

TURUN YLIOPISTON JULKAISUJA
ANNALES UNIVERSITATIS TURKUENSIS

SARJA - SER. B OSA - TOM. 325

HUMANIORA

SOCIAL COMPETENCE AND LONELINESS DURING THE SCHOOL YEARS

ISSUES IN ASSESSMENT, INTERRELATIONS AND INTERGENERATIONAL TRANSMISSION

by

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TURUN YLIOPISTO
UNIVERSITY OF TURKU
Turku 2010

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ISBN 978-951-29-4225-1 (PRINT)

ISBN 978-951-29-4226-8 (PDF)

ISSN 0082-6987

Painosalama Oy – Turku, Finland 2010

Abstract

The present dissertation examined issues in assessment, interrelations, and intergenerational transmission of children's and adolescents' social competence and loneliness by using data from two research projects focusing on elementary school children and lower secondary school adolescents. The elementary school sample (n=985) consisted of self-, peer-, teacher-, and parent data from the Quest for Meaning research project (Vauras, 2000-2004). The data included multisource (self, peer, teacher, parent) evaluations of children's social competence, consecutive self evaluations of their loneliness, teacher evaluations of their motivational orientation, standardized tests of their academic skills, and parents' evaluations of their own loneliness and parenting self-efficacy. The lower secondary school sample (n=386) consisted of consecutive self evaluations of adolescents' loneliness, social anxiety, and social phobia from the Socio-Emotional Learning and Well-Being in Lower Secondary School research project (Niemi, 2006-2013).

The assessment issues were studied in light of multisource assessments, validity analyses, and over-time stability testing (main aim 1). The interrelations between the main elements – social competence and loneliness – were studied. Further on, their relations to elementary school children's academic skills and motivational orientation, and lower secondary school adolescents' social anxiety and social phobia were explored (main aim 2). Finally, the intergenerational transmission of loneliness was analyzed adapting different contextual views of family relationships (main aim 3).

Starting with the assessment issues (main aim 1), a Multisource Assessment of Social Competence Scale was developed and examined to test the factor pattern and the consistency of the ratings of self, peers, teachers, and parents (article 1). The findings of the CFA supported a four-factor solution consistent with two main dimensions (Prosocial and Antisocial), each divided into two sub-dimensions (Co-operating Skills, Empathy, Impulsivity, and Disruptiveness). The correlations between the four social agents were statistically significant, albeit quite low, indicating that the different sources tend to provide divergent pictures of a child's social competence. Secondly, a Finnish version of the Peer Network and Dyadic Loneliness scale (Hoza, Bukowski & Beery, 2000) was validated and the stability of children's and adolescents' social and emotional loneliness was analysed with consecutive (4th grade autumn - 4th grade spring - 5th grade autumn; and 7th grade autumn - 7th grade spring - 8th grade autumn) self evaluations. The over-time stability analyses indicated average stability in children's (article 3) and from average to strong stability in adolescents' (article 4) loneliness, especially in the dimension of social loneliness. Both of these measurement scales were confirmed to be valid and reliable measurement tools in order to screen children's and adolescents' social competence and loneliness during their school years.

The interrelations (main aim 2) between peer evaluated social competence and loneliness were tested with structural equation modelling and found to be statistically significant, albeit modest in magnitude, between social competence and global loneliness (article 2), as well as between co-operating skills and social and emotional loneliness (article 3). For elementary school children, a significant path between social competence and teacher evaluated motivational orientation as well as academic skills was found. For lower secondary school adolescents' loneliness, strong interrelations between their social anxiety and social phobia were found. Therefore, social competence can be seen as a protective factor and loneliness as a risk factor for children's and adolescents' socio-emotional well-being and learning.

Finally, intergenerational transmission of loneliness (main aim 3) was found to exist in-directionally mediated by children's social competence 1) within families as units, as well as 2) between mother-daughter and father-daughter dyads. In the first model (article 2) the mothers' and fathers' own feelings of loneliness and parenting self-efficacy were combined within families and related to their child's social competence and loneliness. The paths indicated that parents' loneliness and parenting self-efficacy were strongly related and had a significant relation to their child's peer-evaluated social competence, which further on predicted her/his loneliness. In article 3, intergenerational transmission was studied in more detail using the social and emotional aspects of loneliness and separating the data of mothers and fathers as well as of girls and boys. Consequently the results from the structural equation modeling showed that mothers' and fathers' loneliness reduced their daughters' peer-evaluated co-operating skills, which in turn predicted higher levels of both social and emotional loneliness.

Keywords: social competence, loneliness, parenting self-efficacy, social anxiety, intergenerational transmission, structural equation modeling

Tiivistelmä

Väitöskirjassa tarkastellaan kouluikäisten lasten ja nuorten sosiaalisen kompetenssin ja yksinäisyyden mittaamista, yhteyksiä ja periytyvyyttä vanhemmilta heidän lapsilleen. Alakouluikäisten lasten tutkimusaineisto (n=985) koostuu lapsilta itseltään, heidän luokkatovereiltaan, opettajiltaan ja vanhemmiltaan vuosina 2000 - 2004 osana Merkitystä etsimässä – tutkimusprojektia (M. Vauras) kerätystä aineistosta. Mukana on itse-, toveri-, opettaja- ja vanhempien arviot lasten sosiaalisesta kompetenssista, seuranta-aineisto lasten yksinäisyydestä, opettajien arviot lasten motivationaalisesta orientaatiosta, standardoiduin testisarjoin arvioidut akateemiset taidot sekä lasten äitien ja isien arviot omasta yksinäisyydestään ja koetusta kyvykkyydestään toimia vanhempana. Yläkouluikäisten nuorten (n=386) aineisto koostuu vuosina 2006 – 2007 osana Sosioemotionaalinen oppiminen ja hyvinvointi yläkouluyhteisössä (P. M. Niemi) kerätystä nuorten yksinäisyyden, sosiaalisen ahdistuneisuuden ja sosiaalisen fobian seuranta-aineistosta.

Mitattavuutta (päätaavoite 1) tutkittiin erityisesti monitahoarviointien rakenteiden yhtenäisyyksiä, subjektiivisten arvioiden ajallista pysyvyyttä sekä mittareiden validiteettia ja reliabiliteettia testaamalla. Sosiaalisen kompetenssin ja yksinäisyyden keskinäisten yhteyksien lisäksi tarkasteltiin näiden yhteyttä alakoululaisten oppimiseen sekä yläkoululaisten psykososiaaliseen hyvinvointiin (päätaavoite 2). Kolmantena päätaavoitteena oli selvittää yksinäisyyden mahdollista periytymistä vanhemmilta lapsille.

Osana ensimmäistä päätaavoitetta kehitettiin Monitahoarviointi sosiaalisesta kompetenssista (MASK) -arviointimenetelmä (artikkeli 1). Konfirmatorisen faktorianalyysin tulosten perusteella nelifaktorinen rakenne (prososiaalisuus sisältäen yhteistyötaidot ja empatiakyvyn sekä antisosiaalisuus sisältäen impulsiivisuuden ja häiritsevyyden) sopi sekä lasten itsensä, heidän luokkatovereidensa, opettajiensa että vanhempiensa tekemiin arviointeihin. Eri tahojen arviointien väliset korrelaatiot olivat tilastollisesti merkitseviä, joskin suhteellisen matalia, ts. eri tahojen näkökulmat lapsen sosiaalisesta kompetenssista ovat toisistaan eriäviä. Täten eri arvioitsijatahojen käyttäminen on kokonaisuuden tutkimisen kannalta tärkeää. Toisena mittaamiseen liittyvänä tavoitteena oli validoida Hozan, Bukowskin ja Beeryn (2000) sosiaalisen ja emotionaalisen yksinäisyyden mittari suomalaisille lapsille (artikkeli 3) ja nuorille (artikkeli 4) soveltuvaksi sekä tutkia, ovatko lasten ja nuorten arviot omasta yksinäisyydestään ajallisesti pysyviä. Alakoululaisten lasten osalta yksinäisyys, erityisesti sosiaalinen yksinäisyys osoittautui suhteellisen pysyväksi, mutta vahvistui entisestään yläkouluikäisten nuorten aineistoa tarkasteltaessa. Huomionarvoista sekä ala- että yläkoululaisten aineistoissa oli poikien kokemana vahva emotionaalinen yksinäisyys. Molempien mittareiden osalta sekä validiteetti että reliabiliteetti todettiin hyväksyttäväksi ja niitä voidaan suositella lasten ja nuorten sosiaalisen kompetenssin ja yksinäisyyden arviointimenetelmiksi.

Toisena päätavoitteena oli rakenneyhtälömallinnuksen keinoin tarkastella sosiaalisen kompetenssin ja yksinäisyyden yhteyksiä sekä keskenään (artikkelit 2 ja 3) että suhteessa lasten oppimiseen (artikkeli 2) ja nuorten psykososiaaliseen hyvinvointiin (artikkeli 4). Alakouluikäisten lasten osalta sosiaalinen kompetenssi oli yhteydessä paitsi yksinäisyyteen myös opettajien oppilaistaan tekemiin motivationaalisen orientaation arvioihin sekä standardoiduin testien arvioituihin akateemisiin taitoihin. Yläkouluikäisten nuorten osalta yksinäisyys oli yhteydessä sosiaaliseen ahdistuneisuuteen ja sosiaaliseen fobiaan. Täten sosiaalisen kompetenssin voidaan katsoa olevan koululaisten hyvinvointia ja oppimista vahvistava, ja toisaalta yksinäisyyden nuorten psykososiaalista hyvinvointia heikentävä tekijä.

Viimeisenä päätavoitteena mallinnettiin yksinäisyyden mahdollista periytyvyyttä. Ensimmäisessä vaiheessa periytyvyyttä tarkasteltiin koko perheen sisällä, vanhempien tai lasten sukupuolta erottelematta (artikkeli 2). Tässä rakenneyhtälömallissa vanhempien kokema yksinäisyys ennusti heikompaa kyvykkyydentunnetta vanhemmuudesta, joka edelleen ennusti lapsen heikompaa toveriarvioitua sosiaalista kompetenssia koulussa ja tätä kautta vahvempaa yksinäisyyden kokemusta. Toisessa mallissa eroteltiin äitien ja isien sekä tyttöjen ja poikien aineistot, jotta periytyvyyttä voitiin tarkastella äiti-tytär, äiti-poika, isä-tytär ja isä-poika dyadisuhteisissa. Rakenneyhtälömallinnuksen tulosten perusteella sekä äitien että isien kokema yksinäisyys ennusti yhteistyötaitojen kautta medioituna tytärten, muttei poikien voimakkaampaa sekä sosiaalista että emotionaalista yksinäisyyttä.

Avainsanat: sosiaalinen kompetenssi, yksinäisyys, kyvykkyydentunne vanhemmuudesta, sosiaalinen ahdistuneisuus, periytyvyys, rakenneyhtälömallinnus

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Acknowledgements

I started to plan this dissertation in August 2000 when I got a job for a few months as a research assistant at the Centre for Learning Research. A project entitled “Quest for Meaning” led by Professor Marja Vauras opened me up the possibility to study in the area of loneliness, which I had been intrigued since doing my master thesis. The job at the centre has been going on for over decade and I am still intrigued by the phenomenon of loneliness as well as a huge amount of related and not always even so related, areas of research.

So first of all, I want to express my deepest gratitude to my supervisor Professor Marja Vauras, who has not only offered me the opportunity to work on this dissertation, but also many more opportunities to work in several research projects focusing on children’s socio-emotional learning and well-being. I wish to warmly thank her for the constant support and encouragement she has given me during these years. Warm thanks also belong to my second supervisor, Professor Päivi Niemi, who invited me to participate in her project “Socio-Emotional Learning and Well-Being in Lower Secondary School”, thereby offering me an opportunity to study the aspects of loneliness, social competence and social anxiety during adolescence. I also wish to thank my previous second supervisor, Professor Kaarina Laine, who introduced me to the phenomenon of loneliness while supervising my master thesis, as well as Professor Erno Lehtinen and Professor Pekka Niemi who have supported my work from the very beginning, but especially during the last period with valuable comments and encouragement.

There are two statisticians without whom I believe I would not have been able to execute all the SEM analyses in this dissertation. My gratitude belongs to Doctor Marinus Voeten, with whom we worked five years in order to complete the multisource assessment of children’s social competence scale. I believe it would have been easier for him to complete the analyses and just let me follow. However, because he let me make all the possible mistakes before guiding me towards the right solution, I learned a lot more than I could have ever expected to. Secondly, I wish to thank statistician Eero Laakkonen, who has not only been an irreplaceable help and tutor with the statistics, but has also been an invaluable and dear friend. Besides tutoring and guiding me through the methods required for this dissertation, both of them have triggered in me a desire to learn more and more about these methods.

I wish to thank my co-workers during the “Quest for Meaning” project – Riitta Kinnunen, Pekka Salonen, Anu Kajamies, Tuike Iiskala and Ari Kaukiainen from the Centre for Learning Research, and my current co-workers in the “Socio-Emotional Learning and Well-Being in Lower Secondary Education” project - Klaus Ranta from the Department of Adolescent Psychiatry at Tampere University Hospital, Kimmo Häärä from Finnish Health Services, Leena Koivusilta and Matti Näsi from the Institutions and Social Mechanisms,

Acknowledgements

Hanna Maijala, Riitta Asanti and Hanna-Riitta Laakkonen from the Department of Teacher Education and Anna-Liisa Koivisto, Pekka Kääpä, Erika Österholm and Miia Mäkinen from the Medical Education Research and Development Centre. Moreover, I wish to thank Professor Hannele Räihä for including me in the “Family Functioning, Parental Relationship and Mental Health – The Intergenerational Transmission and Associations with Child Development” research group of the Turku Institute of Child and Youth Research Centres’ longitudinal study “Keys to a Good Childhood”. This gave me an opportunity to follow the aspects of this dissertation over a wider life-span – from pregnancy until adolescence.

My thanks belongs also to my other co-workers at the Centre for Learning Research, especially to our leader Doctor Elisa Poskiparta, who encouraged me to focus on my dissertation during this last year, but also to Taina Piponius, Marjaana Veermans, Mia Dufva, Tarja-Riitta Hurme and all the others with whom we have always had good coffee table conversations about parenthood, research, and life at the University.

