Doing better? Children's and their parents' and teachers' perceptions of the malleability of the child's academic competences

This study presents a new model of examining children's and their parents' and teachers' perceptions of the malleability of the child's academic competences. These perceptions are examined in relation to the restrictive and the promotional sphere of education at the school. The results suggest that all the school's actors exhibit a self-serving attribution pattern, which not only indicates their willingness to believe in the children's learning potential but also reflects a perceived association of good achievement with talent rather than effort.
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ABSTRACT

DOING BETTER? CHILDREN’S AND THEIR PARENTS’ AND TEACHERS’ PERCEPTIONS OF THE MALLEABILITY OF THE CHILD’S ACADEMIC COMPETENCES

This study examined children’s and their parents’ and teachers’ perceptions of the malleability of the child’s academic competences. It investigated how children, parents, and teachers perceive the child’s potential for improvement and how these perceptions are related to each other.

The study is based on the following theoretical viewpoints: first, it leans on the psychology of education, especially on earlier research on beliefs about ability and intelligence and the expectations set for children’s academic achievement. Second, the study rests on social-psychological research, especially the research examining notions of intelligence as social representations, which highlights the contextual and positional aspects of the construction of individual beliefs. Third, it leans on the sociology of education, particularly its analysis of the societal functions of the school, which include not only the ranking and ordering of pupils’ academic achievement but also the development of every child’s learning and competences.

For these contradictory functions, the school system taps different assessment structures and notions of intelligence. In the restrictive sphere of education, assessment is differential and pupils’ abilities are considered relatively stable, whereas in the promotional sphere of education, assessment is individual and the possibility of improving one’s abilities is acknowledged. Since the school houses diverse views of intelligence, this study also examined the perceptions of the school’s actors two-dimensionally: interpersonal perceptions refer to normative views of the child’s potential for improvement in relation to her/his peers’ performance, and intrapersonal perceptions refer to the views of the child’s potential for improvement in relation to his/her current individual competences. This study sought to find out whether the interpersonal and the intrapersonal perceptions form distinct domains in children’s, parents’, and teachers’ views of the malleability of competences.

The perceptions of the malleability of competences were examined in regard to two academic school subjects, mathematics and Finnish. These school subjects are pivotal
in the definition of children’s school achievement and educational potential. Besides, mathematics and Finnish are gender-stereotyped subjects, and by examining the perceptions subject-specifically we were able to identify the possible gender differences.

For this study, 103 children were interviewed. They were girls and boys on the third and the sixth grade. The parents and teachers of these children were asked to assess the children’s potential for improvement by means of questionnaires. The parents were mothers and fathers with either academic or vocational education. The study aimed at finding out whether there were differences in the malleability perceptions according to the child’s grade level and gender and the parent’s education and gender.

It was found that the children’s intrapersonal and interpersonal perceptions of the malleability of their academic competences were separate. Importantly, the children’s academic self-concept was related only to their interpersonal perceptions of their improvement potential and thus to the restrictive, not the promotional, sphere of education. In contrast with the children, both the parents’ and the teachers’ interpersonal and intrapersonal perceptions were closely connected to each other and were interpreted to reflect the school system’s dominant notion of intelligence, the normative one.

The third-graders were more optimistic about their improvement potential than the sixth-graders were, suggesting that pupils adopt the school system’s differential notion of intelligence gradually in the course of their school years. Moreover, the children’s perceptions of their improvement potential were more optimistic than those of the parents and teachers, with the parents’ perceptions being more optimistic than the teachers’. Though both the parents and the teachers seemed to lean on the school system’s restrictive frame in their assessments, the parents’ greater optimism seemed to suggest a willingness to see their child’s development in a favourable light.

Furthermore, the older children’s perceptions tended to be closer to their parents’ and teachers’ views than those of the younger children, which may well reflect the growing importance of the significant adults’ perceptions for the children’s self-assessments as they advance at school. The teachers’ and the parents’ perceptions also correlated moderately, which suggests that the views of the child’s improvement potential are to some extent shared between home and school.

The relationship of the children’s perceptions of the malleability of their academic competences to those of their teachers and parents were also structured by the parents’ educational level: the intrapersonal perceptions of the children of academically educated parents were connected to their teachers’ and parents’ views, but those of the children of vocationally educated parents were not. This result may reflect differences in the social distance of homes from the school system and its dominant notion of intelligence.

It was also found that the perceptions of all the school’s significant actors, i.e., the children, the parents, and the teachers, contained a self-serving attribution pattern: the children who were thought to do well were perceived to have more stable competences, whereas the children who were thought to do not so well were perceived to be more capable of improvement. On the one hand, this indicates confidence in children’s learning potential and may motivate children to improve their achievement.
On the other hand, it also reflects an association of good achievement with talent or ability rather than effort and practice. For mathematics, the self-serving attribution pattern was stronger among the academically than the vocationally educated parents, indicating the willingness of the former to associate their child’s success with talent, especially in mathematics, which is usually considered to represent giftedness at its most ‘genuine’.

The self-serving attribution pattern was also manifested in the parents and the teachers perceiving boys’ improvement potential as higher than girls’ in regard to Finnish, which is usually regarded as girls’ strong suit. The finding suggests that gender-bound malleability perceptions are not only complex but also subject-specific. Their variance according to school subject was also manifested in that the children seemed to adopt a fairly stable notion of competence in mathematics earlier than in Finnish.

In general, the interpersonal perceptions of the child’s improvement potential appeared to be more restrictive and to reflect the standardising practices of the school more than the intrapersonal perceptions. The former domain seems to relate to the school’s restrictive sphere, in which normative discussions of the child’s educability are actualised. In contrast, the intrapersonal perceptions are more closely associated with the school’s promotional sphere and may be seen as a more subtle and tacit domain, which does not show up explicitly at school but may still be significant and influential. The intrapersonal domain also seems to contain more hope and optimism than the interpersonal one.
ABSTRAKTI
LASTEN, VANHEMPIEN JA OPETTAJIEN KÄSITYKSET LAPSEN OSAAMISMAHDOLLISUUKSISTA KOULUN OPPIAINEISSA

Tutkimuksessa tarkasteltiin lasten sekä heidän vanhempiensa ja opettajiensa tulkkintoja lapsen osaamismahdollisuuksista. Siinä selvitettiin, miten lapset, vanhemmat ja opettajat arvioivat lapsen mahdollisuuksia parantaa osaamistaan koulun oppiaineissa ja kuinka nämä arviot ovat yhteydessä toisiinsa.

Tutkimus nojaa seuraaviin teoreettisiin lähtökohtiin: Ensiksi se perustuu kasvatuspysykologiseen tutkimukseen, jossa on selvitetty kyky- ja älykkyyksäirtyksiä sekä lapsen koulumenestykselle asetettuja odotuksia. Toiseksi tutkimus perustuu sosiaalipsykologiseen tarkasteluun älykkyyden sosiaalisista representaatioista, jossa painotetaan kontekstin ja sosiaalisen aseman merkitystä yksilöllisten kykykäsitysten rakentumisessa. Kolmanneksi tutkimus pohjautuu koulutussosiologiseen tarkasteluun koulun yhteiskunnallisista tehtävistä, joihin kuuluvat paitsi lasten koulumenestyksen ja koulutuskelpoisuuden arviointi ja järjestykseen asettaminen myös oppilaiden oppimisen ja osaamisen edistäminen.


Käsityksiä osaamismahdollisuuksista tutkittiin kahdessa koulun oppiaineessa, matematiikassa ja äidinkielellä, jotka ovat tärkeitä lasten koulumenestyksen ja kou-
lutusmahdollisuuksien määrittelyssä. Koska matematiikka ja äidinkieli ovat myös sukupuolistereotyypissä oppiaineita, tutkimuksessa tarkasteltiin mahdollisia sukupuolleen liittyviä eroja lasten, vanhempien ja opettajien käsityksissä.


Havaittiin, että lasten tekemät yksilökohtaiset ja vertailuperusteiset arviointit omista osaamismahdollisuuksistaan olivat erillisiä, toisistaan riippumattomia ja heijastivat siten koulujärjestelmän jakaumustaa edistävän ja rajoittavan sfäärien. Lasten oppijaminäkuva kytkeytyi ainoastaan heidän vertailuperusteisiin arviointiinsa, ja siten vain rajoittavaa koulutuksen sfääriin. Toisin kuin lasten kohdalla, vanhempien ja opettajien yksilökohtaiset ja vertailuperusteiset arviointit liittivät läheisesti toisiinsa, ja niiden tulkittiin heijastavan koulun vallitsevaa, normatiivista älykkyyksäisyyttä.

Kolmasluokkalaiset arvioivat osaamismahdollisuuksiaan myönteisemmin kuin kuudesluokkalaiset, mikä liittyi siihen, että oppilaat omaksuivat koulujärjestelmän erottlelevan älykkyyksäisyyden kouluhankintansa edetessä. Lasten arviointit osaamismahdollisuuksistaan olivat myönteisemmät kuin vanhempien ja opettajien arviot, ja vanhemmat arvioivat lapsensa osaamismahdollisuuksia myönteisemmin kuin oletettavat, avoimiaa sekä vanhempien että opettajien arviointiin. Vaikka sekä vanhempat että opettajat näyttivät arvioinneissaan nojautuvan koulujärjestelmän rajoittavaan sfääriin, vanhempien myönteisemmät arviot heijastivat myös heidän taipumustaan nähä lapsensa kehitys myönteisessä valossa.

Kuudesluokkalaisten arviointit osaamismahdollisuuksistaan olivat hieman lähempänä vanhempia koulutusasteita, ja vanhemmat arvioivat koulujärjestelmän osoittautuneen asemakunnann edetessä. Myös opettajien ja vanhempien arviointit korreloivat kohtalaisesti: koti ja koulu näyttävät jossain määrin jakavan näkemyksensä lapsen osaamismahdollisuussa.

Vanhemman koulutustaso jäsensi lasten sekä heidän opettajiensa ja vanhempia yksilökohtaisen arviointien suhdetta: akateemisesti koulutettujen vanhempien lasten arviot olivat yhteydessä opettajien ja vanhempien arviointiin, mutta ammattikoulutettujen vanhempien lasten arviointit eivät kytkeyty neet opettajien tai vanhempien arvioihin. Tulos voi heijastaa kotien erilaisia etäisyysyksiä koulujärjestelmässä, ja sen vallitsevasta älykkyyksäisyydestä.

Tutkimuksessa todettiin lisäksi, että koulun kaikkien tärkeiden toimijoiden - lasten, vanhempien ja opettajien - arviointit sisälsivät taipumukseensa itse suojelevaan attribuutionon: osaaminen nähtiin suhteellisen pysyvänä niiden lasten kohdalla, joiden arvioitiin menestyvän hyvin, kun taas heikommien menestysyksiksi arvioiduilla lapsilla nähtiin enemmän parantamismahdollisuuksia. Yhtältä tämä voi heijastaa luottamusta lasten oppimismahdollisuusiin ja motiivoida heitä harjoittelemaan ja edistämään osaamistaan. Toisaalta näyttää siltä, että lasten hyvää menestystä yhdistetään lahjakkuuteen ja kyyhkkyteen enemminkin kuin yrittämiseen ja harjoit-
teluun. Matematiikassa taipumus itsää suojelevaan attribuutioon oli vahvempi akateemisilla kuin ammattikoulutetuilla vanhemmilla, mikä voi heijastaa akateemisesti koulutetujen vanhempien halukkuutta yhdistää lapsensa menestyminen lahjakkuuteen etenkin matematiikassa, jota tavataan pitää ’aidoimpana’ lahjakkuutena.

Itseä suojeleva attribuutio tuli esiin siinäkin, että vanhemmat ja opettajat arvioivat poikien osaamismahdollisuudet tyttöjen mahdollisuksia paremmiksi äidinkiellessä, jota pidetään yleensä tyttöjen vahvana osaamisalueena. Sukupuoleen liittyvät erot arvioinneissa näyttävät monimutkaisina ja oppiainekohtaisina. Arviointien oppiainekohtaisuus tuli esiin myös siinä, että lapset näyttivät omaksuvan käsityksen kyvykkyydestä suhteellisen pysyvänä ominaisuutena varhaisemmin matematiikassa kuin äidinkiellessä.

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Joensuu, April 2011

Riitta Kärkkäinen
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1 Introduction

This study examined an important but relatively little studied aspect of the definitions of intellectual potential: perceptions of the malleability of children's academic competences. This particular theme is significant because it encases the pivotal question of both scientific and common-sense theories of intelligence: the question whether abilities are stable or changeable. It is also of educational significance because the definitions of children's competences are consequential for their academic self-concept, learning, and achievement at school.

The study leans on three theoretical viewpoints. First, it leans on research into the psychology of education, particularly the studies of implicit theories of intelligence and beliefs about children's achievement (e.g., Dweck, 1999; Eccles & Wigfield, 2002). As these studies acknowledge the influence of significant adults on the construction of children's self-assessments, the present study also addresses not only children's but also their parents' and teachers' perceptions of the malleability of the children's competences.

Second, this study takes into account the significance of contextual and positional factors for the construction of individual perceptions. Some earlier studies of the perceptions of children's abilities have considered this viewpoint (e.g., Ames, 1992; Hart, Dixon, Drummond & McIntyre, 2004; Oakes, Wells, Jones & Datnow, 1997; Rosenholtz & Simpson, 1984; Stipek & Mac Iver, 1989), and the studies based on the theory of social representations in particular have focused on the contextual and positional aspects of the formation of perceptions of intelligence (e.g., Carugati & Selleri, 1998; Matteucci, 2007; Mugny & Carugati, 1989; Snellman & Räty, 1995). As the school is the most important carrier system of views of intelligence (cf. Räty & Snellman, 1995), the contextual and positional aspects considered in these studies pertain mainly to the educational settings and the individual's social standing in relation to the school system. The present study continues, in fact, the research conducted for decades at the University of Joensuu, based on the assumption that the notion of intelligence adopted is constitutive to any system of education (cf. Häyrynen & Hautamäki, 1976); from the early 1990s this research has focused on the application of the theory of social representations to ability beliefs in educational settings (e.g., Kasanen & Räty, 2008; Räty, Kasanen & Kärkkäinen, 2006b; Räty & Snellman, 1995, 1998; Räty, Snellman & Kasanen, 1999a; Snellman & Räty, 1992).

