DOES THE CREAM ALWAYS RISE TO THE TOP?
Correlations between pre-school academic giftedness and perceptions of self, academic performance and career goals, after nine years of Finnish comprehensive schooling

Academic dissertation to be publicly examined, by permission of the Faculty of Education, University of Joensuu, in Building Educa, Lecture Hall P1, Tulliportinkatu 1, on Friday, 31 January 2003, at 12 o’clock noon.

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DOES THE CREAM ALWAYS RISE TO THE TOP? Correlations between pre-school academic giftedness and perceptions of self, academic performance and career goals, after nine years of Finnish comprehensive schooling


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Keywords: potential, gifted education, academic performance, school adjustment, future aspiration, expectancy motivation, self-concept, self-worth, person-environment-fit, individualized learning

Abstract

There is considerable controversy regarding whether students who are academically gifted can or should be identified as such. The criticisms mainly centre on the inaccuracies inherent in such identification and the risk that it may engender a sense of academic elitism in the children. This two-phase longitudinal study (1989-1999) sought to determine whether children who were identified as being potentially academically gifted at pre-school but who received virtually no assistance by way of special programs or other support measures aimed specifically at gifted students, would emerge at the end of their nine years of Finnish comprehensive schooling with higher academic grades, school adjustment, career goals and a realization that they were more academically talented than their peers. In 1989, a group of 40 students were identified as being potentially gifted while a Control group (n=161) was also formed from those students not considered to have such academic potential. Selection was done by the Breuer-Weuffen Discrimination Test (BWDT).

The theoretical framework of this study was based mainly on the following approaches which are social constructivist, self-perception, person-environment-fit, and aptitude-interaction theories. According to these chosen approaches, most children come to school with great eagerness and expectations to learn. However, students’ motivation to learn has shown to diminish dramatically since children enter school, and especially, after they have
transferred from the elementary to upper secondary school. This has been stated to be related, for example, to the changes in the children’s developing self-perceptions, children’s adjusted learning values and changes in the learning environments. Additionally, it has been stated that to maintain learning motivation, especially among the gifted learners, learning activities need to be challenging and self-determined enough to be interesting and simultaneously valued by significant others. These ideas are closely tied to Vygotsky’s (1978, p. 163) formulation concerning the concept of the zone of proximal development (ZPD) which makes assumption that that instruction should be designed to be just beyond the students’ current level of development. From this perspective, it was considered possible that average teacher controlled whole-class instruction which is common to the Finnish educational system may not often meet the cognitive needs of gifted children and thus such instruction can threaten development of academic motivation and self-concept. It was assumed that the signs of maladjustment could be found and examined in students by measuring their school achievements, school adjustment, self-perceptions, learning interests and future career goals.

It is obvious that academically gifted students exhibit higher academic performance, that they form a more positive academic self perception than average students, they usually adjust better to the school system, they have higher academic goals and school plays important role in their life. However in this study, because there was neither specific support mechanisms nor the early identification procedures used for the identified group of potentially gifted children, these very same issues were being investigated. The questions which arose followed four major research themes: academic achievement, school adjustment, self-concept profile, and future aspiration. Moreover, self-concept profile offered an additional indicator concerning fulfillment of the academic giftedness. It has been stated that there is a strong correlation between children’s academic self-concept and their sense of Global Self-Worth, in that school and school achievement generally figure strongly in the lives of average children (Harter, 1996, p. 26). Where such a strong correlation exists it has been interpreted as an indication of the importance and relevance of school in the child’s life. In this study, it was considered possible that school was not considered to be challenging and relevant for those in the potentially gifted group. The formed variables related to the question themes were simultaneously considered as relative indicators of the fulfillment of academic giftedness in terms of this study.

Quantitative analyses showed that the Experimental group scored significantly higher than the Control group in terms of final school grades, while their school adjustment, which was assessed for each gender by the
specifically developed School Adjustment Questionnaire (SAQ), showed higher scores mainly for the girls of the Experimental group. Girls had significantly higher scores on areas such as Learning Behavior, Learning Experiences, and Internalized Value of Learning when compared with the girls of the Control group. The boys of the Experimental group showed significantly higher adjustment only on the area of Learning Behavior when compared with the boys of the Control group. According to findings, the higher scores in the BWDT have facilitated girls of this study to adjust better to the school as their counterparts whereas boys of this study were relatively homogenous regardless of the measured differences in pre-school phase. Findings concerning future aspiration brought parallel information indicating that the girls of the Experimental group had significantly higher academic goals than the boys. Scholastic Competence of the Experimental group, assessed by Harter’s Self-concept Scale for Children, was significantly higher than that of the Control group. There were no statistically significant differences among the groups with respect to the other SC domains. However, the correlation between Scholastic Competence and Global Self-Worth within the Experimental group was found to be considerably lower than in either the Control group or earlier studies.

It was concluded from the findings that, despite having received no specific support, these potentially gifted children outperformed their peers academically, they had adjusted better in school, they were aware of their own academic excellence and they, especially girls, had both higher educational and vocational aspirations. It was also concluded that the identification of potential academic excellence at a pre-school level was relatively accurate. Thus, this study showed that there were potentially academic gifted children among Finnish average children and that they could be identified before school-age by using the BWDT. However, it was of considerable concern that the gifted students in the Experimental group had low correlation between their Scholastic Competence and Global Self-Worth, as this was interpreted as an indication that they viewed their school experiences as lacking challenge and relevance (Harter, 1996), so that they were at risk of joining the ranks of gifted underachievers. Additionally, because the boys of Experimental group had assimilated lower academic interests and lower both academic schooling and career aspirations than their female counterparts it was concluded that especially the academically able boys could benefit from the implementation of those curriculum and counseling modifications which could help them to consider their abilities important and valuable. Without special implications Finland seems to be in danger of loosing the academic potential of its gifted learners.
Risto Hotulainen

NOUSEEKO KERMA AINA PINNALLE? Esikouluiän akateemisen lahjakkuuden yhteys oppilaiden minäkäsitykseen, koulumenestykseen ja ammattitoiveisiin suomalaisen peruskoulun päätösvaiheessa.


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Avainsanat: potentiaali, lahjakkuus, lahjakkaiden opetus, koulumenestys, koulusopeutuminen, odotukset, motivaatio, minäkäsitys, itsetunto, yksilön ja ympäristön yhteensopivuus, oppiminen

Tiivistelmä


Tutkimuksen ongelmaa lähestyttiin pääasiallisesti sosiaalis-konstruktivistis-, minäkäsityksen kehitys-, yksilön ja ympäristön yhteensopivuuden ja oppimistaipumuksen ja opetuksen vuoroaikutus-teorioiden näkökulmista. Yhteistä valituille lähestymistavoille on se, että niiden mukaan lapset aloittavat koulutuksensa hyvin uteliaina ja oppimishaluisina. On kuitenkin todettu, että oppilaiden oppimismotivaatio vähenee huomattavasti koulun aloituksen...

Edellä mainittujen teorioiden perusteella tehtiin oletus, että Suomalaiselle koulutusjärjestelmälle tyyppillinen ja etenkin vuosiluokilla 7 - 9 yleisesti käytössä oleva aine- ja opettajakeskeinen luokkaluokka ei kohtaa esikoululääksessä akateemista lahjakkuutta osoittaneiden oppilaiden kognitiivisia tarpeita, minkä johdosta kyseinen opetus voi muodostaa uhkan kyseisten oppilaiden koulusopeutumiselle sekä oppimisyönteisen motivaation että oppimisesta arvostavan minäkäsityksen kehitykselle. Tästä ongelmapäätelmästä on päätynyt myös Yahkjavuoden tutkimus, jonka mukaan parhaat oppimistulokset on saavutettu silloin kun oppimistilanteet ovat suunnitellut juuri lapsen kehitystason yläpuolelle (vrt. Zone of Proximal Development).

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Tutkimuksen kvantitatiiviset analyysit osoittivat, että koeryhmän menestyvi peruskoulun päättöarvosanojen mukaan tilastollisesti merkitsevästi paremmin kuin kontrolliryhmä. Koulusopeutuminen, jota arvioitiin tutkimusta varten kehitetyn Koulusopeutumismittarin mukaan, oli merkitsevästi parempi koeryhmän tytöillä kuin kontrolliryhmän tytöillä usealla testin osa-alueella, joita olivat: Oppimiskäytäntöyminen, Oppimiskokemukset ja Sisäistetyt Oppimisen Arvot. Koeryhmän pojat saivat merkitsevästi korkeampia arvoja ainoastaan Koulusopeutumismittarin Oppimiskäytäntöyminen osa-alueella verrattuna kontrolliryhmän poikiin. Tulokset oppilaiden tulevaisuuden kou-
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My gratitude goes also to professors Kari Tuunainen and Markku Ihatsu for their advice and supervise earlier on and professors Kari Uusikylä and Jarkko Hautamäki for their comments on the final draft of this thesis.

Related to my study interest I had a great opportunity to study during the years 1998-2000 at Ludwig-Maximillian-University in Munich, Germany. In this international Excellence program I managed to meet academics and students from different locations of the world who shared the same study interests. In concluding phase in the Excellence program when I was expected to write master’s thesis related to my ongoing study project I got involved in two supervising professors who offered me excellent advice and who helped me to see the world in the eyes of scientist. First, I would like to thank Letiticia Hernandez de Hahn for introducing me world of statistics and scientific language. Second, I own my deepest gratitude to professor Neville Schofield who inspired me to go deeper to my study theme and helped me to clarify constructs related to my study. Neville also read my last draft of my doctoral dissertation and provided invaluable proposal and corrections for my English grammar. For this reason I own innumerable thanks to Neville. For the friendship and help in studies in the Excellence program I would like to thank my study colleges Ainhoa, Christine and Markus who showed me various ways how to understand, learn and enjoy life.

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Helsinki, during Christmas, 2002

Risto Hotulainen
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1 Introduction

Sufficient food, increasing pollution, the global greenhouse effect and limited energy resources are issues of universal concern which call for the application of the most innovative and creative solutions. To that end, the world has an obligation to develop those persons with exceptional ability to the limit of their potential. However, in order to achieve this aim, individuals need to be challenged in their area of potential expertise from an early age while also experiencing a considerable degree of self-determination and support (cf. Deci & Ryan, 1992, p. 10; De Corte, 1995a, p. 68). Unfortunately, this emphasis on individual development is not necessarily a feature of the Finnish school system, where educational objectives have primarily focused on the needs of the average child.

Possible reasons for Finland not having such support programs may lie firstly in Scandinavian educational tradition which emphasizes equal rights to free basic education for all and a guarantee for everyone of an equal opportunity to obtain other education besides basic education according to their abilities and special needs. A second reason lies in both a lack of educational resources which is common to most educational systems and a lack of relevant information regarding the needs of the gifted in Finland. In a restricted-resource system, the allocation of funds to the special treatment and research of those who might otherwise appear to be coping well is often hard to justify and this is probably the main reason why educational policy makers in Finland have until now ignored the special need for resources in gifted education and research. However, such a perspective is definitely limited. First, from the theoretical point of view, gifted children, just like all other children, need to have their individual educational needs assessed as early as possible. They also need to receive educational services that help meet their needs (Fetterman, 1988, p. 1) because both their self-concept and motivation are threatened by prolonged use of compensatory strategies and basic level materials in the educational process (Van Tassel-Baska, 1993, p. 383). For this reason challenging content with a focus on creative ideas and independent learning opportunities are claimed to be essential to foster developing academic potential. Second, the educational policy makers perhaps have overlooked the advantages of the gifted education because probably the best way to extend our practical knowledge of how to help young people and adults to make the best of their lives and maximize their chances of being competent and self-fulfilled individuals is to examine the lives of those people who have been the most successful ones (Howe, 1995, p. 33). By
studying gifted, talented and experts, it is possible to help regular, sometimes underachieving, individuals to become more like studied subjects which in the long run can allow the whole educational policy system to achieve more effectively its goals of education. This perspective has obviously not been among the objectives which could characterize the Finnish educational policy and its research. For example, up to now, according to Moberg, Strömmer and Tuunainen (1996, p. 535), only a few master’s theses in Finland have addressed issues concerning “giftedness.” This represents less than 1% of all finished master’s theses in the area of special education in Finland, while the percentage of doctoral theses that discuss giftedness is even smaller. Consequently, the need for research related to gifted students has already been widely acknowledged by the leading special educational scholars in Finland (e.g., Moberg & Tuunainen, 1989; Hautamäki, Lahtinen, Moberg, & Tuunainen, 1993; Uusikylä, 1994; and Määttä & Lummelahti, 1997).

In response to this situation, the objectives of this two-phase longitudinal field study were: to examine how children, who exhibited potential academic giftedness in pre-school (6-year-old), were performing academically; how they had adjusted to the school environment; whether the profile of the self-concept of the potentially gifted children would differ from the average Finnish ninth graders; what kind of educational and occupational aspiration they had at the end of the Finnish comprehensive school; and what were their real educational choices for secondary schooling with respect to the average population.

1.1 Background of the study

I started my Class teacher studies in 1987 at the University of Joensuu. During the first two years I studied basic teaching skills. In autumn of 1988, I met Dr Kari Ruoho, a specialist in Special Education at the University of Joensuu, who was doing research on pre-school children and I had the possibility of taking part in his project. My role was to follow the progress of children who had shown advanced verbosenso-motor abilities during pre-school and their adjustment to the Finnish comprehensive school. In the beginning of the study pre-school children (6-years-old) were classified by the German based Breuer-Weuffen Differentiation Test (BWDT). Breuer and Weuffen (1990) have argued that the verbosenso-motor status (VSM) is highly correlated with the later cognitive development of the child. Briefly, verbosenso-motor status represents a combination of the five language-related differentiation abilities, namely, optical, phonemic, kinesthetic,
melodious, and rhythmical. In particular, high levels of verbosenso-motor abilities have been shown to be directly linked with the acquisition of written language (Breuer, 1981; Breuer & Weuffen, 1986; Ruoho, 1990). In this developmental process, a child’s environment is considered to be the central factor which facilitates children higher levels of verbosenso-motor status. Originally the BWDT was developed to identify and prevent possible learning deficiencies in pre-school or kindergarten children, but its role in the early identification of gifted children was also acknowledged (Breuer et al., 1982). To this end in the first phase of this study (1989-1992) the BWDT was used to select potentially high achievers among six-years-old pre-school children (n=212) at Joensuu Daycare Center in Finland. The children selected for the study were those who did well on that test. Because the cognitive tests indicated parallel results, the study group (n=40) was called potentially gifted children. While doing research with Dr. Ruoho I became very concerned about these children. I wondered how well they were going to do in the Finnish school system, whether they would be bored or highly successful, and whether they would “vanish” among ordinary children. For this reason at school, students’ potential academic giftedness was assessed by interviewing the classroom teachers after the children had completed first grade. The questionnaires showed statistically significant differences (p<.05) between the potentially gifted and the other children with respect to skill development in areas such as language, memory, learning and physical. These skills enabled the potentially gifted children to do better at school than the control groups did at that time according to class teachers (Hotulainen, 1993). Moreover, the semi-structured verbal school reports indicated somewhat parallel results, although non-significant differences were found at the end the second grade. Thus, according to results gained in the first study phase in 1993, these potentially gifted children were doing well and showing generally better adjustment on schooling as their relative counterparts during first two years of comprehensive school. To sum up, in Phase I of the study, the children who exhibited potential academic giftedness in pre-school could be identified by using the BWDT. Consequently, according to the results obtained in Phase I, these children had the potential to become at least high achieving students.

In 1996, I became increasingly interested in different motivational constructs and what kind of roles they play with respect to gifted performance. I became aware that neither higher school achievement nor neatness during the lessons are necessarily indicators of academic giftedness. For example, an interesting question concerning fulfillment of the academic giftedness rose from educationally oriented gifted theories. Authors of these theories have argued
that fulfillment of the gifted potential is attainable only when appropriate educational circumstances and special instructional adaptations, which meet the needs of the gifted learners, are taken into account in education. Otherwise, for example, curiosity and motivation of the gifted learners are argued to diminish or even disappear when they go through non-challenging and non-supporting educational systems. Moreover, mismatch between cognitive development and unchallenging learning environments has been claimed to promote maladjustment among gifted learners.

In 1997, when I considered these questions more deeply, I faced a limited number of published studies related to gifted students and learning in Finland. This lack of research findings concerning gifted children led me to clarify the situation of gifted education in Europe. When exploring this I got involved with Professor Kurt Heller from the University of Munich who invited me to take part to the Excellence Program which was precisely founded to concentrate on the themes which I was searching for. For example, one of the main objectives of the Excellence Program is to educate “…teachers, counselors, researchers and administrators who are sufficiently aware of how to identify, foster and translate raw talent into productive outcomes that are then of benefit to all humanity” (Psychology Excellence Program brochure, 1999, p. 1). As a part of this post-graduate two-year-study in the Excellence Program (1998-2000) I was expected to accomplish a six-week-internship study in an English speaking country in school organization dealing with giftedness and its promotion. In my case, the internship took place in Newcastle, Australia, where I had an opportunity to get familiar with educational policies related to gifted and talented children and youth. Principally, I was involved in both the situations which had close relevance to planning and implementation of the programs and in practical teaching and counseling situations that had particular relevance to giftedness. As a consequence I became even more concerned about my study population because both my special studies in Munich and internship experiences managed to convince me of the necessity of the educational adaptations which should correspond to the needs of the high ability learners to help them to keep their academic motivation alive and fulfill their potential.

Because there are no such educational adaptations existing in the Finnish comprehensive school system I felt that my study could clarify how children who exhibited potential academic giftedness in pre-school phase have managed to keep their learning motivation alive through the Finnish comprehensive school and how well they have adjusted to the existing school system, and also whether there were differences with this respect when comparing them with regular students. According to the recent motivational approaches,
children are considered to be more active and more likely to engage in activities and show more advanced school-achievement behavior if they believe that they can complete the given tasks with some degree of success and if they believe that they have also some degree of control over the predicted outcomes (e.g., Deci & Ryan, 1992, pp. 12-13). Here motivation to learn is considered as a developmental process associated with the development of giftedness. Earlier studies have shown that gifted students must be offered challenging and supporting environments that will allow them to test their skills, develop independent thinking, develop perceptions of competence and maintain their value of learning (e.g., Corno & Snow, 1986; Cheng, 1993; DeCorte, 1995a). However, it has also been claimed that feeling competent is not enough for positive engagement with school activities. Parents and teachers may assume that since gifted children are so bright, there is no need to compliment them or to provide them with positive feedback. Such a practice is however questionable especially if the goal of education is to produce life-long learners who value learning and are eager to fulfill their potential.

To sum up, the main question themes for this study emerged from the area of the fulfillment of academic potential. On the basis of my studies abroad and numerous theoretical arguments for and against gifted education, the second phase of the study was designed to clarify whether children who exhibited academic giftedness in pre-school age (6-years-old) school achievement, school adjustment, self-profile and future aspirations would differ from average students in the end of the Finnish nine-graded comprehensive school.

1.2 Aims of the study

This research reports on a two-phase longitudinal ten-year field study of Finnish children who exhibited potential academic giftedness in pre-school age (6 years old) and how they manage in the Finnish nine-graded comprehensive school. It is almost a truism to say that gifted students exhibit higher academic performance, that they form a more positive academic self image than average students, and that they usually adjust better to the school system and they have higher academic goals. However in this study, because of the lack of specific support mechanisms and early identification procedures used for these potentially gifted students, these very same issues were being investigated. Thus, the objective of the second phase of this longitudinal study project was multifold.
In the first instance, it sought to examine how children who exhibited potential academic giftedness in pre-school (6-year-old) were performing academically at the end of the Finnish comprehensive school when compared with their peers who did not have the same potential according to base-line measurement.

A second question theme rose from the basis of the reported adaptive instructional needs of the academic gifted children. According to Person-environment fit theory, the mismatch between the high able students’ preferences and opportunities for decision making could predict negative consequences for those students whose needs are not being met (Wigfield, Eccles, Maclver, Reuman, & Midgley, 1991, p. 560). When these needs are not met, as numerous studies related to the junior-high environments have shown (e.g., Harter, 1996, p. 15; Eccles, Midgley, Wigfield, Miller Buchanan, Reuman, Flanagan, & Mac Iver, Eccles, 1993, p. 91) such environments are likely to lead to a poor person-environment fit, and this lack of fit could account for declines in motivation. Moreover, according to Corno and Snow’s (1986, pp. 620-624) Aptitude Treatment Interaction theory, school instructions should be adapted to individual differences among the learners. In this sense, the most able students would profit most from “inductive teaching” (inquiry teaching, discovery learning) along low instructional mediation instead of “receiving teaching” along with high instructional mediation. When these instructional adaptations are not taken into account the mismatch between the educational instruction and developmental level of the child is likely to occur (Corno & Snow, 1986, p. 620). As a result, also high ability able students can gradually acquire an extrinsic learning orientation, including, for example, preference to the easy tasks and superficial learning habits which does not necessarily mean that they achieve at the low level (Risemberg & Zimmerman, 1992, p. 98). In addition, because recent studies related to social motivation have shown that peer values of adolescents have increasingly stronger equalizing influence on the both school adjustment and different facets of the perceived self (e.g., Annala, 1986, p. 32; Juvonen, 1996, p. 49), and because there were neither special curriculum adaptations nor program mechanisms in the Finnish educational system for these potentially gifted students, the present study chose a position where it was assumed that there would be no differences between children who exhibited potential academic giftedness in the pre-school age and average children with respect to the following school adjustment variables: learning behavior, learning experiences, internalized value of learning and school-instruction-fit. To study introduced school related aspects in students the School Adjustment Questionnaire (SAQ) was developed.
Thirdly, the study sought to examine the profile of the self-concept of the potentially gifted to determine whether it differed from that of the average Finnish ninth graders. The main contributions concerning the construct of the self for the present study come from the studies of Prof. Dr. Susan Harter (1983-1999). According to her theoretical arguments, the self is constructed in reciprocal interaction with language development (Harter, 1983a, p. 294). Assimilated words and concepts form the frame in which the self can be defined and the level of cognitive development of the child determines the structure of these definitions. In this developmental process the environment and self-related experiences of the child play the major role. When self-related experiences which can be called expectancy beliefs, have positive properties, for example, in terms of success, control and pride, they can predict quite closely later levels of engagement; in the other words, motivation, in similar tasks. It has been stated that to perceive oneself as more academically competent and more motivated a child needs to be challenged, their achievements should be recognized and simultaneously considered desirable and valuable within the surrounding community (Rimm, 1997, p. 418; Butler-Por, 1993, p. 660). With this respect, the Finnish school system may not be prepared to meet the needs of gifted children because the educational objectives are mainly concerned with the regular students and their equal study goals. Actually, the self-concept and motivation of the high ability children are argued to be in danger in similar educational systems (Van Tassel-Baska, 1993, p. 383). In this study, it was considered possible that the potentially gifted students had experienced a loss in academic self-concept, which was not commensurate with their actual ability and performance. Additionally, Harter (1996, p. 25) has argued that, for most children, there is a strong correlation between their academic self concept and their sense of Global Self Worth, in that school and school achievement generally figure so strongly in the lives of children. Where such a strong correlation exists, it has been interpreted as an indication of the importance and relevance of school in the child’s life. In this study, it was considered possible that school was not considered to be challenging and relevant for those in the potentially gifted group. If they were truly gifted and since there were no specific provisions to extend students with high academic ability, these children had probably experienced boredom and frustration throughout their school career, making school and academic pursuits relatively valueless (cf. Harter, 1996, p. 25). For this reason it was assumed that there could be differences between the study groups with this respect. In this study, Harter’s (1983b) Self-Concept Scale for Children (SCSC) instrument was used to disclose if there were differences with respect to self-concept profiles between children who exhibited
potential academic giftedness in pre-school and average students at the end of the Finnish comprehensive school.

Fourth, school adjustment, self-concept and related processes are frequently posited as mediating variables that facilitate the attainment of other desired outcomes. In education, for example, research suggests that the attainment of a positive academic self-concept affects academic behaviors, academic achievement, and subsequent academic goals such as educational and occupational aspirations (Marsh, 1993a, p. 59). For this reason, this study also planned to examine if the students’ both educational and occupational aspirations would differ between the study groups and how the presented motivational variables would predict their choices with this respect and if this value formation would show differences between the study groups. The mentioned SAQ was developed also to produce needed information concerning this demand.

These were the four fundamental question themes which guided the second phase of this study. The chosen variables related to the study themes were simultaneously considered as relative indicators of the fulfillment of academic giftedness in terms of this study. The main information-gathering techniques were school reports, school adjustment measurement, essay-writing, self-concept measurement, and school follow-up cards. This study was carried out at the University of Joensuu.
2 About academic giftedness and its early identification

Despite the fact that the gifted population and their special needs have been recently recognized almost worldwide, including in Scandinavia, the progress in understanding high ability and talent has traditionally been hampered by a lack of an agreed theoretical foundation of giftedness and the concepts involved. From an historical point of view, the theories and definitions related to giftedness have been more or less arguments for or against organic (nature) or environmental (nurture) factors which have an influence on the existence of the gifted individuals and their performance (Mönks & Mason, 1993, p. 89). In the context of this study, it was not possible to go too deeply into this, but given that many eminent researchers in the area of giftedness (e.g., Sternberg, 1997; Gardner, 1983, Tannebaum, 1993; Renzulli, 1998) have recently argued that, provided the child has the necessary ability levels to reach gifted level performance, then there is a subsequent necessary interaction between both the cognitive and social development of the child (Freeman, 1995a, pp. 25-27). In other words, the latest research in this area has demonstrated that giftedness is attainable and it can be developed in some people if an appropriate interaction takes place between an individual, his or her environment, and a certain domain of human venture. This notion is especially useful when widening the discussion to include special gifted groups such as underachievers, students from disadvantaged backgrounds, or any other population which is not identified in traditional ways.

In this study the focus was on the interaction between the individual and his or her environment, how this interaction was perceived from the view of a target population, and how these connections were reflected both in their school-related achievement, various motivational constructs and school adjustment over a ten-year period. In this study, the target population consisted of potentially gifted children whose “academic development processes” were examined at the end of the Finnish nine-graded comprehensive school. In the following section, definitions of academic giftedness, potential giftedness, and early antecedents of academic giftedness with regard to the target population will be more closely described.
2.1 Potentially gifted and gifted

Recent research has shown that giftedness is not an innate quality such as eye or skin color or the formation of ears, which has meant that giftedness is viewed as an attainable competence or ability that can be nurtured and developed to some degree in every person. As De Corte (1995a) stated, “the substantial amount of current empirical work supports the conception that outstanding performance is acquired as a result of intensive and persistent training, experience and practice under optimal environmental conditions” (p. 68). In fact, children’s acquisition of learning techniques comes from their social context, and accordingly the parents and teachers are responsible for passing on thinking and learning strategies, such as self-regulation (see Jakku-Sihvonen & Etelälahti, 1997, p. 402). For example, according to Borkowski and Büchel (1983, p.134), a growing body of memory research indicating that learning differences both in specific deficits and advances may be more strategic than, for example, attentional in nature. Thus, abilities such as thinking do not develop spontaneously, but instead have to be actively promoted by adults in their interactions with young children (Freeman, 1995a, p. 22). Thus, in terms of abilities, both adults and children can be described as exceptional. In the case of children, however, the exceptionality takes the form of a potential rather than of concrete gifted level achievements, since such achievement levels frequently require highly developed technical skills or extensive life experience, and thus, have often taken years to bring to fruition (Cropley, 1995, p. 99; Schneider, 1993, p. 315). Some children and their parents, teachers and coaches have been more successful in this respect than others in developing a higher level of, for example, physical or intelligent functioning at an early age. For example, from the point of Expertise theory, superior performance by very young children without prior instruction, which is actually more than rare, may suggest exceptional promise, leading to the early onset of training. This in turn can lead to consistently greater accumulation of practice and hence exceptional performance in adult age (Ericsson, Tesch, & Römer, 1993, p. 365). If one leaves the field early, there is neither expertise nor fulfillment of the talent. That is one reason why the potential is seen as something that calls for the appropriate circumstances to be fulfilled. On the other words, the ability can develop when a person has an opportunity and the ability to profit from opportunity, and the characteristics needed to hold on to opportunity. According to Howe (1995) “exceptional people may climb higher than the rest of us do, and they may climb faster and more efficiently, but they need to climb all the same, just like all the others do” (p. 35). No-one makes short-cuts on the way to the top achievement.
Nevertheless, after a certain point in the development process of the person, it has been possible to identify that some individuals have a greater capacity than others for development in a particular domain when the opportunity is offered (Gardner, 1995, p. 201). For some children this can mean swimming, playing violin, chess or mathematics for others. Such individuals have generally been identified as “having potential giftedness”. For example, according to Sternberg’s (1993, p. 186) Pentagonal Implicit Theory of Giftedness, such children have been labeled as having the potential for later gifted performance. Lately, also Gardner (1995, p. 202) has defined that the seven intelligences named in his book Frames of Mind present biological and psychological potential, which are “…capable of being realized to a greater or lesser extent as a consequence of the experiential, cultural, and motivational factors that affect a person” (p. 202). Actually, the gifted are often the ones who have already excelled, because they have gained some type of recognition from the members of surrounding societies or who have been judged to be gifted (Sternberg, 1993, p. 187). Consequently, the “potentially gifted” are defined only from the basis of the definition of “gifted”, which is used in this particular domain. Those individuals who were assessed as gifted or who were just called “potentially gifted” possessed characteristics which had the potential to make them like those already classified as gifted in a particular domain. In the first phase of this study, the Experimental group possessed both advanced verbosenso-motor abilities at the preschool age, along with specific characteristics which were observable to their pre-school and class-teachers. These characteristics were taken as attributes which would facilitate performance at an above-average academic level in a Finnish comprehensive school. However, the Finnish school system has traditionally offered neither special educational services for the target population, nor a high degree of independent learning instructions, both of which have traditionally been seen as requirements for the educational needs of gifted and high able students (cf. Gallagher, 1975, p. 10; Van Tassel-Baska, 1993, p. 365). Therefore, it is assumed that the Experimental group has not reached its full level of potential in the Finnish comprehensive school system.

2.2 Academic giftedness

In general “Academic Giftedness” might also be called test-taking or lesson-learning giftedness which exist in the school context. It is the competence most easily measured by normative IQ or other cognitive ability tests, and for
this reason it is also the type most often used in identifying processes to assess suitable students for entrance into special programs. The abilities children perform in these tests are parallel to abilities valued in everyday school learning situations. In other words, these measurements are similar to the situations the children usually meet in formal learning situations. According to research, the students who have managed to be successful in these tests have also performed at a high level in school. Furthermore, research has reported that both these dimensions have been relatively stable throughout the school years. According to Renzulli, “the results of this research should lead us to some very obvious conclusions about academic giftedness: it exists in varying degrees; it can be identified through standardized assessment techniques; and we should therefore do everything in our power to make appropriate modifications for students who have the ability to cover regular curricular material at advanced rates and levels of understanding” (1998, [online]). From this point of view it was interesting to study if advanced verbo-senso-motor abilities measured in the pre-school age would have the same lasting properties as cognitive ability tests and if the students of the Experimental group had noticed that they are in need of extra and more challenging educational treatment.

Actually, most studies which have been carried out in the area of giftedness are those dealing with school. The earliest studies have tried to find individual differences which could be used as predictors that explain success in school and also later in life. The most well-known study related to gifted students will now be introduced, because it will offer a good preview in regard to the history of the research on gifted students in a longitudinal form. This pioneering longitudinal study has had a great effect on gifted studies and gifted education till now (Renzulli, 1998 [online]). The criticism against it will be presented after the presentation of the study.

One of the most well-known studies concerning school-related giftedness was accomplished by Terman (1959). The objectives of Terman’s investigation were (1) to find the typical characteristics and behaviors of intellectually superior children, (2) to show how well these children turn out, and (3) which factors influence their later achievement. Terman also hoped to show that having a high IQ as a child was a good predictor of achieving eminence in adulthood. The study included 1528 subjects (857 males, 671 females), whose ages ranged from 8 to 12 years. First, all classroom-teachers of the grades three to eight of the California schools were asked to name the brightest, the second brightest, the third brightest, and the youngest child in the room. These nominated children were given a group intelligence test (National Intelligence Test, Scale B). Those who scored promisingly high on
the group test (the top 10% of the group) were given an individual examination on the Stanford-Binet-Intelligence-Test. The criterion for inclusion into the Gifted Group was an IQ of 140 or above on the Stanford-Binet-Scale, because this made sure that the study included the highest 1% of the school population in general intelligence. The next waves of questionnaires focused on education, work, and marriage (in 1936, 1940, and 1945). In the 1950, 1955, and 1960 questionnaires, marriage, family, and career accomplishments were the topics. Other follow-up surveys (in 1972, 1977, 1982, 1986) focused on the life cycle of the gifted group, on aging, retirement, family, and reflection. The results from this longitudinal study showed that the mean IQ of the members of the gifted group was 151.5 among the boys and 150.4 among the girls (mean 151.0 for both). Concerning the family background, Terman found that the gifted students came from all kinds of homes, but the majority were the offspring of intellectually superior parents. With regard to the physique and health of the gifted group, it was shown that they were physically and mentally healthier than the children of the general population and that they showed signs of precocious development from infancy. Concerning the educational history, Terman reported that 21% of the gifted children skipped the low first grade and the entire first grade was skipped by 10%. Terman summarized that the interests of the gifted children were multifaceted and spontaneous, that they learned to read easily and that they had read more and also “better” books than the average child. In addition, they engaged in a wide range of childhood activities and acquired more knowledge of games than their average peers. Six years later (in 1927-28), the majority of the gifted group was in high-school and was still highly superior intellectually. The tendency to perform at a high level in the academic area was stated to be parallel in later life.

Despite convincing results for the significance of IQ for later success in academic life, some criticism also arose against Terman’s “Genetic Studies of Genius”. One important point was that Terman had a disproportional number of boys in his final sample. This probably occurred as a result of the teachers’ nomination, who may have been biased to the assumption that boys had more academic promise than girls. For example, Gottfried and Gottfried (1996, p. 180) showed in their much smaller longitudinal study of high-IQ children that, based only on IQ scores and no teacher nominations, equal numbers of high-IQ boys and girls were identified. Another bias of the teacher nomination could be that the teachers probably picked their most high achieving, all-round students and overlooked children with only one strength (for example, in language but not in math), troublemakers, highly creative children, or underachievers. In addition, it was later possible to
judge that Terman’s study excluded two Nobel-prize winners, who would have been the most eminent persons among the study population.

Nevertheless, the results from this particular study have formulated the whole concept of giftedness and intelligence in the direction that both these aptitudes have been seen as something fixed that some people have and some do not. Unfortunately, these wide spread rumors and definitions have certainly affected the minds of students and educators throughout the world, and probably even scholars and their teaching practices and behaviors. The perceptions which consider intelligence and giftedness as something stable, such as intelligence tests scores usually do, feed people’s beliefs about themselves which can be called self-theories (cf. Dweck & Legget, 1988, p. 263). These beliefs can form different psychological worlds, leading persons to think, feel and act in different ways in identical situations (see also Dweck, 1999, p. iii). According to Kail and Pellegrino (1985, p. 45), the most common IQ-test; the Sandford-Binet –test, was originally developed based on Binet’s and Simon’s test, which was planned to identify students who would not probably manage to attain objectives of the Paris public schools. Binet’s idea at that time was that, with the help of the special programs, the intelligence and school performance level of the identified students can be improved better than when teaching them according to normal formal education. Thus, it is possible to conclude that the inventor of the IQ-test himself agreed with the conception of very flexible and attainable intelligence (Dweck & Legget, 1988, p. 263).

Despite the criticism, the results from the Terman’s study have had a great impact on the research of the gifted even today (Renzulli, 1998, [on line]), although it has been found that IQ is not a predictor to explain success in later life (Stenberg 1999, p. 372). Furthermore, according to the latest research (cf. Dweck, 1999, p. iii) the other factors, besides IQ, have been noticed to play an important role when focusing also on school performance (see also Howe, 1995, p. 34) Although the recent studies have shown that the IQ- test still correlates .40 to .60 in relation to school success, this interaction is due to the similarity of both the IQ test and lesson-learning situations. Unfortunately, these school-like situations do not correspond necessarily to the many real life situations after completing school (Renzulli, 1998, [on line]). Here it is possible to induce that, even though the IQ could partly explain the academic success during school, it does not necessarily have anything to do with the success in later life. The same is somewhat true about school achievement. As Uusikylä (1994) wrote, “…labeling of gifted people according to their school achievements is just a ‘lucky game’, sometimes it is possible to get hits and sometimes not” (p. 10). The predictions based on early promising
achievements or characteristics are not necessarily fulfilled in the long-term (cf. Heller, 1993, pp. 59-60). As Sternberg (1999) lately stated, that “…in the modern world, the conception of abilities as fixed or even as predetermined, is an anachronism” (p. 372). Thus, the fundamental change in the use of the IQ and achievement tests related to gifted-programs and high ability studies seems to be that these tests are no longer used as predictors of later success in school or life, but are more often considered as methods among the others to identify students who could need and benefit from special educational services to reach their potential. However, even in this regard, IQ-tests only show what students know in the testing situation but they do not necessarily show how this achievement level has been acquired (cf. Feuerstein, 1983, p. 7).

2.3 Early antecedents of academic giftedness

The most common ways to identify gifted students are usually cognitive ability tests, achievement tests and teacher nominations (cf. Terman, 1959; Neber & Heller, 1995). However, these tests are not suitable for early identification purposes, because of the children’s restricted reading ability. As a consequence, the use of observable characteristics as an identification process is both more common and more widely recommended (Clark, 1988, p. 238). Most studies have listed numerous observable skills such as language, memory and concentration, in which pre-school age gifted children can show advances in relation the others (Eby & Smutny, 1991, p. 105). The other central things which are usually reported to be common characteristics of the academically gifted children are motivation and special orientation to the certain subject or special “hobby”. In research, it has been mentioned, that it is very important that outsiders, such as professional educators, observe these differences, because families have many factors that can hinder the development of giftedness, like for example, fostering style, values, sanctions, and so forth (Heller, 1991, p. 183). However, as we know, the lists of characteristics of gifted children are somewhat endless and a variety of these lists come from a variety of publications (see e.g., Eby & Smutny, 1991, pp. 175-176). In the following section, some observable characteristics which were chosen from some of these lists will be introduced, categorized here as different skills thought to be related to potentially gifted students and their success in the Finnish comprehensive school. These observable characteristics could also be seen as resources which children use to form their perceptions related to the different domains. This can be assumed to be true at least when
children become aware of differences between their own and others’ performance.

In the first phase of the study the indicators of potentially gifted students were classified into four different skill areas: a) language skills, b) memory skills, c) learning skills, and d) physical skills. A presentation by the authors, whose contributions were closely related to this study, of some characteristics concerning these areas will follow. Concerning all these skill sections, observable behaviors could result from some differences between the target population and other students in relation to the earlier experiences of the preschool and class teachers.

a) Language skills, Breuer et al. (1982) mentioned phonemic giftedness, which arises regularly very early and, at the same time, is above the average general level of giftedness. The common features for phonemic gifted children are, according to Breuer et al. (1982, p. 16), that a child speaks his or her first words early, has clear articulation, a large vocabulary, learns early to formulate simple sentences, and begins to use abstract impressions at least by the end of the fifth year. At the preschool age, phonemic giftedness is recognizable, according to Breuer et al. (1982, p. 16), by faultlessly structured sentences. Phonemic giftedness is also recognizable in quality and logic of speech, level of imagination, and articulation. Lurija (1977, p. 93) also stressed the significance of language development in abstract and general thinking. The latter can only be formed from the basis of language development. It is also fairly assumed that the advances in spoken language facilitate acquisition of the written language. Because the linguistically “gifted” child uses speech as a tool in every possible situation, (s)he often both likes literature and tells stories. (S)he can assimilate these different modalities of the language relatively quickly and consequently these children can acquire written language more easily (Breuer et al., 1982, pp. 10-14). As Breuer (1981) states, that “in order to understand language one must be able to perceive and realize it exactly in its external structure by means of the verboseno-motor abilities. These abilities (1. ability of optical differentiation, 2. ability of phonemic differentiation, etc.), must be on such a level that they proceed automatically and without control. In conjunction they guarantee the perception and realization of language” (pp. 8-9). According to Fischer (1980, p. 523), higher cognitive skills are actually composed of sensory-motor skills; and likewise, abstract skills are actually composed of representational skills which means that thoughts are literally built from sensory-motor skills.

To recognize exceptional lingual development Perleth (1993, p. 278) mentions several observable language characteristics of early precocious children, who at the kindergarten level can show advances in language
ability, which include richness of expression, elaboration, fluency, high frequency of speech and questions, and advanced vocabulary for age and grade level. Furthermore, a verbally gifted child can show some degree of interest in foreign languages even before preschool-age (Lupkowski & Lupkowski, 1985, p. 12). According to Plowman (1987, p. 25), it is very important that the recognized verbal interest, for example, in books and other special subjects, is supported in the early years, because in some cases the clear above average interest can “die” in two to three years, due to a non-supportive environment. According to Stednitz (1995, p. 47), the last year of kindergarten and the first years of school might be a difficult time for potentially talented children, who may be bored by learning material that they already know, and by peers who have quite different interests and might not ‘speak their language’. Nevertheless, it could be assumed that those children who achieved language skills early on, for example, with the characteristics listed above, had potential to possess general academic giftedness as Freeman (1995a) has stated: “…advanced language skills has an enduring quality and underpins many other later competencies, including mathematics” (p. 25). For example, in Finland, Kuusinen and Leskinen (1986) have shown that early measured (7-years-olds) Psycholinguistic Abilities and later academic success are strongly correlated.

b) Memory skills, Early childhood memory is the central psychological function on which the other functions are formed, and determines the cognitive developmental level in early childhood (Vygotsky, 1978, p. 50). Actually, during early childhood, memory and thinking can be considered synonymous according to Vygostsky (ibid.). It can be inferred that when the objectives or topics are similar to earlier experiences of the children, the adaptation would happen more easily. Piaget and Inhelder (1977, p. 81) discriminated between two different kinds of memory strategies that exist in early childhood: a) recognition, which means that a person identifies the present and already faced object, and b) recalling, which means that the absent object is recalled with the help of the image. Experience and familiarity helps both recognition and recall. The amount of attention a child must designate to a given task depends on how well-known or automatic the cognitive processes required need to be. An expanding knowledge base promotes improved memory. This goes along with the Levels-of-processing model of Craik and Lockhart (1972, in Woolfolk, 1995) as well as Fischer’s (1980) Skill Processing theory. Fischer’s Skill theory emphasizes children’s specific experiences related to the task differences which determine skill development (1980, p. 483). According to Fischer (1980, p. 522), a skill is a Piagetian scheme applied to a particular task or set of tasks in which a skill can be performed
in seven different levels. Because of that, the unevenness between the skill levels are considered to more as the rule than an exception in contrast to the Piagetian view (p. 485). How broadly applicable a skill is depends on brain maturation, experiences and the range of environments to which the child has been exposed (p. 483). Each child has an optimal level of skill performance, or upper limit of processing capacity, that cannot be exceeded without developmental challenging practice. Fischer (ibid.) has formulated three optimal skill levels that correspond to Piaget’s stages: sensomotory (levels 1 to 4) actions, representations (levels 5 to 6), and abstractions (level 7). However, children (and adults) seldom function optimally because using the most advanced skills possible depends on extensive support from the environment. Therefore, within each level, an extended period of skill learning takes place in which the child acquires new competencies on specific tasks, integrates them with others, and gradually transforms them into more general, high-order skills. Waters and Andreassen, (1983, p. 20) are on the same lines when stating that memory development is largely based on the acquisition and generalization of memory strategies. It is not an all-or-none process but initially it involves limited and often inconsistent strategy use followed by more consistent and broader use of appropriate learning and memory strategies. Also, Glaser and Chi (1988, pp. xvii-xx) have stated that, in general, cognitive development is largely a matter of acquiring domain-specific knowledge which makes strategic learning usable. This means that new related information is more meaningful so it is easier to store and retrieve. For example, in Chi’s (1978, pp. 97-100) study on chess-playing children, better memory was largely attributed to a greater quantity of knowledge. She also found that experts also have a more deeply and elaborately structured knowledge base that permits them to apply organizational strategies more adeptly and retrieve familiar items automatically.

For this reason, it is assumed that some of the improvements in strategy use may depend on the developing knowledge base in semantic memory (e.g., category structure in semantic memory) (Waters & Andreassen, 1983, p. 20). To illustrate this idea, Schneider (1993, p. 321) and Bjorklund (in Schneider, ibid.) classified elementary school children as experts or novices in knowledge of soccer. The both groups were given lists of soccer and non-soccer items to learn. “Experts” remembered far more items on the soccer list (but not on the non-soccer list) than did non-experts. In observing how fourth graders studied soccer items, the researchers found that both groups used organizational strategies. But experts were more likely to apply these strategies (chunks) during retrieval (as indicated by clustering of items during recall). And within each category searched, experts remembered more items.
findings supported Chi’s (1978) results. In conclusion the unskilled needed more time to store and also retrieve from things to the more than the skilled ones. Required attention and deepness of information processing were closely combined. Transient memory load is the biggest problem when approaching new tasks. When the components and rules of how to solve tasks become automatic, the thinking process requires little or no conscious effort and there are more mental resources available. Memory load and limitations of working memory are a very general and pervasive sources of attentional processing (e.g., if a student can automatically remember certain steps rather than calculating them). In this regard, the prior knowledge plays a crucial role in the learning situations. This has been stated to be true also when learning written language (Breuer, 1981, p. 9). For example, children could encode a written word superficially, according to its “perceptual features”, by noticing whether it is printed in capital or lowercase letters. At a slightly deeper level, we could encode the word by attaining to its “phonemic features”, or how it sounds. In this instance, we might repeat the word aloud to ourselves, or rhyme it with another word, several times. At the deepest level of processing, we would encode the word according to its “meaning”, or “semantic features”, by relating it to other information already in our systems (Craik & Lockhart, 1972, in Woolfolk 1995, p. 262). It is reasonable to assume that the same pattern of stepwise learning also occurs when the child starts to acquire written language (cf. Breuer 1981, p. 9). The amount of prior knowledge determines the rate of adaptation of the new information in every day situations as well. In the other words, this means that the central factors in respect to the memory development are the experience, its transformability and quality (cf. also Perleth, 1993, p. 278).

c) Learning skills. In this part the characteristics were mainly the behaviors which were closely related to school-work-like routines, which can be recognized while children are accomplishing similar tasks. We must keep in mind that knowledge is not the only factor involved in memory processing. Children who possess special aptitudes in a particular area, whether it be math, language, sports or music, are usually highly motivated as well. Faced with new tasks or related material, motivated children seem to be excited and concentrate to clarify the meaning of this information so that (s)he can learn it more easily. Researchers have stated that academically successful and unsuccessful students differ in just this way. Poor students fail to approach tasks by asking how previously stored information can clarify new information (Glaser & Chi, 1988, p. xix). As a result, high ability learners not only acquire knowledge more quickly, but they actively seem to use what they know to learn new skills to add more. For example, according to Ericsson (1996, p.
early ability to read alone does not necessarily guarantee high levels of academic performance, because for gaining it children must be able to monitor word recognition and the comprehension of the texts by themselves. For this reason metacognition related to self as doer and knower has a special importance in learning situations. In addition to cognitive components, metacognition has affective and motivational components that energize or delay the occurrence of a strategy or skill. Actually, most likely the concept of metacognition is tied in intricate ways to notions about self-esteem, self-concept and self-control (Borkowski & Büchel, 1983, p. 25). The children who know about their own learning “resources” related to the task demands can be said to have metacognitive capacity to learn (see also Paris & Ayers, 1994, p. 30; Zimmerman, Bonner & Kovach, 1996, pp. 2-3; Weinstein & Hume, 1998, p. 9).

Actually, in the beginning when new learning skills and/or strategies are assimilated as a form of rehearsal, verbalization can help to establish a strategy and the belief that one knows and can use a strategy to improve performance can enhance motivation. In this early phase of strategic learning verbalization may be helpful but to become full self-regulation it must be internalized as private speech (Schunk & Zimmerman, 1996, p. 167). When it occurs often enough, it can become automated which, in turn, relieves extra attentional resources.

If we consider gifted performance from this point of view, knowledge about self-resources as they are related to the task requirements can be seen as a key component of giftedness. This, in turn, interferes with the development of a broad knowledge base. Consequently, poor students are not very effective at learning and thinking strategies, because use and assimilation of new strategies requires enormous energy resources (i.e. attention) and because of that it can cause without extended external guidance and support attention problems among non-gifted learners (cf. Borkowski & Büchel, 1983, p. 134). From this reason they (ibid.) argued that attributing poor performance to lack of attention may be simplistic and unjustified. Additionally, Cain and Dweck (1995, p. 48) have lately shown that children’s goal orientations may reflect differences in strategy use and learning. If children are continuously focusing on the performance goals they may be steered away from identifying and utilizing those strategies (processing strategies) that would improve their performance and skill. In fact, there is a growing body of research indicating that specific deficits in learning may be more strategic than attentional in nature, as shown in studies of short-term memory.

When identifying giftedness among young gifted children, who may show “peaks” of extraordinarily high performance in some areas, but not necessarily
in all cognitive ability areas (Lupkowski & Lupkowski 1985, p. 10), then the behaviors which indicate attentional learning and strategic knowledge such as long attention span, number of used concepts related to domain, concentration skills, specific interests, attention to detail, high energy level, seeking help and so forth can be helpful when identifying potentially gifted preschoolers. Eby and Smutny (1991, p. 105) presented the similar list of characteristics under the title “Task commitment”. In the Eby Elementary Identification Instrument, Teacher Recommendation Form the following characteristics were described: “…is a self-starter, shows initiative, is able to maintain long period of concentration, follows through completes task on time or before, is willing to spend more time than required on subjects which interest him/her, has one or more strong interest; seeks complex and challenging activities.”(p. 105).

In general, these lists of behaviors have given a picture that somehow these skills are possible to develop in each child. As it was later possible to establish on this developmental plane (cf. Schunk & Zimmerman, 1996, p. 167) the use of learning strategies, which are mainly learnt by informative modeling or formatively from significant others like parents, more able peers and pre-school teachers, can really make the difference in learning results already in early age. The studies on the area of student cognition have lately shown that students’ use of prior knowledge, use of task-related cognitive learning strategies and self-management are the main factors in their actual academic learning processes (cf. Pintrich & Schrauben, 1992, p. 149). Lately, Cheng (1993, p. 110) has concluded that metacognition is an essential component which promotes giftedness (see also Span, 1995, p. 83).

d) Physical skills, This appears very early and it is possible to recognize by the degree of the physical development of the body and athletic accomplishments. The typical characteristics are that the children who have this potential are very eager to learn the related skills and their performance also develops at a remarkable rate as a consequence of the guided instruction. The observations are possible to make in this respect, according to different physical skills, which include assessments concerning running, climbing, throwing and catching a ball, jumping, gymnastics, tying shoes, and so forth (Harter & Pike, 1984, p. 1972).