Living on an island quite far away from the University, doing several part-time jobs along with the full-time researcher job, having a son with four swimming and four water pool trainings per week in two other towns, building a house on our own and finishing a dissertation at the same time has required a lot of logistical and practical help. For that, I wish to thank several ladies from our home island, especially Anna Kortelainen, who is amazing in organizing ridesharing for our children. I also want to thank my dearest friends Outi Mäkinen and Eleftheria Gonida, as well as my mother Kirsti Virtanen and sister Päivi Kluuskeri for sharing my concerns and being invaluable emotional support when ever I needed it. Without you, these last years with mice running all over our temporary house, continuously breakdowns of water and electricity, frozen shampoo in the morning shower and dead fox in the barn would have been too much to handle. On the other hand, I can not imagine a better place to write than this outlying house by the sea with own dock, high cliffs and breezy sea wind.

Finally, my warmest gratitude belongs to my family – my dear husband and friend of twenty years Kimmo and my marvellous son Niko – you guys mean the world to me. I thank you with all my heart for being here with me and sharing our dreams, daily routines and blissful moments of just sitting back and letting the sun go down. Soon, we will move into the home we have dreamed of and built up together during the last years and will hopefully have plenty of moments just to enjoy the company of each other.

In Salmenranta, January 2010

Niina Junttila

List of Original Publications

- I Junttila, N., Voeten, M., Kaukiainen, A., & Vauras, M. (2006). Multisource assessment of children's social competence. *Educational and Psychological Measurement*, 66, 874-895.
- II Junttila, N., Vauras, M., & Laakkonen, E. (2007). The role of parenting self-efficacy in children's social and academic behavior. *European Journal of Psychology of Education*, 22, 41-61.
- III Junttila, M., & Vauras, M. (2009). Loneliness of school-aged children and their parents. *Scandinavian Journal of Psychology*, 50, 211-219.
- IV Junttila, N., Laakkonen, E., Niemi, P. M., & Ranta, K. (2010). Modeling the interrelations of adolescents' loneliness, social anxiety and social phobia. *Scientific Annals of the Psychological Society of Northern Greece*, vol 8.

1. Introduction

A crucial issue to children's and adolescents' socio-emotional well-being is whether they are "insiders" or "outsiders" in the developmentally significant peer groups (Brown, 2004; Heinrich & Gullone, 2006). In order to become an insider, one needs skills and behaviour patterns that are acceptable for others (Sheridan & Walker, 1999). During the school years, a mismatch between a child's behaviour and contextual demands may develop from a behavioural problem, such as poor social competence or loneliness, into a functional impairment, such as social anxiety, social phobia or depression (cf. Rapee & Spence, 2004; Stein & Stein, 2008).

Accordingly, social competence and loneliness cannot be seen only as the ability or inability, skills, traits or characteristics of an individual, but are mainly elements which evoke, manifest, and continue in a living interaction between people having different positions within various contexts. According to Sameroff (1993, p. 4), "developmental outcomes are not a product of the initial characteristics of the child or the context, or even of their combination. Outcomes are the result of the interplay between child and context across time, in which the state of one affects the next state of the other in a continuous dynamic process". Thus the multiperspectivity of the social competence in different contexts and the developmental continuity and consequences of the loneliness in question are of particular interest in this dissertation. Child's development is a product of a continuous dynamic interaction between the child and the experience provided by her/his family, peer-, school- and other social contexts. Furthermore, the experiences provided by the environment are not independent of the child, since her/his previous behavior may have been a strong determinant of current experiences (Sameroff, 1993).

The main contexts for the children's and adolescent's socio-emotional well-being are their homes, peer networks and schools (e.g. Bronfenbrenner, 1979). Consequently, the significant social agents for children and adolescents are their mothers, fathers, friends, mates, peers, and teachers. These are the agents whose perspectives and influences for the social competence and loneliness of children and adolescents will be adapted.

The main aim of this dissertation is to examine issues in 1) assessment, 2) interrelations and 3) intergenerational transmission of children's and adolescents' social competence and loneliness by using data from two research projects focusing on elementary school children and lower secondary school adolescents. First, the assessment issues are studied in light of multisource assessments, validity analyses and over-time stability testing. Since the ratings of one's social competence depends on both the context and the evaluator, I will present social competence through the eyes of multiple social agents – the children themselves, their peers, teachers, and parents. In contrast, loneliness is a subjective feeling and therefore relatively inaccessible for

others to observe. The importance of scale development and evaluating issues are highlighted in this dissertation, because for the time being we do not seem to have valid and practical enough tools for school educators and psychologists to use in order to screen and identify the risk and resource factors of children's and adolescents' socio-emotional well-being (e.g. Dirks, Treat and Weersing, 2007; Semrud-Clikeman, 2007).

Secondly, the interrelations between social competence as a resource and loneliness as a risk factor are studied and discussed. In particular, the relationship between social competence and loneliness, elementary school children's academic skills and motivational orientation and lower secondary school adolescents' social anxiety and social phobia will be analysed. Finally, the intergenerational transmission of loneliness is studied by using various contextual views of the family relationships. This is an issue that has not yet been systemically investigated (cf. Galanaki & Vassilopoulou, 2007). The question is whether loneliness, like depression and social anxiety (e.g. Hammen, Shih & Brennan, 2004) can be intergenerationally transmitted, either directly or indirectly mediated by the child's own social competence. I will start by analysing families as units in which loneliness may or may not be transferred from parent to their child and continue with the idea that intergenerational transmission may be divergent between mother-daughter, mother-son, father-daughter, and father-son dyads (cf. Richaud De Minzi, 2006).

This dissertation consists of two parts. The first part is a summary including introduction, aims and methods, overview of the empirical studies, main findings and discussion, and methodological as well as pedagogical considerations. The second part consists of four empirical articles focusing on issues in assessment, interrelations and intergenerational transmission of children's and adolescents' social competence and loneliness. Three of these original study articles have been published in international peer-review journals (*Educational and Psychological Measurement*; *European Journal of Psychology of Education*; and *Scandinavian Journal of Psychology*). The fourth article will be published during 2010 in *Scientific Annals of the Psychological Society of Northern Greece*.

1.1. Social comparison in school: Peers as a source

Peer relations play a critical role in children's and adolescents' social and emotional development (e.g. Ginsburg, La Greca & Silverman, 1998). These relationships become increasingly important when an individual goes through the transition from early childhood into school years and then on to adolescence. When striving for personal autonomy from parents, peers are an important source of social support (Buhs & Ladd, 2001; Hartup, 1996; Parker, Rubin, Erath, Wojslawowicz & Buskirk, 2006). Belonging and identification with a peer group is essential for enhancing self-concept, and peers serve as a base for social comparison (Berguno, Leroux, McAinsh & Shaikh, 2004; Harter,

1999). The quality of children's peer interaction has been shown to be linked with social skills, loneliness, rejection, victimization and social anxiety already during the first years of elementary school (Asher & Wheeler, 1985; Boivin & Hymel, 1997; Ginsburg, La Greca & Silverman, 1998; Hymel, Rubin, Rowden & LeMare, 1990; Kupersmidt & Coie, 1990; Hartup, 1996).

Later on in development, there is abundant evidence on the importance of peer relations for adolescents' psycho-social well-being (Ladd & Troop-Gordon, 2003; Prinstein, Boergers & Vernberg, 2001; Spence, Donovan & Brechman-Toussaint, 2000). Although more advanced socio-cognitive abilities may offer a better means than before to handle these current socio-emotional issues, this change may also mean increased vulnerability to an adolescent's socio-emotional well-being. For example, Rapee and Spence (2004) have suggested that early- to mid-adolescence is likely to be a critical time for many individuals with social anxiety due to the increasing importance of social interactions at this developmental stage. For example, peer victimization is one of the strongest traced risk factors for loneliness, social anxiety and depression (Eslea, Menesini, Morita, O'Moore, Mora-Merchán, Pereira & Smith, 2003; Juvonen, Graham & Schuster 2003; Spence et al., 2000; Storch & Masia-Warner, 2004). Excessive teasing, criticism, bullying, rejection, ridicule, humiliation and exclusion by significant others can be found behind the development of social anxiety and social phobia (Asher & Coie, 1990; Prinstein, et al., 2001; Ranta, Kaltiala-Heino, Pelkonen & Marttunen, 2009a; Rapee & Spence, 2004). Peer responses of this type are likely to reflect a long-term history of social interaction patterns and a gradual establishment of vicious cycles (Blöte, Kint & Westenberg, 2007; Rapee & Spence, 2004). Lonely and socially anxious children and adolescents are less popular and more likely to be ignored, neglected, rejected and excluded by peer groups (Blöte & Westenberg, 2007; Gazelle & Ladd, 2003; Rapee & Spence, 2004). Vice versa, research findings point out that these children and adolescents tend to demonstrate more inhibited and less assertive behaviour in social situations, inferior social skills (Horowitz, French & Anderson, 1982; Lau & Kong, 1999) and more negative interpretations of social situations (Blöte & Westenberg, 2007; Miers, Blöte, Bögels & Westenberg, 2008) than others.

Beyond these, the transition from childhood to adolescence often involves a simultaneous ecological transition (Bronfenbrenner, 1979), e.g., moving to a new school environment. This may mean a thorough reorganization of the peer networks and pose a challenge to create new contacts and to find one's own reference group in a new social setting. Accompanying these changes, many adolescents report worries about maintaining existing friendships and creating new ones (Cotterell, 1996; Wargo Aikins, Bierman & Parker, 2005). It can be suggested that this transition may lead to at least a temporary increase in the feelings of loneliness and social anxiety. As indicated above, poor or interrupted social skills and earlier adverse social outcomes or difficulties in creating friendships are likely to diminish success in these challenges.

1.2. Social competence consists of skills and behaviour

social competence is generally described in global terms, such as the ability to effectively make and maintain positive social outcomes by organizing one's own personal and environmental resources (see Anderson-Butcher, Iachini & Amorose, 2008; Boyom & Parke, 1995; Dirks, Treat & Weersing, 2007; Ladd, 1999; Semrud-Clikeman, 2007). Rubin and Rose-Krasnor (1992) defined social competence as "the ability to achieve personal goals in social interaction while simultaneously maintaining positive relationships with others over time and across situations" (p. 285). Sheridan and Walker (1999) identified two aspects of children's social skilfulness. One aspect is to learn a variety of important social skills appropriate in different contexts and the other is to learn to relate and behave in a way that is acceptable to other people. These aspects may be further divided into more specific skills, such as: 1) positive relations with others, 2) accurate social cognition, 3) the absence of maladaptive behaviours, and 4) effective social behaviours (Vaughn & Hogan, 1990).

McFall (1982) defined social competence simply as "somebody's judgment that a person's behavior in a given situation was effective" (p.13). Despite the lack of focus into social situations and prosocial behaviour, this definition captures the contributions of child-, behaviour-, situation-, and judgement-level factors that were later presented as primary factors associated with children's and adolescents' social competence (Dirks, et al., 2007). According to their review, knowing something about 1) the child of interest, 2) the situation in which the behaviour is conducted, 3) the behaviour that was selected, and 4) the person evaluating the behaviour, would explain a major amount of variability in social functioning. The influence of these child- (e.g. the physical attractiveness, age, and other skills), behaviour- (e.g. co-operating with others or inhibiting one's impulsive behaviour), situation- (e.g. learning in a classroom or playing football in the school yard), and judgement-level (e.g. parent vs. teacher evaluating own child vs. pupil) factors to the evaluation of children's social competence are presented more widely in the next chapter.

Taking the above definitions into account while keeping parsimony in mind, I will focus in this dissertation on two main aspects of social competence: prosocial and antisocial behaviour. Both of these include skills, attitudes and affective states. Prosocial behaviour includes socially desirable actions, such as helping, sharing and comforting. These are actions that society considers desirable and attempts to encourage in children. Manifestations of prosocial behaviour, such as co-operating and participating in group-activities lead to acceptance by peers (see Coie, et al., 1990), and promote learning processes (see Rubin, Bukowski & Parker, 1998).

Social competence also means the absence of antisocial behaviour, for example the inhibition of impulsive and disruptive behaviour. Antisocial behaviour has negative social outcomes, which can be either intentional or unintentional, and which can be

directed towards others or towards the self. Children with antisocial behaviour tend to be members of deviant peer groups and have higher rates of school drop-out and conduct disorders (see Farmer, 2000). In order to be socially competent, a child has to behave strongly on the dimension of prosocial behaviour and low on the dimension of antisocial behaviour.

In this chapter, I will first focus on the multiple perspectives of children's social competence as evaluated by different social agents (self, peers, teachers, and parents) and the possible discrepancies and agreements between these ratings. Secondly, I will review the interrelations of social competence and the other areas of psychosocial well-being as well as academic achievement, and finish with the gender differences in children's social competence.

The importance of who judges

In addition to contextual demands, the perceptions and interpretations of a child's social competence may vary based on the different nature of the relationship between the child and the evaluator or based on the different expectations the evaluator has toward the child's skills and behaviour in a given situation. Accordingly, it is prudent to gather information regarding children's social competence in a multisource manner since there exists several factors, including age, gender, ethnicity, skills or personality traits either in the person being rated or in the person rating the other that can affect the resultant ratings (see also Ekins, 1996; Halpern, 1997; Semrud-Clikeman, 2007; Tarullo, Richardson, Radke-Yarrow & Martinez, 1995; Waters & Sroufe, 1983). When information from multiple sources is integrated, a more complete and accurate picture of the person's competence can be constructed (Renk & Phares, 2004).

Typically, a basic distinction is drawn between the individual's perception of him/herself and the perceptions of others. In a school context, the significant other social agents are peers, teachers, and parents. These perceptions are not based on only the initial characteristics of the child being evaluated or the evaluation context – nor even on their combination. The perceptions are a result of the dynamic and continuous interplay between the child being evaluated and the context changing over time, in which the behavior of the child affects the next state of the other. (Sameroff, 1993.) Therefore, every social agent may have different and unique perception of the child's social competence. Next, I will briefly review the pros and cons of these different sources of ratings.

Self-ratings versus ratings by others. Self-reports are especially important since they are based on information that is inaccessible to others. On the other hand, self-reports may be biased. Social behaviour is usually regulated by social norms, and due to social desirability, individuals tend to underestimate their own negative behaviour and overestimate their own positive social behaviour (Eisenberg & Mussen, 1989). When rating the same behaviours or the same traits, there usually are differences between self-ratings and the ratings of others.