Third, this study leans on the analysis of the school's societal functions attained in the sociology of education. These functions include socialising children into citizenship, equipping them with the knowledge and skills needed in the society, and ranking and ordering their educability so as to guide them to appropriate further education and positions in the labour market (e.g., Antikainen, 1998; Kivinen, Rinne & Kivirauma, 1985). Because of these different functions, the school system also houses different views of intelligence. The dominant view of intelligence is a differential one
endorsing the assumption that children begin school with fairly stable, nature-given abilities. To reveal the assumed internal differences in pupils’ intelligence, the school wields a specific interindividual assessment structure (cf. Kivinen et al., 1985; Oakes et al., 1997; Räty & Snellman, 1995; Snellman & Räty, 1992).

Besides the differential notion, the school system also houses a more dynamic view of intelligence, which acknowledges the possibility of improvement in pupils’ abilities. It is indeed a duty of the school to develop the nation’s human capital, i.e., to enhance pupils’ learning and competences. The constructivist theories of learning and education have highlighted the importance of promoting learning and assessing it individually rather than differentially, and schools have in fact increased the use of individual assessment (e.g., Hart et al., 2004; Perusopetuksen opetussuunnitelman perusteet [‘National core curricula for basic education’], 2004). Even so, differential assessment still seems to be the common official framework in which the discussion of pupils’ educability is carried on. For example, the guidelines of the National Board of Education for pupil assessment call for comparison of each pupil’s achievement with a certain predetermined level of performance and instruct the schools to use relative assessment at least at the end of elementary school (Perusopetuksen opetussuunnitelmman perusteet [‘National core curricula for basic education’], 2004).

The school’s views of intelligence come to the fore particularly when the school system encounters reforms: in the 1970s, when the Finnish school system switched from a parallel system to comprehensive school, there was a heated public and political debate about the equalisation and selection carried on at school (cf. Häyrynen & Hautamäki, 1976; Räty & Snellman, 1998). Similarly, the recent discussion about re-adopting streaming on grades 7-9, which was the practice in the early years of comprehensive school, again reflects the school’s diverse functions and also parents’ concern about the equality of their children’s schooling.

In sum, this study leans on the educational-psychological, social-psychological, and educational-sociological viewpoints presented above. These theoretical viewpoints are complementary, for individual beliefs can be regarded as socially constructed (Berger & Luckmann, 1966) and the construction of ability beliefs occurs in relation to the predominant educational system. Empirically, the study develops and explores a novel model to examine children’s, parents’ and teachers’ perceptions of the malleability of children’s academic competences. From the methodological point of view, the study represents quantitative research accompanied by some qualitative aspects.

Throughout the study, the words ‘competence’, ‘ability’, and ‘intelligence’ are used. These concepts have been defined in various ways in earlier research. In the present study, ‘competence’ is used to refer to subject-specific proficiency or performance that is evaluated explicitly at school, such as mathematical competence or mother-tongue competence. Competences also form a general basis for the formation of views of ability and intelligence. ‘Ability’ is a property inferred from several competences and includes cognitive, practical, and linguistic abilities. ‘Intelligence’ refers to a more

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general construct, which contains several abilities and represents a summary of sorts, or the general level, of one’s mental capacities. Although the present study examines precisely the malleability of competences, a consideration of intelligence is included in the theoretical frame of reference because the study is based on the school’s notions of intelligence and because the child’s school performance is commonly used as a basis for generalising interpretations about his or her intelligence and educability.

There are several concepts that come close to the ‘malleability of competences.’ These include static and dynamic views of intelligence (e.g., Dweck, 1999), self-efficacy (Bandura, 1997), educational resilience (Kärkkäinen, Räty & Kasanen, 2009), and expectations set for the child’s future success (Aunola, Nurmi, Lerkkanen & Rasku-Puttonen, 2003; Fredricks & Eccles, 2002; Wigfield et al., 1997). Although these concepts are related to the construct of the malleability of competences, they are not the same. In the present study the malleability of competences is also called ‘potential for improvement’. The concept of the malleability of competences is operationally and theoretically fairly open and neutral, for it does not include ready-made explanations or definitions as the static and dynamic notions of intelligence do, for example (e.g., Dweck, 1999).

The present doctoral dissertation is based on five research articles, which have been published in the journals Social Psychology of Education, Educational Studies, Educational Research, and Scandinavian Journal of Educational Research. The spectrum of these journals reflects the theoretical diversity of this study. Though this study also examines children’s perceptions, which are admittedly affected by developmental factors (e.g., Nicholls, 1990), developmental psychology is not a major focus of the study and therefore plays a limited role only. Indeed, in terms of the levels of analysis in experimental social psychology defined by Doise (1986), the results of this study are not interpreted at the intraindividual level, which comprises the research concerning children’s cognitive development, for instance. Instead, the results are interpreted at the positional level. This means that children’s grade level is examined as a social category, which is determined by the child’s years of school and her or his school experience (i.e., socialisation into the practices of the school) and thus moulds his or her notions in relation to the school system and its notions of intelligence. Besides grade level, the children’s gender and the parents’ education are regarded in this study as relevant social positions in that their members are likely to share somewhat similar school experiences, which mould their relationship to the school system’s notions of intelligence. Besides the positional level, then, this study also moves at the level of social representations for the results are interpreted in relation to social conceptions, especially the school’s notions of intelligence, as pointed out above.

The next section presents the school’s institutional views of intelligence and the related spheres of education. Section 3 focuses on the children’s, parents’, and teachers’ perspectives to the school’s views of intelligence, and Section 4 deals with their theories of the malleability of intelligence. Section 5 discusses earlier studies of children’s perceptions of the malleability of their competences. Sections 6 and 7 present the aims, research questions, and methods of this study. Section 8 summarises the original five research articles and reports the results of the present study. In the final Section 9 the main results and the model, the limitations, and the implications of the study are discussed.
2 The school’s institutional views of intelligence

Definitions of intelligence are constitutive to every educational system, for they form the basis of pupil assessment. Views of intelligence are thus an inseparable part of the school, its routines and its ethos, and the school system cannot really be discussed without discussing and debating intelligence (cf. Räty & Snellman, 1995). The school’s institutional views of intelligence are based on the societal functions of the school, and they have their empirical manifestations, too, in studies of the practices of the school and its actors’ views of intelligence and competences. In the next two subsections, the school’s two different views of intelligence and the related spheres of education are presented. For simplicity’s sake they are discussed separately even though the spheres often intertwine in the school’s day-to-day practices.

2.1 INTELLIGENCE AS A FIXED ATTRIBUTE AND THE RESTRICTIVE SPHERE OF EDUCATION

The school system’s views of intelligence become visible in the school’s routines and practices, most specifically in the assessment of pupil achievement. In our current school system, pupils’ competences are mostly assessed normatively, i.e., in relation to group norms, the best possible achievements, test results, and the standards of ‘normal distribution.’ Intelligence is thus perceived to be a fairly stable quality, which can be measured objectively by means of grades and tests (cf. Hart et al., 2004; Oakes et al., 1997; Rosenholtz & Simpson, 1984; Snellman & Räty, 1992).

Regardless of the various reforms our school system has undergone in the past few decades, its dominant view of intelligence is still based on a test-oriented differential notion, which is over a hundred years old. This view of intelligence, originally developed to classify large numbers of children by psychometric means for the needs of compulsory mass education, has indeed survived as the predominant one for decades (cf. Danziger, 1990; Hart et al., 2004; Räty & Snellman, 1995). This has been possible because the basic function of the school system has not changed: the school is still expected to reveal differences among individuals and to select them for appropriate positions in the society (Snellman & Räty, 1992).

To fulfil this function the school system needs not only differentiating practices but also a legitimisation for using them. The legitimisation is provided by the assumption that comparative assessment measures relatively fixed differences among the pupils’ educational potential (cf. Oakes et al., 1997). The school then considers the differences among children to be due to natural gifts, even if they may actually
rise from the pupils’ social background and cultural capital, including their parents’ educational level (Bourdieu, 1974; Bourdieu & Passeron, 1977).

Since the selective function remains, the school still functions through its differentiating practices and according to the predominant view of intelligence. The endorsement of the differential view is actually no longer a matter of definitions but one of practices and routines that are considered to belong to the day-to-day work of the school self-evidently (Räty & Snellman, 1995). Through these differentiating practices and routines, e.g., tests, grades, report cards, and appraisals of ability and intelligence, the school not only measures and produces the differences but also teaches the comparative criteria to the pupils (Hart et al., 2004; Räty, Kasanen & Snellman, 2002a; Rosenholtz & Simpson, 1984). This starts at the very beginning of school, and the pupils quickly learn their standing in relation to their peers, even though numerical marks are not given on the lower grades (cf. Kasanen & Räty, 2008).

Comparative classrooms, in which pupil performances are easy to compare, i.e., in which all the pupils work on similar tasks and their performance is evaluated frequently and visibly, are particularly effective in socialising pupils to adopt the static, taken-for-granted view of intelligence (Ames, 1992; Ames & Archer, 1988; Rosenholtz & Simpson, 1984). In these classrooms the pupils learn that the appropriate performance at school is a quick and silent thinking process that is individual, not cooperative, takes place inside one’s head, and produces the right answer (Räty, 2001).

The school’s view of intelligence as a fairly stable individual quality and the differentiating practices associated with it may be called the ‘restrictive sphere of education’, as it sets a limit to each child’s achievement (Räty, Kasanen, Kiiskinen, Nykky & Atjonen, 2004). Pupils face this sphere every time their competences are assessed and compared with those of others, and they are taught to make comparisons themselves instead of concentrating on their own advancement. The restrictive sphere can be seen as rather problematic for the children’s learning motivation, for focusing on their ‘natural’ abilities and interindividual differences may lead children to lacking effort and feelings of helplessness (cf. Dweck, 1999). According to Covington (1998), competitive classrooms in which the rewards, e.g., good grades, are scarce may lead children to play the ‘ability game.’ In this game, pupils try to avoid losing or to make others lose in order to prove their own abilities. Such a game is likely to diminish their learning motivation further.

At school, every new generation is more or less socialised to adopt the predominant view of intelligence for the basis of their notions of their own and others’ achievements and competences. The differential view then becomes natural to the school’s significant actors, i.e., pupils, parents, and teachers, who need shared concepts to talk about the differences in children’s school performance (cf. Carugati, 1990). An example of shared criteria for children’s academic achievement is numerical assessment, which has been used in Finnish basic education over a hundred years (Räty, Pölönen, Pölönen & Snellman, 1995). Indeed, despite reform efforts, the school’s teaching and working methods change quite slowly (e.g., Mäensivu, 1999; Norris, Aspland, MacDonald, Schostak & Zamorski, 1996).
2.2 INTELLIGENCE AS A MALLEABLE ATTRIBUTE AND THE PROMOTIONAL SPHERE OF EDUCATION

Besides the selective function, the school system is also authorised to increase the nation’s human capital, i.e., to promote every pupil’s individual development and learning. In this function intelligence is seen as a developing attribute, and the school’s practices related to it may be called the ‘promotional sphere of education’ (Räty et al., 2004).

The idea of promoting children’s abilities and enhancing their learning is not new: alternative ways of education and learning according to a dynamic view of abilities have been developed throughout the ages (see, e.g., Bereiter & Scardamalia, 1993; Bloom, 1976; Bruner, 1961; Hakkarainen, Lonka & Lipponen, 1999, 2005; McKeough, 1995). In our present school system, however, it is the restrictive sphere that seems to be predominant, and even the existence of the promotional sphere in our traditional schools may be questioned from the sociological point of view focusing on the school’s selective function (cf. e.g., Bourdieu & Passeron, 1977). Altogether, the promotional sphere has received far less scholarly attention than the restrictive one.

However, with the re-emergence of constructivist theories of learning, schools have begun to pay attention to the promotion of children’s individual learning and the individual assessment of it. The National Board of Education has proclaimed that pupils’ progress and the learning process can be described by means of verbal assessment and that comparative numerical assessment is not obligatory until the final stages of school (Perusopetuksen opetussuunnitelman perusteet ['National core curricula for basic education'], 2004). Our current school system has also been shown to entail certain procedures that challenge the deterministic view of intelligence. Hart et al. (2004), for example, found that some teachers acted knowingly against the ability-focused practices and the related categorisation of children in terms of their assumed abilities (see also Oakes et al., 1997).

The practices of the promotional sphere of education include building children’s confidence in their own learning, having the pupils collaborate instead of competing, assessing pupil advancement in comparison with their own earlier achievement, and appraising practising and effort (e.g., Ames, 1992; Hart et al., 2004). Classrooms that do not rely on the conventional concept of fixed ability may encourage children to form dynamic and optimistic views of abilities (e.g., Ames, 1992; Ames & Archer, 1988; Hart et al., 2004; Rosenholtz & Simpson, 1984). The promotional sphere thus provides children with an opportunity to perceive their individual advancement and to practise new skills without regarding effort as lack of giftedness, as is characteristic of the static view of intelligence (e.g., Dweck, 1999).

In the day-to-day work at school, the promotional and the restrictive sphere are most commonly intertwined. For example, teachers may encourage children to practise and give their best performance, on the basis of which the pupils can then be ranked according to their ‘genuine’ intellectual potential (Kasanen & Räty, 2008). The intertwining of the promotional and the restrictive sphere seems to be also connected with the assessment structures, for it has been shown that even if children are encouraged to do self-assessments of their achievement at school, these seem
to be actually based on the teacher’s views, and teachers often ‘correct’ pupils’ self-assessments to correspond their own expectations (Kasanen & Räty, 2002). Thus the boundaries of promotional and restrictive practices are not clear-cut but vary and fluctuate in day-to-day classroom activities.