In conclusion, the observable characteristics of the early academic giftedness are a recommended way to identify children who exhibit potential academic giftedness, as a supplement to or instead of the standardized tests, which usually do not touch on all the possible skill areas of the children before school age. By continuous observation it is possible to recognize a child’s potential and help her or him to achieve and acquire the next performance
level. In fact, according to Vygotsky (1978), any function in the child’s cultural development appears twice, or in two planes (p. 163). Vygotsky (ibid.) stated that the child, due to informal and formal intervention about higher mental functions which are typical of the environment surrounding the child, will move from the social plane to the psychological plane, from the socially regulated to the self-regulated. The child, through the regulating actions and speech of others, is brought to engage in independent action and speech. In the resulting interaction, the child can perform, through assistance and co-operative activity, at developmental levels quite beyond his or her individual level of achievement (Vygotsky, 1978, p. 89). Vygostky (1978) writes:

“...learning awakens a variety of developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with peers. Once these processes are internalized, they become part of the child’s independent developmental achievement. From this point of view, learning is not development; however, properly organized learning results in mental development and sets in motion a variety of developmental processes that would be impossible apart from learning. Thus, learning is a necessary and universal aspect of the process of developing culturally organized, specifically human, psychological functions” (Vygostky, 1978, p. 90).

This is equally true with regard to voluntary attention, logical memory, formation of concepts, and the development of volition (Vygotsky, 1978, p. 163). In the beginning of the transformation to the intramental plane, the child needs not understand the activity in the same way as the adults. However, the children who are already closer to the adult level are naturally more able to acquire more knowledge in this interaction, which is in most cases also the meditative requirement of the transmission of the educational objectives in school. For skills and functions to develop into internalized, self-regulated capacity, all that is needed is performance, experience, modeling, and individualized assisted interaction (Schunk, 1987, p. 171; Tharp & Gallimore, 1988, p. 30; Bandura, 1994, p. 74). According to Mönks and Mason (1993), “the role of parent and teacher can be described as facilitator. To be successful in this role, parents must be aware of the specific developmental needs of the child, not only during early childhood but also throughout the child’s developmental period. Therefore, ongoing careful observation is necessary to give to the child needed experiences” (p. 98).
2.4 Problem of early identification of academic giftedness

According to the results in Phase I, those children who exhibited potential academic giftedness at pre-school age had potential to become academically high achieving students. In that phase, according to the results, high measured verbosenso-motor ability was an indicator of potential academic giftedness and, consequently, use of the BWDT was shown to have promising properties in respect to early identification. However, any process of identification of giftedness in pre-school age children has been considered to be rather problematic and often inaccurate as well (Torrance & Carapreso, 1999, [online]). While it can be assumed that high levels of various skills which were observable by pre-school and classroom teachers would provide the pre-school child with an advantage over their peers during the first years of school, such skills do not define giftedness per se in this population. Moreover, the measured potential in early age does not necessarily mean that, for example, the school achievement and academic motivation correspond to these early measurements and to each other in the long run. For example, several psychological and sociological approaches have shown that there are many factors which affect students’ motivation to learn when they go through their general educational development (Wigfield & Eccles, 1992; pp. 282-285; Freeman, 1995a, p. 27). From the instructional view actualizing academic potential means that the students are continuously motivated toward learning goals (Brophy, 1983, pp. 205-206). When the instruction is not challenging enough it does not meet psychological needs of the individual. When this happens repetitively, for example, through the school years, it can lead to the maladjustment and unrealized potential (Deci, 1975, p. 165, see also Freeman, 1995b, p. 175). Actually, these are main arguments why instruction should vary according to the aptitude levels of the learners (see also Corno & Snow, 1986, p. 620; see also Feldhusen & Jarwan, 1993, p. 234). In fact, according to Wong and Csikszentmihalyi (1991, p. 540), motivational and affective obstacles which emerge during school years, rather than cognitive ones, appear to be at the root of the educational deficits of the gifted students in general. To prevent this from happening, the schools should provide the possibility for an individual to progress at his or her own pace and level of learning which is also core of all gifted education (Mönks & Mason, 1993, p. 98). For this reason, in this study the potentially gifted academic children were considered as a group that could benefit from special educational services and treatment to reach their full potential. According to Feldhusen and Jarwan (1993, p. 235), this orientation could be categorized among
“Educationally Oriented Definitions”. In other words, “the gifted children are seen as a group that requires differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society “ (Gallagher 1975, p. 10). Without access to challenging materials, high-level teaching and emotional support their potential may remain unrealized and unrecognized. Renzulli (1998, [online]) has stated these two goals of gifted education even more precisely:

*The first purpose of gifted education is to provide young people with maximum opportunities for self-fulfillment through the development and expression of one or a combination of performance areas where superior potential may be present. The second purpose is to increase society’s supply of persons who will help to solve the problems of contemporary civilization by becoming producers of knowledge and art rather than mere consumers of existing information* (Renzulli, 1998, [online]).

Subtonik and Arnold (1994, p. 446) have stated that although there may be some arguments for and against both of the above purposes, it would be generally agreeable that goals related to self-fulfillment and subsequent contributions for society are generally consistent with fundamental ideas of education (see also VanTassel-Baska, 1993, p. 369). According to Renzulli (1998, [online]), the more important is that these two goals should be highly interactive and supportive of each other (see also Feldhusen & Jarwan, 1993, p. 236).

However, it must be remembered that all educational programs that will be planned should be based on the objectives of the educational policies and curriculums, which should reflect the values of the surrounding society. In case that society does not value exceptionally high achievements, then there is neither place for the arguments for early individualized learning practices nor gifted education. Lately, also in Finland, curriculum modifications which have emphasized the existence of individual differences and their consideration in everyday educational practices, have been stated to be important (cf. e.g., Airinen, Hautamäki, Hautamäki, Lehto, Niemivirta, & Scheinin, 1997, p. 142).

In practice, as Torrance and Carapreso (1999, [online]) have stated, assessment procedures are pointless when the system is not prepared to guide and instruct students identified as being gifted according to assessment outcomes (cf. also Feldhusen & Jarwan, 1993, p. 236). While this study was
not planned to identify children for involvement in special programs, it can cast light on the reliability and validity of the selection process. For example, if this study was able to produce reliable information in regard to measured VSM and its relation to later academic achievement, school adjustment, learning engagement and future aspirations, then the work of Breuer and Weuffen could offer a theoretical approach to the early identification of academically gifted children (cf. Feldhusen & Jarwan, 1993, p. 247). Existing aptitude differences before school-age could be taken into account when planning education according to individual differences. It should be remembered that the BWDT measures levels of developing lingual expertise in early age (cf. Sternberg, 1999, p. 365). Also in contrast, the role of the BWDT as a dynamic testing method that includes training components according to a students’ weaknesses (and strengths), was absolutely appropriate in order to avoid misclassifying some students as “unable to learn” when, in fact, their poor performance in the early phase was due to their having fewer school-preparatory learning experiences (cf. Day 1983, p. 161; Feuerstein, 1983, p. 13).

If this study is able to show in some degree permanent differences between the study groups in their academic performance, it would offer valuable information concerning the criteria for identifying children who have academic potential before the school-age, which has been stated to be very important and simultaneously very problematic internationally (Torrance and Caropreso, 1999, [online]). Furthermore, the theory of Breuer and Weuffen (1986) would also meet requirements for a general developmental theory, which would explain more general talent development, in that the development of pre-requisites to written language in the form of assimilated verbosenso-motor abilities is assumed to be common to all children (Weuffen, 1989, pp. 1-2; Ruoho, 1990, pp. 242-243).

The aim of this study was to partly examine if the special needs of the children who exhibited potential academic giftedness have been met educationally. However, the primary aim was to examine whether potential academic giftedness has been fulfilled according to the students’ school report grades, their degree of the school adjustment, self-concept profiles and their future aspirations. These should disclose whether the students of the Experimental group differed significantly from the regular students. If the study is able to show the differences for the Experimental group then it would be possible to say that the potential academic giftedness of the Experimental group has been fulfilled. Thus, the definition “pre-school academic giftedness” in the context of this study primarily means that the students of the Experimental group had possibilities (i.e., potential) to perform academically above the
average students, adjust better to the school, form higher perceptions with respect to their academic abilities and have higher educational and occupational aspirations when compared with the average students at the conclusion of their education.

The following chapters which deal with the motivational constructs, the meaning of the both early development and perceptions of the child and the formed expectancy beliefs for the motivation to learn will be more closely overviewed. These chapters will reveal the motivational factors which are necessary for actualizing potential to the recognizable talent and what are the assumptions which are possible to make concerning these factors related to the Experimental group of this study. Finally, the Finnish educational system and its readiness to face instructional requirements of the academic gifted children in practice will be discussed.
3 Motivational preconditions which facilitate fulfillment of academic potential

Motivation is usually defined as an internal state that arouses, directs, and maintains behavior. Psychologists studying motivation have usually focused on three basic questions. First, what causes a person to initiate some action? As educators know, some children prefer doing assignments straight away or very early, and some of them can leave the task until the last minute. Second, what is the level of involvement in the chosen activity? Some are satisfied just by finishing the task, but others can spend hours with the same task. And third, what causes a person to persist or to give up these assignments? Some individual seems to work harder when facing obstacles, whereas others seem to give up from the very first set-backs. To trace answers for these questions in the school and classroom settings, it is common to face a complexity in the answers which is connected to motivation. Answers could include, for example, the following lists of different causes, such as students’ needs, goals, social pressure, self-confidence, curiosity, interest, beliefs of ability, attributes of success failure, values, expectations, affections, psychological maturity and so forth (cf. e.g., Deci, 1975; Harter, 1981; Dweck, 1986; Bandura, 1986; Pintrich & Schrauben, 1992; Pajares, 1996; etc.). In the beginning this list seems to be a little bit overwhelming and confusing, but when we are focusing on the commencements of this study, we can perhaps draw some guidelines of how to take the right perspective for this research. Firstly, we need to clarify our theoretical approach, assumable question areas and then frame the aspects which are close to the study in hand.

As already noted in an earlier section, the assumptions which defined gifted performance from the basis of a predetermined perspective have lost their credibility according to the latest empirical evidence (cf. Sternberg, 1999, p. 372). These studies have undermined the conception that some persons are born already equipped with the special “gift” to find learning activities interesting and achieve highly (cf. Terman, 1959). It is possible to say from numerous children that they have potential for high achievement, but on the way to the realization of their potential there are various factors which should be taken into account by significant others. Actually, recent interaction models which explain gifted level performance have attempted to combine external and internal factors such as cognitive, social, and motivational factors which together are argued to be necessary when realizing gifted level
performance (e.g., Renzulli & Reis, 1986, p. 244; Heller, 1991, p. 176; Sternberg & Lubart, 1993, pp. 11-12). These models emphasize the meaning of the non-cognitive personality dimensions, such as children’s interests, level of engagement, degree of the support, its quality and related environmental factors (e.g., access to the appropriate teaching and materials) in the actualizing process. For example, Task Commitment one of the dimensions of Renzulli’s and Reis’ (1986, p. 224) Triarchic Model of Giftedness, contains undoubtedly, self-related knowledge which in turn have motivating properties. In fact, Chikszentmihalyi, Rathunde and Whalen (1993, p. 212) have found that how far the talented will go in taking courses in their talent area was best predicted by their motivation and worst by their ability. Accordingly, without motivation or motivational “drive” the measured aptitudes, intellectual abilities or creativity potentials are left without fulfillment. Or by the time being perhaps the direction of the motivation changed when, for example, academic activities became either too repetitive and unchallenging (Reis & Renzulli, 1992, pp. 51-52). For example, a child who is according to his or her parents and teachers, “not motivated” at the school can be simultaneously “very motivated” on the football-field (cf. Weiner, 1990, p. 621). These aspects have received a great amount of attention in numerous gifted studies which have increasingly focused on the fulfillment of academic potential by the appropriate educational environments and instruction (DeCorte, 1995b, p. 154).

In this respect the questions we are likely to ask are such as “What effects does measured pre-school potential academic giftedness have on the students’ motivation; and do children who exhibited potential academic giftedness differ from average children in this respect?” or “How challenging is the Finnish comprehensive school for the potentially gifted academic children and do they differ from the average children with this respect?” However, before planning questionnaires and going to the field, it is necessary to study psychological properties which underlie these motivational constructs and which seem to facilitate fulfillment of potential.

The first theoretical restriction can be made by determining whether motivation is explained more in terms of personal characteristics or situational factors. In brief, it can be said that studies have shown that persons can differ in terms of both of their motivational trait and situational state and accordingly, it is possible to say that there are individual differences between the state and trait dimensions. In practice, it is, nevertheless, hard to differentiate by external observation, how much of the possessed actions are due to state or trait dimensions of motivation, but here in this study students’ motivational trait is considered as a developmental consequence of experienced situational states in similar situations. In other words, the more individuals have experiences
concerning similar conditions or situations, the more it can be assumed that they will exhibit similar motivational behavior in the future. According to Deci and Ryan (1992, p. 92) “…if children continually have experiences of being competent and autonomous, they may develop a general orientation that entails being intrinsically motivated and self-determined…” (cf. also Bandura, 1993, p. 136) or when children perceive themselves as incompetent and their accomplishments valueless they can become externally motivated. According to these assumptions, individuals form predictions and cognitions, concerning what the outcome would be. These formed perceptions, for example, as a learner reflect the motivation level of the individual concerning school success and academic tasks in general. From this point of view, students’ continuous school-related experiences play a prominent role which seems to feed their motivational trait dimension, and these contributions becomes more obvious in the long run in both performance and self-beliefs, especially in supporting learning environments. Aho (1996) has even stated that “…for life, what children learn about themselves in the school is more important than what contents and tasks the students learn, because knowledge becomes old and hard to remember, but the self is something that the person carries through life in thyself” (p. 7).

For this reason, the theoretical approaches which explain motivation in terms of formed expectations and perceptions concerning school engagement seem to be an appropriate approach to clarify students’ motivational resources. The most suitable approaches with this regard would be theories which explain the formation of the self-beliefs from the developmental view, which emphasizes the individuals internal interpretations of the world and regards learning as a process of continual development through different stages. The reasonable path to approach these aspects would be to firstly study closely expectancy constructs which can feed learning motivation and then try to determine an appropriate approach which taps the development of the students’ general motivational expectations. Other aspects which affect motivation and fulfillment of academic potential are the external factors such as special environmental and instructional demands which are stated to be necessary to educate gifted children (Mönks & Mason, 1993, p. 94; Van Tassel-Baska, 1993, p. 21; Freeman, 1995b, p. 175). Although these internal and external factors are closely linked in the learning situations and for this reason hard to keep them separate in discussion, the following sections are mainly concerned to present internal aspects of motivation. Later on, the special external educational modifications, which have been stated to affect and facilitate motivational engagement of academically gifted children, will be introduced as well. Additionally, the very same aspects are briefly reflected in regard to the context of the Finnish education system.
3.1 Expectancy constructs which promote achievement behavior: a brief historical overview

In this historical overview three aspects are concerned. First, the early developmental phases of the motivational research are reviewed. Second, the work of Lewin and Atkinson who developed the basis for the expectancy theories are briefly presented and finally, two current motivational approaches which are based on theoretical contributions of these early pioneers of motivation research will be introduced. This would offer a theoretical overview from the motivation research field and a commencement to determine a suitable approach for this study.

In this opening section Weiner’s (1990, pp. 616-623) article about history of motivational research is used as a guiding reference. Studies related to motivational research have been reviewed in Encyclopedia of Educational Research since 1940 and Weiner has written this article four times.

According to Weiner (1990, pp. 616-617), motivational research on that time, in the 1940’s and 1950’s, focused mainly on topics such as “….activity level, appetites and aversions, homeostasis, chemical controls, and neural structures, as well as, incentives, defense mechanisms, and the degree of motivation” (p. 616). Furthermore, already at that time there were other themes which focused on the educational applications and concerns including praise and reproof, success and failure, knowledge of results, cooperation and competition and reward and punishment (Weiner, 1990, p. 617). From the 1940’s, motivational studies began to concentrate on the differences and discrepancies of the internal states. Researchers were interested in ways to examine how a variety of need states produce behavior. In this phase experiments of motivation were executed mainly with rats or monkeys because human behavior was considered too complicated to study directly (Weiner, 1990, p. 617). A remarkable shift from the presented general stimulus and response (SR) -psychology happened at the end of the 1940’s. During this time period discrepancies emerged between the two research themes, namely, motivation-learning and performance-acquisition. Two separate opinion concerning learning emerged. Hullians stated that learning can only take place when a response is reinforced and drive is reduced. Tolman however argued that there can be learning without reward and drive reduction. His experiments showed that learning can occur without reward or drive reductions and that incentives affect performance rather than learning (Weiner, 1990, p. 617).
In 1960s there were continuous gradual shifts toward cognitive approaches from the mechanistic ones. The most eminent theorists on this area were Kurt Lewin and John Atkinson. Typical for research at this time period was that motivational research began to concentrate on human instead of non-human behavior. For example, Lewin predicted behavior of rats from human behavior, when the opposite method had dominated in earlier times (in Weiner, 1990, p. 619). According to Weiner (1990, p. 619) motivational theorists in the 1960s began to use primarily concept subjective expectancy of success. Thus, use of the expectancy construct springs from a general cognitive perspective on motivation and reflects the cognitive metaphor of the individual as an active and rational decision maker in contrast to earlier behavioral models of motivation (Weiner, 1990, p. 621). In the following section two main authors who contributed to the field of the expectancy construct research are presented, because they have formed the basis for modern motivational research.

Kurt Lewin who is sometimes recognized as the founder of modern social psychology proposed (1944) that the construct of level of aspiration could explain human decision-making processes. Level of aspiration is defined as the goal or standard that individuals set for themselves in a task, based on past experience and familiarity with the task. The method which Lewin, Dembo, Festinger and Sears (1944) used to trace the level of aspiration was the ringtoss game in which individuals were asked to throw rings over a peg from different distances from the peg. Distances further away from the peg were given more value because they obviously made the task more difficult. The subjects were given some experience with the game (e.g., 10 trials) and then asked to state their goal for the next 10 trials (How many are you going to try to get over the peg in the next 10 trials?). The combination of different distances and values allowed the experimenter and subject to estimate both expectancy (probability of success for a toss) and value (distance from peg).

The level-of-aspiration method has produced several important findings in the field of expectancy studies. First, participants in the study were most likely to feel successful when they managed to meet the goals they set for themselves (subjective goal or level), not the actual objective level of attainment (e.g., five successful tosses). That would indicate that, for one subject, getting three rings in the trials and then getting three or four in test situation would be a satisfactory outcome for this person. However, for another subject who had a higher level of aspiration, the goal might be to get at least five rings on according to her or his trial. Another finding was that level of aspiration was closely related to prior experience with the task or similar tasks and moreover changes in prior success (failure vs. success) generally led to
changes in level of aspiration. Finally, the research found that there were individual and group differences in level of aspiration. Subjects high in ability tended to set higher aspirations than those with low ability.

The next eminent researcher who contributed to expectancy-motivation research was John Atkinson who tried to separate different components of achievement behavior. His expectancy-value model, which was strongly influenced by findings of Lewin and Hull, included individual’s needs, expectancy, and value assuming that behavior was a combined function of three components, which he labeled as motives, probability for success, and incentive value (Atkinson, 1957, p. 360). As he (1957) describes them, “expectancy and incentive” are similar to variables as presented by Tolman and Lewin” (p. 360). According to Atkinson, motives are learned from similar experiences, and have lasting properties which reflect on the individual differences formed from two achievement motives: to seek success (need for achievement or motive to approach success) and fear of failure (motive to avoid failure) (Atkinson, 1957, p. 360). In his model, capacity to “…experience pride in accomplishment” was described as the main motive for success, “drive”, which explains individuals’ strive for a certain kind of satisfaction (p. 360). According to Atkinson (1957, p. 365), if the motive for success was high, then individuals would likely approach and engage in achievement tasks. In contrast, the motive to avoid failure represents an individuals’ capacity to experience shame and humiliation when they fail, and when the motive is high, this would lead individuals to avoid engaging in achievement tasks. Moreover, Atkinson included expectancy and value constructs in his model that represented the environmental factor. He assumed one side of the equation because they were assumed to be more closely tied to the situation or task. In his studies (e.g., ringtoss or picking various puzzles) subjects were asked to estimate how successful they would be when performing these tasks. These subjective beliefs about expectancy for success, although certainly reflecting an individual’s own beliefs, also were assumed to represent one of the environmental influences on motivation because they could reflect task difficulty (e.g., length of throw, normative information about how well others succeeded). The third component of motivation in Atkinson’s model was the incentive value of success which was defined as an affect, specifically, pride in accomplishment. According to Atkinson (1957, p. 360) it represents the relative attractiveness of a specific goal that is offered in a situation, or the relative unattractiveness of an event that might occur as a consequence of some act. For example, the incentive value of receiving an A in a difficult course would be higher than the same grade receiving in an easier course, because in the latter case there is less satisfaction to be gained. The incentive
The value of success was assumed to be inversely related to the probability of success (incentive value = 1.0 - probability of success). For example, as the expectation for success went up, as in an easy task, the incentive value would go down because it was assumed that the person would not value succeeding at an easy task. From these basic theories, Atkinson (1957) formed his Principle of Motivation: “The strength of motivation to perform some act is assumed to be a multiplicative function of the strength of the motive, the expectancy (subjective probability) that the act will have as a consequence the attainment of an incentive, and the value of the incentive: Motivation = f (Motive X Expectancy X Incentive)” (pp. 360-361). Given the inverse relation between incentive value and the probability of success, Atkinson’s mathematical model predicts that motivation will be highest when tasks are of an intermediate level of difficulty. When the probability of success is .5 (the person will succeed at the task about half the time), the incentive value of success also will be .5 (incentive value = 1.0 - .5, which is the value for probability of success). The product of multiplying the probability of success by the incentive value (as in all expectancy-value models) is greatest at this intermediate level (e.g., .5 X .5 = .25) in comparison to other conditions. For example, suppose that the probability of success is .1 (the student will succeed only 1 time out of 10), then incentive value will be high for such a difficult task (1.0 - A = .9) and the multiplicative product of these two numbers (.1 X .9 = .09) is lower than the number generated at the intermediate level of difficulty (.25). This is true for all values of probability of success and incentive value given the assumed inverse relation between probability of success and incentive value. According to the research results, Atkinson (1957) stated that individuals are more likely to engage in activities of intermediate difficulty. He explained the engagement level by using examples from different sport activities. For example, the players (and also spectators) were more likely to be highly engaged when the scores are tied between two opponents, for example, when likelihood of winning or performing on desired level is between 40 - 60% (Atkinson, 1964, p. 182).

Later, Atkinson (Atkinson, 1964, p. 181) added a new construct to his theory, called resultant motivation, when he got results that all individuals tend to in some degree both avoid failure and need to achieve in given situations. Achievement-oriented behavior was viewed by Atkinson as resulting from a conflict between approach and avoidance tendencies. If someone’s need to achieve in a particular situation is higher than his or her need to avoid failure, this resultant motivation, will be to take the risk and try to achieve. On the other hand, when the need to avoid failure is greater, the risk is seen as threatening rather than challenging, and then the resultant motivation will be
to avoid failure. These motives for success and fear of failure, play an important role beyond the expectancy and value components. Atkinson’s model predicts that individuals high in the motive for success and low in fear of failure (what he called “high need for achievement”) will be most likely to choose tasks of intermediate difficulty, whereas individuals who are high in fear of failure and low in the hope for success (what he called “low need for achievement”) will choose very easy or very difficult tasks (1957, p. 364). In the latter case, for individuals high in fear of failure, a choice of a very easy task ensures success, thereby minimizing fear of failure. On the contrary, the choice of very difficult tasks by individuals high in fear of failure does not maximize the fear of failure because there is the expectation that very few people can succeed at the most difficult tasks (p. 365). It appears that most people, regardless of their motives for success and failure, choose tasks of intermediate difficulty, although there is a tendency for individuals high in the motive for success to choose intermediate tasks more often than those high in fear of failure.

In sum, the early research on expectancy constructs was important because of the focus on cognition and beliefs in contrast to overt behavior and the related constructs of drives, needs, and habits. These studies managed to show that people do not only respond to the external or physical conditions, like thirst or security, but rather their interpretations of these conditions. Pintrich and Schunk (1996, p. 75) state that these theories and models moved motivational psychology away from a dependence on a simplistic S-R psychology to a more rational and cognitive paradigm that is still dominant today. Moreover, these early cognitive models of motivation stressed the importance of the individual’s perceptions and beliefs as mediators of behavior, thereby focusing motivational research on the subjective and phenomenological psychology of the individual. In particular, these early models developed the distinction between beliefs about being able to do the task (can I do the task and what is the probability of success) and beliefs about the value and desire to do the task (how important the success is) and posited that it is the combination of the two that results in motivated behavior. Accordingly, we may feel capable of doing a task, but if we do not value it, then we will be less likely to engage in it. In the same way, we may value a task, but if we do no feel able to do it and expect to fail, we will be less likely to engage in the task. These principles undoubtedly affect students’ learning behavior as well. Current research on expectancy and value constructs continue in this tradition of focusing on these two general beliefs of the individual, although they do attempt to include contextual influences in their models.
3.2 Recent studies on expectancy constructs

Because there are numerous current motivational theories that include some type of expectancy construct, there is a need to restrict this overview to those approaches which are mainly concentrated on school achievement and classroom behaviors from the developmental point of view. The following two approaches were chosen for closer examination. It is however, impossible to refer to all the numerous articles and results concerning these approaches. In this brief section both chosen expectancy constructs will be introduced in the form of their relevance for this study. The first approach comes from the work of Harter (1981-1999) and it focuses on the development of children’s perceptions of competence. Her model is based on general cognitive psychology which approaches the development of the person’s self from the cognitive developmental perspective. The second approach, which is mostly influenced by Eccles and Wigfield (1983-1994) and their colleagues (e.g., Eccles, Adler, Turtterman, Goff, Kaczala, Meece, & Midgley 1983; Eccles, Adler & Meece, 1984; Wigfield & Eccles, 1992; Wigfield, 1994), is closely related to the early expectancy-value models of Lewin and Atkinson introduced earlier. Their cognitive model focuses on the role of students’ expectancies for academic success and their perceived value for academic tasks and springs from a general organismic perspective based in personality and social psychology. The third possible expectancy construct which could be taken into consideration was Bandura’s (1977) Self-efficacy-model. His approach is called social cognition theory and it refers to persons’ beliefs about his or her personal competence to organize and execute courses of action required to attain designated types of performances (Bandura, 1977; see also Schunk, 1991). Limitations of social cognitive theory with respect to this study come from the fact that it relates beliefs closely to the specific task situations. From the point of this study project it could be perhaps absurd to try to trace connections between measured verbosenso-motor ability and task-specific self-efficacy beliefs, which have apparently formed according to earlier task-specific experiences.

3.2.1 Self-perceptions of competence and ability

The research on students’ perceptions of their own competence (Harter, 1982, 1985, 1999) has somewhat different origins than research on expectancy-value models. Harter’s approach focuses on the development of the self from a broader perspective and describes self-related normative developmental
changes which affect the construct of the self-image. As a part of the self-conceiving process, individuals form self-perceptions of competence which present their generalized self-evaluative judgments about their ability to perform in a certain field (Harter, 1983a, p. 294). Thus, self-perception of competence is the more cognitive evaluation of ability in a domain, not a general measure of self-esteem or self-worth which concerns how individuals might feel about themselves. However, these perceptions of the competence are interrelated with the individuals’ self-worth indicating that those domains which are more important for the person are more closely related to global self-worth. According to Harter and Jackson (1993, pp. 383-384), success in domains of importance predicts global self-worth. Often success in various domains is related to the support from significant others. In fact, domain specific self-perceptions of competence are described to have motivational characteristics parallel to expectancy-value models which predicts, for example, academic behavior (cf. e.g., Harter, 1992, p. 79; Nicholls, 1984, p. 328). Recent research related to the perception of competence has repeatedly shown that self-perception of competence becomes more differentiated with age (Harter & Pike, 1984, p. 1979; Marsh, Craven, & Debus 1991, p. 386) and additionally, that self-perceptions of competence have consistently shown a decrease in the mean level of self-perceptions of ability as children move from early childhood into adolescence (Wigfield & Eccles 1992, pp. 282-283; Aho, 1987, p. 54; Harter, 1992, p. 95; Marsh, 1993b, p. 843). Although there is a disagreement about the levels of specificity of the self-domains, most researchers at least distinguish among academic, social, athletic, and physical domains of competence (cf. Harter & Pike, 1984, p. 1978; Marsh et al. 1991, p. 386). To make developmental pattern clearer most researchers as the ones introduced earlier accept nowadays the idea that even first and second graders are able to form self-perceptions of competence that are quite domain specific. Accordingly, students may have differential perceptions in different domains (high in academic, low in physical attractiveness, moderate in social relations, etc.) which become more accurate in the long run. Thus, Harter (1983a, p. 294; 1985, pp. 76-79) has stated that construct of self is strongly developmental in nature.

Because earlier findings in this study (cf. Hotulainen, 1993, pp. 131-132) have shown that advanced verbosenso motor abilities were a good predictor of the acquisition of the many-sided advanced school-related skills in the early school years (cf. also Breuer, 1989, p. 32; Ruoho, 1990, p. 202) it could be also assumed that verbosenso-motor abilities via language development also reflect the construct of the self and its validity. For this reason the introduced ability perceptions in other words Harter’s developmental model
seems to share the same broad developmental properties as theory of Breuer and Weuffen. The described approaches have already been shown to have general comparative properties, because, the earlier findings have produced information concerning construct of the self-profile from the special groups of students, such as, gifted, low-achieving students, handicapped and so forth in comparison with average children (Harter, 1992; Hoge & McSheffrey 1991; Harter, Whitesell, & Junkin, 1998) which also could meet requirement of this study. Additionally, Harter’s test has been successfully implemented in many other western, including non-English speaking countries (e.g., Van Dongen Melman, Koot, & Verhults, 1993).

3.2.2 Expectancy-for-Success construct

Eccles, et al. (1983) have introduced a model which is closely based on Atkinson’s expectancy-value model (Eccles et al., 1983; see also Wigfield & Eccles, 1992). For example, Wigfield and Eccles (1992, p. 265) have shown that higher expectancies for success are positively related to all types of achievement behavior, including achievement, choice, and persistence (see also Eccles, Adler & Meece 1984, p. 27). According to their model, the expectancy and value components are the most important factors for the motivational engagement. Expectancy refers to an individual’s beliefs concerning their future expectancy for success and refers to the question “Can I make it?”. Task values are individuals’ task related opinions or judgements based on earlier experiences which respond to the question “Why should I do it?”. Furthermore, according to Eccles et al. (1984, p. 29) subjective task value are mostly created by differential past experiences, by social stereotypes, and by differential information from parents, teachers, or peers, and about the importance of and/or the difficulty involved in doing well at any particular activity. Eccles (1983) in Wigfield & Eccles (1992, p. 280) defined four aspects of achievement task values that can influence achievement behavior which are: a) attainment value, b) intrinsic value, c) utility value, and d) cost. Attainment value has an importance of doing well on the task which is also linked to the relevance of engaging in a task to confirm or disconfirm salient aspects of one’s self-schema (e.g., actual or ideal self-schema, such as masculinity, femininity, and/or competence in various domains). Intrinsic value is the enjoyment the individual gets from performing the activity, or the subjective interest the individual has in the subject. Utility value is how the task relates to future goals, such as career goal. The individual may pursue some tasks because they are important for
future goals, even if he or she is not that interested in that task for its own sake (for example, good grades are needed for subsequent schooling or work). Cost includes all the negative aspects of engaging in the task, for example, anticipated emotional states, such as anxiety, fear of failure, stress as well as the amount of effort that will be necessary to succeed at task. To differentiate motivational properties from expectancies and values Eccles et al. (1984, p. 37) have reported that students’ expectancies, for example, predict better their performance in math and English whereas their achievement values predict their willingness to keep taking mathematics and English. In following section the general model concerning academic behaviors of Eccles et al. (1983; in Eccles et al., 1984, p. 29) is presented. In this model task related factors are task specific ability and task difficulty where the latter is determined by the subjective probability of success in a given task which closely correspond to Atkinson’s (1957, p. 620) incentive value. These beliefs are influenced by two other variables in the model. One includes other cognitive and internal processes concerning how students perceive and interpret different events that happen to them. In particular, this interpretative process is driven by the types of attributions a student makes for events and actual performance.

Figure 1. General model of academic choice of Eccles et al. (1983)
Attritions are crucial to the formation of self-perceptions of competence and expectancies. The other variables that influence students' perceptions of competence, task difficulty, and subsequent expectancies for success come from their actual culture and environment, including the general cultural and societal milieu; the nature of the students' interactions with parents, peers, and other adults (e.g., teachers) and their past performance and achievements. As noted in the Figure 1, these influences can have a direct effect on children's self-concepts and task difficulty beliefs (a direct arrow), but their main effect is mediated by the students' perceptions and interpretations of these environmental influences. Eccles and her colleagues have done extensive empirical tests of different aspects of this model. For example, in the studies of how expectancies and values relate to elementary through secondary school students' performance and choice. For example, Wigfield and Eccles (1992, p. 282) concluded according to their studies that from 5th to 12th grade, students' expectancies for success are more accurate than their achievement values. Later, from 8th to 10th grade, valuing math strongly predicted their actual decisions to continue taking math later in their high school careers, whereas their self-concepts of ability in math did not predict enrollment decisions that accurately. This general finding that has emerged across a number of studies highlights the importance of students' expectancies and self-perceptions of competence as mediators between the environmental context and actual achievement behavior as proposed in their model.

In a series of large-scale correlational field studies, Eccles and Wigfield and their colleagues (Eccles et al., 1983; Wigfield & Eccles, 1992; Wigfield, 1994) have investigated the role of expectancy constructs in achievement. These studies have consistently shown that students' self-perceptions of ability and their expectancies for success are the strongest predictors of subsequent grades in math and English, even better predictors of later grades than are previous grades. They studied also age-related changes in the mean level of perceived task value. According to Wigfield and Eccles (1992, p. 289) task values are determined by characteristics of the task as well as broader needs and values of the individual. These broader needs and values serve as the primary antecedents of the value which individuals give for specific tasks. Actually according to their findings (ibid.), they have proposed four major antecedents of children's achievement values for different activities: a) their self-schema and goals (e.g., gender-roles, males have more precise goals and females more complex, they value math as high as boys but also other things, for example, social, physical acceptance), b) the relative perceived cost or benefit of doing the activity compared to doing other activities, c) the previous affective experiences individuals have had with different activities,
and d) perceptions of the values of their parents, teachers and peers. These antecedents have obviously a great relevance to the career aspiration formation as well.

General results of studies looking at changes in the mean level of children’s school subject values generally shown that children value academic task less as they get older (e.g., Eccles & Midgley, 1989; Eccles et al., 1984). The studies related to elementary school (1st, 2nd and 4th grade) children’s subject values showed no differences in the value attached to math. However, clearer changes emerged concerning children’s valuing of reading, music, and computer activities which decreased across grades, whereas valuing of sports increased (Wigfield & Eccles, 1992, p. 283). It is also likely that the relationship between children’s achievement values and competence perceptions would change across the elementary and secondary school years which in turn can have an important influence on task choice. At the elementary level these relations are relatively weak, in part because children’s perceptions of competence are not clearly defined during the early school years and because children’s interests may be only weakly related to their level of performance. Through the middle elementary school years there should be an increase in the strength of this relationship. In addition, it seems likely that this relationship is positive when it emerges.

According to Wigfield and Eccles (1992, p. 287), when children reach the late elementary school and middle school years children’s achievement values become more differentiated. At this time children may begin to make some decisions about which activities are more useful to them, although these decisions still would be quite tentative and dependent on support of significant others. Through the junior high and high school years and beyond how useful children think different activities, how their parents and friends value these activities, are playing an increasingly important role in their decisions about importance of the special classes and free time activities (see Wigfield & Eccles 1992, pp. 293-294).

With respect to value development it would be interesting to study whether students have formed different values concerning both their secondary schooling and occupational careers. Additionally it would be interesting to examine how these values are affected by self-perceptions and parents’ socioeconomic background. In general it seems that values form along the competence perception but it seems still somewhat unclear which of these constructs may take casual predominance over the other one. As Wigfield and Eccles have asked “Do children first develop a sense of competence for different activities and then decide which they value or do their values for different activities develop first?” (1992, p. 288). Some of the current views
would hold that for school subjects competence perceptions may develop first because of the kinds of formal feedback students receive about their performance in school (e.g., Ryan, Connell, & Grolnick 1992, p. 178; see also Pokay & Blumenfeld, 1990, p. 41). Actually, to address relationships between students’ competence perceptions and learning values could be one interesting question area which could be close to the study objectives of this study.

As children become aware of their competence at different activities, they adjust their initially high values for all school activities so that their values and competence perceptions are in synchrony with each other. Alternatively, thinking more broadly about achievement choices, it is equally likely that children’s interest in certain activities would stimulate them to spend more time trying to master these activities which would increase their actual competence at these activities. This increased competence, in turn, should foster higher expectations for one’s success at these activities. These alternative causal relations can be tested only using longitudinal research, however, in both cases, there should be a positive rather than inverse association between competence perceptions or expectancies and achievement values.

One interesting question rose from this section. What if children have already mastered offered learning tasks? When there is neither an increase in competence nor higher expectations due to easy learning tasks it is probable that there are no such learning experiences available which could cultivate higher value formation. For this reason value components of motivation could be related to the other activities which could offer increased competence. This speculation has a close relevance to the objectives of this study. For example, it would be interesting to test how students’ environment (e.g., socioeconomic status, school, parents’ and teachers’ support) has affected their competence perceptions, learning values and future educational and occupational aspirations. Furthermore, Eccles et al. (1984, p. 39) have reported about gender differences related to the development of achievement values which could be useful when interpreting findings related to the aims of this study. Although Expectancy-for-Success approach does not seem to offer a clear developmental perspective which could explain development of the self constructs and academic motivation in children it offers valuable information concerning achievement value formation which can facilitate comprehension of the complex relations between different motivational constructs.

In conclusion, Harter’s self perception theory, which describes the construct of the self and formation of self-perceptions of competence from the developmental perspective seems to offer the most suitable approach for this study.
3.3 Construction of the self according to Harter

Self-concept may be defined in very general terms as the image we hold of ourselves (Hoge & Renzulli 1993, p. 449). According to Byrne (1984, p. 428), self-concept forms from our attitudes, feelings and knowledge about our abilities, skills, appearance, and social acceptability. Additionally, Pajares (1996, p. 561) has suggested that self-concept includes competence judgments coupled with evaluative reactions and feelings of self-worth. A cognitive facet of self-concept consists of awareness and understandings of the self and its attributes. Such cognitive components, in turn, can be differentiated into descriptions and evaluation of the self. Thus, self-concept is multidimensional, meaning that it includes cognitive, perceptual, affective, and evaluative dimensions. Individuals form these dimensions by self-directing their life. In other words, we sample experiences from these different dimensions day after day, and how we perceive these experiences leads to formed concepts about ourselves, which we use as a basic resource when directing our future actions. During the development process, which lasts our whole live, we save, evaluate, and organize these perceptions in memory, and we use these resources as basic background information when continuously forming our self-concept (Marsh, 1993b, p. 842). Our self-concept is therefore formed by the combination of these perceptions.

Thus, in general terms an individual’s self-concept is the continuously changing product of a process of self-conceiving where environmental reinforcements and significant others are in a central role (Shavelson, Hubner, & Stanton, 1976, p. 411). In this process, the individual attempts cognitively to acquire a clear and true image of him or herself, in order to meet his cognitive need of such a picture. Viewed form another perspective, the individual seeks continuously to fulfil the social task of being a well-defined person (Van der Werff, 1990, p. 13). When the person begin to form such a coherent image of his personal self, various problems may emerge. These may be concerned with the integration of contrasting ideas about himself, for example, or with questions about his true nature, his destination, or the meaning and purposes of his life. Based on the various life experiences it is evident that the creation of a clear picture of one’s own personality is no simple and unambiguous cognitive process. From origin, formation of the self-concept can be described to follow the same concept formation dimensions as normal concepts, such as “table”, “swimmer” and “velocity”. It is however, the referent of the self-concept. The object to which the concept refers, is a peculiar and subjective one and somewhat similar and somewhat comparable to the concept “truth” which is in some degree always subjugated only to the
person himself. In general it is possible to state that how well one manages to define the self, in meaning that it is accurate and testable, and how satisfied one is with this definition determines overall satisfaction of the person (i.e. self-esteem). Perhaps, due to haziness of the definition or its instabilities, some individuals are regardless of their high age still very dependent on feedback concerning how well they are doing. Epstein (1973, pp. 406-407) used a metaphor “scientist” to refer to the same parallel between scientific and individual self-conceiving, but he puts it in the reverse direction. In his view, the individual searches plausible (or desirable) hypotheses about himself and tries to prove or reject them to optimize pleasure/pain balance over the life time. However, when the transformations of the different roles which occur are considerable and may lead to transient self-concept contrasts, like being a child and at the same time being no longer a child, or to questions concerning the adoption or rejection of various aspects of sex roles. Actually the described self-definition problem, belongs to every self-reflecting individual during his whole life-time. Van der Werff, (1990, p. 20) has even stated that the self-definition problem is, in fact, is one of the major origins and justifications for the existence of sciences like psychology and philosophy. Mead (1969) presented his ideas concerning social foundations of the self in the following way:

“...the “I” is the response of the organism to the attitudes of the others; the “me” is the organized set of attitudes of others which one himself assumes. The attitudes of the others constitute the organized “me”, and then one reacts toward that as an “I”. Now, it is the presence of those organized sets of attitudes that constitutes that “me” to which he as an “I” is responding. But what that response will be he does not know and nobody else knows. Perhaps he will make a brilliant play or an error. The response to that situation as it appears in his immediate experience is uncertain, and it is that which constitutes the “I” “...”I talk to myself, and I remember what I said and perhaps the emotional content that went with it. The “I” of this moment is present in the “me” of the next moment. There again I cannot turn around quick enough to catch myself. I become a “me” in so far as I remember what I said” (pp. 174-175).

To sum up self-conceiving process seems to be a rather complex construction of the multiple selves, which is inevitably related to the use of culture-bound language.
In this study the main theoretical contributions in regard to the formation of the self-concept come from the findings of researcher Prof. Susan Harter (1981 - 1999) and her convincing formulation of how individuals evaluate the self differently in different domains. Her multidimensional approach provides a profile by which the development of the self-construct is comparable to the majority of the individuals. It gives a methodological option to use the profile-model of the self as a comparison tool when focusing the study toward subgroups of individuals who share common features, like learning disabled children, gifted children, sportive children, and so forth. Her recent book “The Construct of Self; Developmental perspective”, (Harter, 1999), contains many research findings from her work and provides a very coherent picture about the development of the self. The book’s strength and advances for the use of it as a guide book, come from the wide array of examined research studies from 1978 until today, which are introduced under the books’ developmental, clinical, and various other headings. Although the book was not available at the time of developing the study questions, not using the book as a one of guiding theoretical frame for the following sections would be unwise.

In the following section the early development of the self and how it is affected by the child’s growth environment will be introduced. Additionally, Harter’s theoretical contributions are used to explain how the early observations and perceptions of the child are formed and how these early self-beliefs affect the child’s motivation to learn. Simultaneously, these contributions are reflected briefly to the recent findings concerning classroom motivation, for example, how external feedback and learning instruction affect the formation of self-perceptions.

3.3.1 Development of self-representations

According to Harter, self is primarily a cognitive structure because individuals, as already briefly described in the opening section, are continuously involved to find and test theories about self, make meaning about the world and assimilate one’s experiences (see also Epstein, 1973, p. 410; Fischer, 1980, p. 513). When studying self-structures, Harter has found that changes in the organization of self-structures are affected by the cognitive development level of the person. As a result she has stated that it is possible to predict organization of the self-presentation related to different developmental periods of the child which she calls normative changes. However, here, the development of self-presentations is viewed as an always continuing develop-
mental process, which can differ remarkably between different domains, individuals and social cultures. Thus, because individuals are living in interaction with other people, the self is also considered to be a social construct. This means that how the socialization agents, such as, caregivers, peers, teachers and the larger sociocultural context will influence the particular content and valence of one’s self-presentations varies (cf. Mead, 1967, p. 173; Fischer, 1980, p. 525). Harter (1999) writes that regardless of her perspective which consider the child as an active agent of his own development (as cognitive developmentalists do) including self construction, “….the child is also at the mercy of the particular caregiving hand they have been dealt” (p. 9).

According to Harter (1983a, pp. 294-302), it is possible to find different developmental phases of self as both cognitive and social construction from early to late childhood. Because language is a perquisite for development of the self, the view she is taking comes from the child’s perspective, for example, how she or he verbally describes the self during the different development periods. The following periods, in which the differences between self-presentations are merged will be more closely introduced: 1) from toddlerhood to early childhood, 2) from early to middle childhood, and 3) from middle to late childhood (Harter, 1999, p. 29). Furthermore, the general effects of these periods are introduced including how cognitive development affects the 1) actual structure of the self-concept, how it 2) mediates the impact of the reactions of socializing agents to the self, and 3) how the social context, in turn, impacts on these cognitive-developmental acquisitions.

Even though Harter (1983-1999) relates findings concerning the self-representation developments to Piaget’s developmental framework, she also claims that the complexity of self-development is not possible to explain only according to the Piagetian three-stage analysis. However, it is possible to draw some correlation. For example, during the pre-operational period children have different categories for how they define self, but these categories, for example, concerning gender and age grouping, are neither hierarchically organized nor very accurate. Additionally, the notion that young children tend to describe the self in terms of concrete, observable characteristics such as physical attributes, material possessions, behaviors, and preferences, are typical characteristics of the preoperational period of Piaget. Also the transfer from the presented self-presentations to the trait-like constructs needs a developmental level that equals Piaget’s period of concrete operations. Harter (1983a) writes: “For example, a trait label such as ‘smart’ could be cognitively viewed as a higher-order generalization that subsumed the behavioral manifestations of scholastic competence in several school subjects” (p. 294).
The movement to the level of formal operations during adolescence, makes more abstract self-definitions based on psychological processes such as inner thoughts, emotions, attitudes, and motives, possible.

Regardless of some parallel developmental periods, some criticism against Piagetian view has also been made from the neo-Piagetian and information-processing perspective. The main arguments are based on importance of a child’s experience, instruction and practice, which can be seen as mediators, which actually define the rate (and direction) of the individuals’ progression through the cognitive levels (Fischer, 1980, p. 513; Case, 1991, pp. 226-227; see also Vygotsky, 1978, pp. 70-72).

3.3.2 Language development and its relation to self-presentations

According to Harter’s (see e.g., 1983a; p. 294) developmental Self-perception theory, language is a perquisite for development of the self. Assimilated words and concepts from the surrounding culture form a frame in which the self can be defined (see also Scheinin, 1990, p. 88). The development of language eventually changes the human memory and thinking processes as a cognitive capacity which in turn dictates the structure and organization of these definitions (Lurija, 1977, p. 90). For example, one common feature related to the first uses of language is where young children contrast the surrounding world according to evaluative judgements, either labeling something as “good” or “bad”. This is equally true when determining the first self-attributes (Cain & Dweck, 1995, p. 29; Dweck, 1999, p. 97). During this period socializing agents such as caregivers of the child are mostly responsible for the valence of the self information. Therefore, the acquisition of language which is strongly related to the surrounding environment determines the development of the self-notions, their structure and the pace of how different developmental levels are acquired and passed through. For example, according to Case (1991) “…verbal and representational skills permit the shift from an “explicit” self that was sensorimotor in nature to an “implicit” self that she calls “referential Me-self” (p. 216). On this level language development facilitates the toddlers to move to a new level of self-awareness, in which they can represent themselves as an object. On this plane, the mind can separate some ideas from the actual experience, as Lurija (1977, p. 92) has stated. In other words, the imagination is formed and it can be used to accomplish planned functions and the creation of ideas. Within this context of the self-development of the ability to take the perspective of the other or imaging
oneself from the generalized other has a special meaning which reflect development of self-awareness (Harter, 1983a, p. 292). It is presumed that those children who learn language skills early, for example, by a large vocabulary, can have also more self-related notions about themselves. Gradually, the language development allows the children to become aware of the world of rules, prohibitions and standards and how they can meet them (Neihart, 1998, p. 187).

The another essential part of the development of self is the formation of narratives related to self. Some authors have called the same phenomena “autobiographical memory” in different contexts (cf. Woolfolk, 1995, p. 279). The autobiographical memory, which can be categorized as a part of the episodic memory, represents one-time events that are long-lasting and particularly meaningful in terms of the “life story” which each of us creates about ourselves. As early as 1 to 2 years, children begin to talk about the past, guided by adults, usually parents, who can expand on their fragmented recollections. Gradually, children adapt to the narrative thinking, in much the same way as Vygotsky (1978, p. 90) indicated that higher cognitive processes emerge out of social interaction with more expert partners. The basic principle is that by language development, one is able to create narratives or stories about her or his life and this facilitates the formation of a more and more constant portrait of the self. This enables a person to overcome very well-known phenomena, called “infantile amnesia”, which explains why one is not able to recall the occurrences before a certain age. Usually the average age when these memorable narratives appear is at 3 years. In some extreme cases, some persons have managed to recall certain events that happened to them at the age of two. However, according to Woolfolk (1995, pp. 279-280), the requirements for forming these narratives were firstly, that the child must have a well-developed image of the self (psychological self). Thus, in the first few years of life, autobiographical memory is not yet mature enough to serve as an anchor for one-time events, which become more difficult to retrieve over time if they do not take on personal meaning. Secondly, forming an autobiographical memory requires that children organize personally relevant events in narrative form so they become part of a “life story”. The formation of autobiographical narrative happens by talking about the past. Parents or adults who talk about the past help their children build the child’s narratives related to personally meaningful experiences by, for example, discussing photos and different historical events of the family. In this period, adults dictate the content of narratives and accordingly the first images of the self. Although there has been convincing evidence that “life stories” have been created in this way, it is also reasonable to conclude that the quality of how
these narratives are told also plays a significant role. Thus, the development of the self and language are reciprocal and occur in parallel. The development of the one has an effect on the development of the other and together they facilitate, for example, the formation of autobiographical memory. In this study, the children of the Experimental group have been shown to have some advanced language skills over the other children at pre-school age and for this reason it could be assumed that their self-notions had also been somewhat advanced compared with other students during the first school years. How this could reflect to the development of their motivation is discussed in the following section.