Previously using self-ratings by children or adolescents for diagnostic purposes has been considered inappropriate due to their lack of cognitive maturity. More recently, researchers have recommended the use of also children's self-reports as an important source of information about their emotions and perceptions (Hope et al., 1999; Semrud-Clikeman, 2007; Renk & Phares, 2004). Understanding children's perceptions of their own social behaviour or social skills provides useful supplementary information regarding the judgements made by significant others, and may therefore be especially important in designing and evaluating interventions directed at social skills.

Teacher versus peer ratings – ratings within the school. In a meta-analytic study by Renk and Phares (2004), the greatest correspondence between ratings across informants appeared between teachers and peers. Both of these ratings are made in the context of school, although teachers are not present or able to observe the children continuously - children confront their peers' behaviour in many interactive situations that are beyond the teachers' eyes. Moreover, teachers may focus more on children's obedience and compliant behaviour, which are essential parts of their good school work and which are more typically directed towards adults than towards classmates (Greener & Crick, 1999). For these reasons, peers have been argued to be the best source for information regarding a child's social competence (see Greener, 2000). Furthermore, peer ratings are obtained by averaging the ratings of a number of peers, whereas teacher and parent ratings come from one single source, and may, therefore, be biased by person-related factors. Aggregating the data from the multiple informants participating in peer ratings may increase reliability by lessening the possible influence of individual bias (see Warden & Mackinnon, 2003). However, averaging the scores may also lose information in a case of very contradictory scores by separate groups of peers. For example, bullies may receive positive ratings from their allies and negative ratings from their victims.

Parent versus teacher ratings – the ratings by adults. While ratings by children have been criticized on the basis of their weak socio-cognitive skills and inability to evaluate themselves as well as their peers, the ratings by adults may be considered to be less biased due to these undeveloped cognitive skills. Parents are most familiar with their child's behaviour and skills across time and situations. On the other hand, teachers have the opportunity to observe how the child behaves in structured learning situations and how they interact with peers. However, teacher ratings may be affected by the other skills and talents of the students, or by teachers' own prejudices of the behaviour models of genders and ethnicity (e.g. Greener & Crick, 1999; Junttila & Vauras, 2007; Mpofo, Thomas, Chan, 2004; Semrud-Clikeman, 2007). Similarly, parents' ratings may be affected by differences between the expectations of behaviour in the home and school environments (e.g. Renk & Phares, 2004), a social desirability bias (Eisenberg & Mussen, 1989) or by the parents' affection for their child (Schneider & Byrne, 1989).

With regards to the age of the child being rated, Renk and Phares (2004) found that agreement between self and parent ratings were greater during middle childhood,

whereas self-peer and self-teacher agreements were greater during adolescence. This difference may reflect the growing importance of outside social networks as well as the greater amount of time spent with peers and at school-related activities during adolescence (Berndt, 1982; Brown, 2004; Kiuru, 2008; Storch, Brassard & Masia-Warner, 2003).

Schneider and Byrne (1989), Ruffalo and Elliot (1997), and Fagan and Fantuzzo (1999) reported that parent and teacher ratings of children's social competence do not agree with each other. On the other hand, van Aken and van Lieshout (1991) and Swick and Hassell (1990) have found evidence indicating that parents and teachers perceive children's social behaviour as reasonably similar (see also Pakaslahti & Keltikangas-Järvinen, 2000). Galloway and Porath (1997) concluded that both parents' and teachers' perceptions of children's overall social skills were similar, but that differences emerged at the level of specific kinds of social skills. Teachers evaluated children as behaving more co-operatively than parents did, and parents evaluated their children as being more assertive than teachers did.

To summarise, it has been argued that social competence is best studied using multiple sources of data (Haager & Vaughn, 1995; Renk & Phares, 2004; Semrud-Clikeman, 2007). Different raters may give different evaluations of a child's social competence; indeed, studies on the consistency of these different perspectives on children's social competence have been found to have conflicting results, which suggests that manifestations of a child's social competence are ambiguous. However, most studies on children's social competence have adopted the perspective of one or two of these types of raters. Also, it is typical that self-ratings and ratings by various significant others involve different aspects of children's social behaviour. For example, teachers may evaluate skills related to learning situations, while parents may evaluate behaviour models at home (cf. Haager & Vaughn, 1995; Javo, Ronning, Handegård & Rudmin, 2009). The results of the meta-analysis by Renk and Phares (2004) revealed that the correspondence of a child's or adolescent's self-ratings with the ratings by parents, teachers or peer informants had average effect sizes that were small in magnitude. However, the average effect sizes of other cross-informant pairs (e.g. parent-teacher; peer-teacher) were moderate in magnitude. All in all, the greatest correspondence was found between the ratings by teachers and peers.

Social competence as a resource

The value of social competence seems to be clear, since its development and consequences are known to contribute to enhanced academic achievement and socio-emotional well-being, as well as decreased social exclusion, delinquency and other psychosocial and mental health problems (e.g. Isley, O'Neil, Clatfelter & Parke, 1999; Kavale & Forness, 1996; Ladd, 1999; Ladd & Profilet, 1996; Nowicki, 2003; Semrud-Clikeman, 2007; Webster-Stratton & Lindsay, 1999). According to Burt, Obradovic, Long

and Masten (2008), social competence is viewed as a primary component of healthy functioning and development “from early dyadic relationships with caregivers, to play and social interaction with peers in the preschool years, to the formation of peer networks, close friends, and romantic relationships” (p.359). Their longitudinal study provided strong evidence for the pervasive linkages between social competence and internalizing problems (anxiety, depression, and somatization) from elementary school into adulthood. According to them, there are several reasons why social competence and mental health problems interrelate over time. Basically, socially inappropriate behaviour resulting from socio-emotional and mental health problems (such as loneliness, social anxiety, social phobia, and depression) could disrupt the development of social competence. On the other hand, experiences of social rejection could produce a variety of emotional, cognitive, and behavioural responses that in turn influence the course of psychopathology (also Dirks, et al., 2007; Hayward, Wilson, Lagle, Kraemer, Killen & Taylor, 2008; Masten, Burt & Coatsworth, 2006; Ranta, 2008; Rapee & Spence, 2004; Rockhill, Stoep, McCauley & Katon, 2009).

Concerning of the academic achievement, children with learning disabilities are at greater risk of social rejection and social problems than average- to high-achieving children. A plausible explanation for why this is the case, according to Nowicki (2003), is that children who have difficulties processing academic information also face substantial challenges in untangling constantly changing environments of social interaction from many sources, non-verbal cues, situational contexts, and so on. In three meta-analytic studies (Swanson & Malone, 1992; Kavale & Forness, 1996; Nowicki, 2003), the effect sizes for peer ratings were all in favour of children without learning disabilities. The effect sizes for teacher ratings and self-ratings varied from small to moderate.

Finally, also gender differences in social competence have been reported. In comparison to boys, girls are on average more assertive (Luthar, 1995), friendly, trustworthy, and helpful (Pakaslahti & Keltikangas-Järvinen, 2001); girls show higher levels of empathy and altruism (Fox, Gibbs & Auerbach, 1985), and have less disruptive (Lumley, McNeil, Herschell & Bahl, 2002), and impulsive behavior (Willcutt & Pennington, 2000). Furthermore, it has been suggested that girls have better skills to demonstrate social competence, such as the comprehension of conversations as well as the use of phonological and semantic information (Halpern, 1997).

1.3. Loneliness in childhood and adolescence

Loneliness is a related but very distinct phenomenon to aloneness and solitude. Aloneness refers to the objective state on having nobody to talk to or to be with; of being physically and communicatively just on one’s own. (Galanaki & Vassilopoulou, 2007; Rokach, 2004). When asking children and adolescents what loneliness feels like, they define it as a distressing emotional experience, associated mainly with sadness, boredom

and anxiety stemming from quantitative and/or qualitative deficits and mismatches in their social relationships (Bucholz & Catton, 1999; Hymel, Tarulli, Hayden Thomson & Terrell-Deutsch, 1999).

Children's and adolescents' feelings of loneliness signal specific problems in their social adjustment and social functioning and deserve therefore a great deal of attention (Stoeckli, 2010). Indeed, research has demonstrated a wide range of unfavourable outcomes for loneliness (Heinrich & Gullone, 2006; Mahon, Yarcheski, Yarcheski, Cannella & Hanks, 2006, for a review). For example, loneliness has been found to have interrelations with the risk of school drop-out (McWhirter, Besett-Alesch, Horibata & Gat, 2002; Page & Scanlan, 1994), depression and anxiety disorders (Boivin, Hymel & Bukowski, 1995; Buchholtz & Catton, 1999; Moore & Schultz, 1983; Storch, et al, 2003), use of social avoidance strategies (Nurmi, Toivonen, Salmela-Aro & Eronen, 1996), low self-esteem (Goswick & Jones, 1982; Inderbitzen-Pisaruk, Clark & Solano, 1992) and negative coping styles and problems in adjustment (Ireland & Qualter, 2008; Pavri, 2001; Milsom, Beech & Webster, 2003). More serious mental health problems, such as avoidant and borderline personality disorders, schizophrenia, suicide attempts and suicide have been reported among lonely adolescents and adults (Heinrich & Gullone, 2006; McWhirter, 1990a; Roberts, Roberts & Chen, 1998).

In this chapter, I will first focus on the subjectivity, bi-dimensionality and over-time stability of children's and adolescents' loneliness. Secondly I will review the interconnectedness of loneliness, social anxiety and social phobia and finish with the prevalence rates of these phenomena.

Social and emotional loneliness: Stable or not?

The subjective feeling of loneliness, which could be experienced not only in aloneness but also in the company of others, is a distressing emotional response to the discrepancy between desired and achieved levels of social relationships (Peplau & Perlman, 1982; Rotenberg, 1999). To date, the most frequently used and the only widely accepted typology of loneliness was proposed in 1973 by Weiss (Galanaki & Vassilopoulou, 2007). Weiss (1973) used the term "loneliness of emotional isolation" in order to describe the sense of emptiness and anxiety stemming from the absence of a close emotional bond and "loneliness of social isolation" in order to describe the sense of non-belonging, aimlessness and boredom stemming from the absence of a network of social relationships. Although using somewhat different terms (most commonly social loneliness and emotional loneliness), further research has frequently supported the existence of these two dimensions of loneliness among late adolescents (e.g. Clinton & Anderson, 1999; Russell, Cutrona, Rose & Yurko, 1984), adults (e.g. DiTommaso, Brannen & Best, 2004; Dykstra & Fokkema, 2007) and elderly people (e.g. De Jong Gierveld & Van Tilburg, 2006; Van Baarsen, Snijders, Smith & Van Duijn, 2001), but more recently also among children (Hoza, et al., 2000; Qualter & Munn, 2002). The commonly

accepted definition of social loneliness is that it refers to the absence of a social network or to the feeling that one is not part of a group. Emotional loneliness, in turn, refers to the lack of a close, intimate attachment to another person. (e.g. Asher, Parkhurst, Hymel & Williams, 1990; Clinton & Anderson, 1999; Heinrich & Gullone, 2006; Hoza et al., 2000; Qualter & Munn, 2002; Rotenberg, 1999.)

Besides focusing on these qualitatively different aspects, it is also important to focus on the temporal differences between children's and adolescents' experiences of loneliness. According to Heinrich's and Gullone's (2006) review, previous research has failed to emphasize differences in the temporal persistence of loneliness. Accordingly, many researchers have argued over the necessity of distinguishing between transition (or state) loneliness and chronic (or trait) loneliness. Transient loneliness refers to current and immediate feelings of loneliness, whereas chronic loneliness refers to a relatively enduring experience of loneliness. Among these, chronic loneliness is strongly associated with a person's social and emotional well-being, such as negative attributions towards loneliness and interpersonal failures, non-active coping strategies, weak social skills, social anxiety, social phobia, and depression (Asher & Paquette, 2003; Cottrell, 1996; Neto & Barros, 2000; Young, 1982; Heinrich & Gullone, 2006). According to Spitzberg and Hurt (1987), the longer a person's loneliness persists, the more likely it is that their causal attributions will become more self-derogatory and their social skills will diminish either through lack of use or motivation to interact with others.

Berndt and Hoyle (1985) studied the stability and change in children's and adolescents' friendships during their first, fourth, and eighth grades. In their study, most friendships established in the fall of the school year remained constant in the spring. The proportion of the friendships that lasted until the spring was generally above .50. The stability of friendships generally increased between the first and fourth grades. However, it did not increase with regularity between the fourth and eighth grades. Moreover, during the first and fourth grades the children gained more new friends than they lost old ones. On the contrary, during adolescence, they lost more old friends than they gained new ones. According to Berndt and Hoyle, this may indicate that during adolescence, children become more concerned about having a friend with whom they can share personal thoughts and feelings and may therefore increasingly prefer interactions with a smaller group of only very close friends.

Concerning the stability of adolescent and adult loneliness, Boomsma, Willemsen, Dolan, Hawkey and Cacioppo (2005) reported unique results from a longitudinal twin study (n=8387). According to their study, the test-retest reliability of loneliness was statistically significant for more than a decade for both males and females. However, it must be noted that in order to measure loneliness, they used only two items of the Anxious/Depressed subscale of Achenbach's (1990) Young Adults Self Report scale. Although their use of the item "I feel lonely" is commonly used in scales developed and validated to measure loneliness, it seems somehow questionable to use the item

“Nobody loves me” as a 50 percent predictor of the phenomenon of loneliness, as this usually refers to low self-esteem.

Loneliness, social anxiety and social phobia

Previous research has found interrelations between loneliness and social anxiety (Inderbitzen-Pisaruk, et al., 1992; Segrin & Kinney, 1995; Storch & Masia-Warner, 2004) as well as loneliness and social phobia (Beidel, Turner, Young, Ammerman, Sallee & Crosby, 2007; Spence, Donovan & Brechman-Toussaint, 1999). Loneliness and social anxiety share many common risk factors such as poor social skills, problems in peer relations, negative experiences both at school and at home, lack of social support as well as some individual traits such as shyness, behavioural inhibition and low sociability (Rapee & Spence, 2004; Rotenberg, 1999).