It must be noted that the school systems of many countries are more strongly based on restrictive practices than that of Finland. For example, in the United States (e.g., Oakes et al., 1997; Rosenholtz & Simpson, 1984), the United Kingdom (Hart et al., 2004) and Russia (Alexander, 2000), normative assessment and standardised ability tests are used more commonly than with us. Finland’s success in the PISA tests may well reflect the emphasis on the equality of pupils, the level of such individual and special educational support as may be seen to represent the promotional sphere of education (Finnish National Board of Education, 2010), and Finland’s ethos of ‘education for all’ (Kupiainen, Hautamäki & Karjalainen, 2009).
3 Children’s, parents’, and teachers’ perspectives to the school’s views of intelligence

Children, parents, and teachers construe their notions of intelligence and educability in relation to the views of intelligence carried by the school system and in relation to their social positions (Räty & Snellman, 1998). Their notions of intelligence can be regarded as social representations, which can be seen as concepts, statements, and explanations constructed socially in the course of interindividual communication and shared by particular communities or groups (Moscovici 1984, 1988, 1998).

The purpose of social representations is to transform something unfamiliar or unknown into familiar and thus to enable intercourse and understanding among individuals (e.g., Moscovici, 1984, 1988). The unfamiliar can be transformed into familiar by connecting the new concepts to phenomena already known. Through social representations the actors of the school are able to understand and communicate the unfamiliar, particularly the differences in children’s school performance that they encounter every day, by anchoring it to existing notions and theories of intelligence (Carugati, 1990).

Testing the theory of social representations in regard to views of intelligence, Mugny and Carugati (1989) found that individuals’ notions of intelligence were structured by their social identity, as parents and teachers were more inclined than childless students to resort to ‘the theory of natural giftedness’ when trying to understand and explain the differences in children’s school achievement. According to the theory of natural giftedness or natural inequalities, intelligence is an inborn, differential, and relatively fixed quality. According to Mugny and Carugati’s study, parents and teachers seem to share, at least to some extent, the school system’s conventional view of intelligence and its pessimistic and restrictive framework of competence assessment.

Snellman and Räty (1995) replicated and extended Mugny and Carugati’s study in the Finnish context. In accordance with Mugny and Carugati’s results, they showed that ‘fostererhood’ was significant for the formation of views of intelligence: the teachers and the parents attributed intelligence more strongly to inheritance than the childless students did. Furthermore, the study brought out the significance of ‘teacherhood’, which meant that the teachers and teacher students were more prone than the parents to support special education for gifted pupils; such a viewpoint entails the assumption that differences in intelligence can be determined early on. The teachers’ more selective view may reflect the fact that they are engaged in comparative practices in their day-to-day work and are therefore particularly likely to lean on the differential frame of assessment. Teachers’ generally stronger leaning on the idea of giftedness (cf. also Räty & Snellman, 1998; Räty, Snellman, Kontio & Kähkönen,
and their particular emphasis on cognitive and problem-solving skills that are traditionally highly valued at school in their definitions of intelligence (cf. Miguel, Valentim & Carugati, 2010) also give their share of empirical support to the notion that the conventional conception of intelligence is still going strong at school though new views have come alongside it.

Apart from being used to make the unfamiliar familiar, the theory of natural giftedness may also serve a self-protective function. This means that by believing in the natural and unchangeable differences in children’s abilities, teachers and parents can perhaps alleviate their educational responsibility, i.e., elude the thought that if the child performs poorly, that might be connected to their actions (cf. Carugati & Selleri, 1998). This may also explain teachers’ stronger deterministic view, as their institutional tasks include the responsibility for children’s learning and achievement. Moreover, parents may place the responsibility for their child’s learning on the teacher, whereas teachers, in return, may be more inclined to place the responsibility for children’s development and abilities on their homes (cf. Carugati, Selleri & Scappini, 1994; Waller, 1976).

Even if parents and teachers seem rather inclined towards the school’s restrictive sphere and the notion of intelligence as a relatively stable quality, they may also hold more flexible views of children’s development. Hart et al. (2004) found that some teachers held dynamic views of abilities and even perceived ability-focused teaching as harmful to children’s learning. These teachers believed in their pupils’ potential and, most importantly perhaps, did not regard earlier failure as a predictor of poor achievement in the future. However, while some teachers criticise the differential view of intelligence, other teachers may not problematise it, and in many cases, even if teachers embrace the dynamic view of intelligence, they may have only superficial knowledge of it. The ‘old’ views of intelligence have not disappeared, then, either at school or in the society at large (Oakes et al., 1997).

Thus teachers’ perspectives to the school’s views of intelligence are fairly diversified: on the one hand, they surely perceive children’s individual development, encourage their learning, and praise them for individual progress, particularly on the lower grades (Kasanen & Räty, 2008; Stipek & Mac Iver, 1989). On the other hand, they are also required to observe their pupils’ learning and rank it interindividually according to the standards of the curriculum (cf. Matteucci, 2007).

Parents, too, perceive their child’s intrapersonal development and are particularly motivated to maintain an optimistic view of the child’s development and to encourage her/his learning (Goodnow & Collins, 1990). Parents have indeed been found to evince ‘a self-serving attribution pattern’ (cf. Miller & Ross, 1975) when assessing their child’s development. This means that parents tend to explain their child’s good achievement by reference to relatively permanent properties, such as talent or ability, and poor performance by reference to relatively changeable properties, such as lack of effort and practice (cf. Natale, Aunola & Nurmi, 2009; Räty et al., 2006b; Rytkönen, Aunola & Nurmi, 2005; Yee & Eccles, 1988). Attributions concerning academic success and failure can be defined in various ways (e.g., Weiner, 1986, 1992), but in this study the term ‘self-serving attribution pattern’ refers to the tendency, described above, to see competences and their constancy in a favourable light.
Earlier research has indicated that the self-serving attribution pattern is stronger among academically educated parents than vocationally educated ones (Räty et al., 2006b; see also Kärkkäinen et al., 2009). This may be because academic recognition is likely to be especially important for highly educated parents, who have also been found to perceive their child’s academic competences more optimistically than other parents even when the child is at preschool, i.e., before they have received any ‘official’ feedback from the school (Räty, 2003). Moreover, highly educated parents generally distinguish cognitive abilities from others, e.g., practical ones, more sharply than other parents do (Räty, Snellman & Vainikainen, 1999b). The parents’ educational position thus affects both their confidence in their child’s academic achievement and their relationship to the school system’s conventional view of intelligence: parents stand at different social distances from the school according to their educational position, so that more highly educated parents are closer to the school than those with a lower education are (Räty & Snellman, 1998).

Furthermore, parents’ gender also affects their social distance from their child’s school: though earlier research has largely neglected the examination of paternal perceptions, it has found that mothers are usually more practically involved in their child’s schooling, i.e., closer to their child’s school than fathers are (Lareau, 2000; Metso, 2004).

To conclude, parents may construct their views of their child’s competences from two perspectives, just like teachers: on the one hand, they are motivated to maintain optimistic expectations for their child’s development, which is made possible by their first-hand observations on the child’s individual development and acquisition of new skills. On the other hand, they also receive normative information, first from the daycare and child welfare clinics and then, increasingly, from the school. That information invites them to make comparisons with the development of other children. Parents have also been found to wish for both normative numerical assessments and individual information on their child’s progress at school (Räty, Snellman, Leinonen & Maksimainen, 2000).

Children, too, have both intrapersonal and interpersonal information available to them, but the relative importance of the two aspects changes with the children’s age and school experience. For preschool-aged children’s self-assessment of their competences, intrapersonal information, i.e., experiences of mastery and recent achievements, is important. When children start school, normative information received through comparative practices becomes more important. Though young children, too, may already compare their competences, systematic comparisons become possible only after the start of school, when normative information enabling explicit comparisons with peers becomes available (Nicholls, 1990; Stipek & Mac Iver, 1989).

From the very beginning of school, children get to know the school system’s restrictive sphere and start to adopt the schools’ conventional view of intelligence (Räty et al., 1999a). At school, pupils are introduced to the criteria of normative assessment, which include the quality of the performance (e.g., speed and correctness) and comparisons of pupils’ competences (Räty et al., 2002a). When children progress at school, normative information becomes more salient and more influential for their social representations of abilities, and they start to base their academic self-concept more firmly on normative or interpersonal information to the detriment of intrapersonal information (Nicholls, 1990; Stipek & Mac Iver, 1989; Stipek & Tannatt, 1984; Veroff, 1969).
4 The entity theory and the incremental theory of intelligence

The duality of the views of intelligence has also been studied in the light of theories about the malleability of intelligence. These theories, dealing with the extent to which intelligence can be improved, have been examined by Dweck and her colleagues in particular, focusing mainly on children’s perceptions.

Dweck and her coworkers (e.g., Blackwell, Trzesniewski & Dweck, 2007; Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Henderson & Dweck, 1990) found that children hold two kinds of notions about the malleability of intelligence. Those who endorse the entity theory regard intelligence as a fairly stable quality. These children think that intelligence cannot be changed, which makes them worry about their own level of intelligence. Believers in the entity theory tend to set themselves performance goals i.e., they try to avoid mistakes and tend to orientate towards demonstrating good performance, such as receiving good grades, in order to look smart. They usually prefer tasks in which they can manage with little effort and can outperform others. These children may also evince helpless reaction patterns when faced with failures and difficulties in learning.

In comparison, children who believe in the incremental theory of intelligence think that intelligence can be increased through effort and practice. These children tend to set themselves learning goals, i.e., they orientate themselves towards new learning opportunities, through which they can improve their abilities. Believers in the incremental theory tend to perform well when faced with setbacks, for they keep on trying even when the task seems demanding and requires lots of effort (see also Faria, 2006).

The feedback children receive on their achievement affects their notions of the malleability of intelligence. In a set of studies, Mueller and Dweck (1998) praised children for either intelligence or effort in the tasks the children performed. They found that praise for intelligence fostered belief in the entity theory and led more often to the setting of performance goals and, in the face of failure, to more attributions of low abilities, less task enjoyment, decline of motivation, and even a decrease in performance. In comparison, praise for effort fostered belief in malleable views of intelligence and led to the setting of more learning goals, attributing failure to lack of effort, and improvement in performance. According to these results, praising children for effort seems to be useful, since it may allow them to focus on learning and practising without a risk of the stigma of low ability and pressure of performing well.
Thus parents’ belief in either the entity theory or the incremental theory of intelligence may influence their children’s perceptions and learning processes. Parents who endorse the incremental theory are more likely to attribute their child’s success to effort and practice than parents who endorse the entity theory and may rather attribute their child’s success to ability or talent. It is also possible that parents who endorse the entity theory will place greater weight on the significance of good grades, for example, and will take their child’s failures in learning more seriously than parents who endorse the incremental theory, who may regard a good try, and even failure, as a way to improve abilities. Moreover, Pomerantz and Dong (2006) found that mothers’ perceptions of their child’s competences acted as self-fulfilling prophecies, i.e., they affected the child’s academic functioning only when the mothers endorsed the entity theory of academic competence. Indeed, parents’ endorsement of the entity theory combined with optimistic perceptions of the child’s competences may even be beneficial to the child’s achievement (cf. also Natale et al., 2009), at least until the child encounters difficulties or failures in learning, but if the parents’ endorsement of the entity theory combines with pessimistic perceptions of the child’s achievement, that is likely to be harmful to the child’s self-perception and learning.

The implicit theories of intelligence held by teachers may affect their educational practices, including pupil assessment. Teachers who endorse the incremental theory may emphasise the importance of trying and practising more and may change their assessments of pupil’s competences more easily than teachers who believe in the entity theory. Indeed, teachers who endorse the entity theory may be more prone to make judgments about pupils’ abilities on the basis of their initial performance than teachers who endorse the incremental theory (Butler, 2000). Moreover, Matteucci (2007) found that teachers’ attribution of pupils’ failure to lack of ability or effort had different consequences for their educational practices: when they attributed pupils’ failure to lack of effort, they tended to hold the pupils responsible for their failure and to punish them, even to feel angry with them, perhaps because they felt the pupils were violating the ‘teacher-pupil contract’ of work ethic and diligence.
5 Children’s perceptions of the malleability of competences

Instead of examining general views of the malleability of intelligence, some studies have focused on children’s more specific perceptions of the malleability of competences. I shall discuss some of these studies below.

5.1 Changes in children’s perceptions of the malleability of competences

Earlier research has shown that children’s perceptions of their own or their classmates’ potential for academic improvement tend to become more pessimistic as they advance at school (Droege and Stipek, 1993; Kasanen, Räty & Eklund, 2009; Stipek & Daniels, 1988). This suggests, firstly, that children adopt the school’s view of ability as a relatively stable property in the course of their school years and, secondly, that children change their criteria of assessing their competences as they grow older: young children, who compare their recent achievements with their earlier competences and thus tend to get mainly positive feedback on their improvement, are likely to hold rather optimistic expectations for their future success. In comparison, school-aged children, who compare their competences with other pupils’ achievements and thus also get negative information on their performance, are likely to develop more pessimistic expectations (cf. Stipek, 1992).

The changes in children’s perceptions may also occur because the expectations of significant adults, i.e., parents and teachers, become more relevant for their self-assessments and academic self-concept as they grow older (cf. Spinath & Spinath, 2005; Wigfield et al., 1997). The more pessimistic perceptions that parents and teachers may hold can contribute, then, to children’s notions becoming less optimistic. Earlier research has shown, in fact, that teachers’ views in particular become more influential for children’s self-assessments as they advance at school (Spinath & Spinath, 2005). This suggests that the teachers’ assessments contain precisely the interpersonal comparison that becomes even more significant for children’s academic self-concept in the course of their school years.
5.2 CHILDREN’S INTRAPERSONAL AND INTERPERSONAL PERCEPTIONS OF THE MALLEABILITY OF COMPETENCES

For this study, a new approach to examining children’s perceptions of the malleability of their academic competences was developed. These perceptions were examined two-dimensionally, on both intrapersonal and interpersonal assessment criteria. The former criteria comprised the children’s perceptions of their potential to improve their competences in relation to their current ones and the latter to their perceptions of their improvement potential in comparison with other children’s achievement. While earlier studies have focused on either of these (Kasanen et al., 2009; Räty et al., 2004), this one includes both of them and thus allows comparisons between children’s intrapersonal and interpersonal views.