To obtain a clearer picture concerning the development of self, Harter’s (1999) normative developmental changes of the self-representations are presented in six different time periods from very early childhood to late childhood. Special attention will be focused on the relation between the self and language development. The main features of the self-structure will be presented with respect to each developmental period and furthermore, some potential advances and liabilities concerning the forming school-related selves and their affects on learning adjustment and motivation will be discussed in light of recent study findings. When focusing on the age categories, it must be remembered that the differences between the developing children can be quite remarkable. The reasonable way to interpret these examples from the given categories is to consider them as an approximate mean of the age group described. The extremes, largely depend on the child’s socialization history in the past, so that both ends of the self-representation periods, are signs of either premature development, or on the contrary, some major deficit related to self-development (Harter 1999, p. 35; cf. Fischer, 1980, p. 483).

3.3.3 Normative-developmental changes in self-presentation and related influences on students’ school-related selves

During the Very early childhood period (ages 4 to 5) descriptions are very concrete cognitive portraits of self (Case, 1991, p. 225). These portraits include representations of observable features, like behaviors (e.g., “I can dive”, “I know my numbers”, “I am five-years-old”, “I can run fast”), abilities (“I am strong”, “I am fast”), emotions (“I am glad”), preferences (“I like ice cream”, “I love my cat”), and possessions (“I am hiding behind the sofa. Try to find me!”) (Harter, 1983a, p. 292). These descriptions and characteristics are isolated from each other, because children of this age are unable to combine such characteristics. The qualities of these categories are also quite
unstable and children are not able to test these different hypothesized selves. As a consequence, one typical feature is that self-presentations are very positive. According to Harter (1999, p. 35), the overestimation is due to children’s inability to discriminate their actual from the ideal, desired competence during this period. The social comparison is non-existent in this period, because the child does not yet possess role-taking skills. Harter writes: “The ability to use social comparison toward the goals of self-evaluation requires that the child be able to relate one concept (his/her own performance) to another (someone else’s performance), a skill that is not sufficiently developed in the young child” (1999, p. 38). The children of this age are not able to tell or are not aware of managing to possess attributes and emotions of opposing valence (e.g., good and bad, nice and mean). Their emotional scale is more likely to be undifferentiated - having only an on or off switch - which indicates that they are not able to make discriminations between different emotions or between different domains (cf. Shavelson et al., 1976, p. 414). Furthermore, because of these cognitive limitations, children are not able to form concepts like global self-worth or self-esteem (Harter, 1983a, p. 294).

As stated earlier, children continue to overestimate their abilities during the Early to middle childhood period (ages 5 to 7) as well. Some observable advances in this period are that children begin to display for the first time the combination of concepts that were isolated from each other in the earlier stage. They are able to, for example, make catalogues about their competencies (e.g., running, swimming, schoolwork) which they are good at. Also imagination develops and helps children to play different roles such as a parent, teacher with him or herself (Harter, 1999, p. 41; see also Mead, 1967, p. 150). In general, the all-or-none thinking reflects the major components of thinking concerning self-descriptions (e.g., good versus bad, nice versus mean, etc.) and still leads to very positive self-descriptions during this period. Some children can show the foundation of appreciation of evaluations concerning the self, although on this plane children are not able to internalize these evaluations because of limitations of cognitive development. Furthermore, some children can show in this period signs of making some comparison of their present accomplishments and earlier ones. In fact, the fast skill acquisition typical for this age-period can offer another explanation why children continue to have very positive self-evaluations. For example, in the study Phase I, regardless of clear reading, writing and math performance differences between study groups, assessed afterwards in the same test situation by the researcher, all children except one child from the Control group, assessed themselves as “very good pupils” who have not experienced difficulties in learning tasks
Thus, it has frequently been claimed that children of this age have higher expectations for future performance than older children and they believe that effort is likely to bring success in most circumstances (Skaalvik & Hagtvet, 1990, p. 305). The children who attend school with advanced knowledge or skills related to the school-world probably have better chances of forming a positive academic self during the first school years. However, this can happen only when the surrounding environment, like the school, family, or peer group, values the acquired skills in the form of positive feedback and reinforcement. This process can gradually help to form a positive perception of self-competence in this particular domain (Dai, Moon, and Feldhusen, 1998, pp. 46-47). In contrast to this, lately Cain and Dweck (1995, p. 29) found that some first graders who were classified as nonpersisters (children who chose to repeat the one puzzle they previously solved instead of more challenging ones were classified as nonpersisters) appeared to act like learned-helpless children, such as those observed among the older children. For example, they were more likely than persisters to attribute their poor performance to a lack of ability, and they expressed more negative affect about the task and additionally they usually had reduced expectations for success on a second task. What was remarkable that already, among the first graders, learned-helpless children were less likely than mastery-oriented children to focus on the process-related causes of performance and instead gave greater emphasis to performance outcomes as causes of performance. That is, they were more likely than their classmates to focus on a final evaluation of a product, such as whether it got “wrong marks”, than on the controllable processes, such as effort and classroom conduct, contributed to these outcomes (Cain & Dweck, 1995, p. 48). Thus, young children’s differential emphasis on outcomes versus processes bears a conceptual resemblance to older children’s belief systems about intelligence and achievement, including their reported focus on outcomes versus processes. Although the results of the study of Cain and Dweck (1995, p. 48) suggested that young children may not yet have systematic beliefs about whether or not their intelligence is malleable, or that they do not draw on these beliefs when thinking about achievement tasks, the findings suggest that the cognitive correlates of motivation in older children may have their roots in key cognitive differences in early development. This lack of attention to achievement processes (which may arise from individual differences in goals, cognitive styles, or contextual factors) may steer some children already during preschool years away from identifying and utilizing those strategies that would improve their performance and skill (cf. Borkowski & Büchel, 1983, p. 125; Krause, 1997, p. 108). In fact, Breuer (1989, p. 6) found that students who
received low grades in their first school assignments formed negative and relatively permanent attitudes toward school during the first school years. Although, these children seemed to “recover” during summer holidays, according to their attitude grading, the changes were usually only temporary and these children usually assimilated unhappy attitudes toward learning again after their first set backs. This finding could support indirectly the findings of Cain and Dweck (1995) (see also Dweck & Lagget, 1988, pp. 257-258). Thus, the children who emphasize task outcomes rather than related processes may come to believe that intelligence is fixed because they do not attend to those processes that may actually improve their ability (Borkowski & Büchel, 1983, p. 125; Borkowski & Thorpe, 1994, pp. 54-55). These findings are very much in line with recent studies on self-regulation and skill acquisition (cf. Glaser & Chi, 1988, p. xxii; Span, 1995, p. 84; Glaser, 1996, pp. 306-307; Zimmerman & Kitsantas, 1997, pp. 34-35). In any case, when one is experiencing education as something unpleasant during the first school years, this can negatively affect a child’s developing personality (self-worth) which can have lasting and self-defeating properties (cf. Keltikangas-Järvinen 1994, p. 180).

To sum up, firstly, it seems that already during the first school years both external and internal evaluation processes can give gradually a sign for a child about his performance level, which in turn has an impact on later goal setting and motivation. Secondly, other longitudinal measurements have shown that already during the first school years there are quite remarkable declines in children’s school and social self judgements. According to Aho (1987, p. 55), children have increasing possibilities to compare their accomplishments to those of others, so that originally overpositive self-perceptions decrease and become more accurate after the first two school years (see also Stipek, 1981, p. 408). Finally, children are still at this period unable to formulate or understand concepts like global self-worth or self-esteem.

During the Middle to late childhood period (ages 8 to 11) especially, the emergence of logical thinking allows more possibilities to handle more domain specific information related to the different facets of the self simultaneously. The following described advances in self-theory are typical for the concrete operational period, which allows children to form organizational hierarchies, such as “I am smart because I am good at reading, spelling and math” (Harter, 1983a, p. 294). These higher-order generalizations which can be drawn from subsumed behavioral manifestations of scholastic competence in different school subjects, let children begin to test inductively their self-theory by making comparisons concerning performances between
different domains and comparing their performances with those of other children. It seems that during the first 2 or 3 school years, such differentiation is not possible, because children are quite “immune” from failures and these failures are not taking as threatening for the self. The exception to this is those children who have assimilated outcome focused views of self (cf. Cain & Dweck, 1995, p. 48). Additionally, according to Harter (1983a, p. 295), the children are not able to use social comparison as a source of self-evaluation before this cognitive developmental phase, which allows children to relate one concept to another. Thus, children become gradually more able to differentiate their competencies from each other and they enter the developmental phase where they are able to make bidimensional judgements concerning their aptitudes. These can include simultaneously such dimensions related to self as “I am good at school, but actually I am not that good in physical education and I am a total idiot with my friends”. Because of these cognitive advances self-hypothesis-testing becomes a more complex process. It is not enough that acts are accomplished successfully in relation to the earlier performance, but it becomes more important to test antecedents of the formed self-theories by comparing how well he or she is performing in relation to others. Apart from the area of cognitive development, an additional push to enter this comparison process comes from changes in the educational environmental which are increasingly emphasizing social comparison (Eccles, et al. 1993, p. 93; Aho, 1996, p. 32; Harter, 1996, p. 29). Furthermore, parents of children of this age are also shown to commonly guide their children toward social comparison, for example, between siblings, peers, class - and / or teammates (Flink, Boggiano, Main, Barrett, & Katz, 1992, p. 208). Actually, according to Ruble, Grosovsky, Frey, and Cohen (1992), a motive to compare oneself with others develops only after “considerable reinforcement” and the “larger socialization by the community through school” (p. 150). According to Harter (1999), recent findings have shown that “the primary motive for children in this age period to utilize social comparison is for personal competence assessment”. She continues “...with the emergence of the ability to rank-order the performance of other students in the class, all but the most competent children will fall short” (p. 53). According to Skaalvik (1997, p. 73), the preoccupation with social comparisons may lead students with low ability perceptions to focus on avoiding looking stupid, predicting a negative correlation between ability perceptions and self-defeating ego orientation (see also Harter, 1992, pp. 107-108). In contrast, it may also lead students with high ability perceptions to focus on outperforming others, predicting a positive correlation between ability perceptions and self-enhancing ego orientation. Actually, Cain and Dweck (1995, pp. 48-49) have stated that
the engagement to the social comparison however largely is dependent on children’s earlier assimilated process versus outcome focused learning (see also Dweck, 1999, p. 17). When children are concerned to improve their competence and learning instead of gaining better grades than others or avoid looking stupid, the social comparison process is more likely to be informative than threatening (see also Butler, 1995, p. 347). Actually, according to Dweck and Legget (1988, p. 262) children during this developmental period are forming implicit theories of intelligence. In the other words, their implicit conceptions about the nature of ability, begin to affect to their motivational engagement. Some children favor what Dweck and Legget (ibid.) have determined as an incremental (malleable) theory of intelligence: they believe that intelligence is an increasable, controllable quality which is improvable by effort. Others lean more toward an entity theory of intelligence which means that they believe that intelligence is a fixed or uncontrollable trait and there is not much to improve it (Dweck & Legget, 1988, p. 262; cf. also Hofer & Pintrich, 1997, p. 127). Wigfield and Eccles (1992, p. 296) described the same phenomenon by using different terms. They also argued that regardless of the perceived ability some children define ability as relatively stable and judge it in comparison with others and so have the notion of “ability as capacity”. In this view children see ability and effort as inversely related, so they base their assessments of ability on how much effort the individual has to expend. The more effort expended, the less ability one has. This feeds the ego-involvement goal orientation, since viewing ability as capacity leads to an emphasis on demonstrating that one has more ability than others. It can be assumed that if during this age-period the Experimental group still possessed advanced language skills and other observable characteristics mentioned earlier over the other children, they were also able to enter this social comparison level earlier. Thus, they probably became aware earlier of these school performance differences and if they at the same time were ahead of their classmates in respect of academic achievements, they could form more positive perceived academic competencies. When the results from these early comparisons are positive (the original positive hypotheses are not rejected) and the self-theory is tested to be reliable concerning academic subjects, the child can maintain or even see him or herself as being more competent than earlier. However, simultaneously, when the number of the social comparisons increases there are also increasing numbers of possibilities to perceive him or herself as unsuccessful in different domains. The latter fact is reported partly to explain the continuous decline of both academic self-concept and intrinsic interest from middle childhood through to late adolescence (cf. Harter, 1981).
According to Harter, (1983a, p. 362) research has also revealed individual differences among elementary school children in the degree to which they can make realistic judgments about their competence. Certain children vastly overemphasize their competence, while others seriously underrate their abilities. Thus, accuracy of these judgments may be an important individual difference variable influencing the effectiveness of self-monitoring and self-evaluative components. For example, deficits to make such accurate judgements can be signs of undeveloped self-related information or it can be an indication of an individual’s tendency to protect self when facing threats. Gradually, during the first school years social comparisons begin to have additional informative effects, which can produce motivational changes both good and bad. Put into other words, Hautamäki and Hautamäki (1997, p. 336) describe that children are forming “school personality” at the ages of 8 to 10. The term is used to explain how the child begins to view him or herself as a learner in comparison to the other children in the school and classroom context. However, it is probable that when early elementary children are graded by their school performance, they are not able to differentiate the received information as separate from the larger context because of their cognitive limitations. Thus, the earliest feedback can give her or him an overall sign as a student by which a child can classify her or himself, for example, as an A, B, C student or alternatively just as a good or bad student (cf. Breuer, 1989, pp. 6-7). Keltikangas-Järvinen (1994, p. 179) shares the similar arguments and adds that during these school years a child is forming quite stable perceptions what her/his capacities to perform are. In these early perceptions which are enhanced by external comparisons, students can be seen as having various properties such as learning disabilities, being non-gifted, being average in terms of their performance, or being gifted (see also Aho, 1996, p. 28).

Given that children of this age become more able to make many sided domain and accurate specific self-judgements, they become able to also make general judgements about their global self-worth. Additionally, during this developmental period children acquire perspective-taking skills. From now on they are able to imagine or think what others are thinking. These advances, especially imagination concerning thoughts of others related to him or herself are especially crucial for the affective and evaluative side of the self (Harackiewicz, Manderlink, & Sansone, 1992, p. 115). Children become aware that when others can accept them they can also accept themselves as they are. In particular, the ability to appreciate antecedents of the global self-worth is one of the main advances of this developmental period. This is also the time when children begin gradually to put more value on different school subjects (Eccles et al., 1984, p. 29; Wigfield & Eccles, 1992, p. 285).
During the *Early adolescence* (ages 12 - ) the children begin to go through a large amount of remarkable developmental changes including cognitive, pubertal, and physical ones. In addition, the social demands of the early adolescent change. For this reason, during adolescence both cognitive and social processes contribute clear changes in organization of the self. On average, the content of self-portraits begins typically to consist of interpersonal attributes and evaluations of social competence during this phase and they become often very central in the life of young adolescents. This becomes evident because ongoing cognitive development makes it possible to differentiate the selves in the different relational contexts and to construct more abstraction about the self (Harter, 1999, p. 65). Additionally, self-presentations are presented in form of competencies such as scholastic abilities (e.g., “I’m intelligent”), as well as affects (e.g., “I’m cheerful”). During this developmental period the self becomes increasingly differentiated. Adolescents are able to differentiate how their behavior or affect changes in different contexts (cf. with peers, mother, father, school etc.). These advances in cognitive development make it possible to combine trait labels to the higher-order self-concepts which in turn allows adolescent to form abstractions from different selves. For example “…one can construct an abstraction of the self as “intelligent” by combining such traits as smart, curious and creative” (Harter, 1999, p. 62). The same is equally true with the emotion concepts. However, these formed selves are still extremely differentiated and can contain contradictory overlapping information. The adolescents are not yet able to combine these different views of selves and as a result the information concerning the self is somewhat black and white information.

As a part of the cognitive development, in the light of Piaget’s theory, when cognitive operations such as categorizing and abstraction establish themselves the ability to engage in logical and hypothetical thinking should emerge (Piaget, 1977, pp. 75-79). On this level the adolescent should be able to use the hypothetical-deductive skills to create and test formal theories. Actually, from the Piagetian perspective, self-theory as any other formal theory, should during this period include elements like how meaningful, empirically valid, internally consistent, coherently organized, testable, and useful they are. Moreover, during this developmental period adolescents should be able gradually to organize, categorize, compare different self-perceptions and test formed assumptions related to the self (ibid.). Nonetheless, according to Harter (1999, p. 65), adolescents are not yet able to form a coherent theory of self, because adolescents in this period are not yet able to compare formed attributes to one other and see them as opposites as they are likely to be. For this reason, the self-theories and descriptions are very
seldom empirically valid, internally consistent, and they are sometimes far more than realistic. That is why the neo-Piagetian approach is needed to fully understand changes during adolescence, how the cognitive-developmental I-self processes result in very different Me-self organization (see also Fischer, 1980, p. 522).

Entering the new developmental level can cause some difficulties to emerge. As Harter (1999) states: “...there are liabilities associated with these emerging self-processes. For example, although abstractions are developmentally advanced cognitive structures, they are removed from concrete, observable behaviors and therefore more susceptible to distortion. The adolescent’s self-concept, therefore, becomes more difficult to verify and is often less realistic” (p. 66). Another typical example of observable behavior is that the adolescent very easily makes overgeneralizations related to their performance, because they cannot yet cognitively control the situations. As a consequence, the unrealistic self-representations are sometimes formed based on a single experience, which can vary significantly from time to time. For example, the statements like, “I am absolutely great” or “I am absolutely an idiot”, can rise according to how one has perceived and interpreted the situation. Thus, increasing engagement to the social comparison during this age period leads to the increased awareness of the general values of the other adolescents. In an academic context, values of the parents, teachers and friends along with the personal expectations and actual performance assessments make hypothesis-testing problematic. For example, when the hypothesis “I am smart, because I am good in spelling, reading and math” is shaken by failures in math, the overall value of being smart can gradually change. It is, however, more probable that after continuous objective or subjective failures, interest in mathematics decreases along with the related values (cf. Deci & Ryan, 1992, pp. 24-25). As a consequence, the hypothesis is reformulated to the form “I am linguistically smart, because I am good in language related subjects”. In this explanation, the value of mathematics is eliminated (its value has been dumped or simply put aside) and being smart has somewhat regained its earlier properties. Additionally, this may lead to the changed ability attributions to perform well in mathematics. Consequently, ability perceptions and values are back in balance, and the child may still have a very positive general self-esteem because (s)he is doing well on the tasks that are important to him or herself (cf. Eccles & Wigfield, 1992, p. 301). After this new formulation of the concept, it is probable that the child would have even more motivational resources available for the language related subjects because she or he has put mathematics aside from the “smart”-definition. However, when the significant others consider mathematics
to be highly valued and important then the process of putting mathematics aside becomes more difficult and accordingly if this contradiction stays unsolvable it can affect the child’s self-esteem. Thus, in the process of the value and interest development the children are very dependent on significant others, like parents, peers, and teachers, and their opinions related to the particular domain, and the self is seen through validation by these people (Flink et al., 1992, p. 211; see also Byrne & Worth Gavin, 1996, p. 226). According to Wigfield and Eccles (1992, p. 288), it is not clear if the perceived competence is predominated by development of values or vice versa, but they suppose that school subject competence perceptions may develop first, because of evaluative feedback. As a consequence children “…adjust their initially high values for all school activities so that their values and competence perceptions are in synchrony with each other” (Wigfield & Eccles, 1992, p. 288). From the developmental perspective, values of younger children are less stable than those of adults, since young children’s choices about which activities they can succeed on and which they value may be less rational and/or conscious than the choices of adolescents or adults (Eccles & Wigfield, 1992, p. 303; cf. also Harter’s formulation concerning adolescents’ self-construction, 1999, pp. 65-66). To sum up, in most achievement situations self-perceptions and values are positively related, so that the individual will value those tasks that (s)he does well and those which are valued by significant others such as parents, teachers, peers and friends. Especially, during adolescence extrinsic sources of task value, such as parents’ opinions, gender role intensification and peer influence, exert a greater influence on choice and involvement than the intrinsic interest value of the task according to Wigfield and Eccles (1992, p. 287). Values of the teenagers include usually, for example, common age-related dress, language, and behavior “codes” which in turn, for example nowadays, contain typically the concept that high achievement in school subjects is something you should not be proud or show off, because it is not cool. For this reason it is possible that some gifted attempt to hide their academic interests or choose other interest to gain more approval among their peer group. However, when these concerned high achieving students either fail to gain approval among peers or are not supported with developing their strengths, then the whole self-worth can be in danger. From this perspective it would interesting to study if the social perceptions, learning value ratings and both educational and occupational preferences of the Experimental group were similar to the those of the others.

When children are entering the Middle adolescence period, self-descriptions continue to become more differentiated and the unreflective self-acceptance of earlier periods begins to disappear. Furthermore, the adolescent becomes
aware of the meaning of the context, in which differences occur in relation to how they describe themselves. However, they may are still unable to handle these controversies and as a result, adolescents experience conflict, confusion, and distress. The earlier unquestioned self-truths become problematic self-hypotheses displaying questions like “Who” or “What am I” (Harter, 1999, p. 68). Experiences of intrapersonal contradictions and discrepancies as well as those of lack of anchorage, lack of authenticity, or personal vacuum are all representative of the problematic nature of self-concept still in this age. Although, according to Piaget (1977), children should be able to form these hypotheses concerning the self, the process of formation of the self-conception continues to be essentially problematic due to the variety of perspectives which can be taken as the source of self-reflection and the variety of social attributions, role-characteristics, external expectations, and so forth, which are perceived by the individual. For this reason, when adolescents’ fail to construct or choose a coherent theory among many formed hypothetical selves which could match to the internal desires (ideal selves) and external demands, symptoms like uncertainty, hopelessness, and depressive behavior can emerge (cf. Epstein, 1973, p. 410). During this period, when students seek reinforcement on how to adjust between these contradictory perceptions, the environment and support from significant others can ease or complicate the self-conceiving process. If the standards and attributes of the peer group, teachers, and parents are not parallel, the information inevitably increases the amount of confusion. In some cases, concern about how to define the true self from this contradictory information can lead to unhealthy discrepancies between the ideal and real self-concept, and cause lowered self-worth. Harter (1999) especially mentions both the problems of females, who adopt a feminine gender orientation, and ethnic minorities, who need to create selves that “bridge between these multiple worlds” (p. 76).

As soon as capacities of self-reflection and social cognition permit, the individual wants to acquire a clear and true conception of him or herself. When entering the Late adolescence period, individuals want to know more about themselves, as well as to design the person they want to be. Further advances in cognitive development leads to greater emphasis on logical consistency in the self-image and also to the ability to views one’s self-image as one of various alternatives: other persons may have another view of me; another course of life or other circumstances might have resulted in quite another perception related to “me”. It is typical that the adolescent has to gain cognitive and emotional acceptance and appreciate positively the imposed personal freedom which is inherent in human existence — the freedom to choose identity, in a cognitive as well as an ontological sense. Thus, during
this period limitations of the preceding periods of early and mid-adolescence would appear to be overcome as a result of the cognitive developmental changes and gradually adolescents begin to internalize the attributes reflecting personal beliefs, values, and standards. By meeting and achieving those standards adolescents can gain an increase in their self-worth. Moreover, the concentration on future selves contributes to a sense of direction. According to Harter (1999), “a critical cognitive advance can be observed in the ability to construct higher order abstractions that involve the meaningful integration of single abstractions that represent potential contradictions in the self-portrait (e.g., depressed and cheerful do not conflict because they are both part of being moody)” (p. 86). Furthermore, the ability to overcome contradictions, which used to cause confusion in the earlier developmental periods, improves. In addition, adolescents are able to admit that they are able to possess different roles according to the different domains. In this phase, the adolescent becomes more aware of possible contradictions which arise from the different requirements of the context. They can separate the situations in which, for example, the behavior is more likely to be appropriate (in offices and with adults) and inappropriate (with friends) according to normal standards. Nevertheless, conflicts between role-related attributes does not totally decrease in this period. Conflict will be more likely to occur if the new skills that allow for an integration of apparent contradictions are not fostered by the socializing environment. There are some degrees of uncertainty still present, especially in those cases in which major truths about the self are derived from omniscient and omnipotent adults as well as peers. In general, the adolescent’s developmental task can be described as an intensification of every self-reflecting individual’s lifelong task (Van der Werff, 1990, p. 30).

To sum up, understanding the background of the self formation processes can help educators and teachers, for example, pay attention to how students’ beliefs, values and perceptions are related to their motivation and affected by feedback. In the clinical sense, related awareness can help significant others to overcome the problematic developmental period that often emerges during mid-adolescence. For example, the observable behavior related to the all-or-nothing thinking, which is typical for adolescents, can be in some cases interpreted as signaling the onset of a manic-depressive disorder, instead of an age-appropriate diagnosis, which explains the behavior based on the lack of cognitive control over differentiated self-attributes. The latter explanation interprets symptoms actually as a part of the normal self-development in that developmental period (Harter, 1999). Harter’s “Normative-Developmental Changes in Self-presentations”, provides practical implications as well as a solid theoretical framework to understand some observable behavioral
characteristics of developing children and compare them with the average. In this study Harter’s self-perception theory is used to explain development of the competence perceptions and school-related values which are stated to affect motivation to learn and accordingly to the fulfillment of potential (Harter, 1996, pp. 25-28; Wigfield & Eccles, 1992, p. 301).

3.3.4 Gender differences in self-concept-evaluations during adolescence

In this section some of the gender-related differences with respect to the construct of self-concept are introduced. In adolescence, the period of major concern of this study, the self-concept continues to contribute further articulation and discrimination. According to Chikzentmihalyi et al. (1993), adolescence is a time when emerging concerns about social and sexual competence begin to place increased demands on a young person’s time and attention (p. 73). During that age period, youngsters face considerable pressure from their peers and culture around them to conform to sex-role stereotypes. These stereotypes have differential gender effects on self-concept, which can subsequently affect confidence in their abilities and competence in a certain domain, and which can, for example, form barriers to achievement. According to Wigfield and Eccles (1992, p. 292), the early emergence of sex differences in the patterning of values attached to different subjects suggests that early socialization practices are having a strong impact on children’s valuing of those subjects. For example, increasingly already from mid-childhood, girls start to receive less positive feedback from teachers and people close to them than boys do and at the same time girls become more sensitive to the feedback they are getting (Dweck, 1986, pp. 1045-1046). Eccles et al. (1984, p. 39) have studied and reported about gender differences in regard to their model which have relevance also for this study. They have found that compared with males, females tend to have lower estimates of their abilities, performance, and expectations of future success in some achievement situations, even when they actually perform as well if not better than males. Additionally, when the sex appropriateness of the experimental task is manipulated, females expected to do less well than males on male-typed tasks; in contrast, females expect to do at least as well as males on “feminine” and neutral tasks (cf. differences in Math and English). Related to the students’ expectations whereas males and females started and ended with similar expectancies, females’ expectancies dropped lower than males during the failure trials (Eccles et al., 1984, p. 30). These results show in some degree that females
are more sensible, depended on and they use feedback to modify self-evaluation and expectancies more than males (see also Calsyn, & Kenny, 1977, p. 142). This could reflect cultural differences attached to the sex-roles. The males are usually described as being more introvert and self-oriented whereas females are more likely to be more extrovert and socially oriented in western cultures. Eccles, et al. (1993, p. 99) found that early developing girls (who reached puberty during elementary years) desired a gradual increase in the opportunity for self-determination and participation in decision and rule making. When these girls were denied this possibility to those activities they wanted they suffered from a loss of motivation. In general Eccles et al. (1993, p. 100) have concluded that adolescents develop best and maintain their interests when they have opportunities to take part in decision making and when they can be self-determined in an emotionally supportive environment.

According to Harter (1983, pp. 297-299), when the content of self-concept becomes increasingly differentiated during adolescence then gender-differences emerge simultaneously in that period (see also Wigfield et al., 1991, p. 563). Supporting evidence for the argument comes from Harter’s numerous findings which she has produced using her instruments. For example, The Self-Perception Profile for Children by Harter (1983b) contains specific components, or subscales, which are Scholastic Competence, Athletic Competence, Social Acceptance, Physical Appearance, Behavioral Conduct, and a separate subscale for Global Self-Worth. In factor analyses, Harter has found that in adolescence, each of five specific self-concept domains forms its own discrete factor. As Harter’s (1983b, 1985, 1996; Harter et al. 1998) studies have shown, the closest variables connected to Global Self-Worth among adolescents have been Physical Appearance, Scholastic Competence and Social Competence.

Recently, numerous studies have shown strong evidence concerning gender-related differences in perceived self (e.g., Marsh & Yeung 1998, p. 711). The general pattern seems to be that boys tend to have higher self-concept ratings. Specifically, the greatest differences appear in the perceptions related to “Physical Appearance” and “Athletic Competence” (see also Chan, 1996, p. 192). According to Harter (1999, p. 131), the mean scores of females on these two subsales fall within the range of 2.3 to 2.6, whereas scores for males typically fall within the range of 2.8 to 3.3 on the 1 to 4 scale. Moreover, these gender differences are highly significant. The research (ibid.) has shown that females have higher scores only on the “Behavioral Conduct” subscale. With regard to other subscales Scholastic Competence, Social Acceptance and Global Self-worth no statistical gender differences was reported although
scores are slightly favoring males with this regard as well. According to Harter (1999, pp. 131-132), the findings are solid across the age level from elementary to college level, and also when compared to several different Western countries (see Figure 2). Concerning the strong evidence about generalization of the profile of self-concept and gender-related differences of the construct of the self, it could be assumed that the same differences between gender would also exist among the Finnish adolescents. Up to now there is no such information available using Harter’s instruments in Finland. Instead earlier findings have produced somewhat controversial results concerning such gender differences. For example, Aho’s (1987, pp. 93-95) study showed that especially elementary boys’ self-perceptions were slightly more negative than girls’ whereas, the results of Korpinnen (1979, pp. 58-59) showed that girls of 14 to 15 years of age had higher scores than boys but only with regard to academic self (see also Salmenvalli, 1997, p. 97). Although the Finnish findings are somewhat contradictory it seems that pubertal and environmental changes, especially after the transition phase from elementary to junior high-school, seem to affect relatively more negatively on the girls’ self-perceptions than on the boys. The interpretations concerning gender differences mostly focus on the different role-models that society is imposing on the younger generation. For example, the athletic domain has until now been mostly considered as something that belongs more appropriately to males. This strongly affects growing boys by serving as a modeling factor. Although girls and women are competing athletically on the international

![Figure 2. Average self-profile domain scores by gender according to Harter (1999)](image-url)
level, there are not that many female role models in that area. And if there are 
some they are more likely to be athletic and very feminine at the same time. 
According to Harter (1999, p. 132), the images of female attractiveness are 
very punishing in that they are unattainable by the vast majority of girls and 
women in the western culture. As a consequence, the vast majority of young 
girls do not attain these ideals, resulting in the pattern of findings obtained for 
perceived physical appearance, namely, that females feel particularly in-
adequate. Males, on the other hand, can be judged attractive not only on the 
basis of their physical features but other contributions, for example, according 
to whether they have money, status, power or original ideas. The controversial 
information about role-models can be very frustrating especially to potentially 
gifted girls. They often face pressure to reject the true self in exchange for 
social acceptability. Pipher (1994) writes:

“They (bright and sensitive girls) are likely to understand the 
implications of the media around them and be alarmed. They have 
the mental equipment to pick up our cultural ambivalence about 
women, and yet they don’t have the cognitive, emotional and social 
skills to handle this information. They are paralyzed by complicated 
and contradictory data that they cannot interpret. They struggle to 
resolve the unresolvable and to make sense of the absurd. It’s this 
attempt to make sense of the whole of adolescent experience that 
overwhelms bright girls” (p. 43).

The case of gifted girls is one example of the effects the mainstream models 
can have on the formation of self-concept (see also Dixon, 1999, p. 86). Later 
on, when self becomes more structured at the upper-secondary and level, 
some differences in how self is perceived in relation to creativity have been 
found. The males excel over the females also in this area. Again, environment 
possibly gives more modeling, encouragement and opportunities to the males 
than to females. Another gender-related finding comes from the studies in 
which academic self has separated to the more domain specific competencies 
like Math, English and so forth. The reason why the perceived competency 
ratings between females and males differ from each other is explained by 
generally perceived sex-related stereotypes. Both males and females may 
hold higher expectations for their performance on those tasks presented or 
perceived as more appropriate for their sex. Both children and adolescents 
tend to sex-type Math and English. Thus, for example, Mathematics, when it 
is sex-typed, is viewed as a male domain and in contrast, Reading and 
English are stereotyped as female domains (Skaalvik & Rankin, 1990, p.
551). The support for this model comes from the Scheinin (1997, p. 105) findings. He found that among the Finnish sixth graders (n=217) the perceived competence of the boys (n=115) was higher in Mathematics, even though there was no achievement differences between boys and girls, and correspondingly girls (n=102) perceived their competence higher in subjects related to Finnish language. Furthermore, Eccles et al. (1984, pp. 35-36) found that the math self-concept was more strongly related to school and general self-concept for boys than girls, but they did not find the support for the opposite assumptions for girls in the English self-concept. According to Wigfield and Eccles (1992, p. 291), the ability perception differences related to math and computer activities emerge already during elementary years although value differences have not been identified before 5th grade (cf. Scheinin, 1997, p. 105). Even though the value ratings did not differ that remarkably, Wigfield and Eccles (1992, p. 291) argued that girls may value other activities more (like social activities, other subjects etc.) and thus, they are in danger of opting out from mathematics.

To sum up, self-competence perceptions are favoring males over females in adolescence. Most of these differences are due to existing and prevailing sex role models which have reflections to the self-perceptions of the adolescent. For this reason, for example, some school subjects are already in the elementary level regarded to be more feminine or masculine. There is no doubt that these perceptions will affect also later, for example, the educational or occupational choices of the young individuals. With this respect it would interesting to study whether self-perceptions of Finnish adolescents share the same gender-related dimensions as presented here and how these possible differences are affecting their values and future plans.

**3.3.5 Summary from Harter’s theoretical contributions for this study**

In conclusion, Harter’s (1983a; 1999) developmental approach provides solid theoretical background for the comprehension of the self-related developmental changes and facilitates understanding of the complex construction of the self during childhood and adolescence. According to Harter (1999, p. 135), development of self-structures seems to follow similar tendencies among individuals within similar cultures which makes generalizations concerning normative changes possible (see also Shavelson et al., 1976, p. 436). In this developmental process self-perceptions of competence presents individuals’ generalized self-evaluative judgments about
their ability to perform certain tasks in different domains. Thus, perceived selves are reflections from the person’s experiences, performance, beliefs, affections and experienced competence both in relation to earlier accomplishments and in relation to others. In the long run, self-judgements become more accurate and more realistic. For example, due to cognitive development the child becomes able to handle more domain specific information related to different facets of the self simultaneously which during adolescence leads gradually to a more coherent self-image. However, the content, valence and organization of self-judgements are strongly affected by socialization agents of the child, such as, caregivers, peers, and teachers. Particularly, the continuous outcome assessments and feedback which are executed by normative comparisons facilitate (or force) the child to enter a new informative level concerning their performance and self-perception which is called a social comparison. These perceptions related to others can affect how the child begins to see him/herself in general as a doer or performer in relation to others in various contexts, for example, as a learner in the school context. As the number of social comparisons increases, so does the possibility of perceiving the self as less successful in these different domains. It is this perception which has been thought to explain part of the decline of both academic self-concept and intrinsic interest during the period from middle childhood through to late adolescence (Harter, 1992, p. 88). With this regard self-perceptions begin to act as an additional motivational “agent” which might determine child’s level of motivational engagement in certain situations.

In this study, it was considered possible that the potentially gifted students had experienced a loss in academic self-concept, which was not commensurate with their actual ability and performance, mainly because they had received no specific support to develop their academic potential (Van Tassel-Baska, 1993, p. 383; see also Dweck, 1986, p. 1046). Another interesting point is that Harter (1996, p. 25; 1999; p. 158) has stated that, for most children, there is a strong correlation between their academic self concept and their sense of Global Self Worth, in that school and school achievement generally figure so strongly in the lives of children. Where such a strong correlation exists, it has been interpreted as an indication of the importance and relevance of school in the child’s life. In this study, it was thought possible that school was not considered to be challenging and relevant for those in the potentially gifted group. If they were truly gifted and since there were no specific provisions to extend students with high academic ability, these children had probably experienced boredom and frustration in the conclusion of their school career, making school and academic pursuits relatively valueless (cf. Harter, 1996, p. 26).
Additionally, the general statements concerning self-concept profile and gender differences of the adolescent brought up a couple of interesting questions. For example, it would be interesting to study whether the Finnish adolescents generally show similar patterns of self-profile as Harter’s findings have shown, and if the identified gender differences were also present or not. The greatest decline in girls' self-esteem probably comes from pubertal changes, which do not meet the standards of the ideal female models, and the cognitive development at that age do not offer much help to solve this problem. Generally, boys have higher perceived self-concept in all subscale areas, except the behavioral one, according to Harter’s self-profile instruments. In case this study is able show somewhat similar features with this regard, it would also be interesting to examine how they had affected students' achievement behavior, motivational engagement and future aspirations in general (cf. Calsyn & Kenny, 1976, p. 143, Eccles et al., 1984, p. 29; Wigfield & Eccles, 1992, p. 301).

3.4 Self-concept of the students

As the overviewed expectancy theories have shown, the self-directed individuals are engaged in self-reflection processes with the surrounding environment which regulate their daily actions. For example, in the school context students’ perceptions of their competence (i.e., expectations) which are formed from the basis of interpretations of their academic experiences affect their future academic behavior. According to these assumptions, students form continuous predictions and cognitions based on their experiences and both internal and external feedback concerning what the outcome of their behavior would be. These formed self-perceptions, for example, as a learner are shown to reflect to the initial motivation level of the individual concerning school success and academic tasks in general. As it has become evident, different developmental phases affect differently the content and accuracy of these perceptions (Harter 1983a, p. 245).

Although traditionally, research has not emphasized the connections between self-concept and successful school performance, because earlier measurements concentrated on tracing more general properties of the self (cf. Burns, 1982), the recent findings in the area of school achievement and classroom behaviors have almost without exception shown that there are strong relations between a student’s perceived conceptions as a learner and subsequent learning motivation and results (Harter, 1981, p. 218; Deci, 1975, p. 141; Song & Hattie, 1984, pp. 1277-1279; Deci & Ryan, 1992, p. 9; Marsh, 1993a, p. 59).
For example, Shavelson and Boulus (1982, p. 16) demonstrated via the path diagram method that academic self-concept proved to be a meaningful predictor of school grades working through motivational variables. These findings also lend further support to prior student performance in the classroom, even when statistically controlling for the effects of ability and prior school performance (cf. Marsh, 1993a, p. 78). Furthermore, Eccles et al. (1984, p. 27) have stated that ability perceptions affect a variety of achievement behaviors including academic performance, task persistence, and task choice. It has become somewhat obvious that self-concept and related processes are posited as mediating variables that facilitate the attainment of other desired outcomes. For example, Marsh, Chessor, Craven and Roche (1995, pp. 289-290) have reported several parallel findings which have indicated that the attainment of a positive academic self-concept is linearly related to subsequent academic effort, course work selection, educational aspirations, attributions for one’s own behavior, academic achievement, completion of high school, and subsequent university attendance. Additionally, self-concept has been noticed to play an important role when predicting positive outcomes, psychological health, attitudes towards school, and interpersonal effectiveness (Colangelo & Assouline, 1995, p. 66).

For this reason it is more than understandable that support of development of healthy, competent and accurate self-concept has become one of the main goals of most educational programs including the Finnish national curriculum (Opetushallitus, i.e. National Board of Education, 1994, pp. 10-12). Although there seems to be quite clear consensus concerning general positive effects of high academic self-concept, there have been arguments about how accurate students’ domain specific perceptions actually are, or on the other hand, what kind of predictable properties the formed perceptions are having. For example, Scheinin (1990, p. 180) has stated that positive self-concept as an educational goal is somewhat groundless unless it does not contain the special goal areas where changes are desired and what kind of changes could be reasonable for attaining a more coherent self (cf. also Craven, Debus, & Marsh, 1997, [online]). For this reason, it has become important to know structure of the constructed self so that self-enhancing activities can be directed more precisely toward desired courses of action. Studies concerning self-constructs have shown that academic self-concept consists of both an individual’s higher general perceptions and domain-specific perceptions (Shavelson et al. 1976, pp. 411-414; Marsh, 1993b, p. 843). Marsh (1990b, p. 624), based on the multifaceted hierarchical model by Shavelson et al. (1976), introduced the revised version, called The Marsh/Shavelson model. This model has the same structure as the original model
(Shavelson et al., 1976, pp. 411-414), in which general academic self-concept is divided on the upper level into the academic and nonacademic components of the self-concept. Although general self-concept is expected to correlate with academic self-concept, academic self-concept with subject-specific self-concepts, and general self-concept with subject specific self-concepts, each of these dimensions operates and can be also measured as a relatively independent entity. In the model of Shavelson et al. (1976, p. 623) the academic self-concept is then divided in particular into subject areas, for example, English and Mathematics, and the nonacademic self-concept is divided into social, emotional, and physical self-concepts. The revision differs from the original Shavelson et al. (1976) model primarily in that in the Marsh model there are two higher order academic factors - Math/Academic and Verbal/Academic - instead of just one. Marsh’s factor-analysis from the 5th to 6th (n=758) graders (only boys) disclosed that academic self-concept was remarkably subject-specific which means that the person can, for example, have a very high general academic self-concept but in a certain domain (e.g., foreign language) (s)he may have perceived him- or herself as a “hopeless case”. For example, in this case, the general academic self-concept fails to correlate with perceived competence in this particular subject. Moreover, Marsh (1992, p. 39) has shown that even though both results and grades of Mathematics and English are in some cases very strongly related to each other, it does not necessarily mean that a person’s self-concepts in these subjects are parallel. This model is called “External/Internal (E/I) frame of reference model” (Marsh, 1990a, p. 108). Some contradictory results have also been presented against the E/I frame of reference model (cf. Sklaavik & Rankin 1990, p. 550). Nevertheless, these findings have generally shown that a child can perceive his or her competencies very unevenly, regardless of parallel objective assessments. These findings support the assumption that self-perceptions actually form via experiences, how these experiences were interpreted and in the internal comparison between these experiences. The differences between perceived selves can give valuable information to educators regarding how students experience their chances to learn and perform in different domains. Thus, according to Marsh’s view the questionnaires related to self-concept should try to define a person’s perceived competence in the multifaceted way. Additionally he seems to be somewhat skeptical concerning measurements which try to trace general self-concept because it seems to have the lowest stability among the domains (Marsh, 1993a, p. 94). For Harter (1985, pp. 114-117) global self-worth (cf. self-esteem) is however, an important domain in clinical sense because it gives information concerning students’ affects. According to Harter (ibid.), global self-worth cannot
considered as a sum of various evaluative self-perceptions because, for example, even perfectionists who can rate themselves relatively high on every measured sub-domain can be dissatisfied about him or herself and consequently (s)he possesses low self-worth. This can happen, for example, when a child’s achievements are neither valued by significant others or when their achievements do not bring the real self close enough to their ideal self.

In conclusion it possible to state that there are some fundamental differences between researchers with respect to how academic self-concept is defined and measured. For this reason self-concept research produces both various research instruments with various findings (cf. Scheinin, 1990, p. 51). It is quite clear that the more general the measures, definitions and structures that are used then the more general the findings that are produced. In this methodological “jungle” the choice of the model and study instrument should follow the questions and assumptions which are based on the theoretical frame of the study (cf. Byrne, 1996, p. 7). In that chosen frame, the use of the instrument is subjected only to the researcher and her or his options.

3.4.1 Academic self-concept as a prerequisite to motivation to learn

As introduced in the earlier sections, individuals have different reasons to engage in activities. Additionally, it was possible to categorize that some motivational constructs rely more on internal, or personal factors, such as needs, interests, expectations and so forth and some others more on external factors, such as, avoiding failure, getting rewards, pleasing either parents or teachers and so forth. In other words when activity is performed more from the personal and internal reasons, such as needs, interests, curiosity, or just because of the pure enjoyment then it is called intrinsic motivation (Rogers, 1969, p. 131; Deci, 1975, p. 23; Deci & Ryan, 1992, p. 9). On the contrary, when the activity is executed due to external factors, such as rewards, punishments, social pressure, gaining better grades or pleasing the teacher and/or parents, then the executed activity is having external causes and then it is called extrinsic motivation. To explain changes in intrinsic motivation, extrinsic motivation can be defined as something where the activity is actually seen as a means to an end, whereas in intrinsic motivation the activity itself is seen as the end (cf. de Charms, 1969, metaphor concerning “Origins and Pawns”).

Thus, according to presented researchers, individuals are naturally born intrinsically motivated and thus, they are initially programmed to fulfill their
potential which, for example, in case of young children leads them to explore and manipulate their environment (see also Pittman & Boggiano, 1992, p. 2). However, there are some preconditions which need to be available before an intrinsically motivated course of action can proceed. According to Deci (1975), “…perceived competence and self-determination act as a fuel for intrinsic motivation. In other words, when people feel competent in a particular domain and they experience a certain amount of self-determination, then they engage freely in the activities” (p. 139). Thus, individuals will engage freely in activities that are likely to lead them to experience feelings of competence and freedom. According to Deci’s (1975, pp. 139-141) Cognitive Evaluation theory, feelings of competence and freedom get their origins from earlier accomplishments and environmental events, such as, from the feedback of the peers, teachers, parents and performance situations such as tests. Interpretations of this information will affect an individual’s intrinsic motivation positively or negatively according to its properties. For example, events and received feedback that lead individuals to feel incompetent will decrease their intrinsic motivation. In this motivation process, self-perceptions of competence work as mediating factors. Actually, Harter, Withesell, and Kowalski (1992, p. 802) have stated that directionality in the relationship between perceptions of competence and performance is somewhat circular. They proposed from the basis of their findings that changes in perceived competence affect changes in motivation, which in turn further affected perceived competence. In the study of Vallerand, Gagné, Senécal, and Pelletier (1994, p. 172), which was implemented with 4th to 6th graders (n = 135), the results showed that scholastic competence and intrinsic motivation were correlated with each other (of .50, p<.001) and were acting parallel to performance. Furthermore, they found that the identified gifted students perceived themselves as being more cognitively competent and more intrinsically motivated than regular students (Vallerand, et al. 1994, pp. 174-175). However, they assumed that these differences in intrinsic motivation were mostly due to students’ homogenous grouping.

Another interesting study area, which tries to find connections between self and learning motivation are the causality studies of the self. According to Marsh, Byrne, and Yeung (1999), “the causal ordering of academic self-concept and academic achievement is, perhaps, the most vexing question in academic self-concept research” (p. 155). Some projects have found that enhancement in the area of academic self leads to motivational improvements and that also leads improvement in achievement. These programs were usually called self-enhancement models (Calsyn and Kenny, 1977, p. 136). According to this model, self can be seen as the primary determinant of
academic achievement. On the contrary, the skill development models emphasized the amount of academic skill acquisition which determines the level of the perceived academic self. A longitudinal study of Calsyn and Kenny (1977, p. 144) which was implemented with 8th to 12th graders (n = 555) in an urban Michigan school, showed support for the skill development model. In other words, academic achievement was causally predominant over self-concept of ability as well as perceived evaluation of others. According to their study results, the academic performance affects more often self-concept of ability of adolescents and their perception of others’ assessment of that ability than others’ perception of ability leads to changes in self-concept of ability, which in turn leads to changes in academic performance (Harter & al., 1992, p. 802; see also Marsh & Yeung ; 1997, p. 50). The basic principle seems to be that the higher the self-perceptions of competence then the higher is motivational engagement which in turn enhances academic behavior (Harter, 1981, p. 218; Harackiewicz et al., 1992, p. 124, Gottfried & Gottfried, 1996, pp. 181-182). Additionally, intrinsic motivation has been found to enhance conceptual learning, recall of material learned, and creativity whereas extrinsic motivation has been found to impair all these dimensions (cf. e.g., Wookfolk, 1995, p. 201; Amable & Hennessey, 1992, p. 55).

Although, according to these studies self-perception of competence undoubtedly is connected to intrinsic motivation it does not alone determine the level of motivation. Another construct which affects intrinsic motivation according to Cognitive Evaluation theory is the perceived locus of causality process and it deals with the need for self-determination (Deci, 1975, p. 141; Deci & Ryan, 1985, p. 50). Self-determination can be briefly described to be an individuals’ need to experience choice in what (s)he can do and how (s)he can do it. When students perceive their locus of causality as being internal (s)he can be considered as an initiator of the action, for example, with respect to described components, this should lead to an increase in feelings of self-determination and intrinsic motivation. By contrast, conditions which restrict students’ self-determination, have been shown to decrease the amount of intrinsic motivation. For example, competition, evaluation, surveillance and rewards, and teachers’ controlling style can all undermine intrinsic motivation, while events such as providing choice, effort feedback and acknowledging people’s feelings enhance intrinsic motivation. From a goal theory perspective also Ames (1992, p. 262) has reported corresponding findings between mastery and performance oriented individuals. According to Ames (1992, p. 263), when a person adopts a performance goal, a perceived ability—outcome linkage guides his or her behavior so that the person’s self-worth is determined by a perception of his or her ability to perform. As a consequence, the
expenditure of effort can threaten self-concept of ability when trying hard does not lead to success, and in this way, effort becomes the double-edged sword. Instructionally this means that students should be motivated by emphasizing and encouraging these inner resources.

For this reason, although perceived competence and self-determination have been shown strongly to affect students’ motivation they are not the only motivational factors which determine the level of engagement (cf. Niemivirta, 1997, pp. 74-75; Wigfield & Eccles, 1992, p. 279). Especially as children grow older and enter institutional settings, extrinsic motivation begins to play an increasingly critical role in learning and achievement. In practice, motivation usually gets its origins from both external and internal factors. For example, in the regular comprehensive school children have a right or duty, depending on definition, to go the school and learn basic academic skills as determined by national educational policies. For this reason, almost all activities which are taught in school are external in their origins (cf. Bandura & Schunk, 1981, p. 587).

However, according Rogers (1969) “… a sad part of most education is that by the time the child has spent a number of years in school this intrinsic (naturally born) motivation is pretty well dampened” (p. 131). According to Harter’s (1981, pp. 115-120) cross-sectional study which examined general changes in children’s intrinsic motivation (interest value), third graders’ intrinsic motivational properties were clearly higher than corresponding values of ninth graders. This general decrease of intrinsic motivation was traceable through all grades between third and ninth grade in all intrinsic motivation subscales: preference for challenge, curiosity/interest, and independent mastery. It seems that possibilities to fail and continuous informal and formal assessment of performance affect ability perceptions, which in turn have an influence on intrinsic motivation. Irrespective of this murky result children can find the activities offered by the school as interesting and motivating as well.

