they already master an area, which becomes problematic when this belief is inaccurate ([Winne, 1995](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0345)); accurate reflection and calibration may also allow students to identify and then focus their studies onto their own developing areas of specialism. Social-cognitive theories of behaviour ([Bandura, 1989](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0010) and [Bandura, 1997](http://www.sciencedirect.com/science/article/pii/S0883035513001298%22%20%5Cl%20%22bib0015)) provide a contrasting view, where positive calibration biases or over-confidence are a normal state that is not necessarily unproductive or damaging, and which facilitates increased motivation and persistence when difficulties arise, together with providing protection from negative affect. Integrated views are also possible, where the positive or negative effects of calibration biases are contextual, dependant on further factors.