Räty et al. (2004) used the interpersonal criterion and asked children of 8-12 years of age whether they could become the best pupil in their class in certain school subjects and asked them to explain why. They found that the children who were optimistic about their potential referred to possibilities of practising and the positive academic recognition they had received (e.g., good test results) more often than the children who gave more pessimistic ratings. The latter ones referred more often to their poor performance and deficient ability.

The results of the study also suggested that the children’s perceptions of the malleability of their competences were subject-specific, i.e., their perceptions varied according to the subject domain (see also Bempechat, London & Dweck, 1991; Freedman-Doan et al., 2000; Spinath & Stiensmeier-Pelster, 2001). Therefore the present study also set out to examine children’s perceptions of their potential for improvement in concrete school subjects, mathematics and Finnish, which are critical for the determination of children’s academic potential and whose assessment is familiar to pupils from the very beginning of school.

Mathematics and the mother tongue are also gender-stereotyped school subjects. In Räty et al.’s study (2004) the boys perceived their potential for improvement in mathematics as higher than the girls did theirs. Also, earlier research has shown that besides boys being more confident of their current competence in mathematics, too, girls are usually more optimistic about their current competence in the mother tongue (e.g., Eccles, Wigfield, Harold & Blumenfeld, 1993; Fredricks & Eccles, 2002; Wigfield et al., 1997). Similarly, parents tend to perceive their sons’ achievement more optimistically in mathematics and their daughters’ achievement in the mother tongue (e.g., Räty, Kasanen & Honkalampi, 2006a; Räty et al., 2006b). Earlier research has also found that parents perceive boys’ success more often as a consequence of talent or ability and girls’ success as a consequence of hard work and diligence (Eccles, Jacobs & Harold, 1990; Räty, Väskä, Kasanen & Kärkkäinen 2002c; Yee & Eccles, 1988).

Similarly to parents, teachers have also been found to rate boys as having more mathematical talent than girls and to also perceive girls as trying harder than boys (Jussim and Eccles, 1992). In Finland, teachers have also been found to rate boys as having higher levels of mathematical skills and lower levels of reading skills than girls as early as the first school year (Onatsu-Arvilommi, Nurmi & Aunola, 2002). These results may possibly reflect girls’ higher competences in the mother tongue,
for the PISA results, for example, have shown that girls have better reading skills than boys. In regard to mathematics, however, the results may reflect a gender bias, for in Finland girls’ and boys’ mathematical skills do not differ in general (Linnakylä, Kupari & Reinikainen, 2002).

Previous research has focused particularly on children’s perceptions of the malleability of competences and intelligence. While parents’ and teachers’ perceptions of the child’s intelligence and achievement and the expectations set for the child’s future performance at school have been examined (e.g., Aunola et al., 2003; Donohue, Weinstein, Cowan & Cowan, 2000; Fredricks & Eccles, 2002; Furnham & Budhani, 2002; Wigfield et al., 1997), no research has been carried out to my knowledge that compares children’s and their parents’ and teachers’ perceptions of the malleability of the child’s academic competences. Since parents’ and teachers’ expectations set for the child’s achievement have been shown to relate to the formation of the child’s academic self-concept (e.g., Frome & Eccles, 1998; Jussim & Eccles, 1992; Pomerantz & Dong, 2006; Spinath & Spinath, 2005; Wigfield et al., 1997), they may be significant for the dynamics and organisation of children’s perceptions of their improvement potential as well.
The main aim of this study was to examine how children and their parents and teachers perceive the malleability of the child’s academic competences and how these perceptions relate to each other. On the basis of earlier research, children’s perceptions were expected to relate to their parents’ and teachers’ views and to be more optimistic than those of the teachers and parents. Moreover, teachers’ and parents’ perceptions were hypothesised to relate to each other, and as parents are inclined to see their child’s competences in a positive light, their perceptions were expected to be more optimistic than those of the teachers.

For this study, a new model for examining malleability perceptions was developed. The model differs from Dweck’s approach in that the perceptions of the malleability of competences were examined in both intrapersonal and interpersonal ways, i.e., in relation to the child’s current competences and in relation to other children’s achievement. Furthermore, the perceptions were examined subject-specifically, in mathematics and Finnish, so as to also bring out possible gender differences. Finally, the children were not offered ready-made explanations to choose from but were invited to reason themselves why they could or could not improve their academic competences.

Two sets of research questions were put forward. One set concerned the empirical examination of the new model and the other one the positional differences in the perceptions of malleability. The research questions pertaining to the model were the following: first, do the intrapersonal and interpersonal perceptions form distinct domains in the malleability perceptions? The intrapersonal and interpersonal domains were expected to be distinct in the children’s perceptions because, besides normative information, intrapersonal comparison is also likely to be still important for children. For the parents’ and teachers’ perceptions, no hypotheses were formed, for on the one hand their intrapersonal and interpersonal perceptions might be distinct, as they attain both comparative and individual information on the children’s achievement, but on the other hand their intrapersonal and interpersonal perceptions might be integrated, as parents and teachers are likely to base their perceptions on the school’s assessment and its differential view of intelligence in particular. Second, in what ways are the intrapersonal and interpersonal views of malleability related to the perceptions of the child’s current competences? The children’s interpersonal perceptions were hypothesised to be connected to their views of their competences (i.e., academic self-concept) more strongly than the intrapersonal ones, since interpersonal perceptions are likely to relate to the school’s restrictive sphere and differential practices, which are relevant for school-aged children. For the parents’ and teachers’ perceptions, no hypothesis was formed on this point. Third, are the perceptions of the malleability of competences subject-specific? The school subject in question was expected to structure the perceptions of the child’s potential for improvement, but no specific hypothesis was set.
The research questions on positional differences pertained to the child’s gender and grade level and the parent’s gender and education and were the following: first, are there differences in boys’ and girls’ malleability perceptions and in the parents’ and teachers’ perceptions of girls’ and boys’ potential for improvement? The gender differences were expected to follow the traditional trend of favouring girls’ performance in the mother tongue and boys’ performance in mathematics. Second, are there differences in the malleability perceptions according to the child’s grade level, and are the notions of third-graders and sixth-graders differently related to those of their parents and teachers? The older children’s malleability perceptions were hypothesised to be less optimistic than those of younger children and also to be more closely related to their parents’ and teachers’ respective views. Third, are there differences in the malleability perceptions according to the parent’s education, and do the connections among children’s, teachers’, and parents’ notions vary according to the parent’s education? As academically educated parents are generally closer to the school than other parents are, their perceptions were expected to be closer to teachers’ views than those of vocationally educated parents were. Fourth, are there any differences between mothers’ and fathers’ perceptions? As mothers are usually more involved in their child’s schooling than fathers are, their perceptions were expected to be more strongly related to both the teachers’ and the children’s views than those of the fathers were. There were also more specific research questions, which are presented in Section 7, and all the hypotheses are presented in the original research articles.
7 Method

7.1 PARTICIPANTS

In early spring 2006, teachers from four schools were asked whether they would be willing to participate in a study in which the pupils of their classrooms would be interviewed and the teachers themselves would rate the pupils’ achievement in school subjects. After eight teachers had consented to take part in the study, no more participants were sought. The participating teachers were from three different primary schools in a medium-sized town.

After the teachers had expressed their willingness to participate in the study, their pupils’ parents were sent letters asking them for written permission to interview their child and for their consent to have questionnaires concerning their child’s school performance sent to themselves and to their child’s class teacher. The participating teachers had 191 pupils in their classes, so that 191 letters were sent to the homes, asking both parents to participate. A total of 164 parents consented to take part in the study, which provided a sample of 106 children (55 percent of the total) with one or two parents participating.

Three of the 106 children were excluded from the study for various reasons, such as moving out of town, so that the final sample comprised 103 children (52 girls and 51 boys), with 44 third-graders and 59 sixth-graders. The third-graders were approximately nine and the sixth-graders twelve years old.

The parents were sent 159 questionnaire forms (though 164 consents were obtained, some of the parents dropped out, e.g., on account of moving out of town), and a total of 140 parents responded, raising the response rate to 88%. Of all responses, 93 were from mothers and 46 from fathers (one respondent’s gender was not specified). In the analyses for the present study, only one parent’s ratings per child were included even if both parents had filled out the questionnaire. To ensure an even gender distribution, all the fathers but not all the mothers who had returned the questionnaire were included, providing a final sample of 97 parents (50 mothers and 46 fathers, with one parent’s gender not known). In this sample, 59 parents were vocationally educated (including vocational school and vocational institute education) and 33 academically educated (including polytechnic and university education).

The 103 children were assessed by 8 class teachers (5 female and 3 male ones). Four of them taught on the third and four on the sixth grade. Their professional experience amounted to 21 years on average, ranging from 8 to 33 years, and they had taught their current class for 2.7 years on average, ranging from a few months to over five years.
7.2 THE CHILDREN’S INTERVIEWS

The children were asked to rate the malleability of their academic competences in two different ways: for intrapersonal ratings, they rated their potential for improvement in relation to their current competence, and for interpersonal ratings they rated it in relation to other children’s achievement. In earlier studies, children’s perceptions of the malleability of competences have been elicited in relation to the best pupil in the class, for example, but in this study they were asked to make comparisons with an imaginary child, the best pupil in town, because for ethical reasons we did not wish to invite comparisons with the children’s own classmates. The functionality of the interviews was tested by means of a pilot round with a few primary school children.

The children were interviewed individually by the researcher (R.K.) in autumn 2006. The interviews were conducted in empty classrooms during regular school days. Each interview took about 10-15 minutes to complete. The children did the interviews willingly, and individual prompting was used when necessary. All the interviews were recorded and transcribed, making up about 500 pages of text.

In the interviews the children were asked the questions below. These were repeated for mathematics, Finnish, sports, and handicrafts with the order randomised for each interview. In this study, only mathematics and Finnish are considered. When the questions were asked for the first time, the meaning of each alternative was explained to the child. Visual aids were used to help the children to remember the alternative responses.

a) The children’s ratings of their current competences

Each child was asked, “How good are you at mathematics/Finnish?” The child was presented with a sheet that showed the alternatives ‘not too good’, ‘fair’, ‘pretty good’, ‘good’, and ‘very good.’ The alternatives were marked with dots, with one dot for ‘not too good’ and five for ‘very good.’ The child was asked to circle the alternative that s/he thought was the best description of her/his competence. The child was also asked not to think of what the teacher or the classmates or mum and dad might think of his/her competence.

b) The children’s intrapersonal ratings of their potential for improving their competences

The child was asked, “Next spring, when you’re still on the third/sixth grade, how much do you think you could improve your competence in mathematics/Finnish before the summer holidays?” The child was thus asked to anticipate the situation 7-8½ months ahead. S/he was presented with a sheet that again showed five alternatives marked with 1-5 dots and was asked to circle the best fitting one: ‘hardly at all’, ‘a little’, ‘to some extent’, ‘a lot’, or ‘a great deal.’ After the child had circled one of the alternatives, s/he was asked, “What is the reason why you think you could improve your performance that much/you could hardly improve your performance at all?”
c) The children’s interpersonal ratings of their potential for improving their competences

The child was shown a sheet of paper and was told, “The checkmark on this line here shows how good the best third/sixth-grader in town is at mathematics/Finnish. How close to that point could you get during your third/sixth grade?” The child would then circle one of the alternatives ‘nowhere near’, ‘pretty far’, ‘pretty close’, ‘quite close’, and ‘to the same point.’ After the child had circled one of the alternatives, s/he was asked, “What should happen in order that you could get so close to/get to be the best pupil in town?” or “Why do you think you’d be pretty far/nowhere near the best pupil in town?”

In both the intrapersonal and the interpersonal ratings, the children were asked to give explanations for their potential for improvement. The explanations given were classified into 16 categories that arose from the data. The same categories covered the explanations given for both intrapersonal and interpersonal ratings. A total of 527 explanations were classified dichotomously into the 16 categories (0 = not mentioned, 1 = mentioned). The classification was not exclusive, i.e., if the child had given several different explanations for one rating, they were assigned to several categories. However, if the child gave several explanations that belonged to the same category, they were coded only once.

The inter-rater agreement of the codings was examined by having two raters familiar with the categories classify ten randomly selected interviews (totalling 1200 codings); they reached a 98-% agreement on the classifications. The parallel classifications were completed for four school subjects, and in all of them the category ‘Cannot say’ was excluded.

7.3 THE PARENTS’ AND TEACHERS’ QUESTIONNAIRES

The parents and teachers were asked to rate the child’s current competences and his/her potential for improvement by filling out questionnaires. Like the children, they assessed the malleability of competences on both intrapersonal and interpersonal criteria. The questionnaire for the parents and teachers included the following assessments:

a) Ratings of the child’s current competences

The parents and teachers were asked how they would rate the child’s performance in mathematics/Finnish right now. They were asked to circle the best of the following alternatives: ‘not too good’, ‘fair’, ‘pretty good’, ‘good’, and ‘very good.’

b) Intrapersonal ratings of the child’s potential for improving her/his competences

The parents and teachers were asked to assess how much the child could improve his/her performance in mathematics/Finnish by the end of the school year (in 6-8 months) in comparison with his/her current performance. The alternatives were ‘hardly at all’, ‘a little’, ‘to some extent’, ‘a lot’, and ‘a great deal.’
c) Interpersonal ratings of the child’s potential for improving her/his competences
Here the parents and teachers were asked to assess how much the child could improve his/her performance in mathematics/Finnish in comparison with that of her/his peers by the end of the school year using the same alternatives as in the previous question.
8 The research articles and results

The results of the study have been published in five research articles, which are all based on the data described in the previous sections. The first and the second article concern the children's perceptions of their potential for academic improvement and are based on data collected by means of interviews. The first article examines the children's ratings of the malleability of their competences and the relation of these ratings to the children's academic self-concept. The second article focuses on the explanations the children gave for their improvement potential.