Recently, Harter (1992, p. 109) has stated that intrinsic motivation represents only one type of self-motivation. Another type is internalized motivation, in which behaviors that initially were under the control of externally established contingencies came to be performed because the child learned from socializing agents that these behaviors were important. Because, the degree of internalization in most cases explains students’ motivation to learn, Harter (1992, p. 110) suggested that the initial conception of classroom motivation, dimensionalized along a single continuum from intrinsic to extrinsic motivation, could be broadened to also include levels of internalized motivation. Actually, Ryan et al. (1992 p. 173) have offered a theoretical model which explains the
degree of the motivational involvement according to this internalization processes (see also Grolnick, Kurowski, & Gurland, 1999, pp. 4-7). Given that internalization processes are relevant to the regulation of all those behaviors that are not natural or intrinsically motivated, it is clear that such processes will play an important role in school adjustment and achievement, as well. Ryan, et al. (1992) have stated that “First of all, while learning in children is often intrinsically motivated in the natural context much of what children are asked to do and learn in school is not intrinsically motivated” (p. 173). Evidence for this has been provided in several studies which suggest that maybe there is a progressive decrease in intrinsic motivation for classwork in the average child as he or she advances through school. According to this logic, in this learning game those children who can internalize extrinsic goals are the ones who can best survive or cope with schooling. In contrast, the students who are alienated, discouraged and are left without support in school, those “at risk” for a variety of adjustment and academic difficulties are reported to possess a highly external regulatory style (Ryan et al. 1992, p. 176).

The described internalization of external goals of education raises fundamental concerns with regard to fulfillment of the potential of potentially gifted children. If the most successful students are those who have best internalized extrinsic goals from the school system (avoid punishment, gain better grades, please the teacher, etc.), how are they performing in other fields of human endeavor: according to their internalized extrinsic goals? Or is the internalization and intrinsic motivation always dependent on situational factors and relatedness? If the most successful students are those who have best internalized extrinsic goals of the school system could it be assumed that they are not necessarily the most creative or innovative persons? The contra question would be: Why should they be? The average school policies and practices are not that often planned to encourage or reward exceptional and creative behavior as, for example, Ames (1983, p. 194) has argued.

3.4.2 Environmental factors which affect self-perceptions and motivation to learn

Changes in the learning environment are stated to play an important role in self-conception and learning motivation. Also according to the Person-environment fit theory, students’ attitudes toward learning and school in general become increasingly negative as they progress through the school years (Wigfield & Eccles 1992, p. 282). This continuous negative change is
due to environmental changes in students’ lives, which do not necessarily correspond to their cognitive advances (Eccles et al. pp. 91-93). Parallel findings which report a decline in competence and intrinsic motivation have been published in Finland as well (cf. Aho 1987, pp. 54-57). Additionally, several studies have shown repeatedly that especially when students transfer from the elementary to the upper-secondary level there are significant drops in students’ self-perception and motivation (Harter, 1981, p. 214; Eccles et al. 1993, pp. 91-92; Harter, 1996, p. 16). The main reasons causing the decline both in self-perceptions and intrinsic motivation toward school are due to intensified engagement in social comparisons and environmental changes, which do not meet the cognitive requirements of developing adolescents. In practice this means that school becomes, especially after the transition phase from elementary to junior high level, more competitive, more impersonal, more formal and more evaluative which in turn facilitates children to assimilate an extrinsic motivational orientation. Hunt (1975) writes:

“Maintaining a developmental perspective becomes very important in implementing person-environment matching because a teacher should not only take account of a student’s contemporaneous needs by providing whatever structure he presently requires, but also view his present need for structure on a developmental continuum along which growth toward independence and less need for structure ...” (p. 221).

Accordingly, it can be said that students’ perceived competence and intrinsic motivation are affected by the changes in learning environments. For this reason, the related study aspects which try to find optimal learning contexts could offer an another passage into which external factors either support or hamper the fulfillment of academic potential. For example, Eccles, et al. (1993) state that “Individuals are not likely to do well or be motivated if they are in social environments that do not meet their psychological needs” (p. 91). Ideally this means that schools should provide the optimal level of structure for children’s current levels of maturity while providing a sufficiently challenging environment to pull the children along a developmental path toward higher levels of cognitive and social maturity. However, after the transition to the upper-secondary level, the educational focus gradually shifts to the products of one’s learning, evaluated through grades instead of progress of learning. When children adapt to this reward system their interest in the learning process itself declines. Contrasting to these changes, according to
Eccles et al. (1993, p. 99), especially adolescents, because of their psychological development level would actually benefit from a gradual increase of self-determination both in school and home environments. This is even more important for high achieving adolescents who could gain benefits from independent learning environments (see also Corno & Snow, 1986, p. 621). For this reason it is assumable that at the upper-secondary level when gifted students need to follow average students they may not be able to feel enough self-determination which could enhance their intrinsic motivation. In fact, some types of changes in the educational environment may be even developmentally regressive. Exposure to such changes is likely to lead to a particularly poor person-environment fit, and this lack of fit could account for some of the decline in motivation seen at this developmental period. This is likely to happen especially after the transition phase (Midgley, Eccles & Feldlaufer, 1991, pp. 135-137).

To examine environmental factors in learning Harter et al. (1992, pp. 802-803) conducted a follow-up study in which they asked middle school students (7th graders) to compare their current school environment to the previous year. Students were asked to rate a number of dimensions, for example, importance of grades, level of competition, teachers’ emphasis on the products of learning (i.e., knowing the correct answer), teacher control, preoccupation ability, and social comparison. The findings revealed that the vast majority of middle school adolescents reported negative changes similar to those presented by Wigfield et al. (1991, p. 552). Such changes are likely to have a negative effect on children’s motivational orientation toward school at any grade level. If these changes appear to be in some degree collective it can be assumed they work up also for negative attitudes toward school among adolescent. After briefly overviewing the environmental effects to adolescents’ learning motivation it is no wonder that interest toward learning is diminishing especially after students have moved from the elementary to the next school level.

The following Figure 3 presents the model of teacher and classmate influences in respect to perceived scholastic competencies and motivational orientation in the transition phase according to Harter’s (1996, p. 16) findings. According to Figure 3, teacher’s greater emphasis on grades, their greater focus on competition and on control, coupled with teachers’ decreasing personal interest in students and new classmate influences are the factors, which usually cause the reevaluation of the competence (Harter, 1996, p. 17). According to Harter (1996), “...comparisons can have devastating psychological effects for a large number of students who conclude that they are relatively incompetent, compared to those at the top” (p. 15). Only the most
competent students can enhance their perceived competence in the transitional change (Harter, 1992, p. 97). It is assumable that those children who can not yet form realistic self-representations but who are forming, for example, their scholastic competence judgements, based on experiences which can vary significantly from time to time, are really in danger. It is more than probable that the transition phase is most challenging for the developing academic self-concept. For example, Eccles et al. (1993, p. 94) have found that over 50% from 1st junior high students have reported that their performance level has decreased during the first junior high year. This can be very frustrating for the some students because simultaneously learning tasks at the junior high level have been reported to become less intellectually challenging. New judgements based on decreased performance and new reference groups, facilitates in turn assimilation of extrinsic motivation.

To sum up, the students’ perceived competence is highly dependent on environment and its changes. According to Harter (1996), “the learning environments not only provide feedback regarding students’ academic performance, but have a major impact on students’ motivation to learn” (p. 11). It seems that those environmental changes which are characterized by many western educational systems, including assumably Finland, have a negative effect on children’s academic motivation by the time they proceed

**Figure 3. Model of teacher and classmate influences on perceived scholastic competence and motivational orientation according to Harter (1996)**
through the school. Especially harmful are those changes which take place on the upper-secondary level because they do not seem to correspond the psychological demands of the adolescents (Eccles et al., 1993, p. 94). The greatest change in self-perceptions is reported to occur between the 6th to 7th grade, when students usually need to move from one physical school environment to another one. Here, it is reasonable to infer that if the potentially gifted children had experienced their elementary school years positively, then their academic competence perceptions could even enhance after this transitional change. However, if the learning tasks have become simultaneously unchallenging as it seems to be, then the high-ability adolescents can consider their success in academic subjects relatively meaningless. For this reason upper-secondary schools could be very frustrating places for academically gifted children (cf. Uusikylä, 1991, pp. 303-304). Based on many aspects introduced earlier, in this study the assumption is that the level of academic self-concept and school adjustment of the students who exhibited potential academic giftedness in pre-school would be somewhat parallel to the average students.

### 3.4.3 Social factors which affect self-perceptions and motivation to learn

Lately, there has been a growing body of research which takes into consideration social aspects which affect motivation to learn (cf. Schunk, 1987, p. 161; Urdan & Maehr, 1995, p. 214; Juvonen, 1996, p.43; Wentzel, 1996, p. 226). According to these studies, students’ school adjustment is largely due to their cultural background and children’s interpersonal relations. These studies propose that social worlds of children should be included with students’ achievement motivation research because children are motivated to achieve both social and academic goals at school. Actually, the behaviors which children perform in the school context are responding to social climate of the classrooms. In this context, for example, Urdan and Maehr (1995, p. 214) have defined students’ social goals as perceived purposes for, trying, or not trying, to achieve academically. In this section some of these factors which affect children’s socialization to the school environment are briefly reviewed. The view is taken from the side of the potential academic gifted children, how the variables such as family, teacher and peers may affect students’ motivation to learn.

First, the family influence plays an important role in gifted development and, for example, many studies in Finland have shown that there are clear
interrelations between the socioeconomic background of the family and children’s school achievement (Kuusinen & Blåfield, 1975; Kuusinen, 1985). Also recently, studies (e.g., Scheinin 1997, p. 103) in this area have shown that there is a close relationship (r’s .35) between parents’ socioeconomic status (PSES) and both elementary school children’s Finnish language and their GPA’s. Also Aho (1987, p. 95) has reported that PSES and stability of the family were related to the grades and children’s academic competence at the elementary level. Although it has become obvious that parents’ socioeconomic status affects students’ learning it can not explain totally the qualitative differences among nurturing practices between various families and what kind of effects these qualitative differences have on students’ motivation to learn (cf. Aho, 1987, p. 95). Theoretically a Cognitive Evaluation theory explains that a need for relatedness is one factor which reflects on the students’ motivation to learn. Relatedness has two components namely involvement and autonomy support (Deci & Ryan 1992, p. 12). Involvement is seen as an interest and devotion of the parents and teachers toward children’s activities and experiences (Ryan, et al., 1992, p. 181). Autonomy support is the other construct which can be defined as a degree to which teachers and parents encourage children to make their own choices rather than applying pressure or control over the children’s behavior. When these needs are neglected the degree of competence and intrinsic motivation will diminish whereas as teachers and parents show high involvement and autonomy support, children possess greater competence, higher academic achievement, and responsibility, as well as less aggression (see also Eccles et al., 1993, p. 99). According to Deci’s (1975, p. 142) Cognitive Evaluation theory, the form of feedback (informative or controlling) affects a person’s motivational engagement. Informational feedback consists of information related to competence and self-determination and thus it emphasizes personal agency whereas controlling feedback and rewards are changing toward the external locus of causality. For this reason, according to Flink et al. (1992, p. 204), one important implication of nurturing practices involves parents’ and teachers’ attention concerning schoolwork. When adults are offering tangible rewards and prizes from the academic work then they may be less likely to consider schoolwork per se, as opposed to non-academic behavior, as an end in itself. The acceptance of inducements or payment for school tasks may lead adults to apprehend extrinsic rewards as an integral feature of schoolwork similar to the its use in “normal” working life (unfortunately). Reward does, in fact, increase subsequent motivation for simple or rote activities of low interest that undoubtedly are composed of many work-like features. Actually, the learning orientation of the child has been reported as being changed from
mastery orientated toward performance orientated from the age of four if the parents are only praising and rewarding finished products (Cain & Dweck, 1995, p. 29; Dweck, 1999, p. 108; see also Flink et al., 1992, p. 192). This has been reported to be sometimes the case with the low self-esteem gifted children who may have learnt that the significant others care only about their performance (skills, achievements, tricks, etc.) but not him/herself as a person (cf. Uusikylä, 1991, p. 121). Although nurturing practices or lack of them do not systematically follow from the socioeconomic status of the parents it is however probable that parents who have higher socioeconomic status are more aware of their parenting manners such as giving assistance, support and related influences on students’ learning. For example, students who have reported that they take part in family decision making have regarded school as intrinsically motivated as well (cf. Eccles et al., pp. 1993, pp. 98-99).

Second, given that teachers have a great importance in the lives of children especially on the elementary level it is noteworthy that they are also responsible for nurturing academic giftedness. Usually teachers have very positive stereotypes of gifted students because it is generally thought that they can manage on their own (Freeman, 1985, p. 248; see also Chikszentmihalyi et al., 1993, p. 243). In Finland Moberg (1982, pp. 296-297) studied the readiness of the Finnish teachers to teach students who were in need of special educational services. The study showed that 68% of Finnish teachers at comprehensive school and high school could always teach gifted pupils and 95% could teach them often in their classes. It seems that, according to the Finnish teachers, the gifted pupils are classified into the group of “easy learners” who do not require that much assistance. In general, it can be said that in Finland there are still beliefs among teachers that some children have been ”born lucky” and this has its reflection in teaching practices in a way that these children are often left without special attention, just as Freeman (ibid.) has reported. If this matter is viewed from a relatedness aspect (cf. Ryan et al., 1992, p. 12), the Finnish school system is not well prepared to face the emotional needs of gifted children. Actually, Uusikylä (1987, p. 56) has found in his retrospective studies that gifted Finnish adults (who were categorized according to IQ-test) have considered Finnish school system as relatively ineffective in transmitting important learning skills such as cooperation, independent learning and reasoning skills which could promote their talent development.

Another aspect, which perhaps affects classroom learning behavior from the students’ side, is teacher guidance. In case the gifted students were eager to learn more they should be ready to discuss and ask guidance when they are
approaching deeper learning. However, many theories propose that already at the elementary level children become aware of the cultural messages which determine extra attention from teachers as a sign of incompetence (Wookfolk, 1995, pp. 387-388). Thus, according to Blumenfeld (1993, p. 275), many students are reluctant to seek individual help and may perceive it as indicative of low ability, especially in instances in which students can readily compare the type of assistance offered to that of their peers. However, he also mentions that for some students extra attention can serve as an approval in the socialization processes. Actually Aho’s (1983-1987) longitudinal study concerning the Finnish elementary-aged children showed that students believe that teachers do not like them, they do not think their best and neither their peers nor parents care about them as much as they thought (Aho, 1987, p. 100). According to her statements, the Finnish elementary school had not managed to offer rewarding experiences which could enhance children’s self-perceptions. According Ryan et al. (1992, p. 182) the same relatedness factors as those affecting home environment have their function also in classroom settings. The teachers who provide support for children solving their own problems in the context of a warm, structured atmosphere can provide these relatedness feelings and help children to internalize values of the school. Again here it is possible to conclude that the context of a safe learning atmosphere which should exist at the elementary level is perhaps in some degree missing on the Finnish upper-secondary level where numerous subject teachers are teaching required learning content according to regular standards. Thus, it is assumable that development of academic giftedness and its support especially in upper-secondary level is more likely to be in hands of parents and students themselves than in those of Finnish teachers. Actually teachers’ perceptions of high or low ability in a student have an effect on the judgements and behavior of these teachers (Guskin, Peng, & Simon, 1992, p. 33). According to Weiner (1993, p. 958), perceived high abilities in students can create, preconditions for teacher expectations. For example, when failure (e.g., bad test results or undone schoolwork) of the high able student is accompanied by their high ability and lack of effort that elicits the greatest anger and punishment, whereas success accompanied by lack of ability and high effort results in the most reward. When high able students do not make an effort (or only pretend to make an effort) they can be punished and even rejected, because their behavior is creating the most anger (Weiner, 1993, p. 959). This can happen if students do not consider learning challenging enough and if their learning accomplishment are not supported.
When looking from the general educational perspective it can be said that in Finland teachers’ guidance and support which could help potentially gifted learners to assimilate higher learning, seemed to be quite restricted in the shade of introduced factors. For this reason, for example, a part-time education of the gifted could offer for some gifted children a path to consider their learning valuable.

Third, there has been a growing body of research which has argued that friends and peers have close effects to students’ learning behavior and perceived competence (Juvonen, 1996, pp. 48-49). As students move from childhood to early adolescence, they develop the cognitive capacity to more clearly distinguish their social concerns from their academic concerns. These cognitive advances may cast the interplay between social relationships and academic achievement in a new light in the life of early adolescent students and may lead some students to choose social interests over academic ones. According to Harter (1996, p. 27), in childhood, there was no need to choose between these dimensions but later during youth when the process of self-conceiving is intensified, young adolescents become wise to seek after situations which help them to feel worthy. If academic situations do not serve these opportunities they are sought elsewhere. During that time, peer group values can have a great impact on perceived competence which is noticed to transfer more closely to the preferred peer group competencies (Stednitz, 1995, p. 45; Harter, 1996, p. 27; Guay, Boivin & Hodges, 1999, pp. 111-112). Simultaneously, according to Wigfield et al. (1991, p. 526), from this (transition) point the gender-differences appear and the findings seem to show that they keep increasing till the end of the late adolescence.

Theoretically behavioral changes which form in the interpersonal influences which happen through school time can be categorized partly due to observational learning. The effects of observational learning from friends and schoolmates have been demonstrated in many laboratory experiments (e.g., Schunk, 1987, p. 157; Schunk & Zimmerman, 1996, pp. 159-160). For example, students may observe friends who are working hard on their homework and use them as a model for their corresponding actions. On the contrary, students may observe friends who misbehave in school and imitate their misbehavior especially if these students are among the admired and most popular students. For example, if there are some students who begin to experience failure in school for some reason (e.g., lack of skills), they may assimilate negative attitudes concerning schoolwork and its’ values and for this reason exert less effort in school. On the basis of these school attitudes students who share the same physical environments can reinforce and strengthen each other’s negative orientations toward academic learning (see Urdan &
Maehr, 1995, pp. 231). In the long run, these attitudes may lead to sustained underachieving behavior, which in turn might cause these students to become either formally or informally classified into the low-ability track with other peers who have negative orientations toward school and school work. In this case, academic failure (an antecedent) leads to the social goal of seeking approval from negatively oriented peers, which may lead to increased negativity toward school and even lower achievement (as a consequence). This consequence, in turn, can lead to the additional antecedent of being surrounded by negatively oriented peers, and a cyclical pattern of causes and effects is created. A similar pattern could of course occur in the positive direction as well. According to Juvonen’s (1996) study, sometimes these behavioral changes are likely to happen because “…adolescents try to “fit in” and act according to the expectations and norms of a desirable peer group or of a person they desire to befriend” (p. 49). Actually, during adolescence the importance of peer acceptance and support are the main factors which maintain the stability of global self-worth and the different results in this respect can been seen as early signs of the depressed affect (Harter & Jackson 1993, p. 400). As Brown and Sternberg (1990) have stated that “…it is frightening that many of the most intellectually capable high school students strive to be less than they can be in order to avoid rejection by peers” (p. 4). This could be one of the main causes why underachievement has stated to occur especially during the pre-adolescent years and the result in each case is that students’ behavior becomes more like that of their friends (Uusikylä, 1994, p. 133; see also Rimm, 1997, p. 418). Even if significant others do manage to convince a child that his personal goals are valuable and precious (which really can help some of the gifted adolescents to consider him or herself worthy) there is still the fact of a classroom environment and the values of other adolescents can cause devaluation of learning. For example, the provided feedback from friends, and common statements during conversation usually direct students’ opinions and attitudes toward mainstream values. In these situations high achieving children are informally forced to disvalue academic learning (cf. Stednizt, 1995, p. 45). Thus, the high achieving students who value academic achievement are in the position of risking peer rejection for pursuing academic goals and on the other hand the student who courts peer acceptance at the expense of academic excellence risks parental sanctions, and elits future options, by doing so (Dweck 1996, p. 183). Perhaps some of the academically potentially gifted need to sacrifice or trade their academic interests to the other interest to gain more approval among their peer group (cf. also Freeman, 1993, p. 4). In this trade some students may adopt social approval goals that are associated with negative educational
outcomes. If this “trade” is unsuccessful, for example, when one lowers the importance of academic skills when (s)he has been academically successful, in order to become socially more accepted but fails, the whole self-worth can be in danger. Alternatively, incentives outside the classroom may gradually assume a greater value for some of adolescent, with a resulting decline in motivation for academic achievement (cf. e.g., Stevenson, Chuansheng, & Uttal, 1990, p. 522). For this reason, the early years of junior high school appear, therefore, to be a critical time period for intervention aimed at preventing the decline in motivation of many academically gifted children. These problems are reported be common especially among adolescent gifted girls. It would be interesting to study if this is true also in the Finnish school system.

Although it was often stated that friends have mostly negative effects, recent empirical evidence has shown that this is not always the case. For example, Brendt and Keefe (1996, p. 251) have found that stringent negative effects of friends such as use of social pressure, punishments, classroom misbehavior, and a devaluation of academic achievement are actually rarely used among children or adolescents. Nevertheless, according to Brendt and Keefe (1996, p. 270) even without overt and explicit pressure, students can be negatively influenced by friends who are uninterested in school, disruptive in class, and low in achievement. But not all students have friends whose adjustment in school is poor. Some students’ friends are interested in their schoolwork, are well-behaved, and high in academic achievement and when friends have these characteristics students are likely to be positively influenced by them. For this reason, the high achievers would benefit by being friends with other high achieving ones.

In conclusion it is possible to argue that parents and teachers have enormously important influences on children’s learning motivation and lives in general. The external support and encouragement in form of relatedness and autonomy support enhance students’ motivational engagement and learning-related values. However, if adults think that rewards and controlling strategies are main factors which promote academic performance and motivation for learning, then families and schools are more likely to produce extrinsically motivated children, characterized by low perceptions of competence, a preference for easy tasks, anxiety over evaluative information, and little or no interest in learning. Additionally, the social goals of the adolescents, which usually are colored by mainstream values of the surrounding peer group, form another concern related to the school motivation of the high-able. Especially, on the upper-secondary level, where students are exposed to the new reference groups there is more implicit pressure to be like the “others”. On that level it
seems that high-achieving children are not usually among the most popular ones. Because there are neither support programs nor special treatment practices for the gifted children in Finland it is relatively sensible to deduce that especially in adolescence students’ academic behavior and learning related values may become more like the ones of others. An additional support for this direction came from studies which have examined students’ social goals. Therefore, it seems that over time, students’ value of learning becomes lower and more like those of their average friends.

To sum up, the psychosocial development depends as much on the social context as on the individual’s perceptions of various influences on the self. Given that positive, caring and learning-oriented approaches might facilitate high-ability students to go further than an indirect overemphasis on maladjustment, there should be something valuable to offer from the side of the school environment for the academically gifted students as well.

### 3.4.4 Studies on self-concept and motivation of academically gifted students

Traditionally, studies related to gifted students and self-concept were mostly concentrated with cases a) in which the gifted and average students are compared in terms of self-concept and b) studies in which gifted children were exposed to different types of programming and, c) the effects on self-concept changes before and after placement to special programs (Hoge & Renzulli, 1993, p. 451). What has been common in most of these studies is that the students were usually either formally or officially called gifted, which was not the case in this study. However, the short review of these studies can provide meaningful information when evaluating this study.

The eminent study related to the special programming and self-concept of gifted students was implemented by Kulik and Kulik (1982). They (1982) meta-analyzed 15 studies comparing the self-concept of secondary school gifted students in special and regular programs. Their findings showed that according to seven studies, the special programming had significant positive effects for self-concept; according to six studies, negative significant effects; and no significant effects, according to two studies. The study of Maddux, Scheiber and Bass (1982, pp. 79-80) compared equally identified 5th and 6th grade segregated gifted students (n=55) and non-identified gifted students (n=55), which were normally integrated in the regular classrooms. The results from these equally matched groups showed that Piers-Harris Children’s Self-Concept Test scores were significantly higher among 6th grade gifted
students in both groups than in the general population. However, the expected differences in self-concept and social distance between the two gifted groups did not provide statistically significant differences (ibid.). Later, Hoge and Renzulli (1993, pp. 452-457) meta-analyzed several studies related to gifted programs and self-concept. Their results showed that the studies generally indicated slightly higher academic self-concepts for gifted students, but otherwise the results of the investigations were highly variable. This was possibly due to small effect sizes (e.g., academic self effect sizes were generally between .20 and .65) of these studies, according to the authors. Colangelo and Assouline (1995, p. 70) got similar results when comparing the same aspects over the grade-levels (from elementary to high school level). These participants of Belin’s Center summer pre-college programs had positive-self-concept both in terms of general and domain-specific self-concept. They also found that self-concept scores were highest for elementary school students, lower for secondary school students and lowest for high school students. According to Colangelo and Assouline (1995, p. 70), the domain which gave the lowest scores came from the domain of Interpersonal Skills and Self-ability (cf. Dixon, 1999, p. 87). This may reflect the assumed claim that gifted students are more sensitive than others and may think more about themselves and are more aware of “unperfectness” in their lives (cf. Chiksenztmihalyi et al., 1993, p. 74). Actually, Stednitz (1995, p. 51) points out that gifted students, especially less popular ones, are the ones who really are in need of counseling.

Thus, the homogenous grouping is not a problem-free solution to enhance and maintain perceived competence and intrinsic motivation, because contradictory results from the effect of the special programs have been reported. These studies provide strong evidence concerning the changes in perceived competence by measuring the changes in the perceived self before and after the placement in the special classes or programs of highly able students. For example, Harter (1992, p. 97) has noticed that at least on the stage of the forming high ability groups there are at least one third of the students who feel a loss of competence and, simultaneously, students’ intrinsic motivation changed more toward an extrinsic direction. Those children who felt themselves less competent in the new surroundings adopted a more extrinsic motivation. Marsh’s (1987, p. 280) findings which he has based on the self-concept theory and Big-Fish-Little-Pond-Effect (BFLPE) are parallel. According to Marsh (1987),”… practice indicates that the formation of academic self-concepts requires students to compare their self-perceived academic accomplishments to some standard or frame of reference” (p. 281). Because individuals have different frames of reference, the same academic
accomplishments can lead in the different frames of reference to the changes in the self-concepts. The BFLPE occurs when students have lower academic self-concepts as a result of comparing themselves to more able students and higher academic self-concepts as a result of comparing themselves to less able students. According to Marsh (1987, p. 290), the BFLPE should be largest in elementary schools. These young students may have no standard of comparison except for the performance of their classmates and may not even know how the average ability level of their classmates compares with a broader frame of reference (see also Marsh et al. 1995, p. 291). The assumptions have evidence to back them up, for example, from the recent study of Zeidner and Schleyr (1999, p. 319) who compared elementary gifted children (n=1020) from 4th to 6th grade, both in the normal mixed-ability heterogeneous classes (n=661) with the gifted special homogeneous classes (n=331). The results reported strong evidence for BFLPE. Marsh has also completed many studies in this area over the past decade, for example, Marsh et al. (1995, pp. 310-311) found that there were problematic changes in self-concepts of gifted students when they participated in Gifted and Talented (G&T) programs (see also Marsh, 1991, p. 445). In two studies, students in G&T programs experienced systematic declines in three components of academic self-concept (Reading, Math, School) over time and in relation to matched comparison students in regular mixed ability class-rooms, but not in four components of non-academic self-concept (Physical, Appearance, Peer Relations, Parent Relations). In both studies, these results were consistent for gender, age, and initial ability level. Also Coleman and Fults (1985, pp. 10-11) noticed that the placement in G&T programs led to a decline in general self-concept, but subsequent analyses revealed that there was a marked decline only for G&T students in the bottom half of their G&T class. Actually, the placement also affected the IQ-test scores in a parallel way. In their study, they concluded that even partial instructional segregation systematically influences children’s perceptions of their own capabilities. These results supported the frame of reference assumption. Some studies have also reported positive transfer effects. In the study of Gross (1993, pp. 137-138) the same pattern of decline of the academic self followed, according to the Coopersmith Self-Esteem Inventory, with the radically accelerated students who skipped three school years. Actually, these highly precocious children (n= 9), according to their Stanford-Binet (L-M) results (x > 160), reported higher social self after the placement when they were compared with the ones as intellectually gifted students (n=31) who stayed with their normal classmates. This latter group reported difficulties making friends with their peers (Gross, 1993, p. 138). In the study of Tong and Yewchuk (1996, p. 18), the participants of the gifted
high-school program (n=39) were more anxious and less satisfied with life than regular program students (n=39).

From the basis of these findings it is possible to assume that perceived competencies form as a result of experiences, which always have effect in some frame of reference. These perceived competencies are functioning as mediators to motivational orientations and achievement behaviors. The findings clearly point out that there are some grouping factors which need to be taken into account when planning special educational treatment and programs for the target population. In conclusion, self-concept studies have shown that the gifted students usually have somewhat higher perceived academic competencies and some studies have reported that gifted students have in some degree lower social competence ratings than average students. From this point of view, it was interesting to study how these informally formed groups of potentially gifted academic children have perceived their competence and would there be differences in degree of the intrinsic motivation in relation to the average students in normal classroom settings in Finland and if these results were in some degree parallel to the other findings related to gifted students and to the ones reviewed here.

Studies have also tried to examine how perceived academic competence of the gifted are related to the motivational constructs. When comparing gifted students to the average students, gifted students have been found to perceive themselves as more competent, have greater intellectual curiosity, academic interest, and challenge-seeking behavior, have a higher preference of independent mastery and higher degree of intrinsic motivation (Vallerand et al., 1994, pp. 173-174). In a longitudinal study, Gottfried and Gottfried (1996, p. 181) followed 99 children from 8 years of age until early adolescence and found that compared to moderate to low-IQ children, children who scored at 130 or above on IQ tests at the age of 8 years old, reported higher intrinsic motivation across various academic subjects. Furthermore, the group difference reported remained stable from ages 9 through 13 years old. According to the results, Gottfried and Gottfried (1996, p.182) considered intrinsic motivation as a developmental process associated with the development of giftedness (see also Chikzentmihalyi et al., 1993, p. 26). Their findings suggest that, at least in the case the gifted students, task orientation results from the intrinsic intellectual interest in task, rather than engendered by the school contexts and classroom conditions or beliefs that intelligence is malleable and can be improved (cf. also Dweck & Leggett, 1988, pp. 258-259). To sum up, these studies which have compared motivation of the gifted with average students have indicated clearly that gifted students have a wider range of academic interests, they perceive themselves as more competent and
more intrinsically motivated toward school tasks than their same-aged peers. When combining findings from the academically gifted students and Harter’s developmental self-theory it is possible to form a conclusion that development of giftedness and academic motivation are strongly dependent on the development of the self. It is possible to argue that without positive self-development there are only a few motivational resources available to feed and challenge a child’s internal potential. According to this conclusion, giftedness (and expertise) is heavily influenced both by children’s developing perceptions and accordingly from the development of the self. The earlier that a child perceives him or herself as competent and their accomplishment are positively recognized the earlier they are likely to assimilate intrinsic (task/learning) motivational orientation and maintain it on the area in question (cf. Pittman & Boggiano, 1992, pp. 1-4). Continuous external recognition and academic encouragement have in turn essential properties which work through the self-worth because they can help a student to consider, for example, his or her high academic achievement as something valuable.

3.5 Instructional factors which can promote motivational learning in gifted students

In this section the recent findings concerning learning of the gifted students are briefly overviewed. The view for gifted education is taken from the cognitive development and motivational perspectives.

When approaching gifted education following questions may emerge: Which characteristics are common for the gifted learners? Do gifted learn differently? Which conditions, learning tasks, teaching methods, and curriculum adaptations are appropriate and necessary to fulfill their potential? Does “gifted education” require differentiated and individualized instructional approaches? Answers to these and other questions should be based on general theories, models and empirical investigations about gifted performance, learning acquisition and learning intervention. In this section, first the recent developments with this respect will be presented according to the introduced motivation theory approaches. Second, general goals of gifted education, basic issues (e.g., acceleration and enrichment), examples of special programs, instructional methods and examples of gifted education will be briefly presented. Finally, some assumptions concerning study groups of the research and their instructional demands in light of the Finnish school context will be discussed.
As it has been earlier verified that most children come to school with great eagerness and expectations to learn. However, as motivational theories suggest students’ motivation to learn diminishes dramatically once children enter school or at least after they have entered developmentally the phase of social comparison (cf. e.g., Deci, 1975; Harter, 1983a; Eccles et al., 1984; Dweck, 1986). In fact according to DeCorte (1995, pp. 159), to avoid a motivational drop among high able learners, creating optimal environmental conditions for the acquisition and development of exceptional performance should commence already during pre-school education because these actions can prevent negative motivational effects of the underchallenging environments (see also VanTassel-Baska, 1997, pp. 9-11). To maintain children’s motivation to learn activities in school must be challenging to be interesting to promote motivation because activities that are too easy lead to boredom, and those that are too difficult may lead to frustration and the experience of anxiety and incompetence (cf. Atkinson, 1964, p. 634; Corno & Snow, p. 621; Korpinen, 1989, p. 195; DeCorte, 1995, pp. 151-152). Developmentally, this means that the differentiation of motivation is influenced by what stimulating and optimally challenging activities are available in children’s surroundings. These ideas are very close to Vygotsky’s (1978, p. 163) Zone of Proximal Development (ZPD) concept which also makes assumption that instruction should be designed to be just beyond the students’ current level of development. This means that instruction should neither be too difficult to be far outside the students’ capabilities nor too easy to be repetitive for the students (Vygotsky, 1978, see also Feuerstein & Tannenbaum, 1991). Although the ZPD is not defined as a motivational theory, by its nature the major principle that learning will be fostered when students are working at a task that is somewhat beyond their range of current capability fits to the chosen motivational theories. From this perspective, learning instruction should vary among children with different abilities as well (see also Span, 1995, p. 83). Consequently, the transformation of ability potential into adequate scholastic or academic performance necessitates motivational learning and performance prerequisites on the part of the individual as well as from the side of supportive learning environment. According to this logic, average teacher controlled whole-class instruction could be classified even as a developmentally hindering environmental factor for some gifted children. For this reason, one of the main arguments for gifted education comes from the fact that special treatment and programs can facilitate to meet both the cognitive and motivational needs of gifted children because when teaching and instruction is challenging and demanding, sufficient motivation and higher level cognitive processing can be maintained and/or even increased. Equally important is the natural
fact that special treatment and differentiated instruction have been reported
to decrease various maladjustments common to gifted children such as
boredom at school, underachievement, behavior problems, discrepancy
between intellectual and social-emotional development, assimilation of the
superficial learning habits, concentration problems, gradually regarding making
school and academic pursuits relatively unimportant, alienated feelings,
lowered self-esteem, and so forth. All of these may emerge when gifted
children are continuously forced to use compensatory learning strategies and
296). According to Van Tassel-Baska, (1993) “…challenging content with a
focus on ideas and creative opportunities is essential to combat further
discrepant performance” (p. 383). Moreover, there are some other advances
that may have long-term payoffs for gifted students trained by the special
treatment such as acquisition of highly effective self-regulatory learning
skills, more positive school attitudes and learning values and lifelong friendships
with other talented individuals, which all together can support development
of positive self-esteem.

Particularly in the United States, there have been various curriculum and
program adaptations for gifted learners. The most known and used curriculum
modifications have been acceleration and enrichment. Although both of
these concepts are still widely used, VanTassel-Baska (1993, pp. 369-372)
has lately introduced a categorization for curriculum models which corresponds
more accurately to the current situation and has used concepts which describe
more closely the form of curriculum adaptations being offered, including the
concepts of acceleration and enrichment. According to her (ibid.) formulation,
models are 1) the content mastery model, 2) the process/product model and
3) the epistemological model. According to VanTassel-Baska (ibid.), the
content model allows identified gifted students to move rapidly (i.e. accelerated
speed) through a subject or field of study. According to this approach, it is
believed that these students are better served when they can study challenging
tasks and contents beyond their actual grade level. Without offering such
accelerated teaching gifted learners they may suffer from both motivational
loss and assimilation of superficial learning habits. Additionally, this method
directly responds to one of the definitions which is frequently combined with
gifted students, namely that gifted students can learn more rapidly. The most
widely recognized content model is perhaps a Study of Mathematically
Talented Youth (SMPY) developed at John Hopkins University by Julian
Stanley. The program is planned for “mathematically precocious” students
who can more rapidly proceed through an accelerated and compressed
mathematics curriculum. Another model which could be categorized by the
content model is “Curriculum compacting” (Reis & Renzulli, 1992, pp. 51-54) which is a procedure used for modifying curricular content to accommodate advanced learners to the learning materials in a way that it enables high-ability children to skip work they already know and substitute more challenging content. This form of content “skipping” can be classified as an accelerative method which in turn allows children to explore at greater depth (cf. enrichment) those themes which have close relevance to the learner. Other models which could be classified by the content model are: early entrance to school or into university, grade skipping, grade telescoping, and whole class acceleration.

Another response to the special needs of gifted learners is the process/product model which emphasizes that those students identified as gifted are offered enriched curricula which develops students’ investigatory skills, both scientific and social, allowing students to develop high-quality products (VanTassel-Baska, 1993, p. 671). Here, students with special talents are keen to explore open-ended problems that direct them to think and develop complex and abstract ideas. In this model teachers are often considered more as interactive team-members who try to solve ill-defined problems with students than teaching-group leaders.

In an average school, enrichment is usually implemented as a pull-out program. Students who are selected or interested in to explore special topics are allowed to leave the classroom once or twice per week to study with a counseling/resource teacher. Most known examples of process/product models are Renzulli’s (1977) Enrichment Triad and Feldhusen and Kolloff’s (1978) Purdue model. For example, in Renzulli’s model the goal is to develop students’ abilities to research, solve real problems and investigate in various fields. To achieve this, learning is differentiated into three different enrichment phases. Type I enrichment includes activities which awake interests, stimulate children, guide children toward various interesting themes and to use general exploring skills. Type II enrichment is more training of the processes and skills of how to conduct investigations and solve problems related to students’ interests. In Type III enrichment, students are encouraged to plan and implement small research projects. As a consequence, the student explores and solves open-ended problems in his or her self-selected field of the study, using those skills which (s)he has learnt in earlier phases. Finished products are evaluated by program personnel, with the goal being to assist the student to improve his or her revising and self-monitoring skills.

Although most enrichment programs are planned for those gifted learners who have been identified by standardized IQ-test scores or achievement tests, Renzulli’s and Reis’ (1992) proposal concerning non-graded instructional grouping and within-classroom cluster grouping is a relatively flexible
curriculum adaptation which could be adapted in some degree to average school settings as well. To accomplish within school or class enrichment the following aspects should be taken into account, according to Renzulli and Reis (1992): the instructional groups should be formed by course description rather than a group label; in order to determine admittance to the clusters, motivational factors, general and specific interests, complementary skills, career aspirations, and even close friendships that might help to promote self-concept, self-efficacy, or group harmony should be used; it is important to ensure that group members have parallel goals; the groups should be flexible enough to allow “group jumping”; and, the learning objectives, teaching strategies, modeling activities and pace should be tuned to the needs of the groups. Another within-classroom solution is curriculum differentiation recommended by New South Wales association for Gifted and Talented (1994). Here, adaptations are made by modifying learning environments, processes, contents and products. Briefly, the physical learning environment should have the following characteristics: high complexity, multiple resources, high mobility, be student centered, and psychologically accepting, open and supportive of difference. Learning processes on a higher level emphasize higher order thinking processes (e.g., analysis, synthesis & evaluation), which is implemented, for example, by open-ended questioning which encourage risk taking and variable response. Content modifications allow high ability children to explore and use more abstract and complex concepts. Methodologically, children are encouraged to form and test hypotheses and evidence of reasoning. Product modifications are achieved by varying both evaluation and assessment (e.g., self, peer, audience, teacher, etc.) and guiding children to plan for whom the products are being presented and the method of transformation. Within-classroom curriculum differentiation is implemented by student negotiation, group conferencing and contracts (New South Wales association for Gifted and Talented, 1994). When these aspects are taken into consideration within heterogeneous classroom it is hard to claim that gifted education feeds elitism.

The third model is called the epistemological model. It focuses on talented students’ understanding and appreciation of knowledge construction rather than the individual elements of those systems. The teacher works as a questioner who facilitates by debating and discussing the formation of the deep perspectives including schemata internalization and synthesization (VanTassel-Baska, 1993, p. 673). In this model, students are exposed to certain themes (e.g., societal, historical, and literal perspectives) and they are expected to learn by reading, reflecting and writing. An example of the epistemological model is
the College Board Advanced Placement Program which uses just such an approach in its history, literature and composition programs.

Although it is quite clear that these special curriculum adaptations and instructional modifications produce advanced learning experiences and higher achievements compared to regular school curriculums they have been seldom theoretically planned and empirically tested. Unfortunately, demand for these differentiated curriculum approaches has often been based more or less on the view that some children have been born with different learning abilities. In fact, DeCorte (1995, pp. 152-154) has claimed that there has not been much interrelation between such research themes, which could explain how characteristics of gifted learners and their achievements differ from those of average people, how gifted learners have acquired these skills, and how teachers could teach other students to achieve these characteristics. Rather, the field of gifted research has concentrated on underlining the benefits and disadvantages of acceleration and enrichment methods for the gifted. Additionally, without clear theoretical background concerning cooperative learning, many gifted programs are based on the assumption that gifted students have the need of “interacting with others of similar ability” (cf. grouping practices). However, as Johnsson and Johnsson (1994, p. 1035) have shown that there are some variations of cooperative learning which are more fruitful for gifted learners than others.

Lately studies related to both self-regulation and expertise have produced parallel information about how high ability students differ from average (“novice”) students when they engage more deeply in complex learning tasks and acquire higher competencies (cf. e.g., Zimmerman et al. 1996; Glaser, 1996). For example, findings of Risemberg and Zimmerman (1992) have summarized research on high achievers, saying that “…gifted students are independent, favoring individualized study to lectures and other forms of whole-class instruction. They favor self-management and self-monitoring. In doing so, they effectively control their pace of study and are aware of and capable of amending their errors. Moreover, the gifted are internally controlled: aware of their needs, feelings and attributes. With this strong internal frame of reference, these individuals are more likely to restructure their environment to suit their learning needs. Other identified qualities which are stated as common to gifted self-regulated learners are persistence over time and high motivation” (p. 98) (see also Borkowski & Kurtz, 1987, p. 146). These are some of the very same skills ascribed to the metacognitive component of self-regulated learning. For example, Zimmerman, and his colleagues (Zimmerman & Martinez-Pons, 1990, p. 51; see also Pintrich & Schrauben, 1992, p. 180) who studied strategic learning of the gifted students gained parallel findings
from the motivational perspective. They investigated the relations between expectancy beliefs and students’ use of various cognitive strategies, such as elaboration (paraphrasing, summarizing), and metacognitive strategies (planning, checking, monitoring work) in a series of correlational field studies. These cognitive and metacognitive strategies have been shown to result in “deeper processing” of the material to be learned and higher levels of understanding and learning. Although Zimmerman and Mariez-Ponz (1990, p. 57) have used self-report measures of both motivation and strategy use, the findings have consistently shown that higher levels of expectancy and perceptions of competence are more often correlated with the reported use of cognitive and metacognitive strategies in both elementary and junior high student samples. Also, Sternberg (1984, pp. 281-283; 1997, pp. 44-46), in his Triarchic theory, specifies the importance of “metacomponents” for giftedness. Among these metacomponents he (1997, p. 45) introduces selection of learning and cognitive strategies, allocating of processing resources, solution monitoring and evaluation. Sternberg (ibid.) suggests that some key feature of giftedness are the abilities to choose and use those strategies that will best achieve desired goals, to regulate one’s thoughts and environmental obstacles so as to better focus one’s attention on the completion of the task, and to monitor one’s progress so as to ascertain that goals are being met. Taking into account that having strong self-monitoring skills is a major characteristic of expert level performance (cf. Bloom, 1985, p. 536; Glaser & Chi, 1988, p. xxi-xxiii; Ericsson, et al., 1993, p. 399; Glaser, 1996, p. 306) it has become obvious that it is of great importance to teach developmentally appropriate metacognitive thinking and learning strategies that foster self-regulated learning and self-monitoring in gifted children as well. If strategy teaching and learning are not adapted to the level of learning aptitudes, developmental regression can occur. As Waters and Andreassen (1983) have stated “.... It is axiomatic that if a child is already executing a learning strategy successfully, (s)he will probably not benefit from further instruction to use the given strategy” (p. 35). It is sad but sometimes true that some students can be academically quite successful through their school time only by using lower level learning strategies such as rehearsing. Nevertheless, what is learned from high performance and its acquisition is applicable to understanding and improving competence in the skills and knowledge learned in regular school as well (Glaser 1996, pp. 304-305).

Thus, from an instructional point of view there is a need to study instructional factors with respect to students’ aptitude differences which can either motivate and support or hinder students to fulfill their potential in the classroom context (cf. Corno & Snow, 1986, p. 621; DeCorte, 1995, p. 153). For
example, various studies which have concentrated on learning instruction have shown that inside the offered curriculum frames some curriculum levels, teaching methods and practices are more appropriate for the high able than average learners. As an example of suitable learning instruction for high aptitude learners, Corno and Snow (1986, p. 620) have used a term “discovery learning” (cf. terms inductive teaching, inquiry teaching) which presents students’ learning as a combination of little teacher support to discover abstract principles from concrete instances and make connections among seemingly disconnected events. Such teaching places a cognitive challenge on learners because they would be expected to succeed if their cognitive capacity is up to the task. This promotes in an essential way the function of forming personality as an active agent which is a function of lifelong learning because the more learning becomes self-regulated the more the students assume control and agency over their own learning. As a consequence they are less dependent on instructional support for performing these self-regulatory activities. Actually, many eminent researches on the area of giftedness (e.g., Zimmerman & Martinez-Pons, 1990; Gardner, 1995; Sternberg; 1997; Renzulli; 1998) have argued that special training in critical thinking or logical reasoning combined with increased possibilities to independent learning (cf. guided enrichment) should be central features of the gifted programs which in turn should provide stepwise transformations toward self-regulated learning. In general, educational curriculums form the frames where teachers need to face differences between students’ learning aptitudes, to make them feel competent and finally try to make them assimilate both set learning contents and motivational curiosity as a habit to explore continuously the world around (cf. Ames, 1992, p. 268; Bandura, 1993, p. 136). To offer a developmental continuum with this respect should be the central part of the education of the gifted. From this point of view the whole learning and cognitive development can been seen as a continuous acquisition of higher level metacognitive processing abilities which are related to advanced structured knowledge and usable strategy acquisition (cf. Jonassen, Beissner & Yacci, 1993). When expectancies are high and valued, goal setting is high and consequently the child is practicing already acquired lower representational and strategy levels. However, as the environment and/or instruction fails to offer either enough challenging active learning that fosters connected knowledge and increasing complexities of abstract thinking or external support then there are neither high goal setting nor corresponding strategic learning nor academic advances which could promote increased competence.

As it has been possible to see, it is very hard to keep motivation fueled only by internal factors through the school-years, but it is at least worth trying,
because only that way teachers can help students to acquire motivational trait
dimension and accordingly help them become more like life-long learners.
For example, when the individualized task demands correspond to the goals
of adaptive instruction which stimulate and optimize learning processes, is it
possible to affect students’ competence perceptions and development of the
motivational trait (Corno & Snow, 1986, p. 622; Deci & Ryan; 1992, p. 13;
Doyle, 1983, p. 183; Qin, Johnsson & Jonhsson, 1995, p. 132; Ames, 1992,
p. 267). The methods available to deal with students’ aptitude differences
and feed students’ motivational trait dimension are multifold including, for
example, such factors as task difficulty, teacher control, choice, task complexity
(level of required cognitive strategies), instructional mediation, grouping,
evaluation, time, cooperation, and so forth (e.g., Ames ibid.; Maehr &
Andermann, 1993, pp. 604-605). What is needed is an analysis of the learning
aptitudes and styles of the learners and the will to take these differences into
account in teaching. As Corno and Snow (1986, p. 622) have stated “the
teaching - learning transaction is dynamic and must be tuned to aptitude
complexes in the learner that encompass intellectual abilities, personality
motivation characteristics, and cognitive styles “ (see also Merenheimio,
1992, p. 120).

Although there still seems to be a gap between studies of giftedness and
common psychological and educational research which could offer clear
guidelines for construction of powerful learning environments for the gifted
learners there are simultaneously numerous young able students who require
special attention and for them there are already countless effective educational
services available in various classrooms as Renzulli (1998, [on line]) has
stated. Thus, in general, every methodologies that foster independent learning,
self-monitoring skills, relationships to the students’ interests, research skills,
problem solving and high order thinking skills, creativity, self-evaluation,
and so forth is appropriated to be used with this population. At any rate the
use in some stage of these methods for all students can improve the quality of
teaching for gifted as well (cf. Sternberg, 1997, p. 52).

To sum up, recent research has shown that there should also be a fit
between students’ learning aptitudes and learning instruction to avoid negative
motivational effects. Thus, the transformation of an individual’s ability potential
into corresponding performances necessitates tasks which offer a grade of
difficulty which lies on the boundaries of the individual’s capabilities in
order to make them sufficiently challenging. From this theoretical perspective
differences between individual learning capacities on various learning domains
should be faced by offering differentiated instructional strategies based on
sufficiently differentiated curricula. Thus, educational policies should provide
first, enough flexible curricula for student-based-instruction, which ideally can stimulate each student to reach his or her potential and second, schooling or awareness projects for the teachers how to face needs of high-able learners, for example, in regular classrooms (cf. New South Wales association for Gifted and Talented, 1994). This demand may sound as an ultimate goal of education because the existence of individual differences in strategy usage also presents formidable challenges to the educator but as a philosophical guideline it gives challenging tasks for the scholars and educators both to investigate and improve those learning environments which promote best competence improvement in students with variable learning characteristics. It is perhaps a truism to state that nevertheless those individuals who manage to fulfill their potential productively or creatively are the ones who are giving direction to the future. Our task as educators is to guarantee that there will be as many children as possible who can find a way to make it.

3.6 Teaching gifted children in the Finnish comprehensive school

Because the research was carried out in Finland, some information needs to be given about relevant aspects of the Finnish educational system. The Finnish education system consists of pre-school education, comprehensive school, post-comprehensive general and vocational education, higher education and adult education. The traditional long-term objectives of the Finnish education policy have been to raise the general standard of education and to promote educational equality. Actually the efforts, which are based in Scandinavian educational tradition, emphasize equal rights to free basic education for all and guarantee everyone regardless of different population groups and regions an equal opportunity to obtain other education besides basic education according to their abilities and special needs. These educational reforms have been accomplished over the last few decades. Today special attention is being paid to the content of education and the methods of instruction, as well as educational standards and equality. For those readers who are not familiar with the Finnish school and grading system some essential parts for understanding will be presented in Appendix 1.