Social anxiety is an experience of fear, apprehension or worry regarding social situations and being evaluated by others. According to Essau, Conradt and Petermann (1999), exposure to feared social situations is associated with numerous problems or concerns, such as fear of doing something embarrassing, being judged as stupid or crazy, having a panic attack or exhibiting avoidance behaviour. Socially anxious adolescents anticipate negative outcomes from social-evaluative situations and they tend to evaluate their own performance more negatively than that of others (Voncken, Bögels & Peeters, 2007). They also show a higher level of negative cognition in stressful social performance situations (Kendall & Chansky, 1991; Spence et al., 2000; Treadwell & Kendall, 1996) and consequently they may prefer to be alone rather than try to connect with others. Indeed, social anxiety could result from negative, aversive or exclusionary experiences with peers, and may in turn inhibit social interactions that are necessary for satisfactory socio-emotional development (La Greca, 1998; Stein & Stein, 2008). Adolescents with higher levels of social anxiety have been found to have fewer friendships and less intimacy, companionship and support in their friendships (La Greca & Lopez, 1998).

Whereas social anxiety is more common and can be transient, the core symptom of social phobia is a marked and persistent fear of one or more social or performance situations, leading to excessive anxiety or avoidance of such situations. The symptoms of social phobia focus on evaluative concerns accompanied by impairments or distress or both (Ranta, 2008; Stein & Stein, 2008). Social phobia typically has a later onset date than loneliness or social anxiety – usually starting in early- to mid-adolescence, with the mean age of onset being between 10 and 17 years. In prospective studies the course of social phobia seems to be chronic, with periods of exacerbation and alleviation of symptoms, but with full remission during adolescence and young adulthood being rare (Ferdinand, Dieleman, Ormel & Verhulst, 2007; Ranta, 2008). For example, a supportive friendship or partnership may bring relief from symptoms, but rigorous challenges in changing peer and educational settings, including requirements to participate in new

performance or social situations may again cause full-blown symptoms (Ranta, 2008; Wittchen & Fehm 2003). Indeed, Rapee and Spence (2004) suggest that the apparent onset of social phobia in early adolescence may have more to do with the increase in life interference caused by social anxiety at this developmental stage than with increases in actual levels of social distress (also Weems, 2008).

During adolescence social phobia may cause significant impairment in both educational activities and establishing friendships (Essau, et al., 1999; Wittchen, Stein & Kessler, 1999; Wittchen & Fehm, 2003). In most cases social phobia is reported to have preceded other co-morbid disorders, such as depression (Essau et al., 1999; Lewinshon, Zinbarg, Seeley, Lewinsohn & Sack, 1997; Nelson, Grant, Bucholz, Glowinski, Madden & Reich, 2000; Ranta, et al., 2009a; Suveg, Hoffman, Zeman & Thomassin, 2009; Wittchen et al., 1999).

Prevalence of loneliness, social anxiety and social phobia. While the clinical manifestation of social phobia in childhood is still limited, expressions of loneliness (Heinrich & Gullone, 2006) and anxious solitude (Gazelle & Ladd, 2003) as well as social anxiety (LaGreca, 1998) are already identifiable. Like anxiety, the level of loneliness and its continuity during adolescence seem to be increasing (Eronen & Nurmi, 2001; Laine, 1998; Renshaw & Brown, 1993).

In general, approximately 15–30% of people experience persistent feelings of loneliness (Koenig & Abrams, 1999). For 10–20% of adolescents, loneliness is a persistent and painful state of mind (Heinrich & Gullone, 2006). In a review of the mean scores, the prevalence of loneliness appears to peak during adolescence, drops between young adulthood and middle age and then perhaps rises slightly during old age (Perlman and Landolt, 1999).

A significant percentage of adolescents, 27–47%, report at least one social fear, the most common being fear of doing something in front of others, e.g., speaking in public (Essau et al., 1999; Ranta, Kaltiala-Heino, Rantanen, Tuomisto & Marttunen, 2007b; Ranta, Kaltiala-Heino, Rantanen & Marttunen, 2009b; Wittchen et al., 1999). As can be expected, the prevalence rates for the clinical and severe form of social phobia are much lower. Before the age of 12 social phobia prevalence is below 1%. By the ages 12–17 years it is already at 2–3% (Essau et al., 1999; Ranta, et al., 2009a; Wittchen et al., 1999). However, higher prevalence rates have also been reported. According to Furmark (2002), social phobia is a relatively common disorder that affects between 7 and 13 % of individuals in Western societies across their lifetime. These discrepancies in reporting may be due to the fact that despite validation of the diagnostic constructs, the opinion that social phobia is merely shyness and therefore not a clinical disorder remains and affects the recognition of the phenomenon (Kashdan & Herbert, 2001; Stein & Stein, 2008).

To summarise, despite previous research having suggested a wide range of unfavourable outcomes for loneliness, such as social phobia and depression (for a

review see Heinrich & Gullone, 2006), it still seems to be a somewhat underestimated sign of children's and adolescents' socio-emotional ill-being. For example, several studies indicate that the increase in depression rates is marked especially at the ages of 14-16, which covers the period of lower secondary school years. It is notable from a life-span and preventive perspective that after each depressive episode the probability of a new episode occurring shows a significant increase (Hart, Craighead & Graighead, 2001). Considering the fact that loneliness, along with social anxiety and social phobia, is among the strongest predictors for depression (Heinrich & Gullone, 2006; Hayward et al., 2008; Lasgaard, 2006), its prevalence during the elementary school years should be taken as an alarming sign of children's socio-emotional ill-being.

1.4. Family as a basis for social, emotional and academic development

Parental sensitivity, involvement and encouragement along with demands for age-appropriate behaviour in combination with limit setting and monitoring contribute to a good psychosocial, academic, and behavioural adjustment among both children and adolescents. A parent-child relationship based on acceptance facilitates adjustment, whereas a poor relationship, especially if it is marked by distancing, is connected with non-adjusted behaviour and socio-emotional problems, such as lower social competence, loneliness and depression (Richaud de Minzi, 2006). Indeed, there exists a wide range of research showing that the quality of the parent-child relationship is an important predictor of peer relationships, socio-emotional well-being as well as mental health throughout childhood and adolescence (e.g. Bögels & Brechman-Toussaint, 2006; Elicker, Englung & Sroufe, 1992; Goswick & Jones, 1982; Kimbrel, 2008; Law & Barber, 2006; Lieberman, Doyle & Markiewicz, 1999; McLeod, Weisz & Wood, 2007; Parke, Cassidy, Burks, Carson & Boym, 1992; Putallaz & Heflin, 1990; Rapee, 1997; Roux, 2009; Semrud-Clikeman, 2007). The way parents model and overtly coach social skills and behaviours, and either encourage or inhibit their child's social interactions will provide either a secure or insecure base for future interaction models, and determine whether the child has the skills necessary to effectively relate to his or her peer group (cf. Henwood & Solano, 1994).

Since parenting self-efficacy has an important mediational role in linking these distinct parental factors, child characteristics, and situational factors (Jones & Prinz, 2005; Teti & Gelfand, 1991), it was chosen along with parents' own feelings of loneliness to be among the family factors that are a focus of this dissertation. Therefore, I will first review the research concerning parenting self-efficacy and its effects on a child's social, emotional and academic behaviour and then look at the scarce research available on the possibility of the intergenerational transmission of loneliness.

Parenting self-efficacy as a mediator between family factors and a child's social and academic behaviour.

Parenting (or parental) self-efficacy (PSE) has been identified as parents' self-referent estimations of competence in the parental role, or as parents' perceptions of their ability to positively influence the behaviour and development of their children (Coleman & Karraker, 1998; Teti & Gelfand, 1991). PSE includes both the level of specific knowledge pertaining to the behaviours involved in child development and rearing, and the degree of confidence in a parent's ability to confront the designated role behaviour without the feelings of frustration or incompetence (Coleman & Karraker, 1998). Thus, PSE belongs to the more general class of constructs associated with personal efficacy, and is a potentially important cognitive construct related to child and family functioning (for a review, see Jones & Prinz, 2005).

PSE has been reported to have a strong relationship with many important aspects of parenting, for example role satisfaction, parental warmth, control, responsiveness, participation, and involvement. In addition, low PSE has been found to correlate with parental depression, defensive and controlling parental behaviours, high levels of parental stress, a passive or negative coping style in the parenting role, a parent's tendency to focus on relationship difficulties, negative affect, elevated autonomic arousal, feelings of helplessness and frustration in the parenting role, use of punitive disciplinary techniques, and lack of satisfactory social networks (Coleman & Karraker, 1998; Cutrona & Troutman, 1986; Gross, Conrad, Fogg & Wothke, 1994; Jones & Prinz, 2005; Lutz & Hock, 2002; Shumow & Lomax, 2002). While parents with strong self-efficacy beliefs work industriously to minimize risk and to promote positive experiences for their child even in the presence of multiple stressors (Elder, 1995), those parents feeling lonely and depressed may more easily feel non-efficacious and give up trying (Cutrona & Troutman, 1986).

According to Bogenschneider, Small, and Tsay (1997), adolescents whose parents have strong PSE have fewer behavioural problems, such as delinquency or substance use, and better adjustment. PSE has also been related, both directly and indirectly, to a child's social interaction, self-regulation, self-worth, anxiety, and self-efficacy (see, Jones & Prinz, 2005). Swick and Hassell (1990) found that parents with strong parental efficacy, consisting of a locus of control and interpersonal support, have a more positive influence on their children's social competence than parents who lack these efficacy indicators.

Indeed, Jones and Prinz (2005) review the relations of PSE with different areas of child adjustment and conclude that PSE has been linked both directly and indirectly to a child's psychological adjustment. However, they raise the concern that PSE and child behaviour have both often been measured via parental reports. Thus, it is not clear whether these documented relations are more a reflection of the parental perceptions of child behaviour and are thus possibly affected by parental self-doubt about their

parenting efficacy. Nevertheless, children presumably learn beliefs about their own self-efficacy, self-worth and the principles of social behaviour by listening to and watching their parents (Jones & Prinz, 2005).

Concerning academic achievement, there are only a few studies supporting the idea of a direct relationship between PSE and a child's academic success (Ardelt & Eccles, 2001; Bogenschneider et al., 1997), with some other studies supporting the notion of an indirect link, for example via parental involvement, monitoring, and aspirations (e.g., Hoover-Dempsey, Battiato, Walker, Reed, DeJong & Jones, 2001; Shumow & Lomax, 2002; Wentzel, 1998). Still, the effect sizes concerning the relationship between PSE and child academic achievement have been small in magnitude (Jones & Prinz, 2005).

However, extensive research evidence supports the idea that early parenting practices, particularly parental affection and control styles, are related to children's cognitive performance and achievement in school as well as to their socio-emotional adaptations and motivational patterns (see, Crittenden & DiLalla, 1988; Gardner, 1989; Maccoby, 1992). For example, maternal sensitivity, responsiveness, emotional warmth and limit-setting tend to promote children's academic performance and motivational autonomy (Salonen et al., 2007; Skinner & Edge, 2002). Therefore, it is feasible to expect that important associations between parenting self-efficacy beliefs and children's motivational orientations exist (cf. Hoover-Dempsey & Sandler, 1997; Maccoby, 1992; Salonen et al., 2007; Spera, 2005; Vauras, Salonen, Lehtinen & Lepola, 2001).

Intergenerational transmission of loneliness.

There exist few previous studies that have addressed the issue of loneliness between mothers and fathers. Among these, a study by Henwood and Solano (1994) found no correlation between mothers' and fathers' loneliness. However, in the studies by Lobdell and Perlman (1986) and Sadava and Metejcic (1987), the correlations were statistically significant, albeit rather low (.28 and .30). R ih , Junttila, Aromaa, and Ahlqvist-Bj rkroth (2008) studied the loneliness of pregnant mothers' and their spouses and found a significant, yet again not very high (.35) correlation.

The hypothesis that there may be an intergenerational transmission of loneliness can be tested by looking for correlations between the loneliness of parents' and their children. Henwood and Solano (1994) found a significant correlation between the loneliness of mothers and their children, but not between fathers and their children. Lobdell and Perlman (1986) found a similar association between children and their mothers' loneliness; moreover, they also reported a significant correlation between the loneliness of children and their father. Both of these studies evaluated the children's loneliness as a global phenomenon rather than distinguishing between social and emotional loneliness.

In a pioneering study of the heritability of loneliness, McGuire and Clifford (2000) found a significant genetic contribution (55% and 48%) to individual differences in

loneliness. However, the etiology of genetic contributions was not examined, and the authors of the study proposed several causal possibilities for the heritability of loneliness, e.g. genetic contributions to negative emotionality, social withdrawal and depression. Due to unique environmental effects, they also proposed the need to examine extra-familial experiences, such as supportive versus unsupportive peer networks. A study by Boomsma et al. (2005) came to the same conclusion that significant genetic contributions were found to add to an adult's loneliness (48 %). According to their study, individual differences in loneliness reflect the expression of multiple genes, which operate similarly in both males and females. Solomon (2000) has suggested that if a child is raised in a socially isolated family, the risk of the child becoming chronically lonely may increase significantly. A socially detached family will not actively enhance the child's social growth by promoting and guiding acceptable behaviours or by modelling patterns of social interaction (cf. Lawhon, 1997). Since children readily acquire their parents' interpersonal behaviours (East, 1991), intergenerational cycles of loneliness may be shaped (e.g. Bullock, 1993).

To summarise, the above research implies that there may be several mechanisms transmitted from parents, and later reinforced by peer relations contributing to children's loneliness. Genetic factors, such as temperament or a tendency to depression (McGuire & Clifford, 2000) may act as a trigger for, or create sensitivity to, certain environmental influences, as well as for family and peer interaction patterns, including attachment relationships (Berlin, Cassidy & Belsky, 1995; Bogarts, Vanheule & Desmet, 2006), or for peer rejection and isolation (cf. Asher & Wheeler, 1985; Boivin & Hymel, 1997).

1.4. Scale development and validation

While trying to capture and evaluate the phenomenon of such socio-emotional behaviour as social competence or loneliness, it is integral to find the underlying theoretical construct, or the latent variable of these phenomena (De Vellis, 1991). In order to do so, we first have to search through the existent theory and build up a hypothetical content of the current phenomenon. For example, for social competence we have to make an assumption of the possible items indicating children's social competence, collect data with these hypothesized items and execute a series of *confirmatory factor analyses* in order to examine whether the data supports the idea of the content of the phenomenon. In most cases (and like in the article 1), researchers first gather and pretest data with a more extensive measurement scale and after running *exploratory factor analysis* and inter-item correlations, modify the scale in order to collect the actual data with more accurate and concise scale.

Therefore, these two factor analysis methods are used to examine the goodness of the scales used in this study. The exploratory factor analysis (EFA) is used to explore the underlying latent variables (such as co-operating skills and empathy for prosocial

behaviour). Confirmatory factor analysis (CFA) is used to confirm the hypothesized factor structure (e.g. De Vallis, 1991; Miettunen, 2004; Little, in press; Little, Lindenberger & Nesselroade, 1999).