The third research article includes an examination of the parents' perceptions of the malleability of their child's academic competences and of the relation of these perceptions to their assessments of the child's current competences. The fourth article is a brief report examining the interrelations between the parents' and the teachers' perceptions of the child's potential for improvement. The fifth article is about interrelations between the children's and their parents' and teachers' perceptions of the child's improvement potential.

All the five articles were joint ones written by members of our research group, and in four of them I was the responsible author. I collected the research data, i.e., conducted the children's interviews and carried out the questionnaire survey among the parents and teachers. Additionally, I completed a great majority of the statistical analyses and constructed the classification system for the children's explanations for their improvement potential presented in the second article.

8.1 Children's perceptions of the malleability of their academic competences

The first study set out to examine children's perceptions of the malleability of their competences in mathematics and Finnish and the relationship of these perceptions to the children's academic self-concept. The following research questions were set: 1) Can children's intrapersonal and interpersonal ratings of their potential for improving their academic competences be regarded as relatively distinct domains? 2) In what ways are children's intrapersonal and interpersonal ratings of their potential for improvement related to their academic self-concept, i.e., their ratings of their current competences? 3) In what ways are the child's grade level and gender and the parent's

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educational level related to children’s intrapersonal and interpersonal ratings of their potential for improving their competences?

The interrelations between the children’s ratings of their current competences and their intrapersonal and interpersonal ratings of their potential for improvement were analysed by means of Pearson correlation coefficients. To examine whether there were differences in these relations between the third-graders and the sixth-graders, Fisher’s z-tests were used. Analyses of variance were conducted to examine the relation of the child’s grade level and gender and the parent’s educational level to the children’s ratings of their potential for improvement. To control for the effects of the children’s ratings of their current competences on the results, these ratings were included as covariates in the analyses of variance.

The results indicated that the children’s intrapersonal and interpersonal perceptions formed distinct domains, for they did not correlate with each other. Moreover, in both school subjects, the children’s academic self-concept was positively related to their interpersonal perceptions only, and this was the case among the third-graders already. In mathematics, the connection between the sixth-graders’ academic self-concept and their intrapersonal perceptions of their potential for improvement was negative and statistically significant.

The sixth-graders’ perceptions of the malleability of their academic competences were significantly less optimistic than those of the third-graders, except for the interpersonal ratings for mathematics, which showed no differences between the two grade levels. For Finnish, the third-graders’ interpersonal and intrapersonal perceptions of their potential for improvement were slightly related to each other, while the sixth-graders’ respective perceptions were independent.

Even if the parents’ education did not relate as such to the children’s perceptions, it did structure a grade-level difference in the children’s interpersonal perceptions for mathematics: On the third grade, the children of vocationally educated parents perceived their potential for improvement as better than the children of academically educated parents did, but on the sixth grade the situation was even slightly the opposite.

The parents’ educational level also structured a gender difference in the children’s intrapersonal perceptions for Finnish: the daughters of vocationally educated parents were more optimistic about their improvement potential than the sons were, but the situation was the opposite among the children of academically educated parents. By itself, the children’s gender did not relate to their perceptions of their potential for improvement.

To conclude, there were three main findings. First, the children’s intrapersonal and interpersonal perceptions of their potential for improvement were distinct, which suggests that children base their malleability perceptions on both personal improvement and comparative information. Second, the results suggest that children’s academic self-concept is connected to comparative information from early on. Third, the sixth-graders’ perceptions of the malleability of their academic competences were mainly more pessimistic than those of the third-graders.
8.2 CHILDREN’S EXPLANATIONS FOR THE MALLEABILITY OF THEIR ACADEMIC COMPETENCES³

This study set out to examine children’s explanations for their possibilities of improving their competences in mathematics and Finnish. The research questions were as follows: 1) What kinds of explanations do children spontaneously give for their potential of improving their academic competences? 2) Can children’s intrapersonal and interpersonal perceptions of the malleability of competences be regarded as distinct domains on the basis of the explanations given? 3) How do mathematics and Finnish differ in regard to the explanations children give for their improvement potential? 4) Do these explanations depend on the child’s gender, grade level, academic self-concept, and the parent’s educational level?

The explanations given by the children were classified into 16 categories. To examine whether there were differences in the number of explanations given for the interpersonal and the intrapersonal perceptions, the Wilcoxon signed-rank test was used. To compare the kinds of explanations the children gave for their interpersonal and intrapersonal ratings, the McNemar test for paired samples was used. Spearman rank order correlations between mathematics and Finnish were computed for interpersonal and intrapersonal domains, and Fisher’s z-tests were used to examine whether the correlations between the two school subjects were different in these domains. To examine whether the child’s gender, grade level, academic self-concept, and the parent’s educational level were associated with the explanations given, logistic regression analyses were carried out.

The children’s explanations were classifiable into the following 16 categories: Effort, Learning and development, Academic recognition in the form of good test results, Bright outlook for future learning, Positive view of current competence, Qualified view of current competence, Negative view of current competence, Positive internal comparison, Negative internal comparison, Positive external comparison, Negative external comparison, Insufficient cognitive abilities, Positive motivation, Negative motivation, Other explanations, and Cannot say.

Effort was clearly the most cited explanation. In both school subjects, the ratings on intrapersonal criteria were explained in more variable ways and by partly different reasons than those on interpersonal criteria. The children cited effort and a positive and qualified view of current competence more often in the intrapersonal than the interpersonal domain, again for both mathematics and Finnish. The explanations given for the two school subjects were more uniform in the interpersonal than the intrapersonal domain. The results also showed that the children explained their intrapersonal potential for improvement by reference to positive external comparison (i.e., comparison with others) and to a positive view of their current competence more often in regard to mathematics than Finnish. Moreover, in the intrapersonal domain, significantly more explanations were given in regard to mathematics than Finnish.

In the explanations for the intrapersonal assessments of the malleability of competences, the following findings were obtained regarding the children’s academic self-concept, gender, grade level, and the parents’ educational level. For both school subjects, the children with low estimations of their proficiency were inclined to use effort as an explanation more frequently than the children with high estimations of their proficiency. For mathematics, the children with high estimations of their proficiency tended to cite a positive view of their current competence more often than the children with low estimations of their proficiency, and the sixth-graders cited positive views of their current competence more often than the third-graders did. For Finnish, the sixth-graders also cited effort more often than the third-graders did. The boys were found to refer to their own mathematical competence more often than the girls did. As regards the children’s ratings of their current competences, the traditional result was obtained: for Finnish, the girls rated their current competence higher than the boys did, whereas for mathematics, the boys rated their competence higher than the girls did. Lastly, the parents’ educational level was associated with the children’s explanations in that for Finnish, the children of vocationally educated parents cited effort more often than the children of academically educated parents did.

To conclude, the results suggest that effort may function as an explanation that helps children to deal with the threat of a low academic self-concept. In the main, the children’s intrapersonal and interpersonal explanations seemed to form different domains, which suggests that children base their malleability perceptions on both mastery-based and comparative information. Moreover, the perceptions of malleability were found to vary, to some extent, according to the school subject in question. The results obtained on the variation according to the children’s grade level and gender suggest that boys’ confidence in their intrapersonal improvement in mathematics is stronger than girls’ and that older children may have adopted the school’s emphasis on effort and good performance more thoroughly than younger children have.

8.3 PARENTS’ PERCEPTIONS OF THE MALLEABILITY OF THEIR CHILDREN’S ACADEMIC COMPETENCES

The third study examined parents’ perceptions of their child’s potential for improving her/his competences in mathematics and Finnish. The following research questions were set: 1) Do parents’ intrapersonal and interpersonal perceptions of their child’s potential for improvement differ from each other? 2) Do parents perceive the malleability of their child’s academic competences as high or moderate? 3) How do parents’ intrapersonal and interpersonal perceptions of their child’s potential for improvement relate to their perceptions of the child’s current competences? 4) Are there differences in parents’ perceptions according to the child’s grade level and gender and the parent’s education and gender?

To examine the relation between the parents’ intrapersonal and interpersonal ratings and the relation of these ratings to the parents’ perceptions of their child’s current competences, Pearson correlation coefficients were used. To examine whether these correlations varied according to the child’s grade level and gender and the parent’s educational level and gender, Fisher’s z-tests were used, and to examine whether the parents’ intrapersonal and interpersonal ratings differed from each other, paired samples t-tests were used. The effects of the child’s grade level and gender and the parent’s educational level and gender on the parents’ ratings were examined by means of analyses of variance. To control for the effects of the parents’ views of the child’s current competences on the results, these ratings were included in the analyses as covariates.

The results indicated that unlike the children’s perceptions, the parents’ intrapersonal and interpersonal perceptions of their child’s potential for improvement were closely connected to each other with respect to both mathematics and Finnish. Their intrapersonal and interpersonal perceptions were quite moderate, though the former tended to be more optimistic than the latter. In regard to both school subjects and on both intrapersonal and interpersonal criteria, the parents’ perceptions of their child’s current competences were negatively related to their perceptions of the child’s potential for improvement. This means that if the child was seen as doing well, the parents seemed to perceive his/her competence as more permanent and to set a clearer upper limit for its improvement but if the child was seen as not doing so well, s/he was seen as more capable for improvement. In regard to mathematics, this self-serving attribution pattern was stronger among the academically educated than the vocationally educated parents.

The parents’ educational level structured their perceptions further in that concerning mathematics, the relation between the academically educated parents’ intrapersonal and interpersonal perceptions was somewhat closer than that of the vocationally educated parents. Moreover, an interaction effect between the parents’ education and gender was found: the academically educated mothers perceived their child’s intrapersonal potential in mathematics more optimistically than the academically educated fathers did, but with the vocationally educated parents the situation was the opposite.

The results also indicated some differences between the mothers’ and the fathers’ perceptions. First, the fathers’ intrapersonal and interpersonal perceptions for Finnish were more strongly interrelated than those of the mothers. Second, the mothers perceived their child’s interpersonal potential for mathematics slightly more optimistically than the fathers did. No significant differences were found in the parents’ perceptions of the third-graders’ and the sixth-graders’ or the girls’ and the boys’ potential for improvement.

To conclude, the results obtained suggest that parents’ perceptions of the malleability of their child’s academic competences are quite moderate and that parents seem to resort to the normative frame in their assessments. However, they tend to be more optimistic about their child’s intrapersonal than interpersonal improvement and also evince a self-serving attribution pattern, which in regard to mathematics seems to be stronger among academically educated than vocationally educated parents.
The fourth study examined the relations and differences between parents’ and teachers’ perceptions of children’s potential for improvement in mathematics and Finnish. The following research questions were set: 1) How do parents’ and teachers’ perceptions of the child’s potential for improvement relate to each other, and are there differences between parents’ and teachers’ perceptions? 2) Do the child’s grade level and gender and the parent’s educational level structure the relations and differences between parents’ and teachers’ perceptions? 3) Do mothers’ and fathers’ perceptions relate differently to those of teachers?

To examine whether there were differences between the parents’ and the teachers’ ratings of the children’s potential for improvement, a repeated-measures analysis of variance was used. The child’s grade level and gender and the parent’s educational level and gender were included as between-subjects factors in the analyses. The relations between the parents’ and the teachers’ ratings were examined by means of Pearson’s correlation coefficients. To examine whether the interrelations between the parents’ and the teachers’ ratings differed according to the child’s grade level and gender and the parent’s educational level and gender, Fisher’s z-tests were conducted.

The results showed a moderate correlation between the parents’ and the teachers’ perceptions of the children’s potential for improvement. The correlations did not vary significantly according to the parents’ education and gender or the children’s gender and grade level.

For both mathematics and Finnish and in both the intrapersonal and the interpersonal domain, the parents perceived their child’s potential for improvement more optimistically than the teachers did. Furthermore, a statistically marginally significant result was obtained in the interpersonal ratings for mathematics: the parents attributed more improvement potential to the sixth-graders than to the third-graders, but with the teachers the situation was the opposite. No differences regarding the children’s gender or the parents’ educational level emerged.

To sum up, the moderate positive connection between the parents’ and the teachers’ perceptions indicated that the views of the child’s improvement potential are to some extent shared by home and school. The results also suggest that parents are more optimistic than teachers in their perceptions.

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The last study looked at the relations of children’s perceptions of their potential for improving their academic competences to the respective views of their parents and teachers. The research questions were the following: 1) How do children’s perceptions of their potential for improvement relate to the respective views of their parents and teachers, and do children’s, teachers’, and parents’ perceptions differ from one another? 2) Do the child’s grade level and gender and the parent’s educational level structure the relations and differences between children’s and their teachers’ and parents’ perceptions? 3) Do mothers’ and fathers’ perceptions relate differently to those of children?

To examine whether the children’s intrapersonal and interpersonal ratings of their potential for improvement in mathematics and Finnish were related to their parents’ and teachers’ respective ratings, Pearson’s correlation coefficients were used. To examine whether these relations varied according to the child’s grade level and gender and the parent’s educational level and gender, Fisher’s z-tests were conducted. The differences among the children’s, the parents’, and the teachers’ ratings in the intrapersonal domain were examined by means of a repeated-measures analysis of variance. The child’s grade level and gender and the parent’s education were included as between-subjects factors in the analyses. Since the children’s rating scales in the interpersonal domain were different from those used by the teachers and parents, the repeated-measures analysis of variance was used in the intrapersonal domain only.

The results suggested that the relations between the children’s perceptions of their potential for improvement and those of their parents and teachers varied somewhat among the subgroups. Between some subgroups there were significant correlations, but between others there were only weak connections if any.

In the intrapersonal domain there was a tendency, though statistically a weak one, for the children’s perceptions of their potential for improvement to positively correlate with their teachers’ and parents’ views. In the interpersonal domain there was an opposite tendency. The negative relation suggested that the higher the children rated their potential for improvement in the interpersonal domain, the lower the teachers and parents tended to rate their improvement potential, and conversely, the lower the children rated their potential for improvement, the more optimistically the teachers and parents tended to perceive their potential. The relation between the children’s and their parents’ and teachers’ perceptions seemed to be somewhat stronger in the interpersonal than the intrapersonal domain.