The latest educational ideas and philosophy that has an effect on the Finish educational system focuses on the goal to improve the quality of education of all students (Opetushallitus, 1994). The basic changes introduced to achieve the official objectives and goals demand the need to acknowledge the existence
of individual differences between learning styles and capacities. The adaptation to meet each individual difference requires changes at the curriculum level, which accordingly needs to become more flexible. These changes offer a ground to introduce more appropriate teaching practices toward individual differences, and with the help of this methodological and fundamental change, the Finnish comprehensive school could be able to adapt to the new demands of society, which should also include a better quality of education (Opetushallitus, 1994, p. 9). The basic philosophical foundation of these ideas lies in the constructivist approach to learning that highlights the active and individualized construction of meaning by every student. Thus, the latest goals are not directed only at mediating differences toward a mean of the students’ performance, but practically demand paying special attention to the individual differences among the learners including gifted children. Additionally, the opportunities for individual choice are also considered important and internationalization has also emerged as a key objective. This probably sounds very coherent and reasonable, but the responsibility for the practical accomplishments seems to remain with the class and subject teachers.

With this regard some single tries to pay attention to needs of the gifted children has emerged. For example, in following, definitions and recommendations concerning gifted education on the elementary level are presented according to Kukkoaho (1994, [on line]):

“Giftedness is a relative concept which emerges in a social context in relation to others. Giftedness presents individuals’ cognitive, special and/or social potential, which develops in the frame of social relationships, environment and his or her biological capacity. Giftedness is considered to be a developmental concept given that cognitive wholeness is affected by the environmental and social factors. As a phenomenon, giftedness can not be framed as separate aptitudes or characteristics but giftedness is individuals’ overall multifaceted developmental function. An individual who possesses developmental aptitude and/or advances on certain field can be determined to be in need of special education for the gifted. The positive self-concept of the gifted child has to be enhanced because a gifted child can experience his/her ability as a threat for his or her social position. Thus, the task of the educator is to support a child’s development on the social and emotional level as well as his or her special aptitude.

The principle of the gifted identification is to recognize the children who have developmental aptitudes and potential to benefit from the
special education of the gifted. On the elementary level the identification can be based on teachers' longitudinal observations, both objective and literary. Identification as a process is continuous and diagnostic. The goal is to follow skill development and simultaneously to diagnose and prevent problems on different fields of development as well. For identification purposes a teacher can use, for example, common lists of characteristics of academically gifted children (so called trait-label forms), results of school achievement tests and parents’ information.

In gifted education the content and skill areas which need to learned can be changed and also changes in the learning environments can take place. Differentiation can be accomplished by transforming education according to their pedagogic contents, tasks and grouping practices. Learning contents and themes are enriched by developing student’s learning processes, thinking qualitatively and developing the problem solving skills of the learner. The learning themes are introduced and approached from various (new) perspectives. Information is gained by self-experience, observing, studying and collecting knowledge from various resources (literature etc.). Results from the experiments and research projects are presented in literature or spoken form. The learner is guided to be gradually more independent and self-regulated in their learning by developing thinking toward more complex and abstract thinking skills”.

However, it is questionable how broadly educators are aware of and practicing such applicable interventions.

In the Finnish educational frame, special education can been seen as an additional service that provides and organizes resources to be used in adapting education to every student. Pupils with “special educational needs” are those students who require, permanently or temporarily, adaptations in the curriculum to meet their educational needs. With regard to special education, Finland, along with numerous other western industrialized countries has included the gifted and talented as a special group among a total of eight special groups under this definition (Tuunainen & Ihatsu, 1996). In practice, however, regardless of these guidelines the special resources, guidelines or materials (i.e., examples) how to identify, promote and counsel gifted children in the regular classroom concerning various performance areas, are still missing (cf. Kuparinen, 1995, p. 73).
3.6.1 About the practical situation and its correspondence to the needs of the gifted students

Regardless of new ideas presented in the previous section, the Finnish educational system still has powerful roots in the earlier foundations of the curriculum of the Finnish comprehensive school (Kouluhallitus, 1985, p. 14), which defines the goals of education in a way that every student should attain the same educational goals. These common goals include both rights to get equal educational possibilities and equality of schooling, which together aim for equal chances to choose from the different educational choices after the Finnish nine-graded comprehensive school (see also Opetushallitus, 1994, pp. 11-12). These principles, however, do not include curriculum adaptations which could correspond to the special needs of the high ability children.

Due to these common goals of basic education, the dilemma between the equal versus individual educational goal undoubtedly still exists irrespective of the introduced qualitative changes of education (cf. Kuparinen, 1995, p. 73). For example, the objective of the Trade Union of Education in Finland (Ängeslevä, 1999, p. 21) is also for “equal education for all” and its emphasis is to provide better basic instruction. It seems that in a democratic-resource system, the allocation of funds to the special treatment of those who might otherwise appear to be coping well is often hard to justify and this is probably the fundamental reason why educational policymakers in Finland have until now ignored the special need for resources for gifted education. In other words “…the fear of elitism is extremely high in the Scandinavian countries” as Uusikylä (1994, p. 164) has stated. Actually, according to Gallagher (1985, p. 345), this fact is one of the main and the most complex problems, which education of the gifted usually faces on the international level.

Another common world-wide problem that Gallagher (1985, p. 345) mentions obviously also exists (or, at least, existed during the implementation of the study) in the Finnish educational system, namely, that the educational policymakers have been unable to see longitudinal benefits of gifted education and its research. According to Gallagher’s (ibid.) statement, it is very hard for some people to see that when taking some services from the primary level it is possible in the long-run to gain benefits from gifted education and improve the results and the function of the whole educational system. The latest theoretical advances, for example, in the areas of expertise, skill acquisition and learning instruction have produced numerous findings on high achievement. These findings are usable in the form of positive psychology to help average, and sometimes below average performing individuals, improve their per-
formance (e.g., by use of thinking and learning strategies, self-regulation, self-evaluation, metacognition and other self-monitoring skills). As Hautamäki et al. (1993, p. 145) wrote, unfortunately the discussion about allocation of special resources to the special target groups is sometimes neither a discussion about special educational needs of the individuals nor how to satisfy them, but a discussion about the present interests of the society and the power of the policy makers. It is hard to grant funds to educational changes which will produce outcomes only after decades. The same is apparently true concerning the allocation of research funds with this respect. The acceptance of the gifted as a group of students who are seen in need of special educational services and resources requires changes in the common values of the culture, as Moberg and Tuunainen have mentioned (1991, p. 30). In this light it seems that the Finnish school system and society has been able to afford to take the risk of not paying attention to gifted students and neglecting their special needs. Nevertheless, although recently, Finland has received high places in international comparisons in education, for example, according to the Program for International Student Assessment (PISA) (2001, [on line]), it would be unwise to ignore this population which could in the long run improve the whole educational system. In fact, some experimental classes and programs are launched during the recent years, for example “Päivölä internate high-school”, but still the general awareness concerning special needs of the target population can be stated to still miss out (cf. Uusikylä, 1994, pp. 164-165). For example, teacher training programs such as a pre-school, class teacher, subject teacher and special teacher do neither provide much information from special needs of gifted children and their special needs nor voluntary awareness modules concerning this group. In practice, from the point of gifted education, this means that the “ball” has been thrown to the class and subject teachers, who already need to face the differentiated needs of 25 students. This has been shown to be true in Kuparinen’s (1995, pp. 83-84) study where the class teachers in the Helsinki school district area admitted that education of gifted children is very difficult in the normal heterogeneous classes especially without any extra resources, help and materials. It is quite understandable that if teachers are neither taught how essential it is to trace developmental paths of the high aptitude learners and subsequently cultivate self-regulated learning, nor guided how to build powerful learning environments which could facilitate teachers to face children’s differentiated demands to acquire higher competencies then attempts to promote giftedness will remain on the level of extra drilling practices. In terms of learning behavior, the aim should be to improve performance by altering students’ characteristically passive and dependent cognitive style so that they become more active, self-
motivated, independent thinkers who acquire continuously higher levels of cognitive competencies. Especially, in the case of potentially gifted children this is essential because otherwise their academic interests can transfer to other more challenging interest areas because when their potential will remain unrealized it presents considerable loss not only for society but for the person him/herself who can suffer from the considerable decrease of self-esteem (cf. Korpinen, 1993, p. 10). According to Sternberg (1997, p. 71), both the needs of the gifted and average students can be met in normal classroom settings. Sternberg (1997) suggests that “…it is useful to help students to exploit their intellectual strengths more effectively and that does not eliminate individual differences, because everyone is able to improve his or her performance” (p. 51) (see also Schofield, 1994, p. 4). Thus, the true goal of gifted education should not be only the learner’s acquisition of information, but the development, refinement, and self-related awareness of the strategic functions that are prerequisites to effective thinking and self-regulation.

For future, the existence of the special needs, goals, identification methods and curriculum adaptations should be all be possible to invent from the basis of the definition used for this population. As a matter of fact, much depends merely on what kind of definition and theory we are using when treating and identifying gifted people. When using a broader definition of giftedness, for example “Multiple Intelligence” (Gardner, 1983), and having this notion when identifying the gifted, the results related to self-concepts of gifted students could be different. As Gardner (1995, p. 2) suggests, gifted education should be a re-oriented system that starts with the question, “How is this child gifted?” instead of asking “Who is gifted?” (see also Merenheimo, 1992, p. 114). In practice this definition allows all children to be gifted (not only musical and athletic ones) to some degree and that could lead to schooling in which high achievements in different areas are admirable and desirable, and not a cause for negative labeling (“geek” or “nerd”) or underachievement because of alienation feelings, which is very common especially among highly able girls (Dixon, 1999, p. 39). And in the long run, in every case, it is very difficult to predict who is going to be the most “gifted”. In addition, Gardner’s theory, for example, which takes different views of intelligence into account, has been implemented successfully at different school levels both in the U.S. and Australian school settings (see, e.g., Gardner, 1995, pp. 2-6; Vialle & Perry, 1995, pp. 29-31).

In conclusion, it can be said that the existence of individual developmental differences has recently been admitted by the Finnish educational policy makers and, from now on, taking these differences into account should play an important role for goal setting and evaluation of schools (Uusikylä, 1991,
As Merenheimo (1992) has stated: “It is no longer possible to teach every individual to think the same way. Individual teaching and differentiation of learning styles are methods, by which the potential of children’s learning is attainable. The specialized educators and teachers have to analyze information processing views of children, which are a heritage from their cultural background” (p. 123). However, regardless of the recent ideological changes of the Finnish Curriculum objectives which also share many aspects related to gifted education, support for the development of gifted children has been still insufficient (Kuparinen, 1995, p. 87; Määttä & Lummelahti, 1997, p. 114). The first step to approach the gifted education should be to map the degree of general awareness related to the target population and its special educational needs and secondly, there should a center, or at least some specialists, who could offer theory driven adaptations along with practical examples of how to address the needs of the defined gifted population (see Ojanen & Freeman, 1992, p. 56; Freeman, 1995b, pp. 188-190; see also Blumenfield, 1993, p. 274). Unfortunately, these specialists, tutors or scholars, who could actively offer and share this essential information, advice or guidelines for counseling concerning the needs of this population, are for the most part still missing from the Finnish educational settings.
4 Question themes and hypotheses of the study

According to the results of Phase I, these children clearly had the potential to become academic gifted students. But can these able learners keep their learning motivation and really fulfill their potential in the Finnish nine-graded comprehensive school? And consequently, do they differ with regard to their school performance and learning behavior from the regular students? On the basis of these questions I became interested in knowing how well the children who had shown signs of giftedness in the first phase of the study have developed and how well they have adjusted to the Finnish nine-graded comprehensive school. Additionally, I became interested in knowing how potentially gifted children perceived themselves with respect to other students and what kind of future plans they had. These were the fundamental questions which guided the second phase of this study. Thus, the objective of the second phase of this two-phase longitudinal study project was multifold. In the following section the themes of this study are introduced separately.

In the first instance, the study sought to examine how children who exhibited potential academic giftedness in pre-school (6-year-old) were performing academically at the end of the Finnish comprehensive school when compared with their peers who did not the same academic potential according to base line measurement. To answer this question the following hypothesis #1 was formed:

H:1) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to their academic achievement at the end of the Finnish comprehensive school.

A second question arose from the basis of the reported adaptive instructional needs of the academically gifted children. According to the Person-environment fit theory, the mismatch between the high able students’ preferences and opportunities for decision making could predict negative consequences for those students whose needs are not being met (Wigfield, et al. 1991, p. 560). From this perspective, teaching should provide the corresponding level of structure for students’ current levels of maturity while providing a sufficiently challenging environment (Eccles et al. 1993, p. 92). When this is not the case, as numerous studies related to the junior-high environments have shown
(e.g., Harter, 1996, p. 15; Eccles et al., 1993, p. 91), such environments are likely to lead to a poor person-environment fit, and this lack of fit could account for some of the declines in motivation that are generally known to be common on this developmental period (cf. Hunt 1975, p. 221; see also Ryan et al., 1992, p. 173). Moreover, according Corno and Snow’s (1986, pp. 620-624) Aptitude Treatment Interaction theory, school instructions should be adapted to individual differences among the learners. In this sense, the most able students would profit most from the “inductive teaching” (inquiry teaching, discovery learning) along with a low instructional mediation instead of “receiving teaching” along with high instructional mediation (see also Risemberg & Zimmerman, 1992, p. 98). When these instructional adaptations are not taken into account the mismatch between the educational instruction and developmental level of the child is likely to occur (Corno & Snow, 1986, p. 620). As a result, also high able students can assimilate gradually an extrinsic learning orientation, including, for example, preference to the easy tasks and superficial learning habits which however does not necessarily mean that they begin to achieve on the low level. In addition, recent studies related to social motivation have shown that peer values of adolescents have an increasingly strong equalizing influence on the both school adjustment and different facets of the perceived self (e.g., Annala, 1986, p. 32; Juvonen, 1996, p. 49). Because there were neither special curriculum adaptations nor program mechanisms in the Finnish educational system for these potentially gifted students the present study chose an assumption that there would be no differences between children who exhibited potential academic giftedness in the pre-school age and average children with respect to variables related to students’ school adjustment. To examine this question theme following hypotheses from #2 to #6 which handled students’ learning behavior, learning experiences, internalized value of learning, school-instruction-fit and external support were formed.

H:2) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to learning behavior at the end of the Finnish comprehensive school.

H:3) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to learning experiences at the end of the Finnish comprehensive school.
H:4) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to internalized value of learning at the end of the Finnish comprehensive school.

H:5) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to school-instruction fit at the end of the Finnish comprehensive school.

H:6) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to experienced external support at the end of the Finnish comprehensive school.

Thirdly, the study sought to examine the profile of the self-concept of the potentially gifted to determine whether it differed from that of the average Finnish ninth graders. The main contributions concerning the construct of the self for the present study come from the studies of Harter (1983-1999). According to her theoretical contributions, the self is constructed in reciprocal interaction with the language development (1983a, p. 294). Assimilated words and concepts form the frame in which the self can be defined and the level of cognitive development of the child determines the structure of these definitions. In this development process the environment and self-related experiences of the child play the major role. When self-related experiences which can be called partly as expectancy beliefs have positive properties, for example, in terms of success, control and pride, they predict quite closely later levels of engagement, in other words, motivation, in similar tasks. In the central role of expectancy beliefs are the formed self-perceptions which individuals form from the experienced competence and judgements of the others. It has been stated that to perceive oneself as academically competent and motivated, a child needs to be challenged, their achievements should be recognized and simultaneously considered desirable and valuable within the educational community which includes parents, teachers, and other adolescents (e.g., Rimm, 1997, p. 418; Butler-Por, 1993, p. 660). With this regard, the Finnish school system may not be prepared to meet the needs of gifted children because the educational objectives are mainly concerned with regular students and their equal study goals. Precisely for this reason, the self-concept and motivation of the high able children are argued to be in danger in such an educational system (Van Tassel-Baska, 1993, p. 383). In this study,
it was considered possible that the potentially gifted students had experienced a loss in academic self-concept, which was not commensurate with their actual ability and performance. This assumption was formulated mainly because they have received no specific support which could develop their academic potential. Additionally, Harter (1996, p. 25) has argued that, for most children, there is a strong correlation between their academic self concept and their sense of Global Self-Worth, in that school and school achievement generally figure so strongly in the lives of children. Where such a strong correlation exists, it has been interpreted as an indication of the importance and relevance of school in the child’s life. In this study, it was considered possible that school was not considered to be challenging and relevant for those in the potentially gifted group. If they were truly gifted and since there were no specific provisions to extend students with high academic ability, these children had probably experienced boredom and frustration throughout their school career, making school and academic pursuits relatively valueless (cf. Harter, 1996, p. 25). For this reason it was assumed that there were no differences between the study groups with this respect. In this study, Harter’s (1983b) Self-Concept Scale for Children (SCSC) instrument was used to disclose if there were differences with respect to self-concept profiles between children who exhibited potential academic giftedness in pre-school and average students at the end of the Finnish comprehensive school. Measured self-concept findings were also planned to compare with the other cross-cultural findings made with the same instrument to clarify if the self-concept of the Finnish adolescent would be different from those of other western cultures. To examine this question concerning students’ self-profile, the following hypotheses were formed:

H:7) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to self-concept at the end of the Finnish comprehensive school.

H:8) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to the intercorrelation between different subscales of the self-concept scale at the end of the Finnish comprehensive school.

Fourth, school adjustment, self-concept and related processes are frequently posited as mediating variables that facilitate the attainment of other desired
outcomes. According to Marsh (1993a, p. 59) positive academic self-concept affects various academic behaviors and subsequent academic goals. For this reason, this study planned to examine if the students’ both educational and occupational aspirations would differ between the study groups and how the presented variables would predict their choices with this respect and if this value formation would show developmental differences between the study groups. The mentioned SAQ was planned to produce needed information for these questions. To examine this third question, the following hypotheses from #9 to #11 were formed:

H:9) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to their secondary school preferences at the end of the Finnish comprehensive school.

H:10) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to their future occupation preferences at the end of the Finnish comprehensive school.

H:11) There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to their actual secondary school replacement after the end of the Finnish comprehensive school.

The purpose of this study was primarily to find answers to these hypotheses. Because of the unpredictability of the time effect during the longitudinal follow up, the p value <.05 (*), was chosen to reject the null hypothesis, which here meant that study groups did not differ from each other (cf. Howell 1995; Nummenmaa, Konttinen, Kuusinen & Leskinen, 1996).
5 Methodology of the research project (1989 - 1999)

This research project reports on a study of potentially academically gifted children in the Finnish comprehensive school system. The study was a two-phase longitudinal ten-year research project on preschool children (n=208) carried out at the University of Joensuu. The main objective of the project was to examine and study how students who exhibited potential academic giftedness, identified during pre-school, developed through the Finnish nine-graded comprehensive school. The different phases of the study project examined the following five themes related to the study population: #1; school achievement, #2; school adjustment, #3; self-concept profile, #4; educational and occupational aspiration including actual information concerning students’ placement in secondary schooling after the Finnish nine-graded comprehensive school. The main information-gathering techniques used in study Phase II were school reports, a school adjustment questionnaire, essay writing, self-concept measurement, and school follow-up cards. This study was carried out at the University of Joensuu in the Joensuu school district area.

5.1 Commencement of the study

In 1989, 40 potentially gifted preschool children were selected from among 390 children tested in the Joensuu daycare area. Choices were made using the BWDT. This test measures the verbal, sensoral and motoral ability of the child. The test is developed by Breuer and Weuffen to primarily identify and prevent possible learning deficiencies in pre-school or kindergarten phase, but the importance of the early identification of the gifted children is also concerned (Breuer et al., 1982). The BWDT measures optical, phonemic, melodic, rhythmical differentiation and kinesthetic discrimination. The test was primarily developed to identify and prevent possible learning difficulties which could emerge when children begin to acquire written language. According to Breuer (1981), “… in order to understand language one must be able to perceive and realize it exactly in its external structure using the verbosonso-motor skills. These skills must be at a level that they proceed automatically and without control. In conjunction they guarantee the perception and realization of language” (p. 9). On the basis of these assumptions, the BWDT was
developed. Furthermore, the tentative results have shown that the students who have achieved above average scores in the BWDT during pre-school have also been successful during the first school years (Breuer, 1981). Because of this reason, it was thought that the highest scores in the BWDT would give a sign of potential academic giftedness. The children chosen for the present study were those who did well (x ≥ 26 points) on that test while a Control group was also formed from those students not considered to have such academic potential. In October 1989, the cognitive state of the tested children was further tested by Raven’s Visual Reasoning Test and Goodenough’s Draw-a-Man test (Raven, Court, & Raven, 1984). In April 1990, the preschool teachers were interviewed concerning the children who had been selected for this study. The interviews were formal and included questions concerning the child’s development, physical-, social- and learning skills compared with other children and the experiences of the preschool teacher. After the daycare sequence, the two Control groups (CGR. 1, CGR. 2) were selected randomly. After this selection, the total number of children in the study was 58. In January 1991, the potentially gifted children were interviewed. In April 1991, questionnaires were distributed to the class teachers of the children and collected during the summer and autumn of 1991. In June 1992, the school reports of the potentially gifted and Control groups were collected.

In kindergarten, the interviews made with the preschool teachers determined that the children selected for this study had the potential to perform above average in all learning areas. Because the cognitive tests indicated parallel results, the study group was called potentially gifted pupils. As well, questionnaires which were gathered from classroom teachers after the children had completed first grade showed significantly higher results for the potentially gifted group than their peers (n=18) in terms of teacher perceptions of skill development in areas such as language, memory, physical development, and learning. These skills enabled the potentially gifted children to perform at higher levels in all areas than the Control groups did at that time (Hotulainen, 1993). The semi-structured verbal school reports indicated somewhat parallel results, although non-significant differences were found at the end the second grade. In summary, Phase I of the study demonstrated that those children who exhibited potential academic giftedness in pre-school, as identified by the BWDT, were still exhibiting signs of academic giftedness at the end of Grade 2. On the other hand, the results showed that the evaluations of the pre-school teachers based on their earlier experiences and comparisons children in other departments were useful tools for identification. For this reason it was concluded that the knowledge that pre-school teachers have about the children should be better transferred to the class teachers. This could help class teachers to
recognize both the weakness and strengths of the first graders. In conclusion, according to the results of the first phase of the study the potentially gifted children could be identified in the pre-school using the BWDT.

5.2 Methodological approach

This study is a two-phase longitudinal field study. It is a longitudinal study because the same subjects were examined in two different phases during the ten-year-long period from the pre-school until the end of the Finnish nine-graded comprehensive school. The early design of the study allowed for the formation of two study groups, Experimental group and Control group #1 on the basis of BWDT. This study approach tried mainly to clarify if there were statistically significant differences between these two study groups in this time period. The dependent variables (14) of the study were categorized on five different question themes: #1, School Achievement (GPA and GAM), #2: School Adjustment (Learning Behavior, Learning Experiences, Internalized Value of Learning, School-Instruction-Fit, External Support), #3: Self-concept Profile (Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct, and Global Self-worth), #4: Educational and Occupational Preferences, and #5: Actual Secondary Schooling Placement. Furthermore, the effects of the interactions between independent variables grouping, gender, socioeconomic status of parents and dependent variables were examined. The methodological comparison processes required were mainly the multiple analyses of variances between the Experimental group and Control group #1. This two-phase longitudinal follow-up study design made it possible to study stability of the characteristics of the potentially academic gifted children and their changes over time.

5.2.1 Sample

In 1989, 40 potentially gifted preschool children were selected from a population of 208 six-years-old children from the Joensuu Daycare Centre, all of whom were tested using the German based Breuer-Weuffen Differentiation Test (BWDT) (Breuer & Weuffen, 1986). The children chosen for the present study were those who did well (x ≥ 26 points) on that test, while the Control group consisted of the remaining 161 students in the Centre. In 1997, when the target population was in the eighth grade in the comprehensive school the students were traced according to their school grade history. However, the
collected number of the final school reports showed that there were only 34 cases from the Experimental and 131 cases from the Control group available for the study purposes. In the following section, three of the most common causes affecting the attrition-rate of the study are reviewed. First, the most natural cause is the geographical mobility of the families. The effects of the working market which have radically changed in the Joensuu area during the last ten years have forced some families to move after work elsewhere. Second, some students, especially not the gifted ones, have perhaps been recommended to either transfer their school enrollment in the early phase, because they had fewer school-preparatory learning experiences or third, to repeat one of the nine school years in comprehensive school, because of their learning deficits. There was no grade-skipping reported within the study population.

The following Table 1 shows the final gender distribution of students for whom records were available in both the Experimental and Control groups.

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>18</td>
<td>16</td>
<td>34</td>
</tr>
<tr>
<td>Control group</td>
<td>60</td>
<td>71</td>
<td>131</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>87</td>
<td>165</td>
</tr>
</tbody>
</table>

However, because students of the study were spread over 27 different classes in the Joensuu school district area the instruments, which will be described later, were administered to whole classes. The integration of the whole age cohort (n=628), gave a possibility to form Control group #2. After this integration, the study groups comprised the Experimental group (n=34) and two different control groups: Control group #1 (n=131) being the children who were in pre-school at the same time and had lower scores in the Breuer-Weuffen Discrimination Test than the Experimental group, and Control group #2 (n=453), who were pupils who started school without having communal pre-school experiences. In this study, the use of Control group #2 can be seen as a control group which should have the same characteristics excluding pre-school background as the Experimental group and Control group #1 together. It is important to keep in mind that in this study the main comparison are made between Experimental group and Control group #1, because of their common background. However, the Control group #2 can give useful information concerning generalizability of the study results, for
example, in respect to gender differences. However, when the results of the primary study groups are compared to those of Control group #2, it is necessary to remember that there is no base line measurement behind this third group. To sum up, a total of 628 students from the comprehensive schools in the Joensuu area participated in Phase II of the study. Students in each of the three groups; a) Experimental group, Control group #1, and Control group #2 were followed from the beginning of the 8th grade until the end of 9th grade. There was an almost equal number of male and female subjects in each treatment condition. The subjects were born in 1983 and studied in five different comprehensive schools in the Joensuu area.

![Figure 4. Total study population by the schools in the end of 9th grade](image)

As shown in Figure 4, there were five different upper-secondary level schools in 1998 in the Joensuu area. This distribution allowed the possibility to handle the results by schools. However, because between school comparison was not among the main purposes of this study the schools are presented here anonymously and the comparisons are mainly focused to the differences according to school sizes. For the analyses the schools #1 and #2 are considered as small schools and number #3, #4 and #5 large schools. This categorization has meaning when the properties of different school adjustment and self-
profile variables will be examined. For example, the big school-small school literature has demonstrated the motivational advantages of small school, especially for marginal students (Eccles et al., 1993, p. 91). The differences between schools concerning students’ final grades were examined because earlier studies have shown that there could be such statistical differences (see e.g., Hautamäki, Niemivirta & Scheinin, 1997, p. 31). Students from different study groups were quite equally distributed in these different schools.

5.2.2 Formation and selection of the study instruments

Because earlier findings (cf. Hotulainen, 1993) had showed that advanced verbosenso-motor abilities were a good predictor of the acquisition of the many-sided advanced level learning skills as well as a written language in the early school years (Breuer, 1989; Ruoho, 1990), the measurement concerning school adjustment was formulated from the broader developmental view. The aim was to create a questionnaire which traced students’ learning experiences, working habits, attitudes and values.

5.2.2.1 School Adjustment Questionnaire (SAQ)

To address study theme #2 there was a need to create a new instrument because there was no such instrument available to address the study questions concerning students’ school adjustment. The theoretical assumptions guided the formation process of the questionnaire. Moreover, to respond to the risen questions concerning students’ future educational and occupational plans an additional section, the last page of the SAQ, was formulated to acquire knowledge for this study purpose. This section of the SAQ was named as an Occupational Aspiration Scale. In the both sections students needed to choose the degree of their agreement or disagreement concerning presented statements by using a one to five point Likert scale. In the following section five different example questions related to the question theme will be presented.

Subscale #1; Learning Behavior. This scale was planned to tap students’ general learning related behaviors, like carefulness in learning tasks, attention in learning, accuracy of the school work, task persistence, and control over these learning skills (cf. Eccles et al., 1984, p. 27). Assimilation of these desired learning behaviors depended on the degree of positive self-perceptions (Marsh, 1993, p. 59; see also Aho, 1987, p. 91).

For this purpose following type of questions were formulated:
As introduced earlier the individuals have different reasons to engage activities. Deci (1975, p. 23) proposes that individuals are engaged in activities because of the persons’ internal factors such as needs, interests, curiosity, or just because of pure enjoyment. For this reason the students who have deeper internalized school values would probably show higher involvement toward such tasks. According to Flink et al. (1992, p. 192), a child who adopts an intrinsic motivational set toward an activity will find features such as enjoyment of task complexity, stimulation from the novelty of the task, and the desire for challenging tasks. In contrast, when an extrinsic orientation toward a task is engendered a child will prefer the opposite: easy tasks (cf. Wigfield & Eccles, 1992, p. 292). Given that internalization processes are relevant to the regulation of all those behaviors that are not natural or intrinsically motivated, it is obvious that such processes will play important role in school adjustment and achievement (cf. Ryan et al., 1992, p. 173).

For the Internalized Value of Learning scale following type of questions were formed:

<table>
<thead>
<tr>
<th>I definitely agree</th>
<th>I am not sure</th>
<th>I definitely disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can usually concentrate very well to the offered school tasks.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Scale #2; *Internalized Value of Learning*. As introduced earlier the individuals have different reasons to engage activities. Deci (1975, p. 23) proposes that individuals are engaged in activities because of the persons’ internal factors such as needs, interests, curiosity, or just because of pure enjoyment. For this reason the students who have deeper internalized school values would probably show higher involvement toward such tasks. According to Flink et al. (1992, p. 192), a child who adopts an intrinsic motivational set toward an activity will find features such as enjoyment of task complexity, stimulation from the novelty of the task, and the desire for challenging tasks. In contrast, when an extrinsic orientation toward a task is engendered a child will prefer the opposite: easy tasks (cf. Wigfield & Eccles, 1992, p. 292). Given that internalization processes are relevant to the regulation of all those behaviors that are not natural or intrinsically motivated, it is obvious that such processes will play important role in school adjustment and achievement (cf. Ryan et al., 1992, p. 173).

For the Internalized Value of Learning scale following type of questions were formed:

<table>
<thead>
<tr>
<th>I definitely agree</th>
<th>I am not sure</th>
<th>I definitely disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often I would like to learn more than is taught about school tasks.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Scale #3; *Learning Experiences*. According to Deci and Ryan (1992, pp. 9-10) students’ self-perceptions form both by judgements of the others and earlier experiences. This question section was planned to examine how students have experienced school tasks: positively versus negatively and additionally if they have noticed some relative differences with regard to other students. This scale should have causal dominance over the scales #1 and #2 (cf. Eccles & al., 1984, p. 29; Pintrich & Scruben, 1992, p. 153; Deci & Ryan, 1992, p. 9). In other words, earlier learning experiences are here seen as an initiative power which arouses, and directs learning behavior. For example, Eccles et al. (1984, p. 27) stated that people with positive judgements of their ability approach achievement tasks with confidence and high expectations for success and consequently, perform well on these tasks.
Learning Experiences items were following kind:

<table>
<thead>
<tr>
<th>Scale #4; School-Instruction-Fit</th>
<th>I definitely agree</th>
<th>I am not sure</th>
<th>I definitely disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I learn new things which are taught in school amazingly fast</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Scale #4; *School-Instruction-Fit.* Here the reason was to clear correspondence between students’ abilities and the given instruction. According to Eccles et al. (1993, p. 92), teachers should provide the optimal level of structure for children’s current levels of maturity. This can be realized by offering a sufficiently challenging school environment to pull the children along a developmental path toward higher levels of cognitive and social maturity (cf. Ryan et al., 1992, p. 173). In fact, some types of changes in the educational environment and instruction could be even developmentally regressive. Exposure to such changes is likely to lead to a particularly poor person-environment-fit. For example, when children transfer from elementary to the upper-secondary level a lack of fit could account for some of the declines in motivation seen typical at this developmental period. Additionally, Corno and Snow (1986, p. 622) have stated the instruction should vary according to students’ aptitude levels otherwise similar motivational problems can follow.

For this purpose following type of question were formulated:

<table>
<thead>
<tr>
<th>Scale #5; Educational support</th>
<th>I definitely agree</th>
<th>I am not sure</th>
<th>I definitely disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers give appropriate instructions which fit just to my learning level</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Scale #5; *Educational support.* This was a two-items scale which was formulated to ask students’ opinion about how much they get external support from their parents and teachers. According to Eccles et al. (1984, p. 29) individual differences on subjective task value are formed by social stereotypes, and by differential information from parents, teachers, and peers about the importance of and/or the difficulty involved in doing well at any particular activity. External support should also reflect on students’ self-development (Aho, 1987, p. 96).

To sum up, the SAQ was originally developed to trace these five different school adjustment dimensions which arose from the basis of the background
theory, namely, students’ Learning Behavior, Internalized Value of Learning, Learning Experiences, School-instruction-fit and External support. Furthermore, two other variables were included which tapped students’ educational and occupational aspirations. For these scales similar statements were presented concerning students’ occupational preferences. For answering these statements, student were asked to rate how likely it was that she/he is going to work on the presented working area after they have finished they studies.

Scale #6; Educational aspiration. This is a single-item scale which asks the students how far they desire to go in academic studies.

Scale #7; Occupational aspiration. These items ask students aspirations to work in the future on several occupational fields which are categorized into the following three separate occupational fields: Academic occupations, Trade and Service occupations, and Functional occupations.

<table>
<thead>
<tr>
<th>I definitely agree</th>
<th>I am not sure</th>
<th>I definitely disagree</th>
</tr>
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5.2.2.2 Self-concept scale for children (SCSC)

In order to analyze the different facets of the perceived self-concept among normal and potentially gifted children, the use of Harter’s (1983b) Self-Perception Profile for Children, Revised Perceived Competence Scale for Children (SCSC) seemed appropriate, because it also included other subscale areas in addition to the academic one. The instrument SCSC was designed as an alternative to self-concept measures yielding only a single global score. This instrument was based on reliability and validity studies done by Harter (1983b) and provides a differentiated analysis of self-concept through six factor scores: Scholastic Competence (SC), Social Acceptance (SA), Athletic Competence (AC), Physical Appearance (PA), Behavioral Conduct (BC), and Global Self-Worth (GSW).

Furthermore, the instrument had been successfully implemented in different Western countries including non-English speaking ones (see Van Dongen Menmal et al., 1993; Worth Gavin & Yves, 1996). However, until now there had not been any reported self-concept studies that used Harter’s instruments in Scandinavian countries. The appropriateness of this instrument as a useful tool concerning the gifted population had also been recommended in the literature (Hoge & Renzulli, 1993, pp. 458-460; see also Colangelo &
Assouline, 1995, p. 67). The question format in this scale was specifically designed to reduce the tendency, which can be observed in the more typical true-false formats, to give socially desirable responses (cf. Harter, 1982, pp. 373-375; Harter et al. 1992, p. 785). In this format, children were presented the following types of items (examples of the two subscales are introduced in following boxes):

<table>
<thead>
<tr>
<th>really true of me</th>
<th>sort true of me</th>
<th>sort true of me</th>
<th>really true of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td>1</td>
<td>BUT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some kids feel like they are just as smart as other kids their age</td>
<td>Other kids aren't so sure and wonder if they are as smart.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>SA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some kids have a lot of friends</td>
<td>Other kids don't have many friends.</td>
<td></td>
</tr>
</tbody>
</table>

Attention: 1) This section is not available in test format (see Appendix 4)

Statements were presented giving a choice between two answers. The child first decided which of the two alternatives (s)he is most like and then whether the description was “sort of true” or “really true” of him or her. Items were scored on a 1 to 4 scale, which was afterwards re-coded according to the six subscales. Subscale scores were a computed average of the scores on the six items designed to assess the specific self-concept dimension.

5.2.3 Timetable of the study

Data for second phase of the study was planned to be obtained from surveys which were administered between different study years, 1998 and 1999. This was planned to avoid too extensive research procedure and additionally, by this arrangement it would be possible to avoid bias introduced by multiple exposure to researchers and instruments. Thus, the SAQ was planned to implement during spring 1998 and the SCSC in spring 1999. The information concerning both the final school reports and the school-follow-up cards were planned to be gathered during the summer 1999. The timetable of the research project (1989 - 1999) with the sample sizes for each test period is available in Appendix 2.
5.3 Instrumentation

All measures on all subjects at the Phase II were obtained with the permission of the Joensuu school district authorities. This permission to study included a promise that study results do not include comparisons between schools. To put the research plan into practice it was necessary to negotiate between the principals of the five different upper-secondary schools. After the first contact round which was implemented in autumn 1997, the following study phases were planned to be accomplished in concert with principals and subject teachers. School counselors helped to obtain information concerning on the school-follow-up cards.

5.3.1 School Adjustment Questionnaire (SAQ)

The first version of the test was pre-tested with the group of children who were participating in the 8th grade in Porolahti comprehensive school in Helsinki. When unclear items emerged, some statements in the instrument were reformulated. In October 1997, the pre-test did not reveal any major deficiencies in the test format and the adolescent in the pre-test group (n=26) managed to complete the test formulas without difficulties. Preliminary analysis showed that the question format was clear enough for the study purposes. Nevertheless, some students’ proposals concerning clarity of the test items were taken into consideration when the last version of the SAQ was modified. Basically, the pre-test was only to clarify if there had been some problems of interpretation concerning the study items. The reliability of the translated version was to be derived from the measurements of the whole study population.

5.3.1.1 Implementation of the study

For the answering to the SAQ and write an essay “2025” from every class, there were two hours (2 x 45minutes) reserved for the study purposes. The instruments were administered separately in each school class (n=27). The researcher explained the purpose of the test briefly to the students. Here, the students were told that the study was designed to learn about their school-related activities, experiences, future plans and generally feelings of adolescents. Furthermore, it was explained that one study goal was aimed to find out if the teaching matched the individual requirements of the students. They were assured that the information obtained would be confidential. After, the example
test items were shown on the blackboard, the fact that there were no right or wrong answer in this survey, which asks for their personal opinions, was emphasized. After the introduction, which usually took about 10 minutes, students completed the questionnaires on their own with clarification if needed. The time required to complete questionnaires was approximately 25-30 minutes. In the following study lesson, the other study task, the essay “2025”, was completed. Properties of the SAQ will be presented later in this chapter.

5.3.2 Self-concept scale for children (SCSC)

A translation of the scale into Finnish was undertaken by the author. This was then translated back into English by an independent source and areas of discrepancy were rectified. This process was repeated until an acceptable translation was available. The translated version was examined by transferring scores according to the SCSC “data coding sheet” (Harter, 1983b). The reliability of the translated version was obtained from the measurements of the whole study population.

5.3.2.1 Implementation of the study

Because the students were now spread across 27 different classes in the Joensuu school district area, the self-concept instrument (SCSC) was administered to whole class groups in which one or more of the subjects had been identified. The research assistant was directed to tell about the meaning of the test in relation to the earlier inquiries which were implemented already in 8th grade: “School Adjustment Questionnaire” and the essay-writing “2025”. When the example test items were shown on the over-head projector, the fact that there were no right or wrong answer in this survey, which asks their personal opinions, was emphasized. After an introduction, students completed the questionnaires on their own, with clarification being provided if needed.

An unforeseen problem arose during the implementation phase in that, being the last spring of the last year of compulsory schooling and given that some grades were already finalized and there was no enforcement of attendance, many students absented themselves, including some of the target group. When all the cases lacking information were deleted and unclear or partly unfilled questionnaires were sorted out, the total number of the complete data sets was reduced to 527. When this number was compared to the collected amount of the final school reports (n=628) the difference was quite remarkable.
Consequently, from the primary study groups of the 165 students located, only 145 completed questionnaires were returned. This represented 31 from the potentially gifted group and 114 from the control group. Perhaps this might be termed the “end-of-school” effect.

5.3.3 Other gathered information for the research

In the following section other information which was gathered in response to the study questions is presented. These brief sections clarify first when the information was gathered, second, what information in question contains and, third, how the information is used for the study purposes.

5.3.3.1 School achievement history

Performance measures on all Grade 9 subjects were obtained with the permission of the Joensuu school district authorities. Final school reports as well as other school history information concerning students’ upper-secondary schooling were collected during August and September 1999. Normally grades of Finnish upper-secondary school reports are divided to two different sections. The first section, which presents grades from different academic subjects, consists of the academic subjects which are: Finnish language, 1st foreign language, 2nd foreign language, Mathematics, Physics, Chemistry, Biology, Geography, Religion, and History. In this study, it is called as general academic mean (GAM). The second numeric mean value is the general grade point average, (GPA), which includes all compulsory subjects (n=15) which are taught in the Finnish comprehensive school on the secondary level. Hence, the GPA includes those subjects presented above by GAM (n=10) plus the following five subjects: Music, Art, Domestic Science, Physical Education and Technical or Textual Work.

The division on two different numeric means is also shown to have different informational properties. For example, in this study, statistical free Extraction method indicated existence of introduced two factors with respect to presented school subjects. This information was needed to address to the question theme #1.

5.3.3.2 School follow-up-cards

This information was gathered during September 1999 from different the upper-secondary schools by the help of the school counselors. School-follow-
up-cards contain information concerning both students’ applied educational wishes for secondary schooling and their actual placement according to these wishes. The application for the secondary level schooling is implemented in the beginning of the spring term of the ninth grade. The information in respect to school placement was categorized for the study analysis into four different categories, such as a) academic secondary schools, b) vocational secondary schools, c) national academies and d) information from the students who did not acquire placement or continued to study in comprehensive school. This information was needed to address to the question theme #4.

5.4 Analysis procedures

To address research hypotheses 1 - 12, a between subjects Multiple Analysis of Variance (MANOVA) was performed using STATISTICA for Windows (1995). The dependent variables in the analyses were GPA, GAM, Learning Behavior, Learning Experience, School-Instruction-fit, Internalized Value of Learning, Self-profile subscales Scholastic Competence, Peer Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct and Global Self-Worth, Students’ Educational Preferences, Students’ Occupational Preferences, and Students’ Actual School Placements. The independent variables were study groups, gender, age of the children and parents’ socioeconomic status. Parents’ socioeconomic status was used mainly as a covariant (MANCOVA). The necessary assumptions for MANOVA were checked by Wilks’ Lambda and Test of Homogeneity of Variance, Box-M -test, and Test of the Main effects. When it was possible to find significant main effects the post hoc multiple comparison test Scheffé was used to trace differences between groups. The effect sizes (c^2) of these comparison were calculated by dividing the difference between means of the comparison groups by the weighted standard deviation to yield a standard score (Cohen, 1977). When inter-correlations between the dependent variables were compared between the study groups the STATISTICA’s “Difference between two correlation coefficient” option was used to demonstrate statistical differences in this respect. When significant relationships were analyzed between two or more study variables Pearson’s r was used for this purpose.
6 Results

In this chapter, the analyses of the data are presented. The information gathered produced a considerable number of important and interesting results and thus, it is quite impossible to present all the interesting findings here. The results which are presented focus primarily on the formulated research questions and hypotheses.

The first section of this chapter presents an analysis of the reliability and validity of the both study instruments SAQ and SCSC. The second section presents an analysis of the data that was gathered to address research questions related to students’ school achievement. The third section presents a general quantitative analysis for School Adjustment Questionnaire subscales and addresses the research questions from #2 to #6. The fourth section presents general quantitative analysis for Self-concept Scale for Children subscale. In this section, firstly, the results are compared to the earlier findings, and secondly these interaction analyses will be used to address to research question #7 and #8 related to the students self-concept profile. The fifth section presents general quantitative analysis for both students’ Educational and Occupational Aspirations and shows their actual placements on the secondary schooling level. This section addresses the research questions from #9 to #11. For each of these sections Multiple Analysis of Variance (MANOVA) will be performed using STATISTICA for Windows (1995). Finally, the effect that each of the 14 dependent variables had on grouping, gender and parents’ socioeconomic background are discussed. The last section consists of the between network analyses.

6.1 Reliability and validity of the study instruments

This section presents factorial analyses and analyses of the reliability of the both used study instruments SAQ and SCSC.

6.1.1 Factorial pattern of School Adjustment Questionnaire

When the properties of the School Adjustment Questionnaire were examined by free varimax-rotation only two factors appeared. These two variables
could be described to present upper-classes of the expected five factors. The first factor can be described to consist of students’ learning experiences and educational values and other factor which could be described to include students’ judgements concerning general learning behavior and attitudes toward learning instruction (cf. Eccles & Wigfield, 1992, p. 282). The content of the factor analysis already gave an idea about close relationship between learning experiences and motivational constructs. Actually, Harter (1992, p. 82) has reported that perceived cognitive competence, challenge, curiosity, and mastery have formed a distinct factor in their study which seemed be also case in this analysis. The another factor could be described to have properties of both expected variables Learning Behavior and School Instruction-fit. However, because questions asked qualitatively quite different dimensions concerning students’ school adjustment the chosen original categorization was used for the factor analyses. Thus, the Extraction method for factors was used to reveal the chosen categorization. Before obtaining the final factorial pattern the statements which did not have clear loadings to the chosen variables or had multiple loadings were deleted from the analysis (see original Finnish questionnaire in Appendix 3.). For example, for this reason the fifth factor “External Support” was left out from the analysis because the tentative analysis showed that this factor is not likely to appear. For this reason factor pattern from the principal extraction method for the four different factors will be presented in Table 2.

In the following Table 2 the factor pattern for the total study population (n=593) is presented. It can be seen that items have moderate to high loadings on their designated factor. Because some of these items cross-loaded on other factors the loadings which were higher than the primary planned (.30) will be introduced in parentheses. For loadings for each of four subscales are substantial, and there are no cross loadings, which are greater than .30 with exceptions of two items on Internalized Value of Learning scale. However, because the chosen questions were formulated to examine students preference to the more challenging school work (e.g., “I can’t concentrate when the learning tasks are too easy to me”), they were considered to belong to the originally designed “Internalized Value of Learning” variable. Methodologically, this means that the results which are gained from these overlapping statements should be interpreted cautiously especially when the results are handling intercorrelation of these particular variables. This chosen categorization is used on the statistical analysis for the group differences. Moreover, the SAQ was planned to produce information concerning students’ experienced external educational support. However, the expected “External support” factor did not appear, because teachers’ and parents’ support was shown to
have different properties. Because these factors did not have similar loadings they were considered two separate variables namely “Parents’ Availability” and “Teachers’ Encouragement”.

**TABLE 2. Factor pattern of School Adjustment Questionnaire (n=593)**

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Behavior</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x73: How do you behave during the lessons?</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x75: Usually I can concentrate well to the given learning tasks.</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x79: My carefulness in school tasks is below the average when compared with others.</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x83: Often I don't manage finish my school work.</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x91: I can interrupt if the school tasks are not interesting enough.</td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x98: Often my thoughts are wandering because studying does not interest me.</td>
<td>.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Learning Experiences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x72: How you have managed to do your studies lately?</td>
<td>.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x88: I can learn new things amazingly fast.</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x94: I do my tasks faster than the other students.</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x97: School tasks are too difficult to me.</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>School-Instruction-Fit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x70: How do you like to study in the upper-secondary school?</td>
<td>.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x93: I am pleased to the given instructions in upper-secondary school.</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x95: Teachers give me often tasks which really correspond to my learning level.</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internalized Value of Learning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x77: I could easily learn more if I was required more.</td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x78: I can't concentrate when learning tasks are too easy.</td>
<td>(.49)</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x84: I would like to learn more than it is taught in the upper-secondary school.</td>
<td>.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x85: I often feel that learning tasks are too easy to me.</td>
<td>(.50)</td>
<td>.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x89: Teachers could demand more.</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigen value</td>
<td>5.78</td>
<td>2.40</td>
<td>1.22</td>
<td>1.04</td>
</tr>
<tr>
<td>% of Variance</td>
<td>30.45</td>
<td>12.63</td>
<td>6.47</td>
<td>5.48</td>
</tr>
</tbody>
</table>

Note: Loadings less than .30 not included for the sake of clarity.
The results from these separate variables will be considered as an additional research information. The suggestion for the future research is that the formulation of these sub-factor questions should be examined more carefully.

Moreover, the SAQ was formulated to produce information concerning students’ future Occupational Aspiration. Because the gathered information concerning students’ Occupational Aspiration was qualitatively different from the presented school adjustment scale there was a need to compute a separate analysis with this regard. When the properties of the Occupational Aspiration Scale was examined by free varimax-rotation only two factors appeared. However, because questions asked qualitatively quite different dimensions concerning students’ school adjustment the chosen three-subscale categorization was used for the factor analyses. Thus, the Extraction method was used to reveal the chosen categorization for the formulated three occupational categories. The factor pattern from the principle extraction method for the three different factors will be presented in following Table 3. Before obtaining the final factorial pattern the statements which did not have clear loadings to the chosen variables or had multiple loadings were deleted.

### TABLE 3. Factor pattern of Occupational Aspiration Formula (n=593)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional Occupations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x104; Safety</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x106; Transportation, etc.</td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x108; Handcraft, etc.</td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x110; Construction, etc.</td>
<td>.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Trade &amp; Service Occupations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x107; Service, etc.</td>
<td></td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>x109; Commercial, etc.</td>
<td></td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>x115; Entrepreneur, etc.</td>
<td></td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>x117; Travel, etc.</td>
<td></td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td><strong>Academic Occupations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x111; Research</td>
<td></td>
<td></td>
<td>.75</td>
</tr>
<tr>
<td>x113; Technical, education, etc.</td>
<td></td>
<td></td>
<td>.71</td>
</tr>
<tr>
<td>x116; Humanistic, lingual etc.</td>
<td></td>
<td></td>
<td>.66</td>
</tr>
<tr>
<td><strong>Eigen value</strong></td>
<td>2.42</td>
<td>2.22</td>
<td>2.02</td>
</tr>
<tr>
<td><strong>% of Variance</strong></td>
<td>20.48</td>
<td>18.38</td>
<td>14.34</td>
</tr>
</tbody>
</table>

Note: Loadings less than .20 not included for the sake of clarity.
out from the analysis (cf. Appendix 3). The factor pattern of Occupational Aspiration Formula showed to stable and solid properties with one exception in the “Trade & Service” occupation scale.

### 6.1.2 Reliability of the School Adjustment Questionnaire

The internal consistency subscale reliabilities (Cronbach’s and Standardized alphas) for all seven subscales of SAQ are presented in the following Table 4. The reliabilities ranged from .59 to .79. The lowest reliability score was in the School-Instruction-fit scale (.61). In the Occupational Aspiration Scale the lowest reliability score emerged in the Academic Occupations scale (.59).