The goodness of the scale is being evaluated by *measurement validity* and *measurement reliability*. These are the two important and distinct parts of the overall research validity, and thus the quality of the whole study (Gliner, Morgan & Harmon, 2001). Whereas reliability refers to the consistency of the scores measured with the test, validity refers to its ability to truly measure the underlying phenomenon or construct that it was designed to measure (Carmines & Zeller, 1979; Gliner et al., 2001; Kline, 1993; Morgan, Gliner & Harmon, 2001; Rust & Golombok, 1999).

Measurement validity

Sufficient measurement validity is the most important characteristic of a measurement scale. Even if a scale has high reliability, it may not necessarily be valid. In other words, while a scale may produce consistent results time after time, it does not measure what it was intended to measure (Morgan et al., 2001; Rust & Golombok, 1999). For example, a loneliness scale can include items that are not indicators of loneliness but are instead indicators of some other close phenomenon such as social anxiety, withdrawal, shyness or low self-esteem.

Several types of measurement validity used for different kinds of research purposes exist. It is meaningless to go through them all here, so I will concentrate on 1) content validity, 2) concurrent validity, 3) divergent validity, and 4) discriminative validity, as these best serve the aims of this dissertation.

Content validity refers to the measurement scales ability to capture all the major aspects of the phenomenon being evaluated. For example, the question for loneliness is whether the factors of social and emotional loneliness cover all dimensions of the constructs of loneliness. Naturally, no statistical test exists that could be used to either confirm or reject the requirements of content validity. Therefore, the process of establishing content validity begins with a definition of the concept it is attempting to measure. However, through the accurate process described above – literature review; hypothesis building; item generating; and item reducing or including by pretests, expert views and factor analysis (EFA & CFA) – a content validity can be presented for a reader to review. (Carmines & Zeller, 1979; Morgan et al., 2001; De Vallis, 1991; Rust & Golombok, 1999).

Concurrent validity can be seen as an aspect of criterion-related validity (Morgan et al., 2001). Criterion-related validity refers to comparing the developed measurement scale against some outside criterion used as a “gold standard”. The concurrent validity refers particularly to the co-variation or concurrence of the results with the results of another psychometrically valid test. Thus, if the measurement scale’s scores correlate with the earlier, valid test, the new scale can be considered to have concurrent validity.

In contrast, if the scale's correlation with another test is low, it is possible to argue that *divergent validity* exists and these two measurement scales, for example loneliness and social competence scales, measure different phenomena (De Vellis, 1991; Ranta, 2008).

The third main category of measurement validity type is *construct validity* (Morgan et al., 2001). Construct validity is probably the most complex type of measurement validity since the constructs (e.g. loneliness or social competence) are hypothetical concepts that cannot be observed directly. However, despite the fact that these constructs cannot be observed directly, it is possible to observe the behaviour patterns (e.g. co-operating with others) and outcomes (having friends) inferred to belong to the particular constructs. While measuring children's social competence for example, the aim is to find out the individual patterns of social competence for each of the children being evaluated. For that purpose it is necessary to have a scale with sufficient *discriminative validity*. The discriminative validity refers particularly to the test's ability to discriminate between subjects with different behaviour patterns, for example the test's ability to distinguish between children with impulsive behaviour and those with disruptive behaviour (De Vellis, 1991; Morgan et al., 2001; Ranta, 2008).

Measurement reliability

Measurement reliability refers to the consistency of scores on the measurement scale (inter-item correlation) which, in comparison to measurement validity, is relatively easy to obtain and report. However, it is important to realize that it is not possible to state that a measurement scale is in itself reliable without taking into account the present sample. For example, a loneliness scale can have sufficient reliability for the American sample, but because of the cultural differences or measurement conditions, it may be inconsistent for the sample of Finnish children. Therefore, when this kind of measurement scale is developed with different samples, it is important to make sure it also has sufficient reliability with one's own data. (Carmines & Zeller, 1979; Gliner et al., 2001, Kline, 1993). For the purposes of this dissertation, I will focus on two of the most common and widely used types of measurement reliability – internal consistency reliability and the test-retest reliability.

Internal consistency reliability refers to the homogeneity of the items comprising a measurement scale, that is, how highly they correlate to one another (De Vellis, 1991). The most commonly used method (if the items are continuous) to test the internal consistency is to calculate Cronbach's alpha (Cronbach, 1951). However, one of the problems with Cronbach's alpha is that the coefficient is directly related to the number of items belonging to the calculated composite score. In other words, the more items there are the higher the alpha rises (Gliner et al., 2001). Therefore, it is important to consider the amount of items while comparing Cronbach's alpha coefficients.

Test-retest reliability (also referred to as a coefficient of stability) refers to the stability of the scores over time. If the scores obtained from consecutive measurement points are highly correlated, the test-retest reliability is considered to be sufficient. The common way to calculate this is to use Spearman's correlation (r). The values $> .07$ are considered to indicate sufficient test-retest reliability (Gliner et al., 2001).

However, it is important to notice, depending on the sample and the length between the measurement times, that low test-retest reliability may also be an indicator of developmental change. This is especially the case when studying children or adolescents, as it is generally expected that their behaviour and skills change through the natural age-related development.

2. Aims and Methods of the Present Study

2.1. Main aims

The general objective of this dissertation is to study children's and adolescents' social competence and loneliness during their school years. The main aim is to develop and validate reliable measurement scales in order to identify the signs and developmental pathways of children's and adolescents' social competence as protective, and loneliness as a risk factor. The intention is to search out family basis, consistency, stability and interrelations of social competence and loneliness. The detailed aims of this dissertation are presented below with reference to the original articles.

1. The first aim is to develop and validate measurement scales for children's social competence and children's and adolescents' loneliness. Because social competence is a phenomenon depending on the context and the evaluator, the aim is to develop a multisource assessment scale, which can be used for self, peer, teacher, and parent evaluations (article 1). In contrast, loneliness is a subjective feeling and thus inaccessible for the others to evaluate. Therefore, the aim is to use consecutive self evaluations in order to examine the validity, reliability, and long-term stability of social and emotional loneliness among children (article 3) and adolescents (article 4).
2. The second aim is to examine the interrelations between these two main phenomena and further on, their consequences to children's motivational orientation and academic achievement (articles 2 and 3), and adolescent social anxiety and social phobia (article 4).
3. The third aim is to examine the possible direct or indirect intergenerational transmission of children's loneliness. This transmission is first studied within families (article 2) and then in more detail between mother-daughter, mother-son, father-daughter, and father-son dyads (article 3).

2.2. Research projects and participants

The three first articles in this dissertation are conducted based on data from elementary school children and their peers, teachers and parents involved in the Quest of Meaning research project. The fourth article was conducted based on data from the Socio-Emotional Learning and Well-Being in Lower Secondary School research project. Below are short descriptions of these research projects and their participants.

Quest of Meaning – Transactional Strategy, Self-Regulation, and Motivation Training in Reading Comprehension and Mathematics in Elementary School (2000-2004).

The general objective of this project led by Professor Marja Vauras and supported by the Academy of Finland¹, was to construct and to examine methods and strategies for enhancing the quality of educational practises in elementary schools and in psychological rehabilitation centres. Thus, the project aimed to improve solutions for reasonably early prevention of personal and societal risks related to severe and manifold learning problems. The project also aimed to examine the complex developmental relationships between cognitive, motivational, emotional and social competence, and family-related factors in the formation of children's social and academic competence.

Participants. The 15 elementary schools participating in this project were from small urban towns and rural communities in southern Finland. The sample consisted of two consecutive cohorts of fourth-grade students from both mainstream and special education schools as well as their teachers and parents. The number of mainstream education girls (n = 222 in the first and 224 in the second cohort) and boys (n = 224 in the first and 221 in the second cohort) were about the same. In the sample of special education children, the number of boys (n = 48 in the first and 24 in the second cohort) was higher than the number of girls (n = 13 in the first and 9 in the second cohort). The mean age of the mainstream children in the first cohort was 10 years and 5 months (sd 6.1 months), and 10 years and 2 months (sd 6.4 months) in the second cohort. The mean age of the special education children was 11 years and 6 months (sd 13.4 months) for the first cohort, and 10 years and 10 months (sd 9.1 months) for the second cohort.

Socio-Emotional Learning and Well-Being in Lower Secondary School (2006-2013).

The research project led by Professor Päivi Niemi is a multidisciplinary collaboration between researchers in the fields of psychology, medicine, educational and social sciences. The main goals of this longitudinal research project are: 1) to analyse the course of developmental pathways and interactions in the physical, emotional, social and cognitive domains of development in 13- to 15-year-old adolescents, 2) to detect both individual and contextual (family, school, peer networks) predictors of developmental pathways and 3) to explore the effects of an intervention (Permanent Small Groups

1 The Quest of Meaning project was supported by Grant 47369 from the Council of Cultural and Social Science Research, The Academy of Finland.

Model, PSG – A school development project²) aiming to enhance positive atmosphere, feelings of school-connectedness, collaborative learning and socio-emotional well-being in lower secondary school.

Participants. The target groups of the study were two age cohorts (13-year-olds) at two schools in a municipality in southern Finland. The number of adolescents in the two cohorts was altogether 458 (N = 222; N= 236) of whom 386 (190 from the first and 196 from the second cohort) participated in the study. The number of girls (n = 94 in the first and 95 in the second cohort) and boys (n = 96 in the first and 101 in the second cohort) was about the same.

2.3. Measurements

One aim of this dissertation is to develop and adapt measurement scales for researchers and professionals to screen out and examine the social competence and loneliness of elementary and lower secondary school students. Therefore, in the next section a focused and detailed description of the contents of the scales being used in this dissertation is presented. A summary of the measurement scales and their factor structures, reliability (Cronbach's alphas in order to present the internal consistency) and validity estimates (CFA fit indexes in order to present the content validity) is presented in Appendix 1. While reading the CFA fit indexes, one should keep in mind the typical error of the chi-square estimates. This test tends to reject the models with large sample sizes and is therefore sometimes considered to be unreliable with large (over n=500) sample sizes (Bentler & Bonett, 1980; Ullman, 2001). Therefore, relative goodness of fit indices is presented. The content of these estimates, as well as their advisable limits, are presented in the next chapter (2.4 Statistical analyses / Confirmatory factor analysis). It is also important to notice that for constructs with just a few items, Cronbach's alpha coefficient tends to be extremely low (Gliner et al., 2001). Therefore, these two kinds of estimates should be compared and observed not only in relation to the traditional limits but also in relation to each other, the presented sample size and the amount of the items belonging to each construct. All of these are presented in the Appendix 1.

Next, the scales are briefly described in respect to their original versions as well as their translation and modification processes. A summary of the measurements, time points and sample sizes is presented in Table 1.

Multisource assessment of children's social competence (MASCS). The MASCS was developed in article 1 on the basis of The School Social Behavior Scales (SSBS) by Merrell and Gimpel (1998). The SSBS is an instrument used by teachers to assess social

2 PSG-model is based on Goldinger's (1984) "family groups" model originally developed for elementary school pupils. In this model, adolescents study together different subjects in permanent small groups of 4-6 students during the 7th and 8th grades. The groups are heterogeneous in terms of gender, school achievement and temperament (Niemi, Asanti & Seppinen, unpublished manuscript).

behaviour in educational settings. It has two major scales and three subscales within each of the major scales. The subscales concern interpersonal skills, self-management skills, academic skills, hostile-irritable behaviour, antisocial-aggressive behaviour, and disruptive-demanding behaviour. Each of the 65 items is to be rated on a scale from 1 (never) to 5 (frequently).

The items of the SSBS were translated into Finnish. The wording of some of the items was changed in order to make them accessible for all raters; simplified wording was particularly needed so that the items were more comprehensible for the children. Because the aim was to construct a measurement scale that did not require much time per child, especially for the peer and the teacher ratings, the number of items were reduced. For the preliminary version of the instrument, 35 of the SSBS items were chosen based on their representation of prosocial and antisocial behaviour.

The translated and modified items were pre-tested with peer and self-ratings of 71 children in grades 3, 4, and 5. The questionnaire was formatted as a table, with items as rows and the names of the children in the classroom as columns. To further reduce the number of items included in the final questionnaire, 16 items were chosen based on the pre-test results. These were in equal numbers for prosocial and antisocial behaviour. The rating scale was changed to a 4-point scale: 1 = never, 2 = rarely, 3 = frequently, and 4 = very frequently, because the children tended to use the midmost number when evaluating their peers.

Finnish version of the peer network and dyadic loneliness scale. To assess children's (in articles 2 and 3) and adolescents' (in article 4) social and emotional loneliness, a translated and modified version of the Peer Network and Dyadic Loneliness Scale (PNDL) by Hoza et al. (2000) was used. The scale measures loneliness as associated with a lack of involvement in a social network and the absence of close dyadic friendships. These are basically the two main dimensions that Weiss (1973) brought up, and are later defined as social and emotional loneliness.

The participants rated their own feelings of loneliness against paired statements such as, "Some students feel like they really fit in with others BUT some students don't feel like they fit in with others" for social loneliness, and "Some students don't have anybody who is really a close friend BUT some students have someone who is a really close friend". Respondents were first asked to select which of these two types of students they were most like, and then to specify whether the chosen description fitted her/him "very well" or "quite well". Item scores varied between 1 (very low loneliness) to 4 (very high loneliness) (Hoza et al., 2000).

Social anxiety scale (SAS-A). Adolescent social anxiety was measured in article 4 by the Social Anxiety Scale for Adolescents (SAS-A) (La Greca & Lopez, 1998; Finnish version: Ranta, Niemi and Uhmavaara, 2006). The scale includes three factors measuring adolescents' Fear of Negative Evaluation (e.g., "I am afraid that others will not like me"),

Social Avoidance and Distress in General (e.g., “It is hard for me to ask others to do things with me”) and Social Avoidance and Distress in New Situations (e.g., “I worry about doing something new in front of others”). The item scores varied between 1 = not at all (true for me), 2 = hardly ever, 3 = sometimes, 4 = most of the time, 5 = all the time.