On the intrapersonal criteria, the children’s perceptions of their potential for improvement were the most optimistic, followed by their parents’ and, lastly, their teachers’ views. The results also showed a tendency for the older children’s perceptions to be closer to their teachers’ and parents’ views than those of the younger children.

were. This result was statistically significant, however, only with the children’s and their parents’ intrapersonal perceptions for Finnish. The children’s perceptions in the intrapersonal domain also varied according to their grade level, so that the third-graders were more optimistic in their perceptions than the sixth-graders. No respective differences were found in the parents’ and teachers’ perceptions.

With respect to Finnish, the parents and teachers rated the boys’ intrapersonal potential for improvement more optimistically than the girls’ one. For both school subjects, the intrapersonal perceptions of the academically educated parents’ children were more closely connected with their parents’ and teachers’ respective perceptions than those of the vocationally educated parents’ children were. Lastly, the children’s interpersonal ratings for Finnish correlated slightly with their fathers’ views but not with their mothers’. There was a parallel relation, though statistically not significant, in the interpersonal ratings for mathematics.

To conclude, the children’s perceptions of the malleability of their academic competences were found to connect with their parents’ and teachers’ respective views in some but not all subgroups. Connections with parents’ and teachers’ views were found in the perceptions of the sixth-graders and the children of academically educated parents. A self-serving attribution pattern was established in that the teachers and parents were more confident about the child’s improvement potential particularly when the child’s own interpersonal perceptions were low, and also in that they rated the boys’ intrapersonal potential for Finnish more optimistically than that of the girls although the mother tongue is usually regarded as girls’ strong suit. Finally, the children’s own intrapersonal perceptions were the most optimistic ones, followed by their parents’ and, lastly, their teachers’ views.
9 Discussion

This discussion focuses on the findings considered the most important. Discussions of other results are presented in the original research articles. The next three subsections present a discussion of the main findings, an evaluation of the research model and the limitations of the study, and a discussion of the implications.

9.1 DISCUSSION OF THE MAIN FINDINGS

Children's intrapersonal and interpersonal perceptions of their improvement potential are distinct

This study aimed at finding out whether children's intrapersonal and interpersonal perceptions of the malleability of their academic competences formed distinct domains. A hypothesis of distinct domains was set, and the results supported the hypothesis: children seem to form distinct sets of views of the malleability of their competences on the basis of their prospects of personal improvement on the one hand and the comparative information they receive from school on the other hand (cf. Nicholls, 1990; Stipek & Gralinski, 1996). This finding indicates that not only normative but also intrapersonal information is significant for school-aged children's notions of their achievement potential (cf. Stipek & Tannatt, 1984) and that children's perceptions of the malleability of their academic competences are worth examining two-dimensionally.

The difference between the children's intrapersonal and interpersonal perceptions was also evinced in their explanations for their improvement potential: first, for both school subjects, their assessments of their potential were explained in more variable ways in the intrapersonal domain. Second, the explanations given in the two school subjects were more uniform in the interpersonal than the intrapersonal domain. It seems, then, that children's explanations in the interpersonal domain reflect the standardising practices of the school (cf. Räty et al., 1999a), whereas the explanations in the intrapersonal domain are more individual and more varied.

Moreover, the children explained their potential for improvement with partly different reasons in the intrapersonal and the interpersonal domain: in regard to both school subjects, they mentioned effort and positive and qualified views of their current competence more often in connection with their intrapersonal than interpersonal ratings. It seems reasonable that children should explain their individual potential with positive and optimistic reasons, for it represents the promotional sphere of education, in which the enhancement of learning is emphasised. However, there was no evidence of the children resorting to normative or restrictive reasons (e.g., test results or insufficient cognitive abilities) more often in their explanations pertaining to the
interpersonal domain. The reason might be that such explanations were also used in the intrapersonal domain, possibly suggesting that the powerful impact of the school’s assessment criteria leads children to use comparative criteria in their intrapersonal ratings, too.

**Children’s academic self-concept relates to their interpersonal perceptions of their improvement potential only**

In line with the hypothesis, we found that in regard to both mathematics and Finnish, the children’s academic self-concept was positively associated only with their interpersonal perceptions of their potential for improvement. It seems, then, that the children’s self-concept relates to the comparative and restrictive, not the promotional, sphere of education. This is a potential problem for children’s learning motivation and their learning processes and outcomes (cf. Dweck, 1999; Frey & Ruble, 1990).

Moreover, even the third-graders seemed to have anchored their academic self-concept to comparative information already, for their interpersonal perceptions were as closely related to their academic self-concept as those of the sixth-graders were. This finding concurs with earlier studies, which have shown that even if the school attempts to avoid normative feedback during the first school years, its everyday practices contain numerous routines and test-like situations from the very beginning that convey comparative assessment criteria to the pupils (cf. Kasanen & Räty, 2008; Kasanen, Räty & Snellman, 2003).

**Teachers’ and parents’ intrapersonal and interpersonal perceptions are closely connected**

Contrary to the children’s views, the parents’ and the teachers’ intrapersonal and interpersonal perceptions of the child’s improvement potential were closely connected in regard to both mathematics and Finnish. Though parents and teachers surely receive information on both the children’s individual development and their achievement in relation to other children, their intrapersonal and interpersonal perceptions seem to be fairly similar. This difference between children’s and their parents’ and teachers’ perceptions may arise from parents’ and teachers’ views being more exclusively based on the interpretative, normative frame of reference derived from the school’s dominant view of intelligence. It must to be noted, however, that the assessment scales for the children and for their parents and teachers were not directly comparable in the present study, which calls for further research. It would seem particularly important to examine the intrapersonal and interpersonal perceptions of older children, e.g., junior high school pupils, to find out if their perceptions were more distinct in the two domains.

Although the parents’ and the teachers’ intrapersonal and interpersonal perceptions were closely connected and seemed to be structured in connection with the normative standards of the school, these connections were still not close enough to warrant regarding their intrapersonal and interpersonal perceptions as fully similar.

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7 The correlations between the teachers’ intrapersonal and interpersonal perceptions were not reported in the original research articles. They were .70 (p< .001) for mathematics and .61 (p< .001) for Finnish.
This suggests that parents’ and teachers’ notions contain not only comparative but also individual assessments. Moreover, the parents tended to assess their child’s intrapersonal potential for improvement more optimistically than his/her interpersonal one. This may be a reflection of the essential difference between the promotional and the restrictive sphere of education: the former holds more hope for the child’s future achievement than the latter. However, no corresponding difference was found in the teachers’ perceptions, which may well be a reflection of their leaning mainly on the restrictive sphere of education in their assessments as they are likely to do in their other day-to-day work.

The more schooling, the less optimistic the perceptions of improvement potential

As hypothesised, the younger children’s perceptions of the malleability of their academic competences were found to be generally more optimistic than those of the older children. This concurs with earlier research, which has shown that as children advance at school, their perceptions of their own or their classmates’ improvement potential decline (cf. Droege & Stipek, 1993; Kasanen et al., 2009; Stipek & Daniels, 1988). This is connected with the fact that as children advance at school, they receive more and more comparative information about their competences and become familiar with the school’s prevailing view of intelligence as a relatively stable quality. The differences between third-graders’ and sixth-graders’ notions may also be influenced by developmental factors: as children’s cognitive abilities mature, they begin to fathom the concept of competence differently, and they may also be regarded as more mature to evaluate their own performance (e.g., Nicholls, 1978, 1990; Nicholls, Patashnick & Gwendolyn, 1986). However, though children’s thinking undergoes developmental changes, the contents of their notions are acquired from their environment and are thus strongly influenced by both the home and, in particular, the school and its conception of intelligence (cf. Sternberg, 2004).

It was also found, again in line with the hypothesis, that in the intrapersonal domain, in which it was possible to compare the children’s perceptions with those of the teachers and parents, the latter were more pessimistic. The parents’ and the teachers’ relatively pessimistic perceptions may result from their stronger endorsement of the school’s dominant view of intelligence and the idea of natural giftedness (cf. Mugny & Carugati, 1989). Parents’ and teachers’ relatively pessimistic perceptions may also encourage children to adopt the school’s dominant view of intelligence.

As hypothesised, the results indicated that the teachers were the most pessimistic in their perceptions of the children’s potential for improvement. This is probably because their day-to-day work engages them in comparative practices and the differential frame of assessment in accordance with their responsibility of ranking and comparing pupil achievement (cf. Spinath & Spinath, 2005). The result also concurs with earlier research, which has suggested that teachers may regard the differences in children’s intelligence as measurable from early on (Snellman & Räty, 1995).

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8 The p-values were > .10 for both mathematics and Finnish.
Sixth-graders’ perceptions tend to be closer to their parents’ and teachers’ views than those of third-graders are

In line with the hypothesis, the results showed a tendency for the sixth-graders’ perceptions to be more closely connected with their parents’ and teachers’ views than those of the third-graders were. This concurs with earlier studies on the perceptions of competences, which have showed that the relevance of parents’ and teachers’ perceptions for children’s self-assessments increases as the children advance at school (Spinath & Spinath, 2005; Wigfield et al., 1997). Thus the reason for older children’s perceptions becoming less optimistic may be, besides the increase in comparative assessment with advancing school years, also their adopting their parents’ and teachers’ expectations. Even if we cannot confirm this influence on the basis of the present study because we examined only correlations, it stands to reason as it accords with earlier studies demonstrating the influence of parents’ and teachers’ views on children’s own perceptions (e.g., Frome & Eccles, 1998; Jussim & Eccles, 1992; Pomerantz & Dong, 2006).

A reason for children’s perceptions coming closer to those of teachers and parents may be that older children are given more pervasive and more specific feedback on their competences and achievement than younger ones are. Understanding and accepting such feedback may also get easier in the course of the school years, for older children are likely to have become familiar with the school’s practices and its differential view of intelligence. More specifically, as pupils advance at school, they start to adopt the language and terms used in the school world, including numerical grading, that teachers and parents also share.

Children’s perceptions of their improvement potential are structured by their parents’ educational level

Besides the children’s grade level, their parents’ education also structured their perceptions of the malleability of their academic competences. Most importantly, the intrapersonal perceptions of the children of academically educated parents were moderately associated with both their teachers’ and parents’ respective views in regard to mathematics and Finnish, whereas those of the children of vocationally educated parents were not associated with their teachers’ and parents’ views. One possible explanation for this is that teachers’ and parents’ expectations for children’s academic achievement are conveyed more clearly to children of academically educated parents. More specifically, since highly educated homes are fairly close to the school system in terms of its values (Bourdieu & Passeron, 1977) and its dominant view of intelligence (Räty & Snellman, 1998), their children may adopt the unspoken consensus concerning the definition of academic potential and may therefore be more disposed to accept the feedback on their academic achievement than children of less educated homes are.

Moreover, children of highly educated homes may indeed be set clearer expectations for their achievement since they are expected to perform better at school. For instance, university-educated parents have very definite expectations for their child’s gymnasium education (Räty, Leinonen & Snellman, 2002b) even before the child has started his/her formal schooling (Räty & Kasanen, 2010). Furthermore, if children of academically educated homes do share their perceptions of their individual poten-
tial with their parents and teachers, it may have a positive effect on their academic achievement because teachers’ and parents’ expectations for their achievement are likely to be fairly positive.

The difference between the relations of the perceptions of academically and vocationally educated children to those of their parents and teachers showed up in the intrapersonal domain with respect to both school subjects. This may be because intrapersonal perceptions allow more room for such differences to turn up whereas the interpersonal domain represents more widely shared normative perceptions and explicit assessment of the children’s educational potential.

Contrary to the hypothesis, the perceptions of academically educated parents did not relate to teachers’ views more strongly than those of vocationally educated parents did. Perhaps both academically and vocationally educated parents share the teachers’ perceptions, at least to some extent, from the very beginning of the child’s schooling (cf. Spinath & Spinath, 2005) or else shift towards the teachers’ views during the child’s first few years of school.

Another interesting finding was that the parents’ educational level structured the children’s interpersonal perceptions of their improvement potential in regard to mathematics: on the third grade the children of vocationally educated parents perceived their potential more optimistically than the children of academically educated parents did, but on the sixth grade the situation was rather the opposite. The finding resembles one from Entwisle and Hayduk’s (1978) classical study, in which they found that working-class children had ‘too great expectations’ for their school performance at the beginning of their schooling (cf. also Alexander, Entwisle & Bedinger, 1994). Additionally, sixth-graders’ perceptions probably reflect their school achievement fairly closely, since the importance of the teacher’s evaluations for children’s own perceptions grows with age (Spinath & Spinath, 2005) and since, according to the PISA results, for example, children from highly educated homes do better than others in mathematics on average (cf. OECD, 2004). The school seems, then, to make it clear to the pupils what their place is on the school’s grading scale and what they can expect of their future achievement.

Children’s perceptions of their potential for improvement are generally weakly connected with their parents’ and teachers’ views

This study suggested that the interrelations between children’s and their parents’ and teachers’ perceptions of the child’s improvement potential differ among pupil groups. As mentioned above, the perceptions of the sixth-graders and the children of academically educated parents were moderately connected with their teachers’ and parents’ views, but in the other groups, contrary to the hypothesis, there were only weak connections if any.

In general, the relations between children’s and their parents’ and teachers’ malleability perceptions found in this study seemed indeed somewhat weaker than those between children’s and their teachers’ and parents’ perceptions of the child’s current school achievement found in earlier studies (e.g., Spinath & Spinath, 2005; Wigfield et al., 1997). This seems quite reasonable, for unlike their current competences, which are visibly compared throughout the school’s day-to-day practices, children’s poten-
The potential for improvement is not assessed directly and explicitly at school (Kasanen et al., 2003; Kasanen & Räty, 2008). Even so, it would seem important to examine in further studies whether children’s malleability perceptions generally become more consistent with their parents’ and teachers’ views as they advance to junior high school.

The perceptions of the child’s improvement potential are shared, to a moderate extent, by home and school

As hypothesised, there was a moderate connection between the parents’ and the teachers’ perceptions of the malleability of the child’s academic competences, which suggests that the expectations set for the child are to some extent shared between home and school. This result concurs with earlier research, which has found correlations between teachers’ and mothers’ perceptions of children’s current competences (e.g., Peet, Powell & O’Donnel, 1997).