<table>
<thead>
<tr>
<th>Subset</th>
<th>Number of subtests</th>
<th>Cronbach alpha</th>
<th>Stand. alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Behavior</td>
<td>6</td>
<td>.79</td>
<td>.80</td>
</tr>
<tr>
<td>Learning Experience</td>
<td>4</td>
<td>.74</td>
<td>.74</td>
</tr>
<tr>
<td>School-instruction Fit</td>
<td>3</td>
<td>.60</td>
<td>.60</td>
</tr>
<tr>
<td>Internalized Value of Learning</td>
<td>5</td>
<td>.64</td>
<td>.65</td>
</tr>
<tr>
<td>Functional Occupations</td>
<td>4</td>
<td>.67</td>
<td>.67</td>
</tr>
<tr>
<td>Trade &amp; Service Occupations</td>
<td>4</td>
<td>.60</td>
<td>.61</td>
</tr>
<tr>
<td>Academic Occupations</td>
<td>3</td>
<td>.59</td>
<td>.59</td>
</tr>
</tbody>
</table>

According to Table 4, the reliabilities of the school adjustment questionnaire suffered from some remarkable deficits. For example, two school adjustment scales School-Instruction-Fit and Internalized Value of Learning and all three scales of the Occupational Aspiration Formula showed reliabilities which were under the recommended .70 values (Nunnaly, 1978, p. 245). For this reason the interpretation of the results of this section should be made very carefully and cautiously. For future studies there is a need to accomplish more precise analyses in order to gain higher reliabilities with respect to studied variables.
6.1.3 Factorial pattern of Self-concept Scale for Children

As Harter (1982, p. 88) has stated, it is assumable that individuals usually show differences across the five subscales, and hence it was also examined if there would be some correlation among subscale question scores. According

TABLE 5. Factor pattern of translated version of Harter’s SCSC (n=510)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
<th>Factor 6 (GSW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC 1</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC 2</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC 3</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC 4</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC 5</td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC 6</td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 1</td>
<td></td>
<td>.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 2</td>
<td></td>
<td>.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 3</td>
<td></td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 4</td>
<td></td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 5</td>
<td></td>
<td>.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA 6</td>
<td></td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 1</td>
<td></td>
<td></td>
<td>.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 2</td>
<td></td>
<td></td>
<td>.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 3</td>
<td></td>
<td></td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 4</td>
<td></td>
<td></td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 5</td>
<td></td>
<td></td>
<td>.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC 6</td>
<td></td>
<td></td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 1</td>
<td></td>
<td></td>
<td></td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 2</td>
<td></td>
<td></td>
<td></td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 3</td>
<td></td>
<td></td>
<td></td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 4</td>
<td></td>
<td></td>
<td></td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 5</td>
<td></td>
<td></td>
<td></td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA 6</td>
<td></td>
<td></td>
<td></td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.25</td>
<td>(.59)</td>
</tr>
<tr>
<td>BC 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>BC 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>BC 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td>BC 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>BC 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.74</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eigen value</th>
<th>8.82</th>
<th>3.91</th>
<th>2.59</th>
<th>2.10</th>
<th>1.57</th>
<th>1.31</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Variance</td>
<td>24.52</td>
<td>10.87</td>
<td>7.19</td>
<td>5.83</td>
<td>4.37</td>
<td>3.64</td>
</tr>
</tbody>
</table>

Note 1) Loadings less than .20 not included for the sake of clarity. Note 2) SC = Scholastic Competence, SA = Social Acceptance, AC = Athletic Competence, PA = Physical Appearance, BC = Behavioral Conduct, GSW = Global Self-Worth
to Harter, the sixth subscale named Global Self-worth (GSW) has different qualities from the other subscales and it is not likely to appear, because values of the different subscales vary between individuals and thus, subscales can have different relationships to the GSW (Harter, 1983b, p. 10). For this reason, the values of GSW are left outside of observation. An oblique solution, which allows the factors to intercorrelate, indicated existence of five factors as expected (see Table 5). Actually, both orthogonal and oblique solutions were obtained, each revealing the same stable factor structure. It was possible to see that items had moderate to high loadings on their designated factor and that with one exception (in Behavioral Conduct scale) in this sample they did not cross-load on other factors over .20 level. Although it has been reported that it is quite usual that the sub-factors cross-load moderately with other sub-factors and these cross-loadings vary according to the different groups (cf. Harter, 1982, p. 91), it is important to keep in mind this exception which appeared in this by the used method. In Table 5 the factor pattern for a total sample (n=510) of this study is presented. The factor pattern of translated version of SCSC showed very stable and solid properties similar to Harter’s (1983b, p. 11) earlier findings with one exception in the Behavioral Conduct scale. Direction of the loading emerged when GSW was included in the computation.

Nevertheless, it was concluded that this one exception does not significantly weaken the validity of the findings of the translated version of SCSC although for the upcoming measures it is necessary that the inappropriate loading must be examined.

6.1.4 Reliability of Self-Concept Scale for Children

Regardless of the “school-ending-effect” the Harter Scale, worked very reliably. In the following Table 6, different subsets are differentiated from each other and the internal consistency reliabilities are shown using both Cronbach alpha and Standardized alpha. To make comparison with the earlier findings easier the reliabilities of the Harter’s original study (1983b, p. 11) in seventh graders are shown on the right column of the Table 6.

When these reliabilities were compared with Harter’s (1983b, p. 12) findings regarding the 7th graders’ subscale reliabilities (Scholastic competence .79, Social Acceptance .79, Athletic Competence .87, Physical Appearance .82, Behavioral Conduct .72 and Global Self-Worth .84), similar patterns were observed. As in Harter’s findings, the Behavioral Conduct subscale had the lowest reliability. Also other subscales seemed to act quite similarly to Harter’s findings and, in general, reliabilities were acceptable.
TABLE 6. Reliability of the translated version of Harter’s SCSC (n=510)

<table>
<thead>
<tr>
<th>Subset</th>
<th>Number of subtests</th>
<th>Cronbac alpha</th>
<th>Stand. alpha</th>
<th>Average inter-item correlat.</th>
<th>Harter (-83) 7th graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholastic Competence</td>
<td>6</td>
<td>.82</td>
<td>.82</td>
<td>.43</td>
<td>.79</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>6</td>
<td>.78</td>
<td>.78</td>
<td>.39</td>
<td>.79</td>
</tr>
<tr>
<td>Athletic competence</td>
<td>6</td>
<td>.82</td>
<td>.83</td>
<td>.47</td>
<td>.87</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>6</td>
<td>.87</td>
<td>.87</td>
<td>.53</td>
<td>.82</td>
</tr>
<tr>
<td>Behavioral Conduct</td>
<td>6</td>
<td>.73</td>
<td>.73</td>
<td>.32</td>
<td>.72</td>
</tr>
<tr>
<td>Self-worth</td>
<td>6</td>
<td>.82</td>
<td>.82</td>
<td>.44</td>
<td>.84</td>
</tr>
<tr>
<td>Subsets in all</td>
<td>36</td>
<td>.91</td>
<td>.91</td>
<td>.22</td>
<td>-</td>
</tr>
</tbody>
</table>

To sum up, the psychometric properties of the translated version of Self-concept Scale for Children found in the present study were close to those reported for an American sample 7th graders (Harter, 1983b, p. 12). Both the factor pattern and subscale reliabilities of the translated version in the present study were parallel to Harter’s findings (1985) as well. In this respect, the translated Finnish version of the SCSC can be said to work in an acceptable way.

### 6.2 Socioeconomic and biological determinants

The socioeconomic status of the parents, which was available from the preschool phase (1989), showed that most of the children had a working class or a partly middle-class background. In the following Table 7 occupational status of the parents is presented for the study groups.

Comparison between the Experimental group and Control group did not show statistically significant differences when only either mothers’ or fathers’ occupational status was examined separately. When parents’ common
socioeconomic status was calculated together analysis showed a slight difference although still non-significant (t-test, p=.058) for the parents of the Experimental group. This factor is taken into account in the coming analyses procedures.

Although it is quite assumable that the age of the child within one year cohort does not have a strong effect, its relation to the study groups was examined for the study purposes. Table 8 shows intercorrelation between the biological and sociological determinants and their relation to the independent variable study groups. According to the Table 8, the independent variable grouping was statistically significantly correlated to the age of the child. The

**TABLE 7. Socioeconomic status of the parents split by study groups**

<table>
<thead>
<tr>
<th>Classes</th>
<th>Mothers' Occupational Status</th>
<th>Fathers' Occupational Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental Group</td>
<td>Control Group</td>
</tr>
<tr>
<td>1 Employer</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>2 High Officer</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>3 Officer</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4 Low Officer</td>
<td>11</td>
<td>32</td>
</tr>
<tr>
<td>5 Employee</td>
<td>12</td>
<td>35</td>
</tr>
</tbody>
</table>

n in all 34 166 32 147

**TABLE 8. Sociological and biological determinants and their relation to the study groups**

<table>
<thead>
<tr>
<th>Study groups</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents SES</td>
<td>.146*</td>
</tr>
<tr>
<td>Age</td>
<td>.199**</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001
biological age which was here determined as a born month has facilitated a child to acquire higher level of VSM in pre-school phase. In conclusion, in the pre-school phase, the age of the child had a higher relation to the study groups than Parents’ SES.

6.3 General findings on school achievement

In this study the final school reports are presented according to two classes. The first class which is called General Academic Subject Mean (GAM) consists of academic subjects (n=10) and the second class is called General Point Average (GPA) which includes all compulsory subjects (n=15) which are taught in Finnish comprehensive school on the secondary level. Although this division between GPA and GAM classes is mainly used in statistical analyses, for the study purposes some singular school subjects are also set apart to demonstrate special differences within school subjects.

Because, the students need to pass Finnish comprehensive school with passing grades, the number 5 is eventually the smallest possible number which can emerge in the final school report. These both numbers (5 and 10) exist seldom compared to the other grades. For this reason GPA and GAM mean values are mainly ranging between 6.0 - 9.0. In the following Table 9 the measures of variability on final school reports are presented for gender.

According to Table 9, the GPA points are in general higher than the GAM points. It can be assumed that when a student has some language-related advances or deficits in learning such as in the Finnish language it is related to the other academic grades as well. Already here it is possible to state that the gender effect is eminent. For example, boys’ mean values on both GPA

<table>
<thead>
<tr>
<th></th>
<th>GPA, General Point of Average</th>
<th>GAM, General Academic subject Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Min</td>
</tr>
<tr>
<td>Girls</td>
<td>8.17</td>
<td>5.73</td>
</tr>
<tr>
<td>Boys</td>
<td>7.69</td>
<td>5.67</td>
</tr>
<tr>
<td>In all</td>
<td>7.93</td>
<td>5.60</td>
</tr>
</tbody>
</table>
(7.69) and GAM (7.54) are about 0.5 lower than corresponding mean values of the girls.

Additionally, the effect of the different schools concerning final school grades were examined. The results showed that there were statistically significant differences (ANOVA, Rao R=6.13, p<.001). Post hoc Scheffé showed that school #5 have given statistically significantly (p<.001) lower both GPA and GAM grades than school #2 and statistically significantly (p<.01) lower both GPA and GAM grades than schools #3 and #4. For this reason the findings that address questions related to school achievement would be examined by using schools as a covariant. The other between schools comparisons concerning school achievement produced non-significant differences.

6.3.1 Academic achievement for the study groups

Question Theme #1; School Achievement

Hypothesis #1:
There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to their academic achievement at the end of the Finnish comprehensive school

A 2 x 2 between-subjects multivariate analysis of variance was performed on two dependent variables GPA, and GAM to address study question #1. In these analyses, independent variables were grouping (Experimental and Control Group #1) and gender. Moreover, parents’ socioeconomic status was used as a covariate (MANCOVA) to find if the slight differences which were present in the pre-school phase have affected these study variables. Effect of the school was also examined.

STATISTICA MANOVA was used for the analyses with the sequential adjustment for nonconformity. Total n of 165 according to Final School Reports was available for these analyses. There were no univariate or multivariate within-cell outliers at p<.001 according the Box-M test (14.55, df 9, p=.121). Results of evaluation of assumptions for normality, homogeneity and distribution of variances were satisfactory.

Wilks’ criterion was used to find out how the combined dependent variables were affected by the independent variables. Both grouping, Rao R (12.03); p<.001 and gender Rao R (6.01); p<.01 were affected significantly, but the
interaction was not significant, Rao R (.013); p<.986 (see Table 10). Significant F statistics were followed by post hoc contrasts designed to investigate mean differences. Study groups had a statistically significant (p<.001) effect on both dependent variables GPA; F(22.84), and GAM; F(19.72). Gender had a statistically significant (p<.01) effect on both dependent variables GPA; F(10.76) and GAM; F(8.86) as well.

TABLE 10. Multivariate analysis of variance on GPA and GAM

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Wilks' Lambda</th>
<th>η²</th>
<th>Rao's R</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Groups</td>
<td>.87</td>
<td>.23</td>
<td>12.02</td>
<td>2</td>
<td>160</td>
<td>.001***</td>
</tr>
<tr>
<td>Gender</td>
<td>.93</td>
<td>.07</td>
<td>6.00</td>
<td>2</td>
<td>160</td>
<td>.001***</td>
</tr>
<tr>
<td>Two-way interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender x Study groups</td>
<td>.99</td>
<td>.01</td>
<td>0.13</td>
<td>2</td>
<td>160</td>
<td>.11</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001

As shown in the Table 10 there were differences between study groups with regard to school achievement (p<.001), but Wilk’s Lambda did not tell exactly where. In the following Table 11, the effects of the study groups on dependent variables GPA, and GAM, will be more closely presented to address study hypothesis #1 by Multiple comparison test post hoc Scheffé which is recommended to use when the comparison groups are not equal.

Results are presented in the Table 11.

The Experimental group had higher scores in both GPA and GAM than the Control group. The academic subject means of the Experimental group were on the same level as the GPA means. In the Control group, the academic subject means were smaller than the GPA means. According to Table 11, there were statistically significant (p<.001) differences between the study groups. When comparing Experimental group and Control group, it was clear that early measured ability differences (6-years-old) using the Breuer-Weuffen Differentiation Test were strongly related to later school performance in the Finnish comprehensive school. Statistically significant differences in
the two school-related dependent variables were present (p<.001) at the end of the ninth grade. These statistically significant results in this respect remained on the same significance level (p<.001) even though either the effect of parents socioeconomic or schools status was covariated out.

Furthermore, when *post hoc* comparison focused on the differences between various school subjects, the grouping according to baseline measurement had a statistically significant (p<.001) effect on 7 academic subjects: Finnish, 1st Foreign language, History, Physics, Chemistry, Biology, and, Geography, a significant (p<.01) effect on subjects Mathematics, 2nd Foreign language, and Religion. Moreover, concerning the rest of the five non-academic subjects, which were included in the GPA, the Experimental group performed statistically significantly (p<.001) higher than the Control group in Domestic Science, and Physical Education, statistically significantly higher (p<.05) than the Control group in Visual arts and Technical/Textual Work. In the other words, the only school subject which was not affected by grouping was Music.

In conclusion, scoring high in BWDT at six years of age, was strongly related to average academic success in the end of the Finnish nine-graded comprehensive school. These results seemed to have quite similar properties as those Kuusinen and Leskinen (1987) have gained when using ITPA to study relationships between early (7-years-olds) measured Psycholinguistic Abilities and later academic success in Finland. Additionally, measures of relationship, the Pearson correlation coefficient between the measured pre-

**TABLE 11. Post hoc test Scheffé on dependent variables GPA and GAM for study groups**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>S.D.</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GAM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>8.60</td>
<td>.84</td>
<td>.001***</td>
<td>.99</td>
</tr>
<tr>
<td>Control group</td>
<td>7.72</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GPA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>8.63</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>7.87</td>
<td>.67</td>
<td>.001***</td>
<td>.99</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001
school verboseno-motor status and GAM showed statistically significant interrelation $r=.35 (***)$ after ten years from the base-line measurement (see Table 31, p. 192). This quite surely indicates that high academic achievement resulted indirectly from the relatively high VSM status. At least, the result showed that the measurement of the VSM status at the preschool age can give robust information concerning broad level academic achievement, especially in language related subjects.

6.3.2 Academic achievement for the study groups and gender

Given the fact that girls have traditionally been reported to perform academically better than their male counterparts (e.g., Kuusinen & Blåfield, 1975; Kuusinen, 1985; Heller, 1992), the effect of gender in this study was also examined. The following Figure 5 shows that there are differences between Experimental and Control groups with respect to school performance and parallel differences are also visible by gender as well. As Figure 5 indicates, the Experimental group performed significantly higher than the Control group.

![Figure 5. Plot of means of the final GPA and GAM for the study groups and gender](image-url)
Furthermore, the gender differences were remarkable but followed a similar pattern in both of the study groups. The additional post hoc Scheffé showed that the girls in this study performed significantly (p<.05) better than boys in all school subjects except in history, mathematics and physics.

Although Figure 5 shows clear differences between the Experimental and the Control group, there was a need to investigate these differences more precisely according to the statistical analysis. The post hoc Scheffé was used to find these statistical differences. For these analysis purposes only the final GAM comparisons for study groups and gender were performed (see the following Table 12). Actually, the GPA comparison according to Scheffé’s test, produced similar differences between both of the study groups.

Table 12 shows that the girls in the Experimental group (n=18) had the highest GAM scores. They performed significantly (p<.01) higher than the girls in the Control group and significantly (p<.001) higher than the boys in the Control group. Also, the effect sizes of these comparisons were large. However, there were no statistically significant differences between gender in the Experimental group. The boys in the Experimental group (n=16) performed significantly (p<.05) better than the boys of the Control group but they did not perform better than the girls of Control group. The fact that boys’ high achievements might not be as desirable as girls’ had obviously affected the academic achievements of the boys of the Experimental group because they seem to be quite parallel with the boys’ of the Control group. However,

| TABLE 12. Post hoc test Scheffé on dependent variable GAM for study groups and gender |
|---------------------------------|------|---------------------|---------------------|---------------------|---------------------|
| Group                          | Gender | Mean | S.D. | {1} η² | {2} η² | {3} η² | {4} η² |
| Experimental group             |       |      |      |      |      |      |      |
| Girls {1}                      |       | 8.88 | .85  |      |      |      |      |
| Boys {2}                       |       | 8.33 | .94  | .478 | .56  |      |      |
| Control group                  |       |      |      |      |      |      |      |
| Girls {3}                      |       | 8.03 | 1.05 | .026*| .80  | .892 | -    |
| Boys {4}                       |       | 7.41 | 1.07 | .000***| .99  | .018*| .89  | .009**| .91 |

* p < .05
** p < .01
*** p < .001
the effect size of this between boys’ comparison was large, which demonstrated that there were differences between boys in the study groups. An additional examination of the boys’ performance differences showed that there were actually only three boys in the Experimental group who performed lower level than boys’ average GAM (M=7.79). These examples could be the interesting cases, which could be traced backwards and the possible causes of these minor failures which happened despite the “good start” could be found. Perhaps, the assumed environmental factors had affected the boys’ academic performance. The shown statistically significant results in this respect remained on the same significance level thou the effect of parents socioeconomic status was covaried out. The same was observed thou the effect of the school was covaried out. For future studies there is a need to accomplish more precise multiple variable analyses in order to examine also the effect of the class. Nevertheless, in light of this result it be concluded that when a child possesses high level VSM in the pre-school phase it seems to guarantee a relatively successful school path for him or herself through the comprehensive school years.

6.3.3 Conclusion regarding findings on academic achievement

The answer to the first study question theme was obvious. According to the results, the potentially gifted children performed significantly higher than the other students according to both GPA and GAM scores. On the basis of these results, it was possible to conclude that advanced verbosenso-motor abilities, measured at the pre-school age (6-year-old) by the BWDT, were strongly related to above average academic success at the end of the Finnish nine-graded comprehensive school. The result supports Breuer’s (1981) formulation that appropriate level and quality of language-related verbosenso-motor abilities facilitates the acquisition of written language, which in turn affects later academic achievements. To sum up briefly, the higher the early measured verbosenso-motor abilities were, the higher were final academic grades. Furthermore, according to the results, the high verbosenso-motor ability at age six, was also related to the broad level success, which did not solely reflect on the academic subjects at the end of the Finnish comprehensive school. Doubts that achievements of the potentially academic gifted children and the average children would have been more equal due to equalizing school objectives of the Finnish comprehensive school did not get support from the study findings. Only the boys of the Experimental group showed somewhat average results compared to the students of the other group.
Nevertheless, the finding was interesting, because the boys of the Experimental group had the same advances according to the BWDT, as the girls of the Experimental group and thus, they could perform at the same level as these girls. This finding supported Heller’s (1991, p. 185) finding which has shown that the high achievements of the boys’ were not as desirable as the high achievements of the girls. Upcoming study sections may reveal if there were motivational differences among students of the study groups and between genders with this respect.

6.4 General findings on students’ school adjustment

In this section, first, the descriptive statistics of the SAQ instrument will be introduced. Second, the correlation between different subscales will be presented and discussed briefly in the light of the theoretical assumptions. The goal of this section is to present instrumental properties of the SAQ in descriptive form and disclose how the SAQ worked among study population and also generally compare with the earlier findings which have reported students’ motivation to learn. This background information concerning SAQ variable interaction also facilitates interpretation of the upcoming results related to the particular hypotheses #2, #3, #4, #5 and #6. In the following Table 13 the means and standard deviations of the SAQ scales for the study population are presented split by gender. For the most part measures of central tendency showed that mean values were higher than mid-point 3.0. Especially, subscales School- Instruction-Fit and Learning Behavior scores were relatively high. Moreover, the students assessed their Learning Experiences as slightly positive. According to these answers patterns, students in the Joensuu school district had in general experienced school positively. However, the subscale Internalized Value of Learning formed a qualitatively different domain with this respect because the sub-statements of this variable included statements for more challenging and more demanding school work. It seems that the students are more likely to disagree with such statements which indicated that they clearly would neither prefer extra work nor challenging learning tasks. Because of this, scores in this scale are heavily skewed to the smaller values. The difference between Internalized Value of Learning scores and other variable scores becomes clearly visible in the following the Figure 6. The students who disagreed less are considered here to be more intrinsically motivated. According to this finding, learning tasks at the upper-level of school were often either difficult enough or they were seldom considered to
TABLE 13. Subscale means and standard deviations of School Adjustment Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Girls (n=274)</th>
<th>Boys (n=284)</th>
<th>all 593</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Learning Behavior</td>
<td>3.44</td>
<td>.83</td>
<td>3.19</td>
</tr>
<tr>
<td>Learning Experiences</td>
<td>3.07</td>
<td>.79</td>
<td>3.15</td>
</tr>
<tr>
<td>Internalized Value of Learning</td>
<td>2.55</td>
<td>.73</td>
<td>2.77</td>
</tr>
<tr>
<td>School-Instruction-Fit</td>
<td>3.27</td>
<td>.74</td>
<td>3.22</td>
</tr>
</tbody>
</table>

Figure 6. School Adjustment subscale scores for gender
be something inherently enjoyable. Instead it seems that much of what children were asked to do and learn in school had become something which is not characterized by intrinsic motivation (Ryan et al., 1992 p. 173; Harter 1992, pp. 86-87). When concentrating on the differences between genders the scales Learning Behavior and School-Instruction-Fit appeared to favor girls whereas scales Learning Experiences and Internalized-School-Values appeared to favor boys which probably resulted from reported competence perception differences between genders. In Figure 6 these differences are presented in graphic form.

As shown in the Figure 6 there were gender differences. The greatest differences seemed to be on the scales Learning Behavior, for the girls whereas the Internalized Value of Learning scale skewed for the boys. When comparing Learning Experience and School-Instruction-Fit scores between both genders there were no such differences observable. Additionally, Figure 6 showed that Internalized Value of Learning was closely parallel to the Learning Experience scores. These tentative gender differences found in this Figure 6 followed patterns which were quite parallel to the ones suggested by Eccles et al. (1984, p. 41) in a sense that boys have more positive learning experiences along with the higher Internalized Value of Learning scores. Additionally, the girls were generally adjusting their behavior better toward learning than boys which is also quite expected. The statistical differences for gender will be examined later according to the analyses for the study groups and gender. In the following section, the measures of relationship of the SAQ are presented by weighting each subscale. To provide a clearer picture on how the school adjustment subscales were related to school achievement, the dependent variable GAM was also included in this pooled interaction. This later comparison can offer clarifying information for the reader with respect to how these different school adjustment variables were related to the students’ school success. However, it is important to remember that GAM was not part of the SAQ-test and it cannot be used to assess accuracy of the SAQ instrument or vice versa. In the following Table 14, the measures of the relationship between the subscales of the SAQ are presented by weighting each subscale.

Several correlations in Table 14 are of interest here. First, there seemed to be a cluster involving three variables, namely, Learning Behavior, Learning Experiences and School-Instruction-fit. It is quite inappropriate to infer causality according to appearance of these scales, but it seems to be likely that the students who were having more positive learning experiences were also considering offered instructions more suitable for them and accordingly they could adjust their learning behavior better to the school demands. The
high correlation between the variables Learning Experiences and Learning Behavior ($r = .49$), School-Instruction-Fit and Learning Behavior ($r = .43$) and School-Instruction-Fit and Learning Experiences ($r = .49$) can be taken as indicators of the these assumptions. The similar relationships were also supported by earlier findings which were briefly overviewed in the theory section (cf. Harter, 1981, p. 218; Eccles et al., 1984, p. 29; Pintrich & Schrauben, 1992, p. 153).

Second, the scale Learning Experiences had relatively high correlation with Internalized Value of Learning ($r = .48$). The result supports the earlier findings (cf. Deci & Ryan, 1992, p. 27) which have stated that students who have positive learning experiences are usually more capable of internalizing school values and simultaneously they have higher interests for more demanding and challenging school work. Given that internalization processes which are formed along expectancies are relevant to the regulation of all those behaviors that are not natural or intrinsically motivated, it is clear that such processes are closely related to school adjustment and achievement (cf. Ryan et al.)

<table>
<thead>
<tr>
<th>Correlation with:</th>
<th>Learning Behavior</th>
<th>Learning Experience</th>
<th>School-Instruction-Fit</th>
<th>Internalized Value of Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Behavior</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning Experience</td>
<td>.49 (***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School-Instruction-Fit</td>
<td>.43 (***</td>
<td>.49 (***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalized Value of Learning</td>
<td>.13 (**)</td>
<td>.48 (***</td>
<td>.27 (***</td>
<td></td>
</tr>
<tr>
<td>GAM</td>
<td>.41 (***</td>
<td>.60 (***</td>
<td>.30 (***</td>
<td>.21 (***</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001

| TABLE 14. SAQ subscale intercorrelations with GAM (n=560) |
1992, p. 173). Now, it is however important to remember the existing close
relation between these variables which may mislead interpretation concerning
this relationship. In contrast to this finding, it was interesting to notice that
Internalized Value of Learning scale appeared not to have that high a correlation
to the Learning Behavior scale. This may indicate that the students who had
assimilated high levels of Learning Behaviors did not necessarily prefer to
have more challenging and demanding school work. This could be an indicator
of the different learning orientations among adolescents which when holding
low correlation as here could mean performance orientation (cf. see more
precise analysis of learning orientation, Skaalvik, 1997, p. 75). Perhaps, this
because of the same reason the relationship between Internalized Value of
Learning and School-Instruction-fit may be moderately low as well. However,
because these predictions were correlational in nature, it is not fruitful to
argue what variable was causing an effect or vice versa and it is even possible
that these relations are affected and risen from other, perhaps here invisible,
effects.

Moreover, comparison between GAM and school adjustment variables
produced interesting relations. For example, Learning Experiences had
relatively high statistically significant (r = .60) relation to the GAM, which
could indicate that the students who were academically successful had more
positive Learning Experiences as well. With this regard the scale Learning
Experiences seemed to have been formed along to the students’ performance
assessments or vice versa which could mean that students of this study have

Some lower relationships though still significant emerged between the
variables School-Instruction-fit, Internalized Value of Learning, and GAM.
The School-Instruction-fit was positively related to the Internalized Value of
Learning and these both scales were related to the GAM scales as well. This
could indicate that the when students are successful, they usually consider
school tasks more appropriate for them and they can better internalize values
of learning than those who are not that successful (cf. Wigfield & Eccles,
1992, p. 310). However, this last correlation was relatively low which may
indicate that high-achieving students are not necessarily eager for more
demanding learning tasks. It seems that only when students have experienced
and perceived themselves as highly successful that they can prefer more
demanding school work and this is not necessarily related to their academic
achievement. Actually, when one has both a high preference for challenging
learning tasks and simultaneously low academic achievement and vice versa
it can indicate that school-instructions are inappropriate, one has assimilated
a performance learning orientation and as a consequence one is underachieving
academically.
The subscale intercorrelations for gender did not vary significantly although in general the boys seem to have slightly higher correlations between the SAQ subscales than girls.

6.4.1 School adjustment for the study groups

Question theme #2; School Adjustment

A 4 x 2 between-subjects multivariate analysis of variance was performed on four dependent variables Learning Behavior, Learning Experiences, School-Instruction-Fit and Internalized Value of Learning to address study questions from #2 to #5. An additional MANOVA was calculated for the both separately identified External Support scales: Parents’ Availability and Teacher Encouragement to address study question #6. In these analyses, independent variables were grouping and gender. Furthermore, parents’ socioeconomic status and school were used as covariates to find if these variables had an effect on students’ school adjustment.

STATISTICA MANOVA was used for the analyses with the sequential adjustment for nonconformity. Total n of 165 which was available for Academic Achievement calculations was reduced to 158 cases with the deletion of cases missing a score on the School Adjustment Questionnaire. There were no univariate or multivariate within-cell outliers at p<.001 according the Box-M test. Results of evaluation of assumptions for normality, homogeneity and distribution of variances were satisfactory.

Wilks’ criterion was used to find out how the combined dependent variables were affected by the independent variables. Grouping, Rao R (6.75); p<.001, was affected significantly. Gender had no significant affect with this respect, Rao R (1.55); p<.18. However, the interaction, Grouping x Gender, was significant Rao R (4.70); p<.01 (see Table 15) which caused changes in statistical analyses.

Because of the significant interaction effect between study groups and gender, the analyses concerning school adjustment scales were performed for both genders separately as recommended (cf. Nummenmaa et al. 1996, p. 96). This was made to avoid interaction effect which could distort the statistical analyses. It would be interesting to study why interaction effect actually emerged. Although it could be too early to speculate the reason for this phenomena it was probable that school adjustment values of the boys in the Experimental group were somewhat lower and simultaneously these values could be more mainstreamed than the values of the girls in the Experimental
TABLE 15. Multivariate analysis of variance on Learning Behavior, Internalized Value of Learning, Learning Experiences, and School Instruction-Fit

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>Wilks' Lambda</th>
<th>( \eta^2 )</th>
<th>Rao's R</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Study Groups</td>
<td>.85</td>
<td>.15</td>
<td>6.26</td>
<td>4</td>
<td>151</td>
<td>.001***</td>
</tr>
<tr>
<td>Gender</td>
<td>.94</td>
<td>.04</td>
<td>2.02</td>
<td>4</td>
<td>151</td>
<td>.093</td>
</tr>
<tr>
<td>Two-way</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender x Study groups</td>
<td>.90</td>
<td>.09</td>
<td>4.07</td>
<td>4</td>
<td>151</td>
<td>.003**</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001

group. For this reason girls values may had too much weight for the two way interaction analyses. To examine this closer a graphical presentation and rough estimation on group and gender differences was used to reveal the cause of the interaction effect. In the following section the SAQ scores are presented graphically for the study groups and gender. After these analyses one-way ANOVA for both genders is computed on the school adjustment variables to address set hypotheses.

6.4.2 School adjustment for the study groups and gender

In the following Figure 7, school adjustment variables are firstly presented graphically for the study groups and gender.

According to Figure 7, it can be tentatively said that school adjustment seems to generally follow students’ academic achievement (cf. Figure 5, p. 136). Moreover, the effect of the study groups became visible as well. It is somewhat clear that early advanced verbosenso-motor abilities have facilitated students of the Experimental group to consider school more positively in terms of measured school adjustment variables than the Control group. The arguments which were pointed to regarding the boring educational experiences of the high able which could result to the some motivational problems did not seem to get support according to these tentative measures of relative position for both study groups.
The clearest difference between the groups emerged in Learning Experiences scale where the Experimental group had higher scores than the Control group. This could result from their higher verbosenso-motor ability. Although it is much too early to speculate developmental path with this regard it is quite assumable that when children who exhibited potential academic giftedness have entered the Finnish comprehensive school they have managed to form, or to maintain their originally positive, perceptions concerning school. Moreover, it seems possible, that these children who have probably done well on the first school-related tasks have assimilated learning behaviors which correspond closely to their positive school-image (cf. Breuer, 1989, p. 6). At least, Figure 7 clearly points out that as the higher measured verbosenso-motor abilities are the more positive so are the Learning Experience scores.

Before overemphasizing group differences it is necessary to observe the same graphic for gender. The following Figure 8 shows the very same aspects split by gender. As Figure 7 has already shown, the Experimental group had higher scores than the Control group and additionally, Figure 8 shows that especially the girls of Experimental are mainly responsible for the emerged differences. The girls of the Experimental group are holding clearly the highest scores in following three school adjustment components, Learning
Figure 8. School Adjustment for study groups split by gender

Behavior, Learning Experience, and Internalized Value of Learning. In contrast, the boys of the Experimental group had similar scores when compared to both the girls and boys of the Control group. Only their scores in scales of School-Instruction-Fit appeared to be somewhat higher than the ones of the Control group. According to the Figure 8, it was already possible to suppose the reason of the emerged interaction effect. The boys of the Experimental group did not have similar (as high) school adjustment scores when compared with the girls of the Experimental group and, because of this, the straight comparison which would concentrate on the differences between the study groups would be too greatly affected by the scores of the girls. This in turn could lead to inaccurate interpretations concerning group differences. When concentrating on the gender differences between the study groups some clear differences emerged. Especially, the scales Learning Experiences and Internalized Value of Learning had somewhat different gender related properties in both groups. First, Figure 8 shows that boys of the Experimental group have relative low Internalized Value of Learning scores which are even lower than the ones of the boys of the Control group. This result is quite surprising because the boys of the Experimental group had statistically significantly higher academic achievement and simultaneously they seem to rate their Learning Experiences more positively than boys of the Control group. Usually
these both factors, especially Learning Experiences have reported to be related to the higher internalized value of learning and intrinsic motivation (cf. Deci & Ryan, 1992, p. 9). Tentatively, the Figure 8 showed that boys of the Experimental group had relatively low interest in learning because their Internalized Value of Learning scores were not on the same level as their competence indicates. Second, the boys of the Experimental group had the highest scores in School Instruction-Fit scale. Although the difference was not clear the result indicated that the boys of the Experimental group were the most satisfied with their school instruction. According to these tentative results, the boys of the Experimental group who had both relatively high Learning Experience scores and school grades and additionally they were very pleased with the school-instructions although simultaneously they showed to have the lowest interest toward more challenging and demanding learning. In a word they seemed to be very satisfied with the current school work but they would not like learn anything more. Other between gender differences concerning students’ school adjustment were not remarkable and seemed to follow similar pattern in the both study groups. For example, with respect to variables Learning Behavior and School-Instruction-fit could be described to follow quite closely to students’ academic achievement level which on the whole showed to have positive relationship to each other. However, before interpreting these differences very detailed it should be useful to examine results statistically. For this purpose, in the following Table 16, the results of two ANOVA's for dependent fit are performed for both genders separately to avoid interaction effect. Additionally, the effects of the single question items Parents’ Availability and “Teachers’ Encouragement” are included.

As shown in the Table 16 there were statistically significant differences between the groups according to one-way ANOVA’s. The girls of the Experimental group had statistically significantly higher scores than the girls of the Control group on variables Learning Behavior, Learning Experiences and Internalized Value of Learning. Interestingly, the boys of both study groups had similar values to each other with the exception of the variable Learning Behavior.

In following section, the effects of the study groups for the both genders will be more closely presented by Multiple comparison test Scheffé to address more closely the study hypotheses from #2 to #6. Analyses are performed only on the variables which were shown to have significant differences in the Table 16. Furthermore, the effect from parents’ socio-economic status will be examined and the results are briefly reflected upon in relation to the theoretical framework.
According to the analysis of variance (see Table 16), the dependent variable Learning Behavior, was significantly affected by the type of grouping. According to these results, the second question concerning the SAQ subscale Learning Behavior was rejected, and further analyses were undertaken on the Learning Behavior variable. The following Figure 9 shows the scores of the Learning Behavior scale in graphical form.

According to Figure 9, it is quite noteworthy that advanced verbsenso-motor abilities in the pre-school phase appears to guarantee that children do not assimilate very poor learning habits. Developmentally this might indicate that when children possess early advanced language skills they have more resources to assimilate and use more effective learning styles and strategies which in turn seem to improve their attention and concentration in the long

### TABLE 16. Analyses of variances on SAQ variables Learning Behavior, Learning Experiences, Internalized Value of Learning, School-Instruction-fit, Parents’ Availability and Teachers’ Encouragement split by gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Girls</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SS</td>
<td>F</td>
<td>p</td>
<td>SS</td>
<td>F</td>
<td>p</td>
<td>SS</td>
<td>F</td>
</tr>
<tr>
<td>Learning Behavior</td>
<td>4.18</td>
<td>6.09</td>
<td>.015*</td>
<td>2.50</td>
<td>4.19</td>
<td>.045*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning Experiences</td>
<td>15.43</td>
<td>30.53</td>
<td>.000***</td>
<td>1.06</td>
<td>1.97</td>
<td>.163</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalized Value of Learning</td>
<td>6.03</td>
<td>13.20</td>
<td>.000***</td>
<td>.003</td>
<td>.006</td>
<td>.938</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School-Instruction-Fit</td>
<td>.61</td>
<td>.24</td>
<td>.24</td>
<td>1.53</td>
<td>4.66</td>
<td>.054</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ Availability</td>
<td>1.40</td>
<td>.54</td>
<td>.46</td>
<td>.001</td>
<td>.00</td>
<td>.978</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers’ Encouragement</td>
<td>1.28</td>
<td>.46</td>
<td>.54</td>
<td>.054</td>
<td>.04</td>
<td>.836</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001
run (cf. Borkowski & Büchel, 1983, p. 134). At least, the finding clearly showed that there are only a few students in the Experimental group who have assessed their Learning Behavior negatively. In the following Table 17 one-way analyses of variance for both genders are separately computed on the variable Learning Behavior to address hypothesis #2.

Hypothesis #2:

*There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to learning behavior at the end of the Finnish comprehensive school*

As shown in Table 17, students of the Experimental group have statistically significantly (p<.05) higher Learning Behavior scores than students in the Control group. This finding followed a similar pattern according to computations for both genders. Statistically significant results in this respect remained on the same significance level (p<.05) although either the effect of parents’ socioeconomic status or school in turn was covaried out. The effect sizes of these comparisons were at a medium level as well.

The results of this study showed that advanced verbosenso-motor ability measured at six years of age was related to the students’ Learning Behavior
assessments. According to this result, the students of the Experimental group were in a personal sense more careful in learning tasks, had higher attention of learning, possessed more accuracy in their school work, and had better concentration skills. It has been stated that when students have higher learning behaviors these skills undoubtedly have also effect on their academic achievement because high achievement behavior has been reported to reciprocally affect self-perception of ability and motivational engagement (cf. Eccles et al., 1984, p. 27). In fact, according to Marsh (1993a, p. 59), assimilation of learning behaviors is depended on positive academic experiences and perceptions (see also Aho, 1987, p. 91). At least, high VSM seemed to be related to the higher learning behaviors. In the following section students’ academic learning experience ratings will be examined to find if there were differences with this regard as well.

**Hypothesis #3:**

_There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to learning experiences at the end of the Finnish comprehensive school._

The ANOVA in the Table 16 on Learning Experiences showed that there were statistically significant differences but only between girls of the study
groups. For this reason the sub-question #3 can be rejected only partly and further analyses are only performed for girls of the study groups. In the Figure 10 the scores of the Learning Experiences scale are briefly overviewed in graphical form to clear direction of the scores for gender and study groups.

According to the Figure 10, the students of the Experimental group had more positive Learning Experience scores according to both genders, than students in the Control group. Also here the tendency of Learning Experience scores seemed closely to follow the pattern of students’ school achievement (cf. Figure 5, p. 136).

Figure 10. Learning Experiences for study groups and gender

The finding indicates that perceptions of learning capacity have really formed according to the students’ learning experiences which seems to follow external normative assessment. Also here it was notable that there were only a few subjects in the Experimental group who have assessed their learning experiences negatively. With this regard in short good verbosensomotor abilities seemed to guarantee that children had in general positive learning experiences at the conclusion of comprehensive school.

In the following Table 18 post hoc Scheffè for the girls of the study is computed, because ANOVA comparison for girls (see Table 16) showed that
there is a statistically significant difference with regard to Learning Experience scale.

As shown in Table 18 the girls of the Experimental group had statistically significantly ($p<.001$) more positive Learning Experience scores than the girls in Control group. This statistically significant result in this respect remained on the same significance level ($p<.001$) even though the effect of parents’ socioeconomic status and school in turn were covariated out. The effect sizes of these comparisons were on large level as well.

Because the result showed that girls who exhibited potential academic giftedness in the pre-school phase had perceived that they have “managed lately to do they academic tasks well”, “to learn new things quickly”, “to accomplish their school tasks more quickly”, “to consider school task relatively easy”, it became obvious that they have considered themselves as more successful students than girls of the Control group. This study showed that skill differences in the pre-school phase were related to differences in learning experiences at the end of Finnish comprehensive school which in turn have consequences on the students’ academic motivation in the form of initiative, goal-setting, and persistence (cf. Deci & Ryan, 1992, p. 12). More positive learning experiences in turn mobilize positive learning behaviors. This study result indirectly supports the Skill Enhancement -model of Calsyn and Kenny (1977), because more positive learning experiences of the girls have been formed parallel to their advanced lingual-related skills. In contrast boys of the Experimental group had not acquired such advances over the boys of the Control group which did not support this conceptual analysis. It would be interesting to know how gender differences with this regard have emerged. However, to acquire more precise knowledge concerning formation of the

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
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<td>Girls</td>
<td>Experimental group</td>
<td>4.01</td>
<td>.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control group</td>
<td>2.93</td>
<td>.75</td>
<td>30.53</td>
<td>.001***</td>
<td>.99</td>
</tr>
</tbody>
</table>

* $p < .05$
** $p < .01$
*** $p < .001$
competence perceptions would methodologically require at least two different self-measurements.

Nevertheless, this result showed that girls of the Experimental group had experienced themselves as academically more able than the girls in the Control group did. It would interesting to know, how much of this difference is due to absolute standards of statements in question, because relative instruments have continuously reported that girls have lower scores than boys (cf. Wigfield et al., 1991, p. 563; see also Keltikangas-Järvinen, 1994, pp. 71-72). This fact will be studied more closely in the upcoming sections of this study when Harter’s SCSC is used to examine students’ relative competence perceptions. At least it is clear that the girls of the Experimental group have managed to form (or maintain) more positive academic ability perception.

Additionally, it is noteworthy that Pearson’s statistical correlation ($r=.30$, see Table 31.) indicated a relatively high correlation between measured verbosenso-motor ability in pre-school phase and Learning Experience scores in the eighth grade. According to this result, it became obvious that early advanced verbosenso-motor abilities have facilitated children to consider themselves to be more able with regard to learning tasks through the Finnish comprehensive school. To sum up, the present results revealed that children who exhibited potential academic giftedness at pre-school age especially girls considered themselves as having more learning potential at the end of Finnish comprehensive school. Thus, developmental lingual differences which existed according to the BWDT, in 1989, have transformed to the academic experience differences between the girls of the study groups which in turn have undoubtedly motivational reflections on students’ learning behavior.

An interesting finding related to the students’ learning experiences came from a single sub-question which was planned to be among the questions within this formed Learning Experiences subscale (see Appendix 3.). However, the statement “On the upper-secondary level you can manage without reading” produced an unsatisfactory loading, because it revealed a different response pattern with regard to other learning experience questions. The boys of Experimental group (M=2.36) had higher agreement concerning this statement than girls of the Experimental group (M=1.96) which was about on the same level as the ones of the other subgroups (M=2.01). According to this single question, it could be possible to conclude that the most successful students in this study, namely the girls of the Experimental group did not only count on their ability but also their effort which in turn could be taken as a sign of a mastery learning orientation (cf. Dweck 1986, p. 1046). Simultaneously, the boys of the Experimental group seemed to put more emphasis on their ability
than effort compared with the other students of this study. These boys have either partly lost their interest in study and/or assimilated the fact that only untalented students need to study in the comprehensive school (cf. Skaalvik & Hagtvet, 1990, p. 305). Actually, according to the findings of Harter (1999, p. 66), students by this age have often formed the idea that it is not cool to put extra effort into studies if you can manage without trying. This finding in some degree reflects that boys of the Experimental group have assimilated an external learning/working orientation. It is nevertheless important to remember that there were no statistically significant differences with this regard between study groups.

**Hypothesis #4:**

*There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to Internalized Value of Learning at the end of the Finnish comprehensive school.*

The ANOVA in Table 16 on the Internalized Value of Learning showed that there was a statistically significant difference but only between the girls of the study group. For this reason the sub-question #4 can be said to be rejected only partly and further analyses are only performed for the girls of the study. In the Figure 11 the scores of the Internalize Value of Learning scale are briefly overviewed in graphical form to clear direction of the scores for gender and study groups.

As shown in Figure 11, the clearest difference seems to be between the girls of the study groups. Actually, there were relatively many girls (over 50%) in the Experimental group who showed to have eager for more challenging and demanding school work (see values over the mid-point value 3.0). By contrast, the boys of the study groups as well as girls of the Control group have relatively low scores which fall for the most part under value three excluding few subjects in these sub-groups. In the following Table 19 post hoc Scheffè for the girls of the study are computed, because the ANOVA comparison for girls showed statistically significant difference only with this respect.

Table 19 showed that girls who exhibited potential academic giftedness in pre-school phase had statistically significantly (p<.001) higher Internalized Value of Learning scores than the girls of the Control group. Between girls’ statistical differences remained on the same significance level (p<.001) although the effect of parents’ socioeconomic status and school in turn were covaried out. The effect sizes of these comparisons were on large level as well. Because boys of the study had no such differences these results are
Figure 11. Internalized Value of Learning for study groups and gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
<th>F</th>
<th>p</th>
<th>η²</th>
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<tr>
<td>Girls</td>
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</tr>
<tr>
<td>Girls</td>
<td>Control group</td>
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<td>.67</td>
<td>30.53</td>
<td>.000***</td>
<td>.95</td>
</tr>
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<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001

interesting for at least four following reasons. To sum up, first, the assumptions which Breuer (1989, pp. 4-6) has mentioned concerning effects of ability differences for later academic motivation and learning have been partly shown to be true. With this regard, the study clearly showed that girls who had advanced verboseno-motor ability in pre-school phase own higher Internalized Value of Learning scores but similar differences were not observable between the boys of the study groups. Second, the result supported
the Self-perception theory from the point of development of the internalized learning values because it seems that those lingual advances which were visible during the first school years have now been shown to transfer to both more positive learning experiences and higher internalized learning values especially among the potentially gifted girls. Interestingly, there were no such differences between the boys of the study. When students form perceptions concerning their abilities and values it is more than assumable that environment has a great influence to the forming internalized of the learning values. In light of this study, it seems that environment has supported primarily the high academic engagement of the girls because boys, who actually had the same possibilities to experience easiness of the school and form both more positive experiences and higher learning values according to their early potential, did not differentiate from the average students with this regard. The third point of interest stemming from the present findings dealt with their implications for Cognitive Evaluation theory. This theory postulates that when individuals feel competent, their intrinsic motivation will be enhanced, and conversely (cf. Gottfried & Gottfried, 1996, pp. 181-182). Results from the present study support this conceptual analysis only on the side of the potentially gifted girls, because they have managed to see themselves as more competent and more motivated in relation to the regular students. It can be said that success in BWDT in the pre-school phase predicted strong positive engagement in school activities which had strong lasting motivational effects till the end of the Finnish nine-graded comprehensive school especially among the girls. Thus, it seemed that the Finnish school system has managed only to keep girls who exhibited potential academic giftedness in pre-school phase interested in learning and schooling. They were still statistically significantly more interested in school activities than both girls (p<.001) and boys (p<.01) of the Control group. According to results, they liked to learn, they preferred more challenging study tasks and they had not much against more demanding school work. Hence, the doubts which arose from the earlier studies on gifted studies (e.g., Vallerand et al., 1994, p. 175; Gottfried & Gottfried, 1996, p. 181) were not clearly visible according to girls’ ratings, because their argument that gifted students would not experience intrinsic motivation in normal heterogeneous study groups, did not get support from this study. However, fourth the boys of the Experimental group could fall into this category according to these results. Actually, in contrast the boys of the Experimental group did not show much interest in learning but, regardless of their high academic achievement level, they may have assimilated the so called “min-max” principle. This means that they are attempting to expend the least amount of effort necessary to obtain the maximum gain (cf. Kruglanski,
1975). It seemed that academic learning did not offer much of desirable value for the boys of this study.

To sum up, it is possible to conclude that children, especially girls, who had advanced verbosenso-motor abilities in pre-school had assimilated higher internalized learning values when compared with the average girls in the end of the Finnish comprehensive school. For the reader, due to deficits in reliabilities of SAQ the findings and presuppositions which have been drawn from these results should be observed cautiously.

Hypothesis #5:

There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to School-Instruction-fit at the end of the Finnish comprehensive school.

According to the ANOVA for both genders (see Table 16) the dependent variable School-Instruction-fit was not statistically significantly affected by the type of grouping. According to these results, the fifth subquestion concerning the “School-Instruction-Fit”, was not able to be rejected, and accordingly further analyses were not executed with this regard.

Although there were no statistically significant differences in this respect these findings were interesting. This theme of the study was planned to find out if the students who were identified to have advances in their verbosenso-motor abilities in the pre-school phase would consider general learning instruction inappropriate for their learning phase. In the other words, there was a doubt that the most able students would consider general school instructions boring and because of that they could demonstrate mismatch and disagreement against school-instruction-fit statements. However, according to the other findings, it has been shown that academically gifted students are really involved in learning and like to be at school especially when their special needs are met. However, according to the trend of these results, the children who exhibited potential academic giftedness in the pre-school phase appeared to make quite similar judgements with this regard when compared with the judgements of the other children. Both groups split by gender agreed with the following statements: “Teachers are giving me instructions which fit to my learning pace and level “, “I am satisfied with the tasks I get at the upper-secondary level”, and “Generally I like to study at the upper-secondary level” at the same degree and accordingly showed themselves to be equally satisfied at the level of general learning instruction. Perhaps more detailed questions could reveal differences with this respect. In summary, in the future
the statements concerning appropriateness of the learning instruction should examine more closely students with varying learning aptitudes and if there were qualitative differences concerning learning and instruction preferences. This could be traced by asking their preferences to the learner centered versus teacher centered learning situations or open-ended versus close-ended learning instruction and so forth (cf. Corno & Snow, 1986, pp. 620-621).

It is nevertheless, somewhat interesting that the boys of the Experimental group (M=3.55) were that satisfied with the received instruction when compared with the boys of Control group (M=3.21) (p<.055). This finding namely gave an additional support for the idea that boys of the Experimental group were really considering school comfortable and suitable place for them regardless of the fact that they had relatively low interests in learning itself.