Social phobia scale (SPIN). To measure adolescents’ social phobia in article 4, we used the Social Phobia Inventory (SPIN) (Connor, Davidson, Churchill, Sherwood, Foa & Weisler, 2000; Davidson, 2000; Finnish version: Ranta, Kaltiala-Heino, Koivisto, Tuomisto, Pelkonen & Marttunen, 2007a; Ranta et al., 2007b). The original scale had 17 items and three subscales: Fear in Social Situations (e.g., “Being criticized scares me a lot”), Avoidance of Performance or Social Situations (e.g., “I avoid talking to people I don’t know”) and Physiological Discomfort in Social Situations (e.g., “I am bothered by blushing in front of people”). However, in a Finnish sample of 12- to 17-year-old adolescents from the general population, the one-factor solution was preferred over this three-factor solution (Ranta et al., 2007a; Ranta et al., 2007b). Therefore, for the purposes of this dissertation the one-factor solution was also tested. The item scores varied between 1 (indicating no symptoms of social phobia) and 5 (indicating strong symptoms of social phobia).

Teacher evaluations of the children’s motivational orientation. The participating teachers evaluated children’s motivational orientation (in the article 2) on a Motivational Orientation Scale for Children developed by Salonen, Kajamies, Vauras, Kinnunen and Junttila (unpublished manuscript). The teachers’ evaluations were used in order to study the children’s generalized ways to behave in learning situations. Those teachers that have been able to observe a child’s behaviour for a long time and within different situations seem to be the best source for evaluating these generalized behaviour tendencies. The theoretical and empirical work for the scale being used can be found in Salonen et al., (1998) and Vauras, Salonen, Lehtinen & Kinnunen (2009).

The scale included 30 items measuring children’s: 1) task orientation, 2) social dependence orientation, 3) ego defensive externalizing orientation, and 4) ego defensive internalizing orientation. Task orientation refers to a behaviour targeted at mastering a task with the purpose of learning (e.g. “tries to solve problems independently”). Social dependence orientation refers to gaining approval and to complying with expectations (e.g. “tries in different ways to get the teacher give glues”. Ego defensive orientation in a learning situation is dominated by self-protecting motives. This self-protecting behaviour can manifest itself as externalizing; “fooling around”, exaggerating behaviour (e.g. “inappropriate outburst”), or as internalizing; withdrawal, apprehensive behaviour (e.g. “is retiring and avoids social contact”). The rating scale was a 5-point scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = very frequently.

Reading and mathematical skills. Reading abilities were assessed in article 2 using a Finnish Standardized Reading Test for elementary school children (Lindeman, 1998). In the decoding test, the task was to identify as many words in long continuous word chains as possible within the period of 3 minutes and 30 seconds. In the reading comprehension test the children were given two narrative texts and twelve multiple-choice questions in reference to the texts they had read. The mathematical skills of the children were assessed through two time-limited tests. One (Räsänen, 2004) assessed how well children understood number relationships, and the other assessed how well the children knew the basic arithmetic operations (Räsänen, 1993; Räsänen & Koponen, 2005).

Parent's loneliness (UCLA). For the purposes of articles 2 and 3, the mothers and fathers completed a measure of their own loneliness using a translated and modified version of the Revised UCLA Loneliness Scale by Russell, Peplau & Cutrona (1980). The UCLA Loneliness Scale is widely used and has well-established reliability and validity in different contexts (see Allen & Oshagan, 1995; Cuffel & Akamatsu, 1989; Hojat, 1982; Lasgaard, 2006; McWhirter, 1990b; Pretorius, 1993; Vassar & Crosby, 2008). The Finnish version of this scale included 10 items, such as, "I feel isolated from others", and "There are people I feel close to". Mothers and fathers rated separately how well the items described their own feelings on a scale of 1 (very well) to 6 (not at all).

Parenting self-efficacy scale (PSE). For the purposes of article 2, a modified version of the Self-Efficacy for Parenting Tasks Index (SEPTI) by Coleman and Karraker (2000) was applied. The scale has five subscales that are designed to assess parents' sense of competence at: 1) facilitating a child's achievement in school, 2) supporting a child's need for recreation including socializing with peers, 3) provision of structure and discipline, 4) provision of emotional nurture, and 5) maintenance of a child's physical health. Based on the principle components factor analysis, several items did not load on the intended factors, so they decided to use the scale as a global estimate of parenting self-efficacy, instead of using the subscale scores.

In addition to the original measurement, we included similar scales for both mothers and fathers. Moreover, our result indicated a different factor structure consisting of 1) Nurturance (e.g. "I am definitely an adequately nurturing mother/father"), 2) Discipline (e.g. "It is difficult for me to decide on appropriate rules for my child"), 3) Recreation (e.g. "I take good care that my child has a variety of recreational experiences"), and 4) Participation (e.g. "I get easily frustrated while helping my child with her/his school work"). Each of the items were rated on a 6-point scale (1 = strongly agree, 6 = strongly disagree).

Table 1. Summary of the measurements, time points and sample sizes

Measurement scale	4 th gr. autumn	4 th gr. spring	5 th gr. autumn	7 th gr. autumn	7 th gr. spring	8 th gr. autumn
<i>Multisource assessment of social competence scale (MASCS)</i>						
Self evaluations	n=963					
Peer evaluations	n=974					
Teacher evaluations	n=974					
Parent evaluations	n=889					
<i>Finnish version of the peer network and dyadic loneliness scale (PNDL)</i>						
Self evaluations	n=981	n=943	n=930	n=381	n=186	n=181
<i>Social anxiety scale for adolescents (SAS-A)</i>						
Self evaluations				n=381	n=186	n=181
<i>Social phobia inventory (SPIN)</i>						
Self evaluations				n=381	n=181	
<i>Motivational orientation scale for children</i>						
Teacher evaluations	n=974					
<i>Reading and mathematical skills</i>						
ALLU - Decoding skills and reading comprehension	n=976					
LULA – understanding of number relationships	n=973					
RMAT – basic arithmetic operations	n=973					
<i>Finnish version of the revised UCLA loneliness scale</i>						
Mothers' self evaluations	n=834					
Fathers' self evaluations	n=661					
<i>Parenting self-efficacy scale (PSE)</i>						
Mothers' self-evaluations	n=834					
Fathers' self evaluations	n=661					

Note: Elementary school children's data was collected within the Quest for Meaning research project (Vauras), and lower secondary school adolescents' data within the Socio-emotional Well-Being and Learning in Lower Secondary School research project (Niemi).

2.4. Statistical analyses

The summary of the data collection and statistical analyses in respect to the original empirical studies and their main aims is presented in the Table 2. Below, I will briefly describe the main statistical analyses used in this dissertation.

Confirmatory factor analysis (CFA)

Confirmatory factor analysis, a specific case of structural equation models, tests the adequacy of the specified relations whereby indicators are linked to their underlying constructs (Kline, 1998; Little, in press; McCallum & Austin, 2000). In contrast to

exploratory factor analysis, which does not place strong a priori restrictions on the structure of the model being tested, CFA requires the researcher to specify both the number of factors and the specific pattern of loadings for each of the measured variables. Therefore, CFA models provide strong evidence regarding the validity of a set of measured variables, and thus allow tests among a set of theories about measurement structures (Curran, West & Finch, 1996).

For the purposes of this dissertation, CFA models were used to examine the factor structure and validity of 1) *social competence scale* (separately for self, peer, teacher, and parent evaluations in article 1), 2) *loneliness scales* (separately for children in article 3, for adolescents in article 4, and for mothers and fathers in article 2), 3) *social anxiety scale* (in article 4), 4) *social phobia scale* (in article 4), 5) *motivational orientation scale* (in article 2), and 6) *parenting self-efficacy scale* (in article 2).

The analyses were performed on the covariance (or correlation in article 2) matrices from each sample using a maximum likelihood or maximum likelihood robust estimation method with Lisrel 8.30/8.70 (Jöreskog & Sörbom, 1999/2004) and/or Mplus 4.1 (Muthen & Muthen, 2006). In all cases, factors were allowed to correlate and errors were assumed to be uncorrelated. The fit of the models was evaluated using chi-square, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), also known as Non-Normed Fit Index (NNFI), and the Standardized Root Mean Square Residual (SRMR). Chi-square measures the distance between the sample covariance matrix and the fitted covariance matrix. RMSEA is a measure of discrepancy per degree of freedom (Steiger, 1990). According to Hu and Bentler (1999), a cut-off value of close to .06 for RMSEA indicates a good fit. The CFI indicates how much better the model fits than the independence model. The index varies between 0 and 1, and the value should be close to .90 for the model to be suitable (Bentler, 1990). However, according to Little, Card, Preacher and McConnell (2009), the values between .85 and .90 are considered to be mediocre. Also the TLI (NNFI), developed by Tucker and Lewis (1973), indicates how much better the model fits than the independence model. The index varies between 0 and 1, and the value should, according to Hu and Bentler (1999), be close to .95 for the model to be suitable. The Standardized Root Mean Square Residual (SRMR) is the average of the standardized residuals between the observed and the predicted covariance matrix; a cut-off value of close to .08 indicates a good fit (Hu & Bentler, 1999).

Since CFA models are the “measurement models” which constitute the basis for the longitudinal CFA models as well as all other structural equation models with latent variables, the models that were first confirmed were used for the other analyses for this dissertation. The factor structures and goodness of fit indexes for all the measurement scales are presented in Appendix 1. Further on, the fit indexes presented above were used for the following analyses.

Invariance testing between different samples

In order to test the equality of factor patterns of the social competence scale for the two consecutive cohorts in the article 1, a sequence of four increasingly restrictive models was constructed (cf. Breckler, 1990). In the first model the structure was qualitatively the same for both cohorts, but all parameters were completely free. In this kind of *unrestricted model*, all the parameters may have different values across the cohorts. In the second model, *the factor pattern was restricted to be equal for both cohorts*. In the third model all *factor variances and co-variances between factors were restricted to be equal for the cohorts*. Finally, the fourth model was a *fully restricted model*, in which all model parameters, including error variances and co-variances of the items, had the same value for both cohorts.

Longitudinal confirmatory factor analysis and stability testing

The longitudinal CFA models can be used to for a number of longitudinal as well as validity-focused research purposes. According to Little (in press) and Little, et al., (2009), the longitudinal CFA can be used in order to answer: 1) are the measurements of each construct factorially invariant across measurement occasions, 2) how stable are the cross-time relations of the constructs, 3) how stable are the with-in time relations among the constructs, 4) have the constructs' variances changed over time, and 5) have the constructs' mean levels changed over time.

For this dissertation the longitudinal CFA was used in articles 3 and 4. In article 4 the aim was to analyse the stability of adolescents' loneliness (two-factor model), social anxiety (three-factor model), and social phobia (one-factor model). These would be measured three times within one year, starting at the beginning of lower secondary school. Stability and invariance of each subscale (social loneliness, emotional loneliness, fear of negative evaluation, social avoidance and distress in new situations, social avoidance and distress in general, social phobia) within each measurement scale (loneliness, social anxiety, social phobia) was tested with longitudinal confirmatory factor analysis by using three differently restricted models. The first model was the *baseline model with configural invariance*. The error autocorrelations were included wherever needed. For the second model the *invariance of the factor loadings* were added by fixing the corresponding loadings to be equal in each time points. For the third model also the *interrelations between the consecutive latent variables were modelled as autoregressive paths* (Little, Preacher, Selig & Card, 2007). In this type of stability model the only exogenous factor to the consecutive one is the previous one. The difference in the fit of consecutive models was calculated with a chi-square difference test using scaling correction for the robust maximum likelihood method (Satorra & Bentler, 1999).

For article 3, in order to examine the stability of the social and emotional loneliness of girls and boys, a longitudinal factor analysis with grouping for girls and boys was conducted. Similar to the procedure in article 4, the invariance of the factor loadings

was included in the model by fixing the corresponding loadings to be equal at each time point. The error autocorrelations were included when needed.

Structural equation modelling (SEM) with latent and second order latent variables

Latent variables (e.g. social competence and loneliness) are theory-based hypothetical constructs that can not be directly measured. However, by confirming latent variables with the CFA procedure described above, we can go on and study their relations. Compared to more traditional regression analysis or path analysis, SEM with latent variables tends to reduce the overall effect of measurement error of any individually observed variable because the latent constructs are represented by multiple measured variables that serve as indicators of each construct (Kline, 1998; MacCallum & Austin, 2000).

For the purposes of this dissertation, SEM models were used in article 2 (to analyse the relationships between parents' loneliness, parenting self-efficacy, and their children's peer evaluated social competence, self evaluated loneliness, teacher evaluated motivational orientation and academic skills), article 3 (to analyse the relationship between mothers' and fathers' loneliness to their daughters' and sons' co-operating skills and social and emotional loneliness), and article 4 (to analyse the relationships between adolescents' loneliness, social anxiety and social phobia).

Contrary to articles 2 and 3, in article 4 the interrelations between the constructs were analysed with a *second order latent variable structural equation model*. This means that the latent variables (e.g. social and emotional loneliness in the loneliness scale) resultant by the confirmatory factor analyses were further modelled to constitute a second order latent variable (loneliness) (Kline, 1998). Further on, the interrelations between these second order latent variables (loneliness, social anxiety, and social phobia) were tested by using SEM. Due to the considerable amount of parameters to be estimated versus the sample size, the analyses were executed separately within the measurement points.

Table 2. Summary of the data collection and data analysis

Article	Participants	Main aims	Data sources and measurement scales	Analysis
<i>Article I Multisource assessment of the children's social competence</i>	Two consecutive cohorts of elementary school (4th grade) children (n=507; n=478).	To construct a relatively short and practical measurement instrument of children's social competence taking into account the perspectives of self, peers, teachers, and parents.	Self-, peer-, teacher- and parent evaluations of children's social competence (MASCs)	Confirmatory factor analyses for separate evaluators, scale invariance testing between cohorts.
<i>Article II The role of parenting self-efficacy in children's social and academic behaviour</i>	Mothers (n=430), fathers (n=335) and their 10 year old children.	To study the relationships between parents' loneliness, parenting self-efficacy and their child's social competence, loneliness, motivational orientation and academic skills.	Questionnaires (UCLA, SEPTI) for mothers and fathers, peer evaluations of children's social competence (MASCs), self-evaluations of children's loneliness (PNL), teachers evaluation of children's motivational orientation (MOSCS) and validated test series for children's mathematical and linguistic skills.	Confirmatory factor analysis, structural equation modelling with latent variables (parents' loneliness, parents' parenting self-efficacy, children's peer evaluated social competence, loneliness, teacher evaluated motivational orientation, academic skills).
<i>Article III Loneliness of school-aged children and their parents</i>	Elementary school children (n=981), their mothers (n=834) and fathers (n=661).	To analyze the existence and stability of, and gender differences in, fourth and fifth grade children's social and emotional loneliness and further on, to analyze the either direct or indirect relationship between the loneliness of mothers' and fathers' and the loneliness of their daughters' and sons'.	Measurement scales for mothers and fathers loneliness (UCLA), children's loneliness (PNL) and peer evaluated co-operating skills (MASCs).	Longitudinal confirmatory factor analysis and stability testing, structural equation modelling with latent variables (mothers' and fathers' loneliness, children's co-operating skills, social loneliness and emotional loneliness), multigroup analysis.
<i>Article IV Modelling the interrelations of adolescents' loneliness, social anxiety and social phobia</i>	Two consecutive cohorts of lower secondary school (7 th to 8 th grade) adolescents (n=190; n=196).	To analyze the validity and reliability of the measurement scales assessing adolescents' loneliness, social anxiety and social phobia in three consecutive measurement points, and to analyze the interrelations between these phenomena.	Measurement scales to assess adolescents loneliness (PNL), social anxiety (SAS-A) and social phobia (SPIN).	Longitudinal confirmatory factor analysis, stability and invariance testing, structural equation modelling with latent variables (loneliness, social anxiety, social phobia).