What this means for an individual child is that the expectations s/he has for his/her future achievement may be strengthened if s/he receives similar feedback from two sources. Children who get positive feedback on their learning possibilities are likely to be motivated to practise and thus also likely to get better learning results (cf. Mueller & Dweck, 1998). On the other hand, children who get feedback that contradicts their own expectations or who fail to get sufficient feedback may feel confused and question their achievement. One might also ask whether the child has any chance of interpreting his/her learning potential optimistically if the feedback s/he receives from both school and home is pessimistic.

The child may find support in her/his parents’ perceptions

The parents were found to hold more optimism about their child’s improvement potential than the teachers did, probably because of their desire to motivate, support, and protect their child. The optimism may function as a resource for the child, helping her/him to maintain confidence in her/his academic achievement. Parents’ perceptions may also act as mediators between the children’s and the teachers’ views (Frome & Eccles, 1998; Spinath & Spinath, 2005); this cannot be confirmed on the basis of the present study, though, because we examined only the correlations among the children’s, the parents’, and the teachers’ perceptions.

It was further found that with respect to both school subjects and in both the intrapersonal and the interpersonal domain, the parents’ perceptions of their child’s current competences were negatively related to their views of the child’s potential for improvement. In other words, if the child was seen as doing well, the parents seemed to regard his/her competence as more permanent and to set a clearer upper limit to its improvement, but if the child was seen as not doing so well, s/he was seen as capable of improvement. Thus, though the parents surely expected their well-doing child to also do well in the future, they seemed to think that a well-doing child had no room any longer to improve her/his competence relative to that of other children, which is another reflection of their perceptions being based on the school’s normative notion of ability.

Parents’ tendency to perceive their child’s good competences as relatively permanent and poor competences as more malleable reflects a self-serving attribution
pattern, which represents their motivation to see their child’s competences and development in a favourable light (cf. Goodnow & Collins, 1990). The present findings concur with those of earlier studies, in which parents have been found to explain their child’s good achievement by fairly permanent reasons such as talent or ability and poor performance by more controllable ones such as lack of effort and practice (cf. Natale et al., 2009; Räty et al., 2006b; Rytönen et al., 2005; Yee & Eccles, 1988). It has also been found in the follow-up studies that in regard to both mathematics (Räty & Kärkkäinen, in press) and Finnish (Räty, 2010), parents who explain their child’s success by talent or by both talent and effort have a higher opinion of their child’s competence across the child’s schooling than parents who explain the child’s success by effort have. Moreover, parents’ attribution of their child’s success to ability has been found to relate to the child’s higher academic achievement (Natale et al., 2009). Indeed, such a parental self-serving attribution pattern may be useful for children’s learning, as attributing failure to lack of effort may help low-achieving children to motivate and practise (cf. Mueller & Dweck, 1998), and for high-achieving children, an emphasis on ability to explain their success may be beneficial as well, at least until learning problems come up (cf. Pomerantz & Dong, 2006).

In the present study, the self-serving attribution pattern with respect to mathematics was stronger among the academically than the vocationally educated parents (cf. Räty et al., 2006b). This may reflect greater significance of academic success for academically educated parents on account of their social identity. Indeed, parents with an academic education usually perceive their children’s academic achievement as better than other parents do theirs (e.g., Räty, 2003). The difference may have shown up precisely in regard to mathematics because it is the most highly valued school subject and is considered to reflect giftedness at its most genuine (Mugny & Carugati, 1989).

In this study, the relation between the academically educated parents’ intrapersonal and interpersonal perceptions in regard to mathematics was also slightly closer than that of the vocationally educated parents. This finding may indicate that parents with an academic education, standing fairly close to the school system, share the school’s dominant view of intelligence more strongly than others do (cf. Räty & Snellman, 1998) and may thus base their ratings mainly on normative criteria, particularly in regard to mathematics.

**Teachers, too, evince a self-serving attribution pattern**

Though the teachers were found to hold the most pessimistic perceptions of the children’s improvement potential, they, too, evinced a self-serving attribution pattern in their perceptions: like parents’ perceptions, also their perceptions of the child’s potential for improvement were negatively related to their views of her/his current competences⁹. The self-serving attribution pattern also manifested itself as a negative relationship between the children’s and both their teachers’ and their parents’ interpersonal perceptions, which means that if the child considered him/herself to

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⁹ The correlations between the teachers’ perceptions of the child’s current competence and his/her interpersonal potential for improvement were -.88 (p<.001) for mathematics and -.86 (p<.001) for Finnish, and the correlations between the perceptions of current competence and intrapersonal potential were -.73 (p<.001) for mathematics and -.67 (p<.001) for Finnish.
be approaching the level of the best pupil in town, the teachers and parents tended to perceive the child’s potential for improvement rather pessimistically, as if the child were already quite close to her/his maximum potential. Respectively, if the child considered her/himself to be nowhere near the best pupil, the teachers and parents were willing to perceive her/his improvement potential more optimistically. For both teachers and parents, this pattern may serve the function of motivating and encouraging children when they encounter difficulties in learning (see, e.g., Hart et al., 2004), but it also reflects a tendency to attribute children’s good achievement to fairly stable abilities.

Parents and teachers perceive boys’ improvement potential in regard to Finnish as higher than girls’

The self-serving attribution pattern also manifested itself in that the parents and teachers showed more confidence in boys’ intrapersonal potential in regard to Finnish than they did in girls’ corresponding potential even though the mother tongue is usually seen as girls’ strong suit. Thus the hypothesis that the traditional trend of favouring girls in regard to Finnish and boys in regard to mathematics would also emerge in perceptions of the malleability of competences was not supported by the results.

Teachers and parents may presumably be inclined to perceive boys as having inner potential for the mother tongue that does not surface because boys may not be interested in the subject, which may be seen as a girlish domain. So, although girls do better than boys in the mother tongue (see, e.g., Linnakylä et al., 2002), the parents and teachers may not be willing to attribute the difference to boys’ lower verbal abilities but rather to their lack of motivation. Earlier studies have shown, indeed, that boys’ success at school is often attributed to talent or ability and girls’ success to diligence and hard work, which are regarded as less valuable properties than talent (see, e.g., Eccles et al., 1990; Jussim & Eccles, 1992; Räty et al., 2002c; Yee & Eccles, 1988).

In the light of the above-mentioned earlier studies, it does not seem so surprising that the present study showed no respective difference in the parents’ and teachers’ views favouring girls’ improvement potential in regard to mathematics. It is indeed possible that girls’ giftedness is not similarly trusted, especially in mathematics, which the traditional gendered notion regards as boys’ strong suit. It is thus possible that both parents and teachers share the stereotype that girls are not as gifted as boys in mathematics, which may even lower girls’ actual performance in mathematics (cf. e.g., Aronson & Steele, 2005; Spencer, Steele & Quinn, 1999). However, it is also possible that parents and teachers are not so worried about girls’ competence in mathematics as they are about boys’ competence in the mother tongue because girls outperform boys in many school subjects (Jakku-Sihvonen & Komulainen, 2004). Parents, too, have been found to perceive girls as doing better than boys in almost all other school subjects but mathematics (e.g., Räty et al., 2006a).

Contrary to the hypothesis, no gender differences were found between the boys’ and the girls’ own perceptions of the malleability of their competences. However, it was found that in the explanations the children gave for their intrapersonal improvement potential, the boys referred to their mathematical competence more often than the girls did (cf. also Räty et al., 2004). Perhaps gender differences do not occur in
children’s perceptions of their improvement potential as clearly as they do in their perceptions of their current competences because the latter have stronger stereotypical expectations attached to them. Among some boys, however, confidence in their mathematical competence may be so strong that it determines their explanations for their potential for improvement.

Another interesting finding was that the boys’ and the girls’ intrapersonal perceptions in regard to Finnish were structured by their parents’ education: among the children of vocationally educated parents, the girls were more optimistic than the boys about their potential for improvement, but among the children of academically educated parents it was the boys that were more optimistic. Thus parents’ education, which affects the child’s schooling in many other ways, too, may also structure gender differences in children’s perceptions of the malleability of their competences. This finding highlights the importance of examining children’s perceptions in relation to both gender and parents’ education.

**Effort as a way of improving one’s competences may give children hope for future achievement**

Though the children were found to have a rich variety of explanations for their potential for academic improvement, effort was clearly the most frequently cited explanation. This concurs with earlier research, in which effort has also been found the most frequently cited explanation for anticipated improvement in academic competences (Räty et al., 2004; cf. also Droege & Stipek, 1993). This finding suggests that besides being self-evident ways of learning new things, effort and practice also belong to those desirable pupil properties that the school emphasises along with sociability, cooperativeness, and the acceptance of rules (cf. Gipps & Tunstall, 1998; Stipek & Mac Iver, 1989).

It was also found that the children’s explanations for their intrapersonal improvement potential were related to their academic self-concept: in regard to both school subjects, the children with low estimations of their current proficiency were inclined to use effort as an explanation more often than the children with high estimations of their proficiency did. This may be seen to reflect a self-serving attribution pattern: effort seems to be an explanation that helps children to deal with the threat of a low academic self-concept determined on normative grounds and thus to retain hope and optimism for future achievement.

Interestingly enough, when explaining their intrapersonal potential for improvement in Finnish, the children of vocationally educated parents cited effort more often than the children of academically educated parents did. This, too, may be seen to reflect a self-serving attribution pattern, for the children of highly educated homes usually do better at school than other children (e.g., Hautamäki et al., 2000; Kuusinen, 1992), among whom the idea of effort as a way of improvement may boost confidence in future achievement.

Lastly, some grade-level differences turned up in the children’s explanations: in the intrapersonal domain, the sixth-graders cited a positive view of their current competence in mathematics and effort in Finnish more often than the third-graders did. Their positive view of their mathematical competence may indicate that those
sixth-graders who had done well in mathematics had also adopted a relatively stable notion of their competence. But the sixth-graders’ referring to effort in Finnish more often than the third-graders did is rather surprising. Their perceptions may reflect the school’s emphasis on effort and good performance, or perhaps the commonly held view that competence in mathematics is a nature-given property but that competence in the mother tongue is more modifiable through practice.

**Children may adopt a relatively stable notion of competence in mathematics earlier than in Finnish**

The results indicated that the children’s perceptions of their improvement potential in respect to mathematics were construed differently from those in respect to Finnish: it was found that the children explained their intrapersonal potential in respect to mathematics by reference to positive external comparison (i.e., comparison with others) and to a positive view of their current competence more often than they did in respect to Finnish. That their explanations for mathematics included more comparative criteria may be because mathematics is usually seen to reflect a relatively stable and nature-given competence. Surprisingly, however, these differences showed up in the intrapersonal, not the interpersonal, domain. This may indicate that the intrapersonal domain gives more room for such optimistic attributions than the more restrictive interpersonal domain.

It also seems possible that children adopt a relatively stable notion of competence in mathematics earlier than in Finnish. First, the third-graders’ and the sixth-graders’ interpersonal perceptions of their potential for improvement in mathematics did not differ (cf. also Räty et al., 2004), which could be explained by the fact that in regard to mathematics, third-graders have already received plenty of normative feedback (cf. Kasanen et al., 2003) and have adopted the notion of mathematical competence as a relatively stable property (cf. Eccles et al., 1989). Even the third-graders, then, seem to have already learnt to perceive competence in mathematics as more nature-given than that in Finnish.

Second, like the sixth-graders, the third-graders had already separated their intrapersonal and interpersonal perceptions of their improvement potential in mathematics. It is possible, then, that besides the individual criteria of assessment, children also acquire the normative ones in regard to mathematics strongly at the very beginning of school because mathematics is highly valued and children get a great deal of comparative and uniform feedback on their progress in it from the start. Indeed, Kasanen et al. (2003) found that at the very beginning of school, the pupils already competed for who finishes the tasks first in mathematics, which indicates that mathematics is highly valued and is perceived in terms of giftedness, which include the speed of performance as an essential element. Another possible reason why children begin to perceive competence in mathematics as a relatively stable one earlier than that in the mother tongue is that competence in mathematics is more cumulatively structured than that in the mother tongue. This means that if the child has problems with mathematics, s/he may find it increasingly difficult to keep up with the others, whereas the mother tongue is a subject with several subfields, which makes it possible to succeed in at least one of them even if the child has difficulty in others.
The results also showed that in regard to mathematics the connection between the children’s academic self-concept and their intrapersonal perceptions of their potential for improvement was negative, even significantly, among the sixth-graders. Besides possibly reflecting children’s desire to maintain their notion of their individual improvement potential over their school years, this finding also reflects a self-serving attribution pattern: if the children found their competence in mathematics good, they also tended to see less potential for improvement, whereas if they found it poor, they tended to see better chances of improving it. The reason why this pattern showed up with the sixth-graders and in respect to mathematics might be that because of the high valuation, the demandingness, and the cumulative nature of mathematics, a self-serving attribution pattern may be necessary at the more advanced stage of school in order to protect children’s notions of their competence in it.

Vocationally educated mothers and mathematics
Relatively few differences were found between the mothers’ and the fathers’ perceptions of their child’s potential for improvement, and, contrary to the hypothesis, no evidence was found that the mothers’ notions were more connected with those of the teacher or the child than the fathers’ notions were. The findings are thus parallel to those from earlier research, in which, though some differences have been found between mothers’ and fathers’ perceptions, the parents have shared their perceptions and explanations of their child’s achievement in most respects (e.g., Rytkönen et al., 2005). The results may partly reflect the fact that fathers are involved in their children’s upbringing and schooling a great deal these days and at least are likely to be equally aware of their children’s school performance as mothers are. Another possible explanation for the slightness of the differences found in the present study may also be that the participating fathers were perhaps a self-selected group possibly more involved in their child’s schooling than fathers in general.