Hypothesis #6:
There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to experienced external support at the end of the Finnish comprehensive school.

As the factorial analyses showed the expected “External support” factor did not appear, because teachers’ and parents’ support had qualitatively different properties and accordingly the loadings of the factors differentiated from each other. For this reason these items are only handled as single-items which were used to give additional information concerning students’ school adjustment along the presented main variables. Although a separate ANOVA in Table 16 showed that there were no statistical differences between the study groups which could allow further analyses with this regard some of the descriptive statistical findings are briefly introduced in the following section to show interesting tendencies which came out from these questions.

First, the main difference is that generally Parents’ Availability scores were favoring girls whereas Teachers’ Encouragement scores were favoring boys. These findings are similar to Dweck’s (1986, p. 1045) findings which have shown that girls are, since the first school days, experiencing less attention from the teachers than boys do, whereas parents usually state that they are more interested in education of the girls than one of the boys. Second, although the grouping effect appeared to be minimal with this regard it could be said that the Experimental group, especially girls, had perceived that they received slightly more support from their parents than girls of the Control group. When this result was reflected back to the Cognitive Evaluation
theory (cf. Ryan et al. 1992, p. 181) Parents’ Availability could correspond to this proposed factor concerning parents’ relatedness, namely, the involvement. Involvement can be described as an interest and devotion of the parents toward children’s activities and experiences which promote intrinsic motivation. According to this, there should be a correlation between the Internalized Value of Learning scale and Parents’ Availability. However, a closer examination of this produced non significant ($r = .11$) correlation. Another aspect which may have affected the classroom learning behavior from the students’ side was teacher’s guidance. According to these findings, it was possible to state that teachers in Finnish comprehensive school were paying more attention to the average and weaker students than the highly able. In heterogeneous groups it is quite obvious that the teachers are behaving in this way. However, these manners enhance indirect cultural messages which determine extra attention from the teachers as a sign of incompetence as Harter’s (1996) Self-perception theory proposes (see also Wookfolk, 1995, p. 395). Thus, as a result many high able students are reluctant to seek individual help and may perceive it as indicative of low ability, especially in instances in which students can readily compare the type of assistance offered to that of their peers (cf. Blumenfeld, 1993, p. 275). According to these tentative results, students who exhibited potential academic giftedness in pre-school were supported slightly less from the side of the teachers than average students. It is necessary to remember that statistical analyses showed non-significant statistical differences between the study groups and therefore the interpretation of the study results with this respect should be taken only as a trend.

### 6.4.3 Conclusion regarding to the findings on school adjustment

To sum up, hypotheses concerning school adjustment theme demonstrated that children (especially girls) who exhibited potential academic giftedness in the pre-school phase have adjusted better to the school environment than students who were not considered to be potentially gifted. For example, the girls of the Experimental group differed statistically significantly from the girls of the Control group according to their Learning Behavior, Learning Experiences and Internalized Value of Learning scores. The result may indicate that when children (especially girls) have early advanced verbosenso-motor ability in the pre-school phase they have more possibilities to experience themselves as successful in learning tasks. This may lead gradually to more
positive learning experiences and higher competence perceptions which in turn improve children’s attention and concentration in the long run. This conceptual analysis was supported by showing that the Experimental group had assimilated higher Learning Behaviors than the Control group according to both genders. At least, the finding clearly showed that higher Learning Behavior scores were related to the VSM abilities measured in the pre-school phase. Actually, there were only a few students among the Experimental group who had assessed their Learning Behavior negatively. However, the between boys’ comparison did not produce any other statistically significant differences which could indicate that boys who exhibited academic giftedness in pre-school were not able to reach the same level school adjustment and fulfillment of academic giftedness as the potentially gifted girls did. Thus, findings related to the gender differences posed very interesting questions. What contributed to the development of these differences? Was socializing culture including parents, peers, and role models responsible for these differences? According to these findings, boys’ academic inputs were something which were not supported as much as achievement of the girls by the external environment. This may gradually lead to the situation in which boys do not consider school that important.

6.5 General findings on children’s self-concept profile

In this section, the SCSC instrument and the interactions among it’s subscales will be presented and compared to prior research results obtained using the same instrument. To introduce analysis concerning measured self-concept profiles of the students, first, the means and standard deviations of the SCSC instrument will be presented and compared to earlier findings. Second, the properties of the SCSC are introduced by the schools of the study. Third, the correlation between different subscales will be presented and discussed. Additionally, the goal of this section is to disclose how the translated version of the SCSC worked among Finnish students and also generally compare to the other cross-cultural findings made with the same instrument. Clarifying these questions was one of the study goals stated in the problem section. This background information concerning general interactions also facilitates the understanding of the upcoming results related to the sub-questions #7 and #8.

In the Table 20 the results by the subscales were compared to the findings of the Harter Scale manual named Supplementary Description of the Self-
Perception Profile for Children Revision of The Perceived Competence Scale for Children (Harter, 1983b). The computed means and standard deviations for each subscale for 6th and 7th grade girls and boys were presented separately. And, to make the comparison clearer, separate results are presented for each gender. As Table 20 shows general findings concerning subscale means and standard deviations were similar to those obtained by Harter (1983b). Standard deviations, except boys’ Social Acceptance and Behavioral Conduct (these deviations were smaller), fall between .51 and .69 which is similar to what Harter found. According to standard deviations and gender differences, the questionnaire SCSC functioned in parallel to Harter’s findings (1983b). Although comparisons among countries are not always fruitful, when Finnish 9th graders in 1999 were compared to 6th and 7th graders from the United States in 1983, some common tendencies were found based on these results. Like previous studies had shown (cf. Harter, 1992; Marsh, 1989) there was a general decline in total self-concept scores over the pre-adolescence years, especially when moving from elementary (6th grade) to secondary school (7th grade). However, during early and middle adolescence, like Scholastic Competence and Physical Appearance, continued to decline

TABLE 20. Means and standard deviations of SCSC subscales for the total study population (n=510) compared with Harter’s findings

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through grades seven and nine, which was usually explained by both an increased amount of possibilities to face difficulties and new reference groups (Harter, 1992, p. 109). The same phenomenon was present in these three studies. It can be assumed that the same developmental pattern also exists among Finnish secondary school students and similar gender-related changes in self-profile could be used to explain slightly smaller scores in the present study, although Aho (1987, p. 54) has reported that in her study after 5th grade there was some with regard to different self-concept domains. To conduct precise analyses to trace developmental patterns in self-concept would require several self-concept measurements which was not the case in this study.

6.5.1 Intercorrelation between self-concept subscales

In this section, the interactions of the constructed selves are presented by weighting each subscale. To provide a clearer picture on how the self-concept subscales were related to school performance the dependent variable GAM was also included in this pooled interaction. This later comparison gave valuable information on how these different facets were related to school performance. However, it is important to remember that the GAM was not part of the SCSC-test and it can not be used to judge the validity of the SCSC. According to Table 21 (see following page), it was possible to justify that Finnish adolescents categorized themselves like other adolescents in similar studies (cf. Harter, 1983b; 1996). For example, the subscale Physical Appearance seemed to be highly correlated to Global Self-Worth, “…(correlations) usually between $r=.65$ to $r=.87$ through life span” as Harter (1996, p. 26) has stated. Furthermore, Behavioral Conduct showed the highest correlation in relation to Scholastic Competence as Harter (1996, p. 26) had also reported. Accordingly, children who perceived themselves as doing well in school also perceived themselves as being well-behaved. The subscales Physical Appearance, Social Acceptance, Athletic Competence were highly correlated to each other, which suggests that a greater Social Acceptance is related to both a child’s Physical Appearance and his or her Athletic Competence. According to the following Table 21, these subscales and their relations showed a pattern similar to the one found by Harter’s (1983b, p. 16) original findings. The Behavioral Conduct was also correlated to GAM ($r=.30$). The interesting finding comes from the negative correlation between Social Acceptance and GAM. Even though the significant correlation was not high ($r=-.17$), it showed the general trend of the values of the Finnish
adolescent at this age. The correlation among the boys of the study was even higher \((r=-.22)\). This result showed that children who performed well in school considered themselves as having fewer friends. One interpretation could be that it was not “cool” to be a high achiever at school. An another explanation could be that this finding tentatively indicates from the existence of cultural difference with this regard because it seems that the Finnish students especially those who are achieving on the high level are those who are not considered to be that extrovert. If this is a general trend, then there is no doubt that the group values are really among the facts that can cause underachievement among high achievers also in Finland (cf. Rimm, 1997, p. 418). This result indirectly supported Juvonen’s (1996) findings which have indicated that “…adolescents tried to “fit in” and acted according to the

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* p < .05  
** p < .01  
*** p < .001

| TABLE 21. Pooled SCSC subscale intercorrelations with GAM (n=510) |
expectations and norms of a desirable peer group or of a person they desired to befriend” (p. 49). According to this study, the highest achieving students did not seem to be the ones who had the most friends. This seemed be case especially among the boys of this study. In fact, the study of Guay et al. (1999, p. 111) showed that children’s preferred social relations had affected children’s perceptions of their academic competence. Furthermore, as an example of the school subjects’ relation to the Social Acceptance which was analyzed by stepwise pooled MANOVA, the grade of Physical Education was the only school subject which was significantly and positively ($r = .14$) correlated to the Social Acceptance subscale. Results were parallel to the findings of Wigfield and Eccles (1989, p. 283) because they have also found that only the value of sport was increasing among growing adolescents whereas value of all other school subjects were decreasing through the school years. Finally, it would be interesting to know how many high achieving students actually are needed to sacrifice their high performance because of the peer group values or is it just normal that high achievers need to assimilate relative solitude in Finnish school settings.

6.5.2 Self-concept subscales for the study groups

**Question Theme #3; Students’ Self-concept Profile**

Hypothesis #7:

*There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to self-concept profile at the end of the Finnish comprehensive school.*

A 2 x 6 between-subjects multivariate analysis of variance was performed on four dependent variables Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct, and Global Self-Worth to address research hypothesis #7. In these analyses, independent variables were grouping and gender. Furthermore, parents’ socioeconomic status was used to as a covariate to find if the parents’ socioeconomic status had effects with this regard.

STATISTICA MANOVA was used for the analyses with the sequential adjustment for nonconformity. Total n of 165 which was available for Academic Achievement calculations was reduced to 147 cases with the deletion of cases missing a score on the Self-Concept Scale for Children. There were no
univariate or multivariate within-cell outliers at $p<.001$ according to the Box-M test ($69.62$, df $63$, $p<.535$). Results of evaluation of assumptions for normality, homogeneity and distribution of variances were satisfactory.

Wilks’ criterion was used to find out how the combined dependent variables were affected by the independent variables. Both grouping, Rao $R (3.31); p<.01$ and gender Rao $R (5.44); p<.001$ were affected significantly, but the interaction was not significant, Rao $R (1.29); p<.261$ (see Table 22). Significant $F$ statistics were followed by post hoc contrasts designed to investigate mean differences. Study groups had a statistically significant ($p<.001$) effect on a dependent variable Scholastic Competence; $F(12.82)$. Gender had a statistically significant ($p<.001$) effect on dependent variables Physical Appearance; $F(10.22)$ and Global Self-Worth; $F(20.63)$, and a significant effect on Athletic Competence $F(8.86)$.

**TABLE 22. Multivariate analysis of variance on dependent variables Scholastic Competence, Social Acceptance, Behavioral Conduct, Athletic Competence, Physical Appearance and Global Self-Worth for study groups (n=146)**

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<th>Source of variance</th>
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<th>Rao’s $R$</th>
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* $p < .05$
** $p < .01$
*** $p < .001$

As shown in Table 22 there were differences between study groups with regard to self-concept profile, but Wilk’s Lambda did not tell exactly where. In the following section, the effects of the study groups on the dependent variables Scholastic Competence, Athletic Competence, Physical Appearance, and Global Self-Worth will be more closely presented to address study hypothesis #7. Multiple comparison post hoc Scheffé tests were then used when the comparison groups were not equal.
According to analysis of the main effects on six different self-concept subscales, Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct and Global Self-Worth, only the Scholastic Competence subscale was significantly affected by the type of grouping. According to these results, the sub-question #7 concerning the self-concept subscale “Scholastic Competence” was possible to reject, and further analyses were possible to perform on the “Scholastic Competence” subscale. In the following Figure 12, scores of the Scholastic Competence subscale for study are briefly overviewed in graphical form to clearly illustrate the direction between study groups. Figure 12 shows that the Experimental group has higher Scholastic Competence scores than the Control group.

![Categorized Plot for Variable: Scholastic Competence](image)

**Figure 12. Plot of means of Scholastic Competence for study groups**

It is quite noteworthy that the advanced verbosenso-motor ability measured at six years of age seems to be so strongly correlated with the students’ perceived “Scholastic Competence.”

In the following Table 23 the post hoc test Scheffé is used to show the statistical difference between the study groups.
Table 23 shows that the Experimental group had significantly (p<.001) higher Scholastic Competence scores than Control group. Furthermore, the effect sizes of this comparison were large. In this respect, the study managed to show that early advanced verbosenso-motor abilities facilitated the formation of the more positive academic self. Even though this study did not intend to explain the formation of the more positive Scholastic Competencies, the results seemed to support the assumption that the children who exhibit potential academic giftedness in the pre-school phase, had a possibility to achieve more positive Scholastic Competence than the other children.

The result however gave a possibility to form an assumption of how the more positive academic self was formed. The study Phase I showed clearly that the Experimental group had school-related observable advances in the area of language, memory, learning, physical and social and skills (p<.05) over the other children evaluated by both primary school and school 1st grade teachers. It is assumable that the first comparisons related to these skill areas played a prominent role in the formation of the academic self. With this respect, for example, in the area of academic performance, the first successful comparisons and additional feedback could feed the use of more effective study skills and strategies. This could lead later reciprocally to higher academic achievement. Although the occurrence of this development is in some degree speculation the results from this study clearly support determination that early language differences are related to academic self-perception differences.

Following Figure 13 shows the relation between measured verbosenso-motor abilities in pre-school phase (raw minus scores) and the perceived Scholastic Competence scores at the end of the Finnish comprehensive school. There were no self-concept measurements available from those students.
who had failed in all categories (six minus scores) of the BWDT in pre-
school phase and for this reason the smallest score in the Figure 13 is five.

Figure 13 clearly shows that the better the measured VSM status was in the
pre-school phase the higher are the perceived Scholastic Competence scores
on the 9th grade. It is remarkable that differences in linguistic abilities which
were measured in the pre-school phase are that closely related to the Scholastic
Competence perception differences. According to this result, there is no
doubt that existing VSM differences in pre-school would also have motivational
effects on students’ later school engagement. The result indirectly supports
findings of Harter (1992, p. 109) because she has stated that those students
who have perceived themselves to have higher academic aptitudes during
elementary school years could actually perceive their academic competence
even stronger in the upper-secondary level, whereas the less competent
usually suffer from decline in their perceived competence after this transition
phase (cf. Harter et al., 1992, p. 802). According to the results, it was
assumable that the same phenomenon between low aptitude and high aptitude
learners would happen in some degree among the children of this study as
well. This is of course to some degree speculation and the possible changes

![Plot of Means](image_url)

**Figure 13. Relation between VSM minus scores measured at pre-school
phase and perceived Scholastic Competence scores measured on the 9th
grade**
in self-perception are only possible to examine by multiple measurements. Additionally, for this reason, the interesting questions remained, namely, when exactly children become aware of their performance differences in relation to others and how stable these first comparisons are and, what are the subsequent effects of these early conscious comparisons.

Furthermore, the results supported earlier findings that indicate that gifted children usually have a more positive academic self (Chan, 1996, p. 189; Hoge & Renzulli, 1993, p. 458). According to this study, there was no evidence for the argument that gifted children would have to some degree negative perceptions in the area of social acceptance or peer relations (Colangelo & Assouline, 1995, p. 71). In fact, this problem mostly exists among the homogeneous groups of the gifted children and this was not the case in this study. This study did not support the belief that the perceived Scholastic Competence would not differ between the study groups due to the equal study objectives of the Finnish school system and increased peer group values (cf. Vallerand et al. 1994, p. 174). In the following section the effect of gender on self-concept is introduced.

6.5.3 Self-concept subscales for the study groups and gender

Earlier studies had shown that there were quite clear gender-related differences among the self-concept subscales (e.g., Harter, 1983b; 1996; 1999). Usually boys were outperforming the girls in every subscale domain except Behavioral Conduct (cf. Figure 2, p. 62). The following Figure 14, which was made on the basis of MANOVA comparisons, provides a graphical picture of the gender differences which are present in this study. As shown in Figure 14, the gender differences found in this study followed a pattern that was quite similar to the one suggested by Harter (1983b; 1999). According to this graph, the boys perceived their different selves higher on every self-concept subscale domain than girls. They also scored slightly higher on the “Behavioral Conduct” subscale, on which Harter (1999, p. 131) reported that girls score higher. As expected, the biggest gender-differences favoring boys were those on the Physical Appearance, Global Self-Worth and Athletic Competence subscales (cf. Harter, 1983b; 1999). This study was not planned to answer why these differences exist, but the results posed very interesting questions. What contributed to the development of these differences? Were significant others, such as parents, peers or even teachers, responsible for these differences? Or are “girls’ lower perceptions on self-concept” just something that belongs
to the Western culture? One possible reason could be that the Finnish school system and surrounding culture (like the American one) emphasizes the positive ability-related aspects of boys’ learning over the girls, who were probably mostly reinforced by effort. This could partly explain why the boys see themselves as more competent than the girls. Although lately there have been studies which have shown that girls may have more accurate competence perceptions than boys when comparing their ratings with the ones of their friends’ ratings (cf. Salmivalli, 1997, p. 97) finding the roots of these gender differences requires further research.

In the following section, the effects of study group and gender on the various subscales will be presented. Although there were more gender differences than between group differences in this study, the main aim was to disclose group differences, which existed in the first phase of the study. Figure 15 shows graphically subscales of SCSC by study groups and gender.

In the Figure 15 it is possible to see that the self-concept profile follows a similar pattern in both study groups. The only difference was that the scores of the Experimental group on the subscale “Scholastic Competence” were different from those of the Control group. Additionally, according to these study results it seemed that boys were gaining not that much from the relative comparison (cf. Learning Experience scores for gender, p. 152). When comparing the “Scholastic Competence” subscale ratings between four subgroups it was possible to notice that girls in the Experimental group had clearly perceived their “Scholastic Competence” to be the highest. Because statistically significant differences were found regarding the subscale

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**Figure 14. Means of Self-concept subscales for gender**
TABLE 24. Post hoc test Scheffé on Scholastic Competence for study groups split by gender

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls {1}</td>
<td></td>
<td>3.10</td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys {2}</td>
<td></td>
<td>2.86</td>
<td>.52</td>
<td>.57</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls {3}</td>
<td></td>
<td>2.47</td>
<td>.50</td>
<td>.01*</td>
<td>.99</td>
<td>.17</td>
<td>.52</td>
</tr>
<tr>
<td>Boys {4}</td>
<td></td>
<td>2.67</td>
<td>.53</td>
<td>.04*</td>
<td>.80</td>
<td>.82</td>
<td>.24 .36</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001

Figure 15. Self-concept subscales for study groups and gender
“Scholastic Competence” of the SCSC, post hoc comparisons were made by Scheffé -test.

According to Table 24, analyses using Scheffé’s multivariate comparison test for gender disclosed a statistically significant (p<.05) difference between the girls of the Experimental group (M=3.10) and the girls of the Control group (M=2.47), and statistically significant (p<.05) difference between the girls of Experimental group and the boys (M=2.67) of the Control group. The comparison between the boys (M=2.86) of the Experimental group and both boys of the Control group (M=2.67) and girls of the Control group (M=2.47) indicated somewhat parallel results, although non-significant differences were found. Perhaps, the fact that the boys’ higher academic achievement had generally not been reported to be very desirable gradually affected both the academic achievements and perceived Scholastic Competence of the boys in the Experimental group.

6.5.4 Self-concept subscale intercorrelations for the study groups

Hypothesis #8:
There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to intercorrelation between different subscales of the self-concept.

Pooled intercorrelations were performed for the both study groups to determine whether there were differences in the structure of self-concept between the Experimental and Control group. The comparisons showed that r-values were similar to those which were shown in Harter’s (e.g., 1983b; 1999) studies. However, two interesting variations emerged. The Experimental group appeared to have remarkably small, non-significant correlations between the subscales Scholastic Competence and Global Self-Worth, and between Behavioral Conduct and Global Self-Worth. By contrast, the Control group had significant correlations between these variables as had been expected. According to Harter (1996, p. 25), the correlations between perceived Scholastic Competence and Global Self-Worth for older children and adolescents should range from $r=.46$ to .64. When focusing specifically on those students for whom academic success is judged important, the magnitude of these reported correlation increased from 0.53 to 0.68. It was also found that this was particularly the case for those students whose scholastic
competence is judged important and those who had been identified as gifted (Harter, 1996, p. 25). Consequently, it was considered reasonable to assume that the correlation between Scholastic Competence and Global Self-Worth of those children who exhibited potential academic giftedness in pre-school should be at least as high as in the other study groups or even higher. However, because there were neither formal special treatment nor early identification procedures used for these potentially gifted students, it was also considered feasible that there were no such differences between the study groups.

To clear this the pooled intercorrelations between the SCSC subscales were performed for the both study groups to find if there were differences between the study groups.

Table 25 shows the correlations and statistical differences between the study groups with this respect. The analyses which examined statistical significant differences between the correlations of the study groups were made using STATISTICA’s “Difference between two correlation coefficients” option. Table 25 shows that there are statistically significant (p<.05) differences between the study groups concerning introduced intercorrelations. Although

TABLE 25. Intercorrelation between SCSC subscales and Global Self-Worth for study groups

<table>
<thead>
<tr>
<th></th>
<th>Global Self-Worth</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental Group (n=28)</td>
<td>Control Group (n=114)</td>
<td>p</td>
</tr>
<tr>
<td>Scholastic Competence</td>
<td>.15</td>
<td>.47</td>
<td>.03*</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>.31</td>
<td>.29</td>
<td>-</td>
</tr>
<tr>
<td>Athletic Competence</td>
<td>.30</td>
<td>.34</td>
<td>-</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>.72</td>
<td>.62</td>
<td>-</td>
</tr>
<tr>
<td>Behavioral Conduct</td>
<td>.01</td>
<td>.43</td>
<td>.01*</td>
</tr>
</tbody>
</table>

* p < .05
** p < .01
*** p < .001
correlations might have in some degree attenuated due to restricted range of scores the finding that children of the Experimental group exhibited lower correlations than other children with this regard these findings were, to some degree unexpected. Although the study was not prepared to explain this result, one reason could be that these children who exhibited academic advances already in pre-school, may have always managed to be among the best students and, hence, higher academic results were taken already as granted. This could also explain the low correlation between Behavioral Conduct and Global Self-Worth. This result indicated indirectly according to Harter’s formulation, that students of the Experimental group were considering school as something less important and of less value for their developing self. Although this finding gave additional evidence for the academic giftedness of these children it also raised concern that they may view their school experiences as lacking challenge and relevance. These results gave new information from the high achieving self-concept profile in the Finnish school context, which definitely calls for further studies in this area.

6.5.5 Conclusion regarding study findings on self-concept profile

The results concerning students’ self-concept profile indicated that the differences between study groups with respect to perceived selves were statistically significant only in the area of Scholastic Competence. Subjects in the Experimental group perceived their Scholastic Competence more positively than subjects in the Control group. Thus, according to these results, the sub-question #7 concerning the self-concept subscale “Scholastic Competence” was rejected. These results were similar to those obtained by Chan (1996, p. 189). She found that gifted students scored higher than non-gifted students only in the area of perceived cognitive competence. Further analyses using post hoc Scheffé for gender disclosed statistically significant differences because girls of the Experimental group had significantly higher (p<.05) “Scholastic Competence” scores than the girls and boys of the Control group. The results of the Scholastic Competence subscale indicated that the high scores in BWDT during preschool were related to the more positive Scholastic competence. The results of the Scholastic Competence subscale indicated that the high scores in BWDT measured in preschool were related to more positive perceptions of Scholastic competence at the end of nine years of Finnish comprehensive schooling. The correlation coefficient between measured pre-school verbosenso-motor status by BWDT and
Scholastic Competence scores was statistically significant ($r=0.32, p<0.001$) ten years after the base-line measurement (see Table 31). In conclusion, the results showed that the BWDT could be used as an identification instrument for academic giftedness in terms of the chosen independent variable Scholastic Competence.

The self-concept subscale interactions with Global Self-Worth by study groups showed a pattern similar to the one found in earlier studies (cf. Harter, 1983b). The exceptions were the interaction between Scholastic Competence and Global Self-Worth, and between Behavioral Conduct and Global Self-Worth. In this respect, a lower correlation coefficient was found for the Experimental group. Actually, the comparison of the correlation coefficients differences showed statistically significant differences between the Experimental group and Control group #1, which allowed the rejection of sub-question #8. According to these results, the students of the Control group were shown to have closer and expected relations between the self subscale variables which indirectly could indicate that school and behavior are playing a less important role in the lives of subjects in the Experimental group. Due to the unexpected nature of these findings it is important that replication studies with this regard be conducted to determine the extent to which the findings of this study can be generalized.

6.6 General findings on students’ secondary schooling and occupational aspirations

**Question Theme #4; Students’ Educational and Occupational Aspirations**

This fourth section is divided into the three separate sub-themes. The first section presents findings on students’ educational preferences, the second section presents findings on students’ occupational preferences and the third theme is the findings on their actual school attendance after the 9th grade. In each section the properties of the information will be firstly described graphically according to the whole study group and secondly, the analyses of the findings for study groups and gender will be presented to address hypotheses from #9 to #11.

Figure 16 shows educational preferences to the secondary education on the 8th grade of comprehensive school for study population. Here the information was recoded on the three separate answer categories: 1= ”Academic secondary schools”, 2= ”Vocational secondary schools”, and 3= ”I do not have a clear opinion”. Originally the formula had separate alternative for the other alternative
vocational secondary schools, such as academies and other specific secondary schools, but because the number of answers which fell into these categories were exceptional, these answers were recoded to belong to the “Vocational secondary schools” category.

Figure 16 shows that the most of the eight graders (about 60%) considered academic secondary schools as appropriate study place where amount of students who are willing to attend to secondary vocational schools is clearly less (about 25%). Moreover, the result showed that there were still at the end of the 8th grade about a quarter of the students who did not know what their study place after the comprehensive school. Moreover, Figure 16 clearly shows that there were clear differences between the study groups with this respect because the majority of the students in the Experimental group (over 80%) would prefer to attend the academic secondary schools whereas the corresponding number within the Control group was about half. Also the number of students who did not have a clear opinion concerning their future study place was smaller among the students of the Experimental group when compared with students of the Control group.

Figure 16. Educational Aspiration for study groups
6.6.1 Educational aspiration for the study groups and gender

Before judging visible differences in detail, it should be rational to examine the results statistically. For this purpose, in the following section, the differences will be analyzed by multivariate analysis of variance to address hypothesis #9.

Hypothesis #9:
*There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to Educational Aspiration at the end of the Finnish comprehensive school*

A 2 x 3 between-subjects MANOVA was performed on three dependent variables, Secondary Educational Aspiration, High Degree Educational Aspiration and Actual Secondary Schooling Placement to address study questions #9 and #11. The variable Actual Secondary Schooling Placement was included in the analyses to avoid multiple MANOVA’s. Originally, also the variable Occupational Aspiration was among the studied variables but because analyses showed that it was highly gender-typed it was excluded from these analyses and analyses with this respect were planned for later using separate ANOVAs for both genders. The parents’ socioeconomic status was used as a covariate to find if the parents’ socioeconomic status had effects with this regard.

STATISTICA MANOVA was used for the analyses with the sequential adjustment for nonconformity. The total n of 165 which was available for Academic Achievement calculations was reduced to 153 cases with the deletion of cases missing a score on the SAQ. There were no univariate or multivariate within-cell outliers at p<.001 according the Box-M test. Results of evaluation of assumptions for normality, homogeneity and distribution of variances were satisfactory.

Wilks’ criterion was used to find out how the combined dependent variables were affected by the independent variables. A Grouping, Rao R (4.99); p<.001 was affected significantly, but neither Gender, Rao R (1.01); p<.386 nor interaction were significant, Rao R (1.70); p<.169. According to significant F statistics, study groups had a statistically significant (p<.01) effect on examined variables Secondary Educational Aspiration F(6.55) and High Degree Educational Aspiration F(6.51) and statistically significant p<.001 effect on variable Actual Secondary Placement F(11.69).
It was noteworthy that when parents occupational status was covaried out (MANCOVA) the statistically significant effects on Educational Aspiration variables were reduced to (p<.05) level and concerning Actual Placement to (p<.01) level. The High Degree Educational Aspiration variables were not statistically significantly affected by this covariation.

Although post hoc Scheffé could offer statistical possibility to examine main effects of grouping, gender and their interaction it does not show qualitative differences between students’ different choices with this regard. Additionally, the information gathered for this purpose was not entirely linear which is a necessary precondition for MANOVA analyses. For this purpose the Cross Tables are used to describe differences between the study groups. In the following section, the Cross-tabulation on students’ occupational preferences will be presented for both study groups separately. The analyses on Actual Secondary Placement will be more closely examined in upcoming analysis sections.

Table 26 shows that answer patterns of the study groups are independent from each other at the statistical significant $\chi^2$ (p<.01) level. Table 26 gave evidence that a clear majority (80.65%) of the students who exhibited potential academic giftedness in the pre-school phase were considering their academic abilities more suitable for subsequent academic secondary school studies than the number of the students of the Control group (50%). Additionally, the column which reported the number of students who did not have any clear school preferences at this stage showed that among the students of the

<table>
<thead>
<tr>
<th>TABLE 26. Crosstable on Educational Aspiration (%) for study groups (n=153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grouping</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Experimental Group</td>
</tr>
<tr>
<td>Control Group</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Pearson Chi-square</td>
</tr>
<tr>
<td>M-L Chi-square</td>
</tr>
<tr>
<td>Spearman Rank R</td>
</tr>
</tbody>
</table>
Experimental group there were relatively few subjects, in all four (12.9%), who did not know what could be suitable place for them whereas the corresponding percentage in the Control group was more than a quarter (27.87%).

When tracing the relation between early measured verbosenso-motor status (raw minus scores) and students’ educational preferences it became evident that there is a close connection also with this regard (Spearman \( r = .25, p = .003** \)) respectively. Based on these findings it can be said that the higher was the measured level of VSM-status at the pre-school age the higher was probability that students would prefer to select academic secondary schools for their next study place after the Finnish nine-graded comprehensive school.

An additional question area was planned to trace students extended schooling path through higher degree education enhanced previous results. Given that it is quite clear that students of this age were not entirely aware of their vocational possibilities, the following Table 27 gave a quite interesting picture concerning students’ preliminary academic schooling intentions concerning high degree education on the 8th grade.

Nearly all answers (with three exceptions) were falling into the following three categories: 1= “University Studies”, 2= ”High Degree Vocational Studies”, and 3= ”I can’t say yet”. Thus, the exceptional answers (one from the Experimental group and two from the Control group) were deleted from the following analyses.

### TABLE 27. Crosstable on students’ High Degree Educational Aspiration (%) for study groups

<table>
<thead>
<tr>
<th>Grouping</th>
<th>University Studies (%)</th>
<th>Vocational or Open University studies (%)</th>
<th>I do not have clear opinion yet (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>50.00% 15</td>
<td>16.67% 5</td>
<td>33.33% 10</td>
</tr>
<tr>
<td>Control Group</td>
<td>24.80% 29</td>
<td>20.00% 24</td>
<td>55.20% 66</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>29</td>
<td>76</td>
</tr>
</tbody>
</table>

Pearson Chi-square 7.58 df=2 p=.022
M-L Chi-square 7.17 df=2 p=.027
Spearman Rank R .20 t=2.62 p=.009
This additional question concerning students’ preference for high degree academic studies brought parallel information to that contained in Table 26. Students of the Experimental group seemed to be more aware of their possibilities to proceed academically and accordingly they were already more eager to make it. This additional result seems to support the assumption of Wigfield and Eccles (1992, p. 288) because they have reasoned that students’ learning values develop parallel to their competence perceptions. They have stated that developmentally, children seem to adjust their initial high values for all school activities so they argued that competence perception and values are usually developing in synchrony with each other. From mid-adolescence, values such as educational aspirations, will gradually begin to have more effect on students’ decision making situations regarding future actions. For example, Eccles et al. (1984, p. 37) have reported that students’ expectancies predict performance whereas their achievement values predict their willingness to keep taking courses related to their values. If students already in adolescence have such clear differences concerning their future schooling places as Tables 26 and 27 show it is quite obvious that these differences reflect on students’ academic course selection, schooling choices and accordingly their academic motivational as well.

Finally, it is important to remember that children’s families have a great effect on their forming school-related values. The significance levels on the Educational Aspiration variable systematically dropped from p<.01 (**) to p<.05 (*) level when parents’ socioeconomic status was covaried out from the analyses. It is clear that family background and related behaviors such as support, parents’ availability, relatedness, control, modeling, and so forth, are important factors in the lives of the young adults which affect their developing educational and occupational values along with their developing academic ability perceptions and self-image. Variable school had no effect on students’ Educational Aspiration.

### 6.6.2 Occupational aspiration for the study groups split by gender

In this section, the properties of the Occupational Aspiration Formula will be graphically presented for both genders. This background information concerning general central tendencies also facilitates the understanding of the upcoming results related to the hypothesis #10.

Given that occupations and occupational preferences in general are strongly gender-typed (cf. Betz, 1994, p. 35; Lent & Brown, 1996, p. 311) the
information with this regard is presented by gender. In the following Figure 17 students’ Occupational Aspiration scales such as Functional, Trade-Service-Care and Academic are presented by gender.

According to Figure 17, the gender effect is clearly visible as expected. Especially the scale Functional Occupations seemed to be strongly affected by gender, favoring boys over the girls. This trend shows that boys are considering technical, production, and other physical careers that hold more masculine characteristics which are more appropriate for them than girls do. On the contrary, the girls seem to favor academic occupations when compared with the boys while trade and service occupations seem generally slightly favored by girls as well. When focusing on the differences between the study groups it became obvious how clearly the girls of the Experimental group had already by the 8th grade agreed that they could work in the academic field. Gender differences with relation to the academic occupation preferences becomes especially clear when positive scores of the girls are compared with the ones of the boys of the Experimental group. In contrast, according to this result, the boys who exhibited academic giftedness in the pre-school phase did not have aspirations to work in academic occupations regardless of their measured advanced academic aptitudes.

![Plot of Means](image)

**Figure 17. Occupational Aspiration for study groups by gender**
Hypothesis # 10:

There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with respect to their future occupation preferences at the end of the Finnish comprehensive school.

A total n of 165 which was available for Academic Achievement calculations was reduced to 160 cases with the deletion of cases missing a score on the Students Occupational Aspiration formula. There were no univariate or multivariate within-cell outliers at p<.001 according to the Box-M test. Results of evaluations of assumptions for normality, homogeneity and distribution of variances were satisfactory.

Statistical analyses showed that expected gender effect which were already visible in Figure 17 emerged according to Test of Main effects, which showed that occupational aspiration variables were affected significantly Rao R (16.83); p<.001 by the independent variable gender. Moreover, a Test of Main effects showed that the independent variable study groups had no statistical effect with this regard Rao R (1.25); p<.293. However, the interaction between study groups and gender was significant Rao R (4.60); p<.01. Due to the interaction effect, univariate analyses of variance on the dependent variable Occupational Aspiration, were performed for both genders separately to avoid the interaction effect. Parents’ socioeconomic status was used as a covariate to find if the parents’ socioeconomic status had effects with this regard. In the following Table 28 separate ANOV A’s are performed for both genders.

As shown in Table 28 there were statistically significant differences between the girls of the study groups according to the one-way ANOVA on Trade & Service and Academic Occupations variables. On the contrary, the comparison between the boys of the both study groups did not show such differences with this respect. Thus, early identified potential academic giftedness that boys of the Experimental group exhibited in pre-school phase was not visible in their academic aspiration. For this reason the sub-question #10 can be rejected only on the side of the girls.

In the following section, the effects of the study groups for the girls of the study will be more closely presented by Multiple comparison test Scheffé to address hypotheses #10. Furthermore, the effect from parents’ socioeconomic status will checked and the results are briefly reflected to the theoretical background according to set hypotheses.

Table 29 shows that the girls of the Experimental group had statistically significantly (p<.001) higher Academic Occupation scores than girls of the
TABLE 28. Analyses of variances on dependent variables Functional, Trade & Service, and Academic Occupations for study groups split by gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Girls</th>
<th></th>
<th></th>
<th>Boys</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SS</td>
<td>Effect</td>
<td>F</td>
<td>p</td>
<td>SS</td>
<td>Effect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>.01</td>
<td>.03</td>
<td>.853</td>
<td>.03</td>
<td>.057</td>
<td>.810</td>
</tr>
<tr>
<td>Occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade &amp; Service</td>
<td>3.01</td>
<td>5.45</td>
<td>.023*</td>
<td>1.63</td>
<td>2.40</td>
<td>.126</td>
</tr>
<tr>
<td>Occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>8.61</td>
<td>11.22</td>
<td>.001**</td>
<td>.124</td>
<td>.14</td>
<td>.704</td>
</tr>
<tr>
<td>Occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001

TABLE 29. *Post hoc* test Scheffé on dependent variables Academic Occupations and Trade & Service Occupations for the girls of study

<table>
<thead>
<tr>
<th>Group</th>
<th>Academic Occupations</th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>F</td>
<td>p</td>
<td>η²</td>
</tr>
<tr>
<td>Experimental group</td>
<td></td>
<td>3.90</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td>3.08</td>
<td>.92</td>
<td>11.22</td>
<td>.001***</td>
<td>.89</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Trade &amp; Service Occupations</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>F</td>
<td>p</td>
<td>η²</td>
</tr>
<tr>
<td>Experimental group</td>
<td></td>
<td>2.91</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td></td>
<td>3.42</td>
<td>.65</td>
<td>5.45</td>
<td>.022*</td>
<td>.56</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001
Control group. The results appears strongly to share the same dimensions as Learning Experience scores (cf. Table 18) which showed clear differences between girls of the study groups. It seems that already in the 8th grade the girls who exhibited potential academic giftedness in pre-school phase have formed quite positive views concerning their possibilities to proceed educationally toward academic occupations compared with the girls of the Control group. This statistically significant result in this respect remained about on the same significance level (p<.01) although either the effect of parents’ socioeconomic status or school in turn covaried out.

When examining scores on the scale Trade & Service occupations, the girls of the Control group had statistically significantly (p<.05) higher preference to work in this area than girls of the Experimental group. This may indicate that girls of the Control group were considering these occupations as more suitable for themselves than did the girls of Experimental group. These vocational preference differences at this stage assumably affect students’ academic motivation as well. This statistically significant (p<.05) finding however became non-significant (p<.08) when parents’ socioeconomic status was covaried out. This result emphasizes the effects of the parents’ SES over the children’s vocational preferences.

6.6.3 Findings on students’ actual location on secondary schooling

Information concerning students’ Secondary School Placement offered information concerning students’ fulfilled educational path. School-follow-up-cards contained information concerning both students’ applied educational wishes for secondary schooling and their successful attendance with the same respect. Information concerning school attendance was categorized for the study analyses into three separate categories which were: 1=”Academic secondary schools”, 2=”Vocational secondary schools, institutes and academies”, and 3=”Students who did not acquire placement according to their desired option”. In the following Figure 18 (see the following page) the number of students in each of these categories will be presented in the graphic form.

According to Figure 18, about half (49.83%) of the total number of students of this study had attended secondary academic schools. About ten percent less (39.43%) of the students had attended the secondary vocational schools and about ten percent (10.72%) had received no placement within the secondary schooling options which could match their wishes.
Next, the properties of the results are examined separately for the study groups. The following Figure 19 shows secondary educational replacement according to the school-follow-up cards. Here information was recoded into three separate answer categories: 1=”Academic Secondary Schools”, 2=”Vocational Secondary Schools”, and 3=”Students who did not have a match in their secondary schooling application”.

According to Figure 19, a clear majority of the students’ of the Experimental group were placed in academic secondary schools as their Educational Aspiration Scale indicated (cf. Figure 16, p. 177). However, the numbers within the Control group were somewhat changed from the earlier situation which was measured at the 8th grade. When earlier there was a clear tendency that over half of the students of the Control group were estimating that they could attend the academic secondary schools the reality showed that number of accepted students was remarkably lower. According to these figures, it seems that those students who were uncertain about their schooling place in the 8th grade had chosen secondary vocational schools for their next schooling place. Actually, the number of students who needed to reevaluate and readjust their schooling preferences during the last year of comprehensive school was quite large (about 30%). Moreover, it was quite interesting how many of the

![Figure 18. Distribution of students’ actual secondary schooling places](image-url)
students (10.0%) actually did not find suitable place from the secondary schooling which would match their preferences. Developmentally this could be very frustrating for some adolescents of this age because, first, they need to begin to build a new educational self by reevaluating their academic resources with respect to the demands of both academic secondary schools and some vocational secondary schools. When they perceive their resources as insufficient with regard to their wishes, it is perhaps hard to maintain academic learning motivation. Moreover, when academic tasks neither offer challenges for self-testing (especially if learning is controlled by external factors) nor instrumental value, then school can become relatively unimportant for some subjects, and these students are in danger of stepping aside from the average school path. Simultaneously many teenagers are struggling with the self-conceiving process related to the other forming self-images such as sex, friend, home and so forth. In this self-conceiving chaos, it is sometimes easy to assimilate very strict mainstream sex-typed role models which do not necessarily correspond to the real selves of the developing adolescents. According to these findings, it seems that the Finnish school system does not offer a clear track for low achieving students. In contrast, the academically well performing students did not seem to have these problems of choice and

**Figure 19. Distribution of students’ actual secondary school places for study groups**
they can study and proceed toward academic secondary studies. It is probable that they can maintain their relative positive academic perceptions and they do not need to adjust their selves in this transition phase. For this reason, the high academic educational path seems to offer a carefree path for those who are having enough high academic performance in this phase. Moreover, with this respect it is probable that high achieving students can assimilate more positive academic schooling value as well. Only, in case when high achievements and high-school placement are taken as granted the value component does not clearly serve as an additional motivational value with this respect.

Hypothesis # 11:
There are no statistically significant differences between children who exhibited potential academic giftedness in pre-school and other students with the respect to their actual secondary school placement after the end of the Finnish comprehensive school.

Statistical MANOVA on students’ Actual Secondary School placement (p. 178) showed that independent variable grouping had a statistically significant F(11.69) effect on the variable in question. Although post hoc Scheffé could offer statistical possibility to examine main effects of grouping, gender and their interaction it does not show qualitative differences between different choices. For this purpose the Cross Tables offer more descriptive information related to the qualitative differences between answer patterns of both study groups. In the following Table 30 the cross-tabulation with regard to students’ Actual Secondary Placement will be presented.

Table 30 shows that there were differences between the students’ educational preferences by the study groups and the answer patterns are independent to each other at the statistical significance $\chi^2$ (p<.001) level. With this respect the sub-question #11 can be rejected. Table 30 gave clear evidence that the majority of the students who exhibited potential academic giftedness in preschool (84.85%) phase had attended the academic secondary schools whereas the corresponding number of the Control group is about half that number (43.75%). Additionally, the columns which reported the number of students who choose secondary vocational schools or who could not find placement show clearly the difference between the study groups. The more precise examination of the frequencies of the Experimental group showed that there were three boys and one girl who actually had chosen vocational secondary school instead of high school for their studying place which is in all quite a few.
According to these findings, advanced verbosenso-motor abilities seem quite clearly to facilitate children to form positive perceptions of their abilities and maintain their initially high values of education. When the students value a higher academic path then the academic studies are considered to have utility and instrumental value in the future. For example here, preference differences with regard to high degree education have undoubtedly additional effects on students’ learning motivation. Presumably, these values begin to affect students’ learning behavior at least during the last years of comprehensive school (cf. Wigfield & Eccles, 1992; p. 287). Thus, development of achievement values offers an additional explanation for the existing motivational differences among adolescents because for some high achieving students succeeding in academic tasks can offer already in this phase external values which could lead to other high valued goals such as academic career paths. Unfortunately, it seems that the students with lower academic aptitudes need to select from the other alternative pathways instead of valuing academic work. If this alternative pathway is unclear then studying and learning can assumably loose its meaning within this particular group.

To sum up, these findings brought additional information about gender differences related to academic motivational engagement. These findings

### TABLE 30. Crosstable on Actual Secondary School Placements (%) for study groups (n=163)

<table>
<thead>
<tr>
<th></th>
<th>Academic Secondary ed. (%)</th>
<th>Other Secondary ed. (%)</th>
<th>No Place (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td><strong>Experimental Group</strong></td>
<td>84.85 28</td>
<td>9.09 4</td>
<td>4.92 2</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td>43.75 56</td>
<td>45.31 59</td>
<td>10.94 14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>74</td>
<td>63</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Pearson Chi-square 16.63</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df=2 p=.000</td>
</tr>
<tr>
<td></td>
<td>M-L Chi-square 18.15</td>
</tr>
<tr>
<td></td>
<td>df=2 p=.000</td>
</tr>
<tr>
<td>Spearman Rank R</td>
<td>-.29 t=-3.91 p=.000</td>
</tr>
</tbody>
</table>

### 6.6.4 Conclusion concerning findings on students’ future aspiration and secondary schooling places

According to these findings, advanced verbosenso-motor abilities seem quite clearly to facilitate children to form positive perceptions of their abilities and maintain their initially high values of education. When the students value a higher academic path then the academic studies are considered to have utility and instrumental value in the future. For example here, preference differences with regard to high degree education have undoubtedly additional effects on students’ learning motivation. Presumably, these values begin to affect students’ learning behavior at least during the last years of comprehensive school (cf. Wigfield & Eccles, 1992; p. 287). Thus, development of achievement values offers an additional explanation for the existing motivational differences among adolescents because for some high achieving students succeeding in academic tasks can offer already in this phase external values which could lead to other high valued goals such as academic career paths. Unfortunately, it seems that the students with lower academic aptitudes need to select from the other alternative pathways instead of valuing academic work. If this alternative pathway is unclear then studying and learning can assumably loose its meaning within this particular group.

To sum up, these findings brought additional information about gender differences related to academic motivational engagement. These findings
showed that girls who exhibited potential academic giftedness in the pre-

school phase have already by the 8th grade managed to create quite a clear

picture path of how they can go through the academic educational tube and

end up with both higher education and academic occupations. However, the

occupational values of the boys were relatively homogenous, regardless of

existing VSM differences in the pre-school phase. According to findings of

this study, it seemed quite obvious that boys who exhibited academic potential

were neither interested in nor able to see the value of academic pursuits in the

long run when their ratings were compared with ones of the girls of the

Experimental group. This result is quite alarming because boys’ academic

achievements and relative ability perceptions could indicate higher involvement

with this regard. In addition this finding supports the earlier findings of this

study which showed that boys with academic potential seemed to consider

academic learning relatively valueless. This tentative result raises concern

for the schooling and lack of support of the academic gifted boys. It is

obvious that during this schooling phase high achieving students, especially

boys, would benefit from some extra curricular activities and counseling

which could help them to recognize that they have some valuable academic

aptitudes. For this reason, welfare and counseling programs could perhaps

reduce the incidence of underachievement and guide these boys (and the

other boys too) to recognize their possible future career and educational

paths and accordingly help them fulfill their potential.

Findings concerning actual secondary placement showed that a clear

majority of the students in the Experimental group have chosen academic

secondary school for their secondary study place whereas subjects of the

Control group have chosen mostly vocational secondary schools. This result

enhanced earlier findings of this study which have shown that advanced

VSM abilities measured in pre-school seemed to guarantee a problem-free

attendance to the academic secondary education.

6.7 Interrelations between study variables

In this section findings on interrelations between study variables are introduced.

However, because the number of significant correlations was large, primarily

those correlations which were not observed in the earlier sections and which

produced statistically significant (p<.01) correlations will be discussed.
6.7.1 Interrelations between dependent and independent study variables

It was interesting to examine how various independent variables, which were formed to address various hypotheses were related to the dependent variables of the study; measured VSM, students’ age, parents’ socioeconomic status, and school size. Following Table 31 shows the relationships between the independent variables and dependent variables. Here, the VSM is presented as raw scores according to its minus values. The children who did not have any minus points present here with the best level scores whereas the child who failed in all sections (6) of the BWDT had the lowest scores with this respect. Parents’ socioeconomic background is calculated from the occupational status of the both parents (mean value). Independent variable School size was recoded and thus number one indicates the smallest school size and so forth.

According to the following Table 31, it is clear that both measured verbosenso-motor ability (VSM) in the pre-school phase and Parents socioeconomic status (PSES) were more closely related to the various independent variables than the independent variables Age and School size which had clearly lower and non-significant correlations excluding few exceptions. Due to the fact that some of the significant correlations have been already introduced in the earlier sections only those findings which were not observed yet will be introduced.

Table 31 shows that measured VSM had a close relation to the school grades and GAM, which became evident earlier. Additionally, the measured VSM had also close relation to the both expectancy constructs. Moreover, Table 31 showed that both variables Learning Experiences and Scholastic Competence were closely (p<.01) related to the measured VSM. In fact, the Learning Experience variable had a relative low correlation with PSES though it could be assumed that PSES could be an important factor which could facilitate children of highly educated parents to consider school as more important for them. Nonetheless, these findings supported earlier findings, which have shown that advanced lingual capacities facilitate the child’s experience of school more positively and form higher academic expectancies. PSES in turn correlated to students’ school grades and additionally it correlated significantly to the students’ relative academic competence perceptions. Moreover, both these independent variables affected in a parallel way, the educational and academic occupation preferences and students’ actual placements in the secondary schooling level. With this respect this study supported earlier findings which have shown that parents’ socioeconomic
status is related to later academic achievement and educational engagement (e.g., Kuusinen & Blåfield, 1975; Kuusinen, 1985).