3. An Overview of the Empirical Studies

This dissertation consists of four empirical studies, of which three focus on elementary school children's social competence, loneliness, academic behaviour and on the impact of parental behaviour. The fourth study focuses on loneliness, social anxiety and social phobia of lower secondary school adolescents. For all of these studies, the importance is on developing and validating reliable and practical measurement scales in order to identify the signs and developmental pathways of children's and adolescents' socio-emotional well-being, especially social competence as a protective, and loneliness as a risk factor. The motive was to search out the family basis, stability over time, and the interrelations and consequences of these elements.

Study I. Junttila, N., Voeten, M., Kaukiainen, A., & Vauras, M. (2006). MULTISOURCE ASSESSMENT OF CHILDREN'S SOCIAL COMPETENCE. *Educational and Psychological Measurement*, 66, 874-895.

According to Semrud-Clikeman (2007) and Renk and Phares (2004), it is prudent to gather information of children's social competence in a multimodal manner since there exist several factors including age, gender, ethnicity, skills or personality traits either in the person being rated or in the person rating the other. This can affect the resultant ratings (see also Epkins, 1996; Halpern, 1997; Tarullo, et al., 1995; Waters & Sroufe, 1983). When information from multiple sources is integrated, a more complete and accurate picture of person can be constructed. In the school context self, peer, teacher, and parent ratings are especially relevant. However, most studies on children's social competence have adopted the perspective of only one or two of these types of raters.

Therefore, the main purpose of this study was to construct a relatively short and practical measurement instrument of children's social competence by taking into account the perspectives of relevant social agents: the self, peers, teachers, and parents. Such a short instrument should be useful for screening children's social competence during their school years.

The sample (n=985) consisted of two consecutive cohorts of fourth-grade (mean age 10 years and 3 months) students from mainstream and special education schools, as well as their teachers and parents. Researchers collected the peer ratings and the self-ratings during a normal classroom lesson. Teachers were given the questionnaire in the same format as the one used for peer ratings and self-ratings. One or both of the parents filled in the questionnaire concerning their child at home and returned it to the school. The peer ratings were averaged to obtain one rating for each child from his or her peers in the classroom.

The findings of the confirmatory factor analysis supported a four-factor solution consistent with two main dimensions (Prosocial and Antisocial). These were each divided

into two sub-dimensions (Co-operating Skills, Empathy, Impulsivity, and Disruptiveness). Within the Prosocial dimension, Co-operating skills are needed to relate and function within a variety of situations, whereas Empathy is more of an ability to show and effectively communicate positive feelings and emotions with others. Within the Antisocial dimension, the Impulsivity reflects more unintentional and undirected misbehaviour whereas disruptiveness is directed at other people with often the deliberate intentions of harming or annoying others.

The resultant model was cross-validated with the second sample. The fit indexes implied that the factor patterns were invariant for the two samples. The correlations between the four social agents were statistically significant, albeit quite low, indicating that the different sources tend to provide divergent pictures of a child's social competence. Therefore, for a comprehensive view of a child's social competence, it is necessary to either take all four perspectives into account or to make a careful choice as to which of the perspectives are relevant for the given social context and the purpose of the study.

Finally, the differences between mainstream and special education children as well as between girls and boys were analysed. For prosocial behaviour, the means of children in mainstream education were all higher than the means of children in special education schools. For antisocial behaviour, the means were higher for special education children than for children in regular schools, but these differences were not statistically significant when evaluated from the perspective of the parents. The effect sizes for these differences were higher for antisocial than for prosocial factors, except with parent ratings. From the perspective of parents, differences between mainstream and special education exist only in prosocial, not in antisocial behaviours. The average scores of girls were higher on the prosocial dimension and lower on the antisocial dimension than those of boys for all four types of raters. The effect sizes between the girls and boys were much higher when using peer and teacher ratings than when using self ratings or parent ratings. From the latter two perspectives, only small effect sizes were obtained.

Study II. Junttila, N., Vauras, M., & Laakkonen, E. (2007). THE ROLE OF PARENTING SELF-EFFICACY IN CHILDREN'S SOCIAL AND ACADEMIC BEHAVIOR. *European Journal of Psychology of Education*, 22, 41-61.

Parenting self-efficacy (PSE) has recently emerged as a powerful predictor of both parent and child well-being. While one of the most salient developmental tasks of adolescence is to succeed in school at both the academic and social level (Bernier, Larose, Boivin & Soucy, 2004), it seems warranted to investigate whether the roots for these can be found from the psychosocial processes happening in families.

Despite a relatively large number of studies concerning the consequences of PSE, the use of the term "parenting self-efficacy" is somewhat misleading in the context of most of these studies, as they have focused only on the self-efficacy beliefs of mothers and in this way have neglected the study of the parenting self-efficacy of fathers. Therefore the

first interest was to test whether the task-specific self-efficacy categories in Coleman’s and Karraker’s (2000) scale can be confirmed when applied to the sample of both Finnish mothers (n = 430) and fathers (n = 335). Further on, the purpose was to study the relations between mothers’ and fathers’ loneliness and PSE, and consequently, the relations between PSE and a child’s social and academic behaviour. I hypothesize the parents’ loneliness to have a relation with their PSE, which again is supposed to have a relation with children’s social competence and motivational orientation. Further on, the social competence was expected to relate with children’s loneliness and the motivational orientation with their academic skills.

To summarise, the results from the latent variable structural equation model (Figure 1) indicate that parents who feel they have social networks that are supportive enough for them not to feel lonely, have a stronger belief in their parenting self-efficacy and their children are perceived as socially competent in their peer networks. Consequently, this lessens the possibilities of the child being lonely. For motivational orientation and academic skills the expected path between parenting self-efficacy and children’s motivational orientation remained below the level to be statistically significant. Instead, the children’s peer-rated social competence had a strong relation to their motivational orientation and also a straight and statistically significant relation to their academic skills. Based on these results, it is possible to argue that social competence is an essential element of a child’s social and academic behaviour and learning.

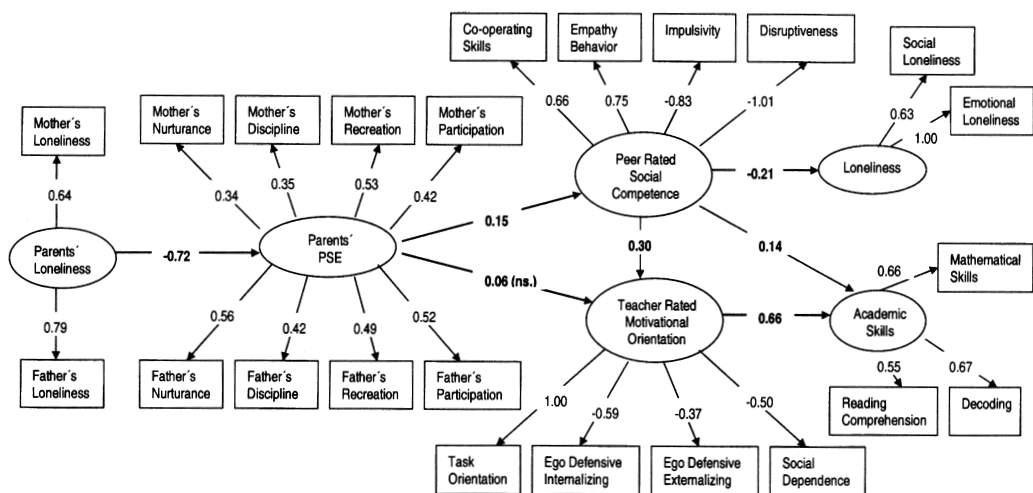


Figure 1. The structural equation model of parents’ PSE related to their loneliness and their child’s social competence, loneliness, motivational orientation, and academic skills. $\chi^2(df)$ 508.25 (213); RMSEA (90%CI) .069 (.061; .077); NNFI .91; SRMR .076.

Study III. Junttila, M., & Vauras, M. (2009). LONELINESS OF SCHOOL-AGED CHILDREN AND THEIR PARENTS. *Scandinavian Journal of Psychology*, 50, 211-219.

Most children experience short-term loneliness as a normal consequence of everyday social situations. However, for some children these feelings become chronic, affecting their academic performance, overall well-being and mental health (see e.g. Rotenberg, 1999). Still, less is known about the bi-dimensional (social and emotional) nature of children's loneliness and especially its continuity during the school years. Even less is known about the possibilities that, like social competence, (Putallaz & Heflin, 1990), shyness (Kagan, Reznick & Snidman, 1988), social avoidance (Filsinger & Lamke, 1983), anxiety (Landman-Peeters et al., 2008) and depression (Hammen, et al., 2004), loneliness may be intergenerationally transmitted from parents through learning or inheritance (McGuire & Clifford, 2000; Boomsma, et al., 2005).

Therefore, the first aim of this article was to analyse the existence and stability of, and gender differences in social and emotional loneliness of fourth and fifth grade girls (n=466) and boys (n=515). The second aim was to analyse the relationship between the loneliness of parents and the loneliness of their children. Unlike in article 2, we hypothesize that this association may not necessarily exist for both parents or for both male and female children. We further hypothesize that these relationships may be either direct (see Henwood & Solano, 1994) or indirect, as mediated by the child's social behaviour, and to be more precise, in the child's co-operating skills in the context of peers (cf. Putallaz & Heflin, 1990).

By collecting data from the 981 participating children at three consecutive time points, starting at the beginning of the fourth grade, we were able to measure the stability of their social and emotional loneliness as measured by the Finnish version of the Peer Network and Dyadic Loneliness scale (Hoza, et al., 2000). In order to get the information of their parents' loneliness, UCLA loneliness self-evaluations (Russell, et al., 1980) were collected from both mothers (n=834) and fathers (n=661). Moreover, to evaluate a child's co-operating skills in the context of their peers, peer evaluations from each child's classmates were collected using the MASC scale.

To analyse the stability of the children's social and emotional loneliness, a longitudinal confirmatory factor analysis with a grouping for gender was used. For the intergenerational transmission analysis, a separate structural equation model analyses for the data of mothers and fathers were conducted. This was done due to the relatively large amount of single mothers. The longitudinal confirmatory factor analysis gave a clear indication of the bi-dimensional nature of children's loneliness, which is in line with the previous results by Hoza and colleagues (2000), as well as Qualter and Munn (2002). Besides the fact that this two-factor solution was supported by the data of each of the three measurement points, the stability was also found to remain within these two factors.

According to article 2 in this dissertation, the combined loneliness of mothers and fathers has an indirect but statistically significant relation to the global loneliness of their

children (figure 1). In this sub-study three, the data of mothers and fathers and girls and boys were separated, and, consequently, the statistically significant relationships were traced to be between the parents' loneliness and their daughters' co-operating skills (figure 2). The only predicting variable for boys in this model was the peer-evaluated co-operating skills.

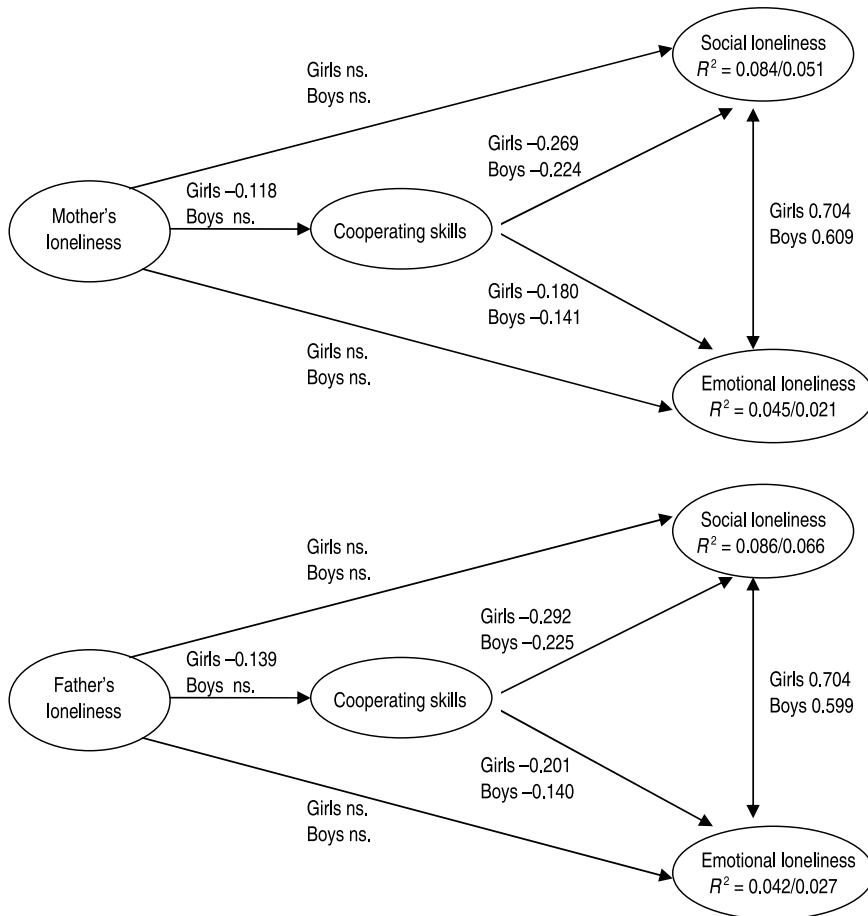


Figure 2. The structural equation models of mothers' ($\chi^2(df) 965.95 (568)$, $p = 0.00$; RMSEA 0.038; CFI 0.951; TLI 0.948; SRMR 0.051) and fathers' ($\chi^2(df) 957.85 (570)$, $p = 0.00$; RMSEA 0.037; CFI 0.951; TLI 0.949; SRMR 0.056) loneliness related to their child's co-operating skills and social and emotional loneliness.