Even so, it was interesting to find that the mothers’ and the fathers’ perceptions of their child’s intrapersonal potential for improvement in mathematics were structured differently by their education: the academically educated mothers perceived their child’s potential more optimistically than the academically educated fathers did, but with the vocationally educated parents it was the other way round. This finding suggests that mothers with a vocational education may be the most ‘pessimistic’ group of parents in regard to their child’s achievement in mathematics, probably because academically educated parents are the most likely ones to be confident of their child’s mathematical competence (e.g., Räty, 2003) and because competence in mathematics is usually seen as a male-dominant property. Vocationally educated mothers thus seem to be labouring under a double burden in regard to their perceptions of their child’s achievement and potential in mathematics.

The interpersonal domain is the more explicit and more shared one
In this study the relationship between the children’s and their parents’ and teachers’ perceptions seemed generally somewhat closer in the interpersonal than the intrapersonal domain. This may reflect the fact that explicit normative feedback from the teacher is valued at school and is particularly significant for the perceptions of
school-aged children (cf. Nicholls, 1990; Stipek & Mac Iver, 1989). The same feedback also contributes to parents’ views of their child’s academic achievement (e.g., Eccles, 1993) and may have a crucial effect on the construction of their perceptions of the child’s educational potential.

The comparisons of the intrapersonal and interpersonal perceptions established the interpersonal domain as the more restrictive and the more inclusive of standardising practices. This domain thus seems to relate to the school’s restrictive sphere, in which the normative discussions of the child’s educability are actualised. In contrast, intrapersonal perceptions of the child’s potential for improvement are more closely connected to the school’s promotional sphere and appear as a more subtle and tacit, unspoken domain, which does not show up explicitly at school but may still be significant and influential. The intrapersonal domain also seems to contain more variation, more individual perceptions, and more hope.

Moreover, not only the interpersonal but also the intrapersonal perceptions were found to evince differences according to social position. That these differences showed up in the intrapersonal domain, too, may indicate that this domain allows more room for views that do not surface in the more explicit and visible sphere. Thus the intrapersonal domain is worth a more specific examination in the further research.

A comparison of perceptions of competences and perceptions of the malleability of competences

The perceptions of the malleability of competences found in this study were similar in many respects to the perceptions of current competences found in earlier studies. First, the older children’s perceptions of the malleability of their competences were found to be less optimistic than those of younger children, similarly to the way children’s assessments of their current competences have been found in earlier research to become more pessimistic as they advance at school (e.g., Fredricks & Eccles, 2002; Marsh, 1989). Second, earlier studies have found children’s perceptions of their competences to come closer to their teachers’ and parents’ views in the course of their school years. In a similar vein, the present study found a tendency for the sixth-graders’ perceptions of the malleability of their competences to be closer to their parents’ and teachers’ views than those of the third-graders were. This was only a tendency, however, and therefore not so clear a result as the earlier ones concerning the perceptions of children’s current competences.

Third, the teachers’ and the parents’ perceptions of the child’s potential for improvement were found to be moderately connected in the present study, similarly to the way earlier research has found moderate correlations between teachers’ and mothers’ perceptions of the child’s current competences. Fourth, concerning parents’ education, the present study found a stronger self-serving attribution pattern among the academically educated than the vocationally educated parents in regard to mathematics, which concurs with earlier research showing stronger self-serving perceptions of the child’s competences among academically educated than vocationally educated parents (Räty et al., 2006b).

However, there also seem to be differences between perceptions of competences and those of the malleability of competences. In contrast to earlier studies concern-
ing competences, the present study found the children’s perceptions of their potential for improvement to be generally rather weakly related to their teachers’ and parents’ respective views. This may stem from the fact that unlike children’s current competences, their potential for improvement is not explicitly evaluated at school.

Another difference, regarding the child’s gender, is that while earlier studies of perceptions of children’s competences have found parents and teachers to be usually more confident of boys’ achievement in mathematics and girls’ achievement in the mother tongue, this study found the teachers and parents to hold more confidence in the boys’ than the girls’ potential for improvement in Finnish. This finding may reflect parents’ and teachers’ unwillingness to attribute boys’ poorer performance in Finnish to lack of verbal ability but it also indicates that gender-bound attributions of children’s achievement are rather complicated and may indeed be difficult to change.

Altogether, some relations of the malleability perceptions to social positions seemed weaker and more difficult to interpret than those concerning the perceptions of competences. This may be because the perceptions of the malleability of competences are not so strongly grounded in the normative feedback on achievement received from the school as the assessments of competences are. It would therefore seem important in future work to examine the relations between the perceptions of competences and of the malleability of competences in more detail.

9.2 EVALUATION OF THE MODEL AND THE LIMITATIONS OF THE STUDY

One purpose of the present study was to examine a new research model, in which children, parents, and teachers assessed the malleability of competences two-dimensionally. For the children’s interviews, the interpersonal domain was operationalised by using ‘the best pupil in town’ as a point of reference. That might have been somewhat problematic, for the best pupil in town seemed perhaps too distant and too demanding a point of reference, particularly to the third-graders. It was chosen to make the assessment task easier for the children, assuming that they might have had difficulty in understanding the difference between the terms ‘in comparison with current performance’ and ‘in comparison with peer performance.’ However, the validity of the operationalisations made in the present study receives support from the fact that the children’s explanations for their ratings in the intrapersonal domain reflected more individuality, variation, and hope than those in the interpersonal domain did.

The parents and the teachers were asked to assess the child’s potential for improvement directly in comparison with the child’s current performance and with that of the child’s peers. The operationalisation of the intrapersonal and the interpersonal criteria may have been somewhat problematic here, too, for their contents were rather similar, so that even the teachers and parents might have had difficulty in understanding the difference between them. This might have been a partial reason why the teachers’ and the parents’ intrapersonal and interpersonal perceptions were closely connected. Moreover, the difference between the children’s and their parents’ and teachers’ assessment scales led to their ratings not being directly comparable, so that
the differences between the children’s and their parents’ and teachers’ interpersonal perceptions could not be analysed. It is also possible that interpersonal assessment was rather difficult for parents because even though they usually get plenty of normative information on their child’s school performance and are thus aware of the child’s achievement in comparison with that of other children, they do not get detailed information on other children’s achievement.

The perceptions of the malleability of competences were measured with single items only, so that the internal consistency of the instrument could not be tested statistically. Such measuring is less reliable than examining the perceptions by means of multiple items, and the present study therefore provides a conservative test of the effects (cf. Jacobs, 1991). Such a single-item research design has also been used in other comparable interview studies measuring small children’s perceptions (e.g., Stipek & Tannatt, 1984). In the present study, questionnaires with multiple questions would perhaps not have brought reliable results, for the reading skills of some third-graders at least are not yet up to such a task. Though earlier studies have obtained results parallel to those obtained in the present study, concerning, for example, the effect of the grade level on perceptions of the malleability of competences (e.g., Kasanen et al., 2009) and also more generally to the effect that children acquire the school’s dominant notion of intelligence at the early stages in their schooling (Räty et al., 1999a, 2002a), it would still be important to re-examine in further work the items used in this study.

In the present study, we did not examine the possible influence of the children’s cognitive skills, as measured with ability tests, on the results. As pointed out above, the purpose of this study was not to analyse the results at the intraindividual but at the positional level (cf. Doise, 1986), i.e., to consider the child’s grade level as a position determined by his or her school experience. Besides, children’s gender and social background also tend to influence their results in ability tests, for children do not come to the tests as ‘just’ children but as representatives of certain social positions, such as gender and social class. The effect of gender and social class on test results has come out convincingly in research concerning the stereotype threat, in particular (see, e.g., Aronson & Steele, 2005; Spencer et al., 1999). However, results from ability tests would be useful to identify cases in which measured abilities clearly differ from self-assessed ones. It would be particularly interesting to examine how such differences showed up in children’s, their parents’ and their teachers’ views of the malleability of the child’s academic competences.

The explanations the children gave for their potential for improvement were found to be various, which led us to classify them into quite a few categories. Even though the classification proved to be a reliable one, the frequencies in many categories were low, which hampered the use of analysing methods. It would therefore seem useful in future work to develop a classification, on the basis of this study, in which children were invited to choose from ready-made explanations for their improvement potential. It would also be interesting to examine parents’ and teachers’ explanations for their perceptions of the child’s potential for improvement and the relations of these explanations to those of children.

In this study the perceptions of the malleability of competences were examined subject-specifically, and the school subject in question was expected to structure the
perceptions. And indeed, the children’s perceptions with respect to mathematics and Finnish were found to be different, and the school subject was also found to structure the parents’ and the teachers’ perceptions. Though mathematics and Finnish are pivotal subjects for the definition of the child’s educability, it would seem important in further work to also examine perceptions of the malleability of competences in other school subjects, such as handicrafts, art, and sports.

The participants in this study may have been a select group, for parents whose child was doing well at school may have been more willing to consent to the study and to personally participate in it than other parents. Indeed, quite a number of the parents invited failed to return the consent form. Besides, we were unable to include all responding parents in the analyses, for our sample included mothers and fathers of the same children, and their assessments could not be regarded as independent. The mothers excluded from the analyses were slightly more educated than those included\(^{10}\), which might have influenced the results concerning, e.g., the differences between the mothers’ and the fathers’ perceptions. In further research it would be interesting indeed to examine whether mothers and fathers assessing the same child differ in their perceptions of the malleability of the child’s academic competences. Moreover, the study included only eight class teachers, whose professional experience and experience with the class (i.e., how many years they had taught their current class) varied considerably, which may have affected their assessments. As the study included a relatively small number of participants altogether, rather simple statistical analyses were used; in future work, structural equation modelling, for example, might yield more insights into the topic.

As the study was cross-sectional, it could not give reliable information on changes in children’s perceptions; in further research, a follow-up study of school-aged children’s perceptions of the malleability of their academic competences would therefore be useful. Furthermore, as the study was limited to examining the relations among children’s, parents’, and teachers’ perceptions only, the assumptions made about certain influences, e.g., the effects of parents’ and teachers’ perceptions on children’s views, remain speculative. In addition, the study focused on subjective perceptions, and it would therefore be significant in further research to examine the perceptions of the malleability of competences in relation to the classroom practices observed. It would also be particularly significant to examine the relationship of the perceptions of the malleability of competences to other notions close to it, such as static and dynamic views of intelligence (Dweck, 1999).

As the data were collected from three schools only, located in the same town, the regional representativeness of the sample is limited. However, the schools were quite ordinary, e.g., in terms of the social characteristics of the neighbourhoods. Moreover, the differences among schools and the parents’ socio-economic levels are relatively small in Finland, e.g., according to the PISA results (OECD, 2004). There is, however, a need for cross-cultural studies, for the cultural values the pupils adopt and the differences in educational systems may relate to children’s learning (cf. Ciochina & Faria, 2009) and their views of intelligence (cf. Räty, Komulainen, Skorokhodova, Kolesnikov & Hämäläinen, 2011).

\(^{10}\) F(1, 90) = 3.77, p < .06
9.3 IMPLICATIONS

This study examined a theoretical model concerning perceptions of the malleability of academic competences and gained some new knowledge about the two-dimensionality of the perceptions and about their potential ties to the school context. In addition, it brought knowledge about the relations of children’s, parents’, and teachers’ perceptions and the connections of these perceptions to social positions, in this case the parents’ education and the children’s grade level and gender. From the point of view of theory elaboration, it would be important, though also challenging, in future work to examine the manifestations of malleability perceptions in classroom work, in the actions of pupils and teachers. It would also seem important to examine classrooms with different teaching orientations from the point of view of their restrictive and promotional practices.

In this study the perceptions of all the principal actors of the school manifested a self-serving attribution pattern: The children who were seen as doing poorly were perceived as capable of improvement, whereas the children who were seen as doing well were considered to have more stable competences. On the one hand, this reflects a notion of equality and confidence in every child’s possibilities of learning, which may actualise in the school’s promotional sphere in the form of motivating and encouraging children, for example, and arranging special support when necessary. On the other hand, these findings indicate that good performance is often attributed to talent or ability rather than effort and practice. Even if the attribution to talent were not detrimental to successful children’s learning and self-concept at first, it may turn detrimental later on, e.g., in junior high school, when the learning materials become more demanding and the children are more likely than before to face failures in their learning.

The self-serving attribution pattern may also be seen as a coping strategy for the actors of the school to endure the schooling and the related pressures of comparison and assessment. Indeed, we have recently seen news of school-related burnout among young people, girls in particular, which has to do with excessively high demands and feelings of inadequacy\(^1\) (Salmela-Aro, Kiuru, Pietikäinen & Jokela, 2008). There has also been talk of anxiety, even fear, related to mathematics in particular\(^2\) (cf. also Hannula, 2002). The results of the present study suggest that children may adopt a relatively stable notion of competence in mathematics at a fairly early stage in their schooling. This may well give rise to a fear of mathematics. As a protective measure, the child may stop trying lest her/his assumed low ability be exposed, which may lead not only to punishments and negative attitudes from the teacher (cf. Matteucci, 2007) but also to impairment of performance at school.

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The child’s views on whether s/he can improve her or his school performance are thus not only significant for the performance itself but are also of wider significance for the child’s self-concept, self-respect, and wellbeing. It is therefore important that the parents, teachers, and the child him/herself believe in the child’s chances of doing well. Thus it is also important for research to bring out factors that affect children’s perceptions as well as such differences in the perceptions as may bring inequality to children’s schooling.

At the same time as competition and comparison seem to be on the increase at school, the individual learning process and cooperation among pupils are emphasised in educational discussion. On the basis of this study we can conclude that the assessment of educability and children’s academic self-concept are still based on the restrictive, not the promotional, sphere of education. Our current day-to-day classroom practices are in fact a case of a relationship between the two spheres: both differentiating and promotional practices are in evidence, and though it is unrealistic to expect normative assessment to disappear altogether from our current school, one can boost the share of the promotional sphere in day-to-day classroom work.
References


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This study presents a new model of examining children’s and their parents’ and teachers’ perceptions of the malleability of the child’s academic competences. These perceptions are examined in relation to the restrictive and the promotional sphere of education at school. The results suggest that all the school’s actors exhibit a self-serving attribution pattern, which not only indicates their willingness to believe in the children’s learning potential but also reflects a perceived association of good achievement with talent rather than effort.