**TABLE 31. Intercorrelations between independent and depended study variables**

<table>
<thead>
<tr>
<th></th>
<th>VSM</th>
<th>Age</th>
<th>PSES</th>
<th>School size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnish language</td>
<td>.27**</td>
<td>.18</td>
<td>.14</td>
<td>-.01</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.31***</td>
<td>.15</td>
<td>.30***</td>
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<tr>
<td>GAM</td>
<td>.35***</td>
<td>.19*</td>
<td>.27**</td>
<td>-.07</td>
</tr>
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<td>Learning Behavior</td>
<td>.16</td>
<td>.08</td>
<td>.01</td>
<td>-.02</td>
</tr>
<tr>
<td>Learning Experiences</td>
<td>.30**</td>
<td>.09</td>
<td>.19*</td>
<td>-.09</td>
</tr>
<tr>
<td>Internalized Value of Learning</td>
<td>.07</td>
<td>.06</td>
<td>.14</td>
<td>-.07</td>
</tr>
<tr>
<td>School-Instruction-Fit</td>
<td>.13</td>
<td>.05</td>
<td>.15</td>
<td>-.16</td>
</tr>
<tr>
<td>Scholastic Competence</td>
<td>.32***</td>
<td>.10</td>
<td>.20*</td>
<td>-.11</td>
</tr>
<tr>
<td>Social Acceptance</td>
<td>-.03</td>
<td>-.01</td>
<td>-.05</td>
<td>.00</td>
</tr>
<tr>
<td>Athletic Competence</td>
<td>-.05</td>
<td>.07</td>
<td>.01</td>
<td>-.16</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.14</td>
<td>.03</td>
<td>.01</td>
<td>-.19*</td>
</tr>
<tr>
<td>Behavioral Conduct</td>
<td>.10</td>
<td>.12</td>
<td>.11</td>
<td>-.13</td>
</tr>
<tr>
<td>Global Self-Worth</td>
<td>.04</td>
<td>.05</td>
<td>.23</td>
<td>-.06</td>
</tr>
<tr>
<td>Parents' Availability</td>
<td>.08</td>
<td>.21*</td>
<td>.02</td>
<td>-.08</td>
</tr>
<tr>
<td>Teacher Encouragement</td>
<td>.12</td>
<td>.09</td>
<td>.05</td>
<td>-.06</td>
</tr>
<tr>
<td>Educational Aspiration</td>
<td>.26**</td>
<td>.10</td>
<td>.23*</td>
<td>.00</td>
</tr>
<tr>
<td>Pref. Functional Occupations</td>
<td>-.11</td>
<td>-.11</td>
<td>-.17</td>
<td>.14</td>
</tr>
<tr>
<td>Pref. Trade &amp; Service Occupat.</td>
<td>-.06</td>
<td>-.09</td>
<td>-.09</td>
<td>-.09</td>
</tr>
<tr>
<td>Actual Secondary Schooling</td>
<td>.24**</td>
<td>-.10</td>
<td>.29**</td>
<td>-.11</td>
</tr>
</tbody>
</table>

*  p < .05  
** p < .01  
*** p < .001
6.7.2 Interrelations between study variables of used study networks

There were several between study correlations which were of interest with respect to between study networks. However, because the number of the significant correlations was notably large, only those correlations which were not observed in the earlier sections and which produced statistically significant (p<.001) correlations will be discussed. In the Appendix 5., the intercorrelations between independent study variables are presented.

First, when observing relations between School Adjustment variables and Self-concept profile variables there appeared be close correlations between all School Adjustment variables and both Scholastic Competence and Behavioral Conduct variables. All of these variables with exception of Internalized Value of Learning variable were correlated positively at about the same significance level to the GPA as well. In general it could be stated that earlier accomplishments and experienced competence were related to the other motivational factors. This could indicate that students who achieve academically on the high level were simultaneously having higher expectancies and were considering school more comfortable and accordingly they could adjust their learning behavior along with study requirements. This means, for example, that they can concentrate better on the given instructions. Of course environment must support such development and let children experience advances in their learning and facilitate them to recognize their competence improvements. For this reason, the visible effect between achievement and school adjustment in terms of motivated learning is obviously reciprocal because motivation affects learning experiences and competence perceptions which in turn affect achievement behavior as earlier studies have shown (cf. Zimmerman & Mariez-Ponz, 1990, p. 57; Pintrich & Schrauben, 1992, p. 152 ; Wigfield & Eccles, 1991, p. 288). In fact, the relative Scholastic Competence variable seemed to share parallel properties as Learning Experiences variable. It can be concluded that lingual advances (i.e. high VSM) can help children to experience their first learning tasks successfully and, as a consequence, they can gradually form and/or maintain positive self-perceptions which, in turn, feed other positive outcomes such as achievement behaviors (cf. Harter, 1981, p. 218; Breuer, 1989, p. 6).

Second, in contrast, Social Acceptance subscale appeared to have negative relations to the GPA, Learning Behavior, Learning Experiences and Actual Secondary Schooling Placement variables. In the shade of light of this finding the Finnish high achieving adolescents do not necessarily feel themselves to be socially acceptable. This result was quite interesting and
indirectly presents one hypothesized explanation, which could be used to explain students’ academic underachievement and even the fact that they drop out from the academic educational path. This could be the case when social acceptance within peer group is perceived to be only achievable by lowering and devaluing academic achievement (cf. Urdan & Maehr, 1995, p. 231; Brendt & Keefe 1996, p. 270). On the other hand these negative relations could be reflections from our cultural heritage in which those individuals who have reported to be highly academically diligent and talented are not necessarily described to be most social ones but conversely quite distant and antisocial. This finding is however quite unexpected when compared with the earlier findings among high achievers in Finland (cf. Uusikylä, 1987, p. 29). Irrespective of these controversial findings the very same variables Learning Behavior and Learning Experiences which were negatively related to the Social Acceptance were positively related to the Global Self-Worth scores. This result indicates that school experiences and assimilated learning behaviors were closely connected to the students’ Global Self-Worth and vice versa. According to these findings, the school adjustment variables played quite important roles in the lives of the adolescents.

Third, a single item variable Parents’ Availability had a statistically significant relation to the Learning Behavior, Learning Experiences and School-Instruction-Fit. Especially this finding became relevant because it was earlier shown that this variable had no correlation with the Parents’ Socio-economic Status (PSES). In comparison with the PSES the Parents’ Availability appeared to have a qualitatively different dimension but nonetheless it was interrelated in a similar way to the academic achievement and school adjustment as PSES. Virtually, in the long run Parents’ Availability may become even more important than PSES in the lives of young adolescents. For example, recent studies (cf. Eccles et al., 1993, pp. 97-98) have stated that those families which listen, support and share responsibility with their offspring especially during adolescence foster safe self-conceiving and motivation to learn in these children. Future studies should observe multifaceted dimensions of the parents’ availability and involvement to examine how they affect students’ motivation to learn longitudinally.

Fourth, a single item variable Teacher Encouragement correlated to the School-Instruction-Fit variable, which appeared to be quite an expected result. The more Teacher Support there is the higher is the School-Instruction-Fit score and vice versa. However, this was not the case within the Experimental group.

Fifth, Educational Aspiration was related to the students’ School Achievement, Scholastic Competence, and all school adjustment variables with
exception of Internalized Value of Learning variable. These relations indicated that already by the eighth grade students’ earlier accomplishments and school adjustment level was quite closely related to their future educational choices.

Sixth, differences between students’ occupational preferences produced some interesting correlations. When observing both Functional and Academic Occupational Scales and their relations to both school adjustment and self-concept profile variables, it became quite obvious that those children who had a preference for academic occupations also reported higher scores in all school adjustment variables, Scholastic Competence and Behavioral Conduct variables and vice versa. In contrast those subjects who reported higher scores with regard to the Functional Occupational scale had somewhat lower but negative correlations to the very same school adjustment variables, and both Scholastic Competence and Behavioral Conduct variables as well. With regard to the students’ occupational preferences students’ school achievement and level of school adjustment were closely connected. Accordingly, it became quite clear that students at the conclusion of the comprehensive school were quite capable of imagining their possible educational paths according to their learning accomplishments and competence perceptions. In general this serves as a motivational factor which can help some students to see their actual academic inputs as valuable and unfortunately valueless as well.

An interesting aspect which rose with this regard was that those subjects who had reported higher scores in the following SCSC scales: Social Acceptance, Athletic Competence and Physical Appearance, seemed to favor Functional Occupations over the Academic ones. The same phenomenon appeared in the other direction indicating that those children who preferred Academic Occupations had negative (smaller but still significant) correlations to the introduced three SCSC variables. According to this result, those children who preferred to choose Functional Occupations had perceived themselves simultaneously more social, more athletic and better looking than those who had preferred Academic Occupations which seemed be a rather controversial direction. It would be interesting to study if this is true also among adults. One explanation could be that those subject who are not that competent in the academic field need to gain compensation from the other self-concept facets to feel worthy or vice versa. Although this study was not planned to answer this, the finding was interesting and calls for further studies in the area of self-conceptions.

Finally, students’ Actual Secondary Schooling Placement variable closely reflected students’ earlier academic accomplishments, their school adjustment, Scholastic Competence and Behavioral Conduct variables and acted in a
similar way as Educational Aspiration and Academic Occupation scales. Those subjects who had been successful had been placed in the academic secondary schools according to school-follow-up cards whereas the less successful had been placed in the vocational secondary schools. The controversial difference which existed between two SCSC variables namely Athletic Competence and Physical Appearance in relation to the students’ Functional and Academic Occupational Preference was not related to the students’ secondary school placements. However, the negative correlation between Social Acceptance and all variables which have illustrated deeper academic engagement existed also with this regard. In fact it would be interesting to study how the Social Acceptance scale is affected by this transition phase, for example, how students have perceived their social competence within the new reference group which should be more homogeneous according to its academic and social competence, values, interests and future aspirations.
7 Discussion

The primary purpose of this study has been to follow and measure how children who exhibited potential academic giftedness in pre-school phase have perceived their schooling in the end of the Finnish comprehensive school. Recently, there have been numerous studies on education which have shown that average whole-class education does not often meet the cognitive developmental needs of academic gifted children. Based on approaches reviewed in the literature, unchallenging learning environments and instruction which are often characterized to use, for example, compensatory strategies and basic level materials can lead to various maladjustment’s including motivational loss among gifted learners. When such mismatch between cognitive development and both environment and instruction occurs repeatedly, it can cause negative changes in a child’s learning motivation and related values. Additionally, during adolescence external pressure of the peer groups which often devalue academic achievements can support such development. According to introduced reasons, some of the academic potentially gifted are claimed to need to sacrifice or trade their academic interests to the other interests to gain firstly, personally more challenging goals and secondly, more approval among their peer groups. However, if the trade is unsuccessful the whole self-worth, self-concept, and academic motivation are threatened. For this reason supporting learning environments and contents with a focus on challenging and self-determined learning opportunities are claimed to be essential components which can foster development of lasting academic motivation and fulfillment of the academic potential. Because of the lack of such specific support mechanisms and the early identification procedures used for these children who exhibited potential academic giftedness in the Finnish pre-school, issues related to children’s school achievement, school adjustment, self-perceptions and future career goals were being investigated in this study in a longitudinal manner.

Despite concerns that the comprehensive nature of the Finnish school system would not be able to meet the educational requirements of the Experimental group, the results of this investigation showed that the children in the Experimental group who exhibited potential academic giftedness in pre-school possessed several features common to the earlier findings related to academic gifted students. Firstly, children of the Experimental group performed significantly better in academic terms than their peers in the Control group at the conclusion of their education. Secondly, findings on
students’ School Adjustment showed that girls of the Experimental group had higher Learning Behavior, Learning Experience and Internalized Value of Learning scores than the girls of the Control group. Regardless of having similar advances as the girls of Experimental group in pre-school phase, the boys of the Experimental group were similar to the average boys in the Control group according to their school adjustment scores, with the exception being that their Learning Behavior scores were significantly higher than the ones of the Control group. It was concluded that the boys of the Experimental group were similar to the average boys in terms of their school adjustment. The question theme concerning students’ future education and career aspiration brought parallel information as school adjustment findings by showing that the girls of the Experimental group had significantly higher educational and vocational aspirations than the girls of the Control group. With this respect there were no such differences between the boys of the study groups. The self-concept profile of the Experimental group was similar to that of the average students with the respect to the Scholastic Competence scores which were higher in the Experimental group. These results were similar to those found in earlier studies of self-concept in gifted students (cf. Hoge & Renzulli, 1993; Chan, 1996).

Consequently, according to these studied variables, the potential academic giftedness what these children exhibited in pre-school was fulfilled, in that the Experimental group exhibited gifted level academic performance, academic self-concept, school adjustment (mainly girls), and academic aspiration (especially girls). Most importantly, the results indicated that academically gifted children could be identified before school age by using the BWDT and that such children could continue to demonstrate academic excellence up until the end of comprehensive school, even though there were no specific support programs in place for gifted students. However, it was of considerable concern that the gifted students in the Experimental group had low correlations between their Scholastic Competence and Global Self-Worth, as this was interpreted as an indication that they viewed their school experiences as lacking challenge and relevance (Harter, 1996), so that they were at risk of joining the ranks of gifted underachievers. Additionally, because the boys of Experimental group had assimilated lower academic interests and lower both academic schooling and career aspirations than their female counterparts it was concluded that high able boys could benefit from the implementation of those curriculum and counseling modifications which could pay special attention to their needs.
7.1 Analysis of the findings

From a theoretical perspective, the results supported the earlier findings which have shown that children with higher verbosenso-motor ability master written language skills more easily (Breuer, 1981). According to results, the Experimental group had statistically significantly (p’s from <.001 to .05) higher school results than the Control group in all school subjects, excluding Music, at the end of the ninth grade of the Finnish comprehensive school. Consequently, it was inferred that when children possessed advanced abilities as measured by the BWDT at age 6, they also possessed the potential to become successful students in various subjects. Thus, the results supported the assumption that the BWDT was a useful tool to assess children who have potential academic giftedness in early age. Up to now the studies which have used BWDT have mainly concentrated on showing that the BWDT is useful in assessing language deficiencies in pre-school aged children and it has consequential effects concerning academic achievement in early school years (cf. Breuer, 1981; Ruoho; 1990).

The second study theme clarified if there were differences between the Experimental group and Control group concerning various School Adjustment dimensions. Because the analyses showed that there were statistical differences with respect to the variables Learning Behavior, Learning Experience and Internalized Value of Learning, these findings were interesting for at least the following three reasons. First, it was noteworthy that the advanced verbosenso-motor ability measured at six years of age was related to students’ learning behavior in the eighth grade. The study showed that the students of the Experimental group are more careful in learning tasks, have higher attention on learning, possess more accuracy in their school work, and have better concentration skills. This finding supports both Skill theory (Fischer, 1980) and Self Perception theory (Harter, 1981). It seems that those children who have advanced verbal skills have more chances to acquire more effective learning skills as well. Advanced verbosenso-motor abilities seemed to boost the formation of the positive learning spiral because these children had also more positive learning experiences and perceptions from which the assimilation of learning behaviors are actually depended on (cf. Marsh 1993a, p. 59). When students have assimilated higher learning behavior it undoubtedly has an effect on their academic achievement as well. Additionally, the assumptions which Breuer (1989, pp. 6-7) has mentioned concerning effects of the ability differences for the later academic motivation have been shown to be true. Breuer (ibid.) has stated that social experiences which are made by comparison and assessment of the others’ accomplishment during the first school years
can determinate, for example, children’s initiative and self-awareness over
the academic accomplishments which have lasting properties. Although it is
somewhat doubtful in light of Harter’s theory that children would be able to
make clear social comparisons during the first school years it is agreeable
that high able learners are perhaps more likely to form and at least maintain
their positive attitudes toward school which in turn feed their motivation to
learn during this crucial time period (cf. also Krause, 1997, p. 115). Second,
the study showed that potentially gifted children, especially girls, had more
positive Learning Experiences and higher Internalized Values of Learning
than the average girls. This finding also supported self-perception theory.
Because these children had in the first phase of the study higher verbosenso-
motor abilities it is assumable that these students have gradually begun to
perceive themselves more competent than the others after the first school
years. Along with these experiences and perceptions the children of Experi-
mental group, mainly girls, have formed very high intrinsic motivational
orientation toward academic learning. According to results, the doubts that
both the comprehensive nature of the Finnish school system and peer influences
could have an equalizing effect on the level of Internalized Values of Learning
was only supported according to scores of the boys of the Experimental
group. Actually, according to the study results, there were no single male
subjects who would had higher internalized learning value scores than the
mean value of girls of Experimental group. These findings clearly shows that
boys’ academic achievements and related motivation are not considered that
desirable as those of girls. An additional close point of interest stemming
from the present findings with this regard deals with their implications for
cognitive evaluation theory. This theory postulates that when individuals feel
competent, their intrinsic motivation will be enhanced, and conversely. Results
from the present study supported this conceptual analysis only on the side of
the girls, because they have managed to see themselves as more competent
and more intrinsically motivated in relation to the regular students. It can be
said that success in the BWDT in the pre-school phase predicts strong
positive engagement in school activities which has long lasting motivational
effects till the end of the Finnish nine-graded comprehensive school especially
among the girls. For this reason, the doubts which arose from the earlier
studies on gifted students (e.g., Vallerand et al., 1994; Gottfried & Gottfried,
1996) were not clearly visible according to girls’ ratings, because their
claims that gifted students would not experience intrinsic motivation in
normal heterogeneous study groups, were not supported from this study.
However, the boys of the Experimental group could fall into this category
according to these results, because they did not show much interest in
learning. In contrast, regardless of the relatively high level of their academic achievements and academic competence perceptions, and regardless of their satisfaction toward learning tasks they possess the lowest internalized learning values. According to presented learning motivation logic, they have assimilated so-called “min-max” principle. It seems that they are just attempting to expend the least amount of effort necessary to obtain the maximum gain (Kruglanski, 1975). An interesting issue would be to trace the factors which generate such gender differences in learning motivation. Unfortunately, because there were no such measurements at the elementary level it is hard to reach a conclusion concerning the developmental pattern of the Internalized Values of Learning. Additionally, because of this reason, it is neither possible to trace possible interesting motivational changes which may have taken course of actions during the school years nor to judge if students’ Internalized Values of Learning could be higher or lower according to environmental changes. Because of these deficits the proposal concerning development of internalized learning value is more or less speculation. Nevertheless it is assumable that environment has had a great influence on the formation of Internalized Values of Learning (cf. Gottfried & Gottfried, 1996, p. 181). In light of this study it seems that environment is supporting only high academic engagement of the potentially gifted girls whereas potentially gifted boys seem to adapt their learning motivation parallel to the other boys. These results were somewhat unexpected though boys’ relatively weak accomplishments in school world have been recently widely acknowledged by the educational scholars in Finland and gave new information from gender differences with regard to school adjustment among the high achieving students. Third, the girls who exhibited potential academic giftedness in the pre-school phase share common characteristics of the gifted students according to many gifted studies (cf. Renzulli & Hoge, 1993; Vallerand et al., 1994, and Gottfried & Gottfried, 1996). Accordingly, it is possible to draw a conclusion that the BWDT could be used in identification purposes for the academically gifted children, because good results in the BWDT are related to high academic achievement and, simultaneously it seems to facilitate students to assimilate deeper levels of internalized value of learning. In case there were some grouping practices or special intervention programs for the target group perhaps also high able boys could develop and/or retain their high learning motivation, which would correspond to their abilities.

The third study theme clarified was whether the self-concept profiles of the study groups were parallel. The study indicated that the self-concept, excluding the Scholastic Competence subscale, did not vary between the study groups. However, with respect to the self-concept Scholastic Competence
subscale, the Experimental group scored significantly (p<.001) higher than the Control group. In conclusion, the high level verbosenso-motor abilities led to the higher perceived Scholastic Competence which was recognizable over a ten year period. This finding brought special information concerning how children begin to form their academic self. Presumably, when the high-ability children entered school, they were also able to show a high performance in their first school-related-tasks. Gradually the comparisons based on observation, external feedback and performance level have probably formed a more positive academic self, which in turn has in the long run additional motivational properties (cf. Marsh et al. 1991; Wigfield & Eccles, 1992). According to this study, advanced verbosenso-motor abilities measured in pre-school have facilitated children of the Experimental group to form more positive Scholastic Competence perceptions than the other children which in turn has affected their motivational engagement (cf. Deci & Ryan, 1992). The findings which concentrated on the self-concept subscale intercorrelation showed that within the Experimental group there were unexpected low correlations between their perceived Scholastic Competence and Global Self-Worth scales. According to Harter (1996), low correlation indicates that this specific domain has no special importance for Global Self-Worth. Actually, Harter (1996) has reported that only 15% of students across various samples have reported low correlation (r’s= .23 - .28) between Perceived Competence and Global Self-Worth across samples. This minority of students have simultaneously reported that scholastic competence is not important for them (Harter, 1996). Thus, the result was initially surprising because the Experimental group was thought to value scholastic issues at least on the same level as the Control group. From an educational point of view, it can be said that the Finnish school system had not managed to either challenge or convince students that high academic achievements were important and desirable which, in turn, would be essential to help these children to fulfill their academic potential (cf. Van Tassel-Baska, 1993). It was not possible to directly explain why the Experimental group considered scholastic competence not to be as closely related to Global Self-Worth as other students did even though this group had both a higher performance level and a higher perceived scholastic competence. One explanation could be that the Experimental group had constantly had an above average performance and, thus, they had taken their high academic results as granted. When the high performance level had been acquired with small effort, there was perhaps no need to take schooling seriously. Consequently, they had perhaps assimilated making school and academic pursuits relatively unimportant and valueless for their self. Thus, the other aspects, like Physical Appearance, had became even
more predictive in regard to Global Self-Worth. Another explanation could be that students in the Experimental group had gradually internalized the fact that it was not “cool” to emphasize academic success in school contexts where the highest achieving students have the least social acceptance (e.g., correlation between GPA and Social Acceptance was statistically significantly (p<.001) but negatively related \( r=-0.18 \)). That is, at least in some degree, a speculation. Bearing in mind, because there are no such studies available from the Finnish adolescents it is necessary to respect the fact that some of the findings from other western cultures may not apply in the Finnish educational settings. Further research is definitely required to find out the developmental pattern of forming global self and academic interests of the Finnish school children. Another speculation could come from the fact that the results from the other high ability studies have performed among formally named gifted students. The special programs or activities, which are designed to develop abilities of the children could also have an effect on the perceived importance of that domain. This was obviously not the case among the students of the Experimental group. Nevertheless, according to study results, Finland might lose partly the potential of these students who do not see formal education as offering anything much of worth to them and hence they can gradually change their interests toward areas which are more challenging and valuable for them. If the introduced facts were to happen in some degree, the overall loss to the community would be considerable and the Finnish school system would be perpetuating mediocrity. It is more than probable that some special treatment or programs could offer highly able students such as those in the Experimental group a possibility to experience the usefulness and importance of their academic abilities and give them the support they need to maintain their interests and develop their academic aptitudes.

The fourth study theme clarified students’ educational and occupational aspirations. These findings enhanced earlier findings of this study because they showed that potentially gifted children had clearly higher educational aspiration than the average students. This can be said to have additional functional meaning which can explain motivational differences between adolescents. With regard to occupational aspiration, the study showed that especially girls of the Experimental group have formed very positive perceptions concerning their abilities to progress toward academic occupations which differed statistically significantly from the ones of Control group. In contrast the girls of Control group had statistically significantly higher preference to the Trade & Service occupations than girls of the Experimental group. The analyses which addressed the differences between boys of the study groups did not show differences with this regard. These findings
brought additional information about gender differences concerning academic motivation. High achieving girls seemed already in this phase to create quite solid and imaginable path about how they can go through the academic educational tube and end up in academic occupations. However, boys’ vocational aspirations have become relatively homogenous regardless of their early measured linguistic differences. According to the findings of this study, it seems that boys are neither able nor interested to see the value of the academic schooling when compared to the ratings of the girls although boys’ academic achievements and relative ability perceptions could indicate higher involvement with this regard. In general this additional finding supported the earlier findings which have shown that the adolescent boys of this study seem to consider academic issues relatively valueless because studying does not seem to neither offer instrumental nor intrinsic value for them.

When combining different findings of this study it is possible to deduce some factors which may have equalized boys’ academic learning motivation. First, we have seen that findings in the area of self-concept intercorrelation showed that high achieving students, especially boys, perceive themselves to have the least friends. If this is a general trend among the high achieving boys of this age, then there is no doubt that some high achieving boys are sacrificing their academic achievements to gain more approval among other academically lower achieving but socially more successful boys. Second, actually, according to analyses of the study, there were no such exception among the boys of the study groups who would simultaneously have high achievement, high internalized value of school, high perceived scholastic competence, high social competence and high academic occupational preferences. This search was made by comparing boys’ scores with the mean values of the girls of the Experimental group. There was no single male subject who could serve as a role model for the high achieving boys because they all showed a moderately low motivational level compared with the girls of the Experimental group. Partly for this reason it can be concluded that the surrounding culture may not offer many examples from the academically hard studying young men who could simultaneously be role-models. Instead of this, this study showed that most adolescent boys are valuing male-typed quite physical occupations which became evident when observing findings concerning occupational aspiration. Perhaps age-related social pressure forces adolescent boys to assimilate mainstreamed sex-typed role models which are typical in this phase of self-constructing (cf. Harter, 1999). When reflecting on these earlier findings of this study concerning occupational aspiration it is no wonder that boys do not seem to consider academic occupations as something desirable and to strive for. Additionally, as we have seen the boys of the Experimental
group do not get that much external support for their academic strivings. First, parents’ of the boys do not seem to encourage boys that much in their academic studies. Teachers’ greater support for the boys (though statistically non-significant) when compared with the girls of the study is mainly aimed at low-achieving boys. Perhaps male subjects who are achieving relatively good level are assumed to manage without extra support. Also here recognition, encouragement, and, for example, part-time small-group treatment which should include also boys with could serve as a starting point when developing academic motivation and giftedness.

7.2 Practical implications of the study

*Early Identification.* Previous studies have concentrated on the use of the BWDT as a tool for the assessment of language deficiencies in pre-school aged children, which have then been linked with the consequential effects on academic achievement in the early school years (cf. Breuer, 1981; Ruoho; 1990). However the present study has shown that it is also a valuable and reliable tool for the early identification of academically gifted children. In particular, it has demonstrated that such early identification is highly reliable across a considerable time span and that the resulting performance levels were not dependent on specific intervention programs. This would suggest that the bulk of what has generally been described as academic giftedness is dependent on the same verbosensor-motor ability purported to be measured in the BWDT. Given the high correlation between verbal/mathematical ability and most academic tasks, such a finding is not all that surprising.

*Intervention or no Intervention?* Probably the most dangerous and misleading implication that could be drawn from this study is that specific support or intervention strategies were not required because the gifted children continued to excel in academic endeavors throughout their school careers. This represents a variation on the common theme that many educators put forward when arguing against special assistance for the gifted, namely that “the cream always rises to the top”. However, these results definitely do not support such a conclusion. While the students may have continued to show considerable academic ability and excellent academic performance, as well as having significantly higher academic self-concept than their average peers, the fact that they appeared not to see that their academic ability was a useful or valuable aspect of their overall self, suggested that they did not value their exceptional ability (Harter, 1996). In an academic and social school culture which emphasizes equality, it is not surprising that such ability was not
valued. The most important implication of this result was that students were at risk of underachievement or in the worst case even dropping out of further study simply because they didn’t value it and it lacked relevance in the actuality of their world (cf. Van Tassel-Baska, 1993).

It could be argued that the task of any form of educational system, particularly one which claims that it is “comprehensive” and so caters for the needs of all children, should be to foster an attitude of valuing learning. One way of doing this is to create an education-long counseling system which should include all children. This could directly transmit information concerning both students’ strengths and weaknesses and development in such areas. Such practice gives directly a sign that the educational system wants to consider students’ self-set-goals. In practice, this could include, for example, to help children plan and choose, appropriate curriculum levels, learning subjects, additional courses, study goals, and future goals. This should be implemented naturally with the help of the parents. A step in this direction of longitudinal counseling has been accomplished, for example, in some junior high schools in New South Wales, Australia (e.g., Merewether High School). Such follow-ups have helped children to see their academic development and possible future paths related to their capacities.

Another solution is to provide specific support programs for those with exceptional talent so that they are able to see that the ability that they possess is valued by their society and that it should be developed further so that it benefits the wider community. For example, part-time service programs have helped children to become aware that teachers and parents are genuinely interested in their progress and their special aptitudes. Additionally these practices could help them to see instrumental and utility value of learning which in turn again helps them to consider their aptitudes as important and maintain their interest toward academic learning (cf. Wigfield & Eccles, 1992). However, such a proposal does not mean a radical segregation of students based on ability. For example, according to Sternberg (1997), the needs of both the gifted and average students can be met in normal classroom settings. Sternberg (1997) suggests that “…it is useful to help students to exploit their intellectual strengths more effectively and that does not eliminate individual differences, because everyone is able to improve his/her performance” (p. 51) (see also Schofield, 1994; Corno & Snow, 1986). It is important to remember that the alternative is that when academic talent is underdeveloped or even lost, both Finland and the wider world community are the poorer.

Some Practical Implications. One of the more valuable results to emerge for practitioners was the fact that the BWDT was found to be useful in
assessing academically advanced children at pre-school age. Up until now, such identification has been extremely problematic (cf. Torrance & Caropreso, 1999). Use of the test should allow pre-school teachers to provide suitably stimulating and deep learning environments for such children from their earliest contact with formal education. This may be of particular value under the new educational policy implemented in Finland in the latter half of 2001, which has flagged such identification as an area of importance (cf. Määttä & Lummelahti, 1997). As well, the BWDT appears to be a useful diagnostic tool, providing pre-school and elementary teachers with detailed knowledge of deficits and strengths in areas of performance considered necessary to cope with the demands of the early years of school and in later life (Breuer & Weuffen, 1986). The format of the results gained from the test are such that they are readily translated into practical curriculum requirements, so that intervention in terms of either strengths or deficits can be undertaken quickly and with relative ease (Ruoho, 1995). The test has also been implemented successfully with 5-year-old children, which makes the identification and beginning of special treatment possible even earlier (Ruoho, 1995).

Such early interventions also have the potential to circumvent a common negative self-concept spiral, whereby students only perceive that extra assistance is provided after failure, so that extra assistance is associated with failure. Consequently, those who receive extra assistance, whatever its form, are likely to have a negative perception of their academic self and any added assistance is resented because it only reinforces that perception (Marsh, 1993a; Borkowski & Thorpe, 1994).

7.3 Limitations of the study

It is also important to acknowledge the limitations of the present investigation and to evaluate how these may influence the generalizability of the results. A cautionary note should be sounded when comparing the results of this study with others which have examined gifted children. Almost inevitably, children in those other studies had participated in various programs for gifted children. However, in this instance, students in the Experimental group were neither told that they had potentially advanced academic aptitude nor provided with any special programs to develop their ability. Consequently, there may be any number of differences which affected their performance and self-esteem and which do not apply in other studies.

A second area of concern is that the attrition rate in boys for the Experimental group was rather high, making the findings in the area of gender differences
rather less reliable than was to be hoped. The “end-of-school” effect exacerbated this problem.

A third area of concern is that the limitations of the study instruments. A first concern rose from the use of BWDT as a baseline measurement of the study. The information concerning selection of the Experimental group did not include individual differences among these children, because they all scored either very close to or at the maximum level. Thus, it was not possible to say if there were already some ability differences during the test taking time in autumn 1989, for example, between boys and girls in the Experimental group. The possible differences could possibly explain to some degree the actual performance differences between genders. Furthermore, because of that deficiency, it was not possible to examine how the very best children from the Experimental group performed. In future, when BWDT is used in similar purposes, it is recommended that the test be modified to differentiate high level performances more clearly from each other. A related concern rose from the reliabilities of the study instruments. Especially, the reliabilities of the of the School Adjustment Questionnaire suffered from some remarkable deficits. For this reason the interpretation of the results of that section should be made very carefully and cautiously. Related to this the generalizability of the results to other cultures needs closer examination, especially concerning the School Adjustment Questionnaire. The threat of use of single-cohort design was not preventable in this study frame. Thus, there could be some societal conditions and identical historical events which could have an effect on the study results.

7.4 Suggestions for the future research

This study focused on comparisons between children who exhibited potential academic giftedness at preschool and their average ability peers. As always, when the emphasis is on between-groups comparisons, within-group individual differences are difficult to determine. If the gifted population was not homogeneous with regard to social environment, personal experiences and attitudes, then within-group individual differences are at least as important as between-group differences. This is particularly true if our concern is to advance the cause of development of potential giftedness in the future rather than to just identify characteristics distinguishing gifted students from the regular students. Certainly, this is an area for further investigation.

A related issue is how and when students form and become aware of their academic performance in relation to others, and how they both adopt and
regulate attributions in the course of talent development. Are the internalization processes concerning these attributions related to other people’s opinions or are they aspects of the self that the individual finds attractive? As well, there is a question about how stable these attributions might be.

Additionally talent development raised some peculiar questions. What is the role of school performance and long-term extrinsic inducements provided by significant others and peers in talent development? How are the social aspects of giftedness affecting motivation and are there some culturally bound factors with this regard? What is the role of school, class, grouping and special treatment in the same respect (cf. Marsh et al., 1995)? These are issues which should be considered in varying degrees in further studies.

The general results related to gender-related self-concept differences gave rise to some questions because boys scored higher than girls in all subscale areas. What led to these differences? Were the significant others, such as parents, peers or even teachers, responsible for these differences? Or were the girls at the stage of developmental transition in which they begin to identify themselves with the role of a “woman” and, therefore, are not as sure as the boys about what they can, should, and want to do? These results definitely call for further studies in this area.

Finally, longitudinal designs should be used to study motivational patterns and their change. However, current motivation research tends to focus mainly on motivational behaviors at one point in time. Because the development of gifted potential is a continuous process, the appropriate research designs should also undertake a longitudinal study of students’ values, relative levels of support and the changes in motivation constructs as self-perception over time. Understanding long-term motivational patterns will be critical for understanding and planning interventions for the development of giftedness.

7.5 Conclusion

This study demonstrated good support for identifying potential academic giftedness using the Breuer-Weuffen Discrimination Test in pre-school in Finland. Despite concerns regarding the comprehensive nature of the Finnish school system the measured differences in tests showed, after a 10-year follow-up, significant differences between the study groups, in relation to the examined study variables, academic outcomes, school adjustment (mainly girls), the perceived scholastic competence, and vocational aspiration (especially girls). Consequently, according to these studied variables, the potential academic giftedness what these children exhibited in pre-school
was fulfilled. The results indicated that academically gifted children could be identified before school age by using the BWDT and that such children could continue to demonstrate academic excellence up until the end of secondary school, even though there were no specific support programs in place for gifted students. However, there were two areas which caused considerable concern. The first was that, the results indicated that the traditional schooling does not necessarily challenge academically gifted children enough because they had exceptional low correlation between their Scholastic Competence and Global Self-Worth subscale. The second was that the boys of Experimental group had assimilated lower academic interests and lower both academic schooling and career aspirations than their female counterparts. It was assumed that this was the result of an often-reported culture in schools in which high academic performance was considered to be inappropriate for boys. If this were definitely found to be the case, then it would provide extra incentive for the implementation of those curriculum and counseling modifications, which consider boys’ developing academic aptitudes and values as something which is in need of special cultivation. These findings definitely call for further studies in this area.

Indirectly, according to findings of the study, on individual level, those children who have academic potential could benefit from the special programs which could encourage and challenge them academically and help them consider their abilities valuable because otherwise they may seek after opportunities which help them feel worthy elsewhere.

To take gifted children into account in teaching, necessitates on the communal level, first attitudinal change to accept gifted students as a seriously taken group of learners who are need in of special education and counseling, second, schooling and practical hints for the teachers how to face these needs, and third, resources, for example, for the instructional grouping.

On national level teacher training programs such as a pre-school, class teacher, subject teacher and special teacher should provide information, such as awareness projects, from special needs of gifted children and how to face them, for example, in the regular classrooms. The educational policy makers may should reconsider the advances of the gifted education and its research because one way how to improve current educational system is to examine the education and life of those students who are the most successful ones. By studying high-able and how they acquire higher competencies it is possible to trace developmental learning paths of the individual and build effective learning environments which also correspond to the needs of the regular students. In this sense research of the high able, gifted and experts can improve the whole educational policy system to become a more effective one.
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Appendix 1. A brief introduction to the Finnish school and grading system

For understanding the study background some essential parts of the Finnish school system will be presented in this Appendix #1. Pre-school education is provided in a day care centre or a comprehensive school in the year preceding the beginning of school. Comprehensive school is a nine-year system (with a voluntary 10th grade) providing education for all children of school age. Every Finnish citizen is required to complete this education. The Finnish nine-graded comprehensive school begins the year a child is or will be seven years old. Pre-school is generally considered to be the last year of kindergarten and it is not part of the educational policy but part of the child-care policy. From the first school year the amount of study hours per week increase from 18 hours to the maximum of 34 hours in the ninth grade. Also the number of subjects increases to at least 15, which is considered the minimum amount of the graded subjects in the end of the average nine-graded comprehensive school. Numeric grades are not recommended before fifth grade. Up to the fifth grade, school reports usually contain semi-structured verbal assessments, which usually explain whether the child is in need of extra exercises or repetition of the subject, or if she or he possesses the required educational objectives from the moderate to the very good level in this subject area.

The grading system in the Finnish comprehensive school which is commonly used after the fourth grade follows the following numerical scale: 4 - 10, in which number 4 means very weak performance, which actually means the need of repetition, and number 10 means very good performance in the subject. Because the students need to pass Finnish comprehensive school with surpassed grades, the number 5 is eventually the smallest possible number in the final school report. Both these numbers (5 and 10) rarely exist compared to the other grades. Through the last three years of comprehensive school, from grade 7 to grade 9, the school reports are presented by help of the mean of Academic school subjects (n=10), which includes the following subjects: Finnish language, 1st foreign language, 2nd foreign language, Mathematics, Physics, Chemistry, Biology, Geography, Religion, History, and by help of the general grade point average, (GPA), which includes all compulsory subjects (n=15). Hence, the GPA includes those subjects presented above (n=10) plus the following five subjects: Music, Art, Domestic Science, Physical Education and Technical or Textual Work. The Figure 4 summarizes the main features of the Finnish school system. Some comments are provided to explain some changes which took place during this research project.
The frame of the Finnish comprehensive school

<table>
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<tr>
<th>Name of the school stage</th>
<th>Age of the child</th>
<th>Comments and or examples</th>
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| **Secondary Education**                      | 15 - 16 years old| Academic Secondary Education  
Vocational Secondary Education  
Special Academic Schools (Academies, etc.) |
| 10th grade → additional year for those who are willing to improve their academic achievements | 16-years old     | 1) The old form of the comprehensive school.  
→ The comprehensive school was divided into the 6-year elementary school, and 3-year upper-secondary school.  
2) The changed form, in which the comprehensive school is considered as a whole. The change was started in 1998. Regardless of the structural change, the curriculum plans and teaching methods are still mostly separated between two introduced school settings.  
→ The old system is still existing, but the units have become bigger. |
| 9th grade                                     | 15-years old     | 1) The old form of the comprehensive school.  
→ The comprehensive school was divided into the 6-year elementary school, and 3-year upper-secondary school.  
2) The changed form, in which the comprehensive school is considered as a whole. The change was started in 1998. Regardless of the structural change, the curriculum plans and teaching methods are still mostly separated between two introduced school settings.  
→ The old system is still existing, but the units have become bigger. |
| 7th grade                                     | 13-years old     |                                                                                          |
| Comprehensive school                          | 7-years old      |                                                                                          |
| 1st grade                                     |                  |                                                                                          |
| **Pre-school**                                | 5-6-years old    | Usually seen as the last year of kindergarten, which is a year before school entrance. It is not part of the educational system, although it provides school-related activities. Became official, must be offered to all children (1.8.2001) |

Hännikäinen & Leskinen, 1999
## Appendix 2. Timetable of the study project (1989 - 1999)

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<tr>
<th>Phase I / Kindergarten (1989 - 1992)</th>
<th>Subjects involved</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td>Place</td>
</tr>
<tr>
<td>Breuer-Weuffen differentiative test</td>
<td>Pre-school</td>
</tr>
<tr>
<td>Parents socio-economic status</td>
<td>Pre-school</td>
</tr>
<tr>
<td>Goodenough's Draw-A-Man Test</td>
<td>Pre-school</td>
</tr>
<tr>
<td>Raven's Progressive Matrics</td>
<td>Pre-school</td>
</tr>
<tr>
<td>Semistructured Interviews for Preschool Teachers</td>
<td>Pre-school</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; grade, Semisturctured interviews for children of the study</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; grade, Questionnaires to class teachers</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; grade, School reports</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; grade</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>- School Adjustment Questionnaire</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>- Writing expression test: &quot;Essay 2025&quot;</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>- Self-concept Scale for Children</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>- Final school reports on 9&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
<tr>
<td>- School follow-up-cards</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; grade</td>
</tr>
</tbody>
</table>
Appendix 3. School Adjustment Questionnaire

KYSELY 8. luokka 1998

Nimi: Koulu:

On kiva, että vastaat tähän kyselyyn!

OHJE: Vastaa ympyröimällä numero, joka mielestäsi parhaiten vastaa mielipidettäsi kysytystä asiasta.
Huom. Ympyröi vain yksi numero kysymystä kohden.

Esimerkiksi: Miten välituntivalvonta on järjestetty koulussasi?

Jos olet sitä mieltä, että välituntivalvonta on järjestetty hyvin, niin ympyröit laatikosta numeron 2.

Erittäin hyvin 1 2 3 4 5 Erittäin huonosti

Varsinaiset kysymykset alkavat tästä

Miten olet yleisesti ottaen viihtynyt peruskoulun yläasteella?

Erittäin hyvin 1 2 3 4 5 Erittäin huonosti

Miten tulet yleensä toimeen luokkasi muiden oppilaiden kanssa yläasteella?

Erittäin hyvin 1 2 3 4 5 Erittäin huonosti

Miten opiskelusi on sujunut yläasteella viime aikoina?

Erittäin hyvin 1 2 3 4 5 Erittäin huonosti

Miten mielestäsi yleensä käyttäytyt oppitunneilla?

Erittäin hyvin 1 2 3 4 5 Erittäin huonosti

Ammattia varten tarvitset lisäkoulutusta. Missä oppilaitoksessa luulet hankkivasi lisäkoulutusta lähivuosina? (ympyröi yksi vaihtoehto)

a) Ammatilliseen oppilaitokseen
b) Lukio
c) Toisen asteen koulutukseen(esim. kauppa-opisto, metsäopisto, tekninen oppilaitos jne.)
d) Suoraan työelämään
e) En osaa vielä sanoa
Seuraavassa on opiskeluun liittyviä väittämiä. Ajattele oppaineita yleisesti ja ympyrö ensimmäisen mielikuvasi perusteella mitä mieltä olet asiasta.

**Vastausvaihtoehdot ovat:**

1. Täysin samaa mieltä
2. Jonkun verran samaa mieltä
3. En ole varma
4. Jonkun verran eri mieltä
5. Täysin eri mieltä

<table>
<thead>
<tr>
<th>Jaksan yleensä keskittyä hyvin yläasteella annettuihin tehtäviin</th>
<th>Täysin samaa mieltä</th>
<th>Täysin eri mieltä</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yläasteella oppiminen on minulle haasteellisempi kuin ala-asteella.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Voisin oppia helposti enemmän, jos minulta vaadittaisiin enemmän.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>En jaksa keskittyä, jos koulutehtävät ovat liian helppoja.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Huollellisuuteni on yleensä luokan keskikon alapuolella.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Yläasteella menestyvän lukematkin.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Saan vanhemmiltani tukea koulutehtävissäni.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Pystyisin helposti oppimaan 10 - 100 kertaa enemmän, jos saisin enemmän opettajan ohjausta ja tukea.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Usein minulta jää koulutehtäviä tekemättä yläasteella.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Haluaisin oppia uusista asioista enemmän kuin yläasteella opetetaan.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Usein koulutehtävät tuntuvat minusta liian helpolta.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Olen usein opettajan hampaassa ja silmatikkuna.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Sanon ääneen, jos tuntitehtävät ovat liian vaikeita.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Opin yleensä uudet asiat yllättävän nopeasti.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Opettajat voisivat yläasteella vaatia enemmän oppilaitta.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Panostan koulunkäyntiin, koska haluan menestyä elämässä.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
Kseen kanssa vietät enimmäkseen aikaasi välitunteilla (ympyröi vain yksi vaihtoehto)?

a) Mieluiten **minun ikäisten** oppilaiden kanssa  
b) Mieluiten **vanhempien oppilaiden** kanssa  
c) Mieluiten **nuorempiin oppilaiden** kanssa  
d) Olen mieluiten **yksin**

Ammattia varten tarvitset lisäkoulutusta. Missä oppilaitoksessa luulet hankkivasi lisäkoulutusta lähivuosina? (ympyröi yksi vaihtoehto)

a) Ammattikorkeakoulu  
b) Yliopisto tai korkeakoulu  
c) Aikuisoppilaitos  
d) Joku muu vaihtoehto, mikä:  
e) En osaa vielä sanoa
Seuraavassa on erilaisia ammatti- ja työaloja. Arvioi omia mahdollisuksiasi toimia ehdotetulla alalla lähivuosina ja vastaa sen jälkeen kiinnostuksesi mukaan.

**Vastausvaihtoehdot ovat:**
1. Työskentelisin erittäin mielelläni kyseisellä alalla
2. Työskentelisin mielelläni kyseisellä alalla
3. Vaikea sanoa
4. En työskentelisi mielelläni kyseisellä alalla
5. En missään tapauksessa työskentelisi kyseisellä alalla

<table>
<thead>
<tr>
<th>Ammattiala</th>
<th>Erittäin mielelläni</th>
<th>En missään tapauksessa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turvallisuusala (poliisi, armeija)</td>
<td>1 2 3 4 5</td>
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<tr>
<td>Hallinto-, Toimisto-, ATK-ala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Kuljetus-, liikenne-, ja postiala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Palveluala (myyjä, tarjoilija jne.)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Tekstiili-, metalli-, sähkö-, puu-, ja maalausala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Kaupallinen ala, markkinointi-, myyntiala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Rakennusala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Tutkimusala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Teollinen tuotanto: graafinen-, elitarvike-, kemian-, paperi-, energia-, ja varastoala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Tekninen ala (esim. arkkitehtti), opetusala, lainopillinen ala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Liikunnallinen ala (urheilija, valmentaja jne.)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Yrittäjä (oma liike, kauppa, yritys)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Kielitieteellinen (suomi ja vieraat kielet), historiallinen, uskonnollinen, psykologinen tai taiteellinen ala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Matkailuala</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

Jos sinulla on jo tiedossa joku muu ammatti tai ammattiala, jolla haluat lähivuosina työskennellä, niin kirjoita tämä toiveammattisi tähän:

**Paljon kiitoksia vastauksistasi!**
**Appendix 4. A translated version from Harter’s (1983) Self-concept Scale for Children**

<table>
<thead>
<tr>
<th>Pitää täysin paikkansa kohdallani</th>
<th>Pitää osittain paikkansa kohdallani</th>
<th>Toiset nuoret ovat huolissaan koulutehtäviensä osaamisesta.</th>
<th>Pitää osittain paikkansa kohdallani</th>
<th>Pitää täysin paikkansa kohdallani</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Jotkut nuoret ovat erittäin hyviä kaikissa urheilulajeissa MUTTA</td>
<td>Toiset nuoret eivät ole tyytyväisiä ulkonäköönsä.</td>
<td>4. Jotkut nuoret ovat tyytyväisiä omoa ulkonäköönsä MUTTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Jotkut nuoret käyttäytyvät usein oletetulla tavalla MUTTA</td>
<td>Toiset nuoret käyttäytyvät harvoin oletetulla tavalla.</td>
<td>18. Jotkut nuoret ovat onnellisia sellaisena kuin he ovat MUTTA</td>
<td>Toiset nuoret ovat harvoin tyytyväisiä itseensä.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Jotkut nuoret unohtavat usein oppimansa</td>
<td>MUTTA</td>
<td>Toiset nuoret pystyvät muistamaan asioita helposti.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Jotkut nuoret puuhaillevat aina ystävien kanssa</td>
<td>MUTTA</td>
<td>Toiset nuoret puuhaillevat useimmiten itsekseen.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Jotkut nuoret ajattelevat, että he ovat parempia kuin muut ikäisensä urheilussa</td>
<td>MUTTA</td>
<td>Toiset nuoret eivät tunne olevansa yhtä hyviä kuin muut urheilussa.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Jotkut nuoret toivoisivat fyysisen ulkonäkönsä (miiltä he näyttävät) olevan erilainen</td>
<td>MUTTA</td>
<td>Toiset nuoret toivoisivat usein olevansa joku muu.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Jotkut nuoret puuhailevat aina ystävien kanssa</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät usein olevansa joku muu.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Jotkut nuoret itsekseen sellaisena persoonana kuin he ovat</td>
<td>MUTTA</td>
<td>Toiset nuoret tuntevat, että useat samankalaiset pitävät heistä.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Jotkut nuoret toivoisivat, että toiset samankalaiset pitäisivät heistä enemmän</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät erittäin harvoin asioita, joita heidän ei pitäisi tehdä.</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Jotkut nuoret itsekseen sellaisena persoonana kuin he ovat</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät erittäin harvoin asioita, joita heidän ei pitäisi tehdä.</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Jotkut nuoret tekevät todella hyvin koulutyönä</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät usein olevansa joku muu.</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Jotkut nuoret tekevät todella hyvin koulutyönä</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät usein olevansa joku muu.</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Jotkut nuoret tekevät asioita, vaikka heidän oso heidän kasvoistaan tai liuksista näyttäisi erilaiselta</td>
<td>MUTTA</td>
<td>Toiset nuoret tekevät usein olevansa erilaisia.</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Jotkut nuoret ovat erittäin tyvyväisiä ollessaan omalla tavallaan</td>
<td>MUTTA</td>
<td>Toiset nuoret toivoisivat usein olevansa erilaisia.</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Joillakin nuorilla on vaikeuksia keksia vastauksia oppitunnilla</td>
<td>MUTTA</td>
<td>Toiset nuoret keksivät lähes aina vastaukset oppitunnilla.</td>
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<tr>
<td>32</td>
<td>Jotkut nuoret ovat suosittuja ikäistensä seurassa</td>
<td>MUTTA</td>
<td>Toiset nuoret eivät ole kovin suosittuja.</td>
<td></td>
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<tr>
<td>33</td>
<td>Jotkut nuoret eivät menesty uusissa ulkopeleissä</td>
<td>MUTTA</td>
<td>Toiset nuoret ovat nopeasti hyviä uusissa peleissä.</td>
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<tr>
<td>34</td>
<td>Jotkut nuoret eivät menesty uusissa ulkopeleissä</td>
<td>MUTTA</td>
<td>Toiset nuoret eivät ole kovin hyvännäköisiä.</td>
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</tr>
<tr>
<td>35</td>
<td>Jotkut nuoret käyttäytyvät erittäin hyvin</td>
<td>MUTTA</td>
<td>Toisilla nuorilla on usein vaikeuksia käyttäytyä.</td>
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<tr>
<td>36</td>
<td>Jotkut nuoret eivät ole oikein tyvyväisiä tapaansa tehdä monia asioita</td>
<td>MUTTA</td>
<td>Toiset nuoret eivät ole kovin tyvyväisiä tapaansa tehdä monia asioita.</td>
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</table>
## Appendix 5. Intercorrelations between independent study variables

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*p < .05, "p < .01, "'p < .001 Note: ASP=Actual Secondary Schooling Place


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