Study IV. Junttila, N., Laakkonen, E. Niemi, P. M. & Ranta, K. (2010). MODELING THE INTERRELATIONS OF ADOLESCENTS' LONELINESS, SOCIAL ANXIETY AND SOCIAL PHOBIA. *Scientific Annals of the Psychological Society of Northern Greece, Vol. 8.*

The increased prevalence rates in mental health problems such as social phobia and depression in the transition from childhood to adolescence have raised questions about individual and environmental risk factors, such as a lack of social competence and ongoing experiences of loneliness, and the over-time stability in these socio-emotional problems.

In order to recognize the signs and developmental paths of adolescents' socio-emotional ill-being before the possible problems become more severe, validated instruments are needed. Consequently, the purpose of this study was to examine the validity, stability and interrelations of scales measuring adolescents' loneliness (PNDL / Hoza, et al., 2000), social anxiety (SAS-A / La Greca, 1998), and social phobia (SPIN / Davidson, 2000; Connor, et al., 2000; Ranta, 2008). The first set of measurements was completed during the first week of the 7th grade; in the transition into lower secondary school. Both loneliness and social anxiety were re-tested twice – at the end of the first school year and at the beginning of the next school year, the 8th grade. Social phobia was re-tested within the third measurement point.³

The findings of the confirmatory factor analyses supported a two-factor solution (social and emotional loneliness) for the Loneliness scale; a three-factor solution (fear of negative evaluation, social avoidance and distress in new situations, social avoidance and distress in general) for the Social Anxiety scale; and a one-factor solution for the Social Phobia scale. The resultant models were cross-validated to consecutive measurement points and the fit indexes implied that the factor patterns remained invariant.

Further on, the stability of the scales was analysed with longitudinal confirmatory factor analysis. The stability was found to be at least moderate between the measurement points. Regarding loneliness, the stability between the first and the second and the second and the third measurement points was similar for social but not for emotional loneliness. For emotional loneliness, the stability was statistically significantly lowest for the first period in lower secondary school. On the contrary, the stability analysis of social loneliness showed that it is already quite stable during the first year in a new school. With regard to social anxiety, the stability between the first and the second measurement point was almost the same as that between the second and the third measurement

³ Because a sub-sample of the students (n=71) of the first cohort (n=190) participated in PSG program during the 7th and 8th grade (see 2.2. Research project and participants), its possible effect on the study variables was tested in the three measurement points of the present study. In these analyses, statistically significant differences between intervention and control group were not found in loneliness, social anxiety or in social phobia scores, except for one (p= .044) difference in second measurement point's variable Fear of Negative Evaluation. Therefore the analyses of the present study were executed to the whole sample without separating intervention and control groups.

point. This may indicate that the aspects of expressions of social anxiety reflect more permanent and personally related traits or dysfunctions of social behaviour and, thus, are observed to be more stable through the transition (Hayward, et al., 2008; Wittchen et al., 1999).

According to the second order latent variable structural equation models, the interrelations between loneliness, social anxiety and social phobia were noteworthy. These path coefficients were already quite strong within the first measurement point, but after one year they were even higher (Figure 3). As predicted, the strongest relationship was between social anxiety and social phobia (cf. Wittchen et al., 1999). However, the straight effect from loneliness to social anxiety (.64 / .66) and indirect effect from loneliness to social phobia (.50 / .55) were both noteworthy.

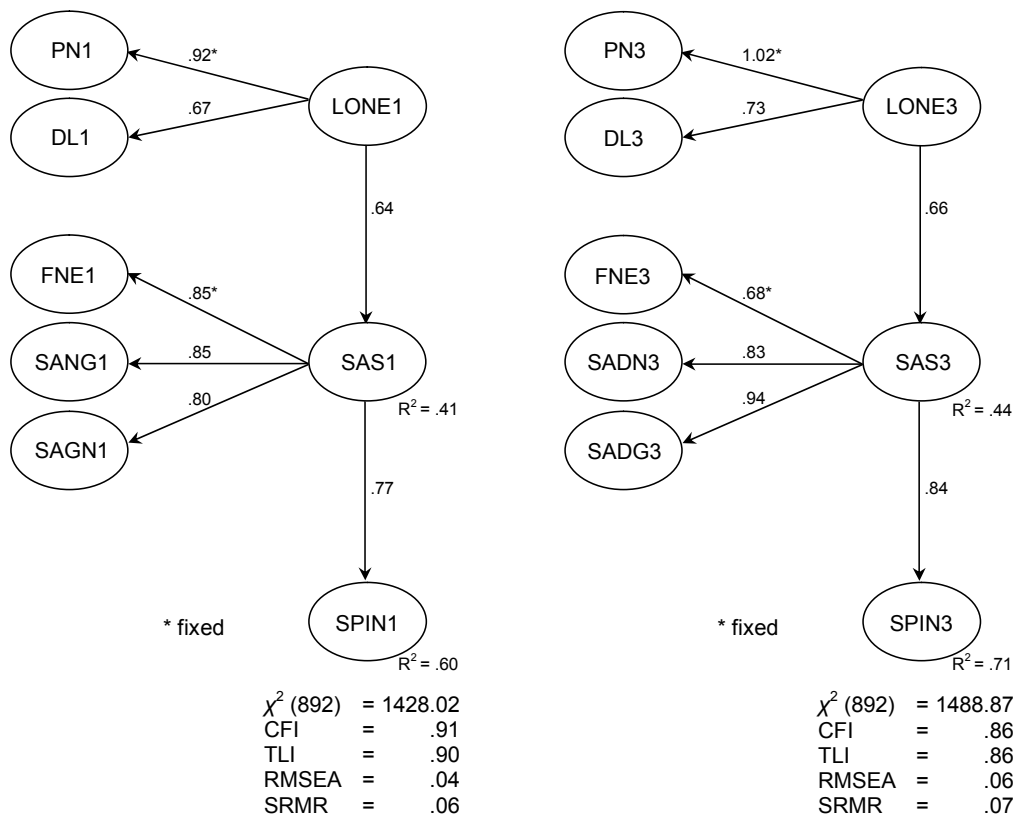


Figure 3. The interrelations between loneliness, social anxiety, and social phobia during 7th and 8th grades.

4. Main Findings and Discussion

The present dissertation examined issues in assessment, interrelations and intergenerational transmission of children's and adolescents' social competence and loneliness by using data from two research projects focusing on elementary school children and lower secondary school adolescents. The assessment issues are discussed in light of multisource assessments, validity analyses and stability testing. The interrelations are studied between the main elements of social competence and loneliness and then in relation to elementary school children's academic skills and motivational orientation, and lower secondary school adolescents' social anxiety and social phobia. Finally, the intergenerational transmission of loneliness is discussed with results from two articles adapting different contextual views of family relationships.

4.1. Assessing children's and adolescents' social competence and loneliness

For the purpose of this dissertation, two main scales measuring children's and adolescents' socio-emotional well-being were used. The first scale was used to measure a resource factor – **social competence** – and the second scale to measure a risk factor – **loneliness**. Since social competence is a phenomenon depending of the context and the evaluator, it was evaluated using multisource assessments, i.e. by the children themselves, their peers, teachers, and parents. In contrast, loneliness is a subjective feeling and therefore inaccessible for others to evaluate. Therefore multiple consecutive self evaluations were used in order to assess the subjective, qualitatively different aspects and long-term stability of children's and adolescents' social and emotional loneliness.

4.1.1. Multisource assessment of social competence scale

During the process of searching for a structure of social competence which could be confirmed for the data from multiple raters, I found that the nature of social competence is clearly a multifaceted one. Despite the fact that the physical context of the school is the same, the subjective and observable context for self, peer and teacher ratings are diverse. However, in order to compare these evaluations, a structure which is applicable and accessible for all of these significant raters is first needed.

Social competence as a combination of skills and behaviour

As hypothesized, prosocial and antisocial behaviour appeared as separate dimensions of children's social competence, but they split into the more specific dimensions of social competence. The two dimensions of prosocial behaviour, Co-operating skills and Empathy, capture both the behavioural and affective aspects of social competence, and are therefore in line with Sheridan and Walker's (1999) definition of social

skillfulness as a combination of important social skills appropriate to different contexts and behaviour that is acceptable to others (see also Rubin & Rose-Krasnor, 1992). Co-operating skills are needed to relate and function within a variety of situations, such as learning together or focusing on mutual goals (see Englund, Levy, Hyson & Sroufe, 2000). Empathy differs from Co-operating skills in that it is not so much a social skill but an ability to show and effectively communicate positive feelings and emotions. Whereas empathy is characterized by sensitivity toward others, social skills may be applied without emotion in a cold-hearted manner (Kaukiainen et al., 1999). An empathic person, for example, avoids hurting others' feelings, understands how they are feeling, and notices when somebody is getting hurt in a given situation or by some incident (Cliffordsson, 2002).

The antisocial behaviour factor diverged into the factors of Impulsivity and Disruptiveness. An impulsive person is profiled as having difficulties inhibiting immediate responses in order to achieve a goal, wait for a desired object or goal or plan ahead. They also have difficulty in inhibiting overt motor movements in response to situational demands (for a review, see Baer & Nietzel, 1991). Impulsivity is a temperamental risk factor for antisocial behaviour, whereas disruptiveness is directed at other people, often with the deliberate intention of harming or annoying them. The outcome of disruptiveness is very close to aggressive behaviour or bullying, because children acting disruptively are usually seen as teasing, disrespecting others, annoying, disturbing, and being aggressive (Kaplan, Gheen & Midgley, 2002).

Consistency of the structure between the raters

The main idea behind the confirmatory factor analysis is to study which item belongs to which factor. While comparing the factor structure between different sets of ratings (self, peer, teacher, and parents) the question arises whether the item represents the same meaning to different raters – for example does the item *“Is sensitive to the feelings of others”* represent empathic behaviour for all of the raters and thus load similarly to the empathy factor?

According to the series of invariance testing between each set of ratings, the four-factor model was largely the same for all types of raters. However, one difference between child and adult raters must be noted. The pattern of correlations between factors differs across these raters in a sense that for self and peer ratings, the correlations within the pro- and antisocial dimensions were very high, pointing to less than four factors. In other words, children tend to evaluate co-operating skills and empathy behaviour, as well as impulsivity and disruptiveness as similar to each other. Children's evaluations are in a sense “coarser” than evaluations by adults, who seem to be able to distinguish between the aspects of intentions, skills and more detailed behaviour. This may be because adults have more complex social representations of a child's social behaviour than children themselves (see Tapper & Boulton, 2000). This hypothesis was supported

by a following study focusing on the self evaluations of secondary education adolescents (Holopainen, Junttila, Lappalainen & Savolainen, 2009). In that study, the correlations and factor structures of the adolescents' self-evaluations of their co-operating skills, empathy, impulsiveness, and disruptiveness were similar to the ones that adults gave in article 1. This indicates that not only adults are able to distinguish the aspects of children's social competence, also adolescents in secondary education are able to do this as well through their self ratings.

The multifaceted nature of social competence – differences between the raters

In order to see whether the self, peer, teacher and parent evaluations for children are similar to each other, I tested the correlations between the raters. The results showed that all correlations between the four social agents were statistically significant. Many of the correlations were, however, quite low, indicating that the different sources of information tend to provide divergent pictures of children's social competence. As in the meta-analysis by Renk and Phares (2004), I found the strongest, but still not very high, relationship to exist between the ratings of teachers and peers.

The correlations between parents and teachers were low, and at a similar level as the correlations between parents and peers. Van Aken and van Lieshout, (1991), Swick and Hassell (1990), and Pakaslahti and Keltikangas-Järvinen (2000) found higher correlations between teachers and parents or correlations of about the same magnitude as in the data for this study. In some other studies (Fagan & Fantuzzo, 1999; Ruffalo & Elliot, 1997; Schneider & Byrne, 1989), however, these relationships between the raters from home and school were lower and not even statistically significant. In addition to the differences in expectations and behaviour norms between home and school contexts, there are other possible sources of difference between parents and other agents. Mainly there is the parents' affection for their child, which can colour their ratings to a considerable degree (Schneider & Byrne, 1989).

As in Greener's (2000) study, the correlations between self and others were low, some even lower than those between parents and teachers. Despite the possible bias of social desirability (Eisenberg & Mussen, 1989), the self ratings are considered to be important information, as they allow us to understand the subjective interpretations of children, and as they provide information that is not available from other sources (see e.g. Hope et al., 1999).

Although the correlations between self and peers were not high, they were somewhat stronger than the correlations between self and adults. Children learn norms and acceptable ways of behaving by participating in social interactions with their peers in the school context. This might influence the way they rate their own behaviour as well as the behaviour of peers. Social competence in the eyes of the self and peers partly emerges from interactions in which the children, but not teachers or parents, participate.

Correlations between different social agents also differed by the component of social competence. The highest correlations between agents (with the exception of self ratings) were obtained for impulsive and disruptive behaviour. Arguing, quarrelling, and teasing others are much more visible than co-operating with others or being empathic. All social agents noted such antisocial behaviours easily because these behaviours are annoying for everyone.

To summarize, the correlations between the four agents rating children's social competence were not very high. Therefore, all four sources are relevant in the process of evaluating a child's social competence. For a comprehensive view of a child's social competence, it is important to take all four perspectives into account. If using only one perspective, a careful choice must be made as to which of the perspectives is relevant for the given social context and the purpose of the study.

4.1.2. The Finnish version of the peer network and dyadic loneliness scale

In order to evaluate children's and adolescents' loneliness, the Peer Network and Dyadic Loneliness (PNDL) scale developed by Hoza and colleagues (2000) was translated and modified for the purpose of this study. This scale was chosen, because contrary to most of the published loneliness scales, PNDL was developed to assess both social (peer network) and emotional (dyadic) loneliness.

Social and emotional loneliness as separate dimensions of children's and adolescents' loneliness

A series of confirmatory factor analyses gave a clear indication of the bi-dimensional nature of children's (article 3) as well as adolescents' (article 4) loneliness, and this was in line with previous results by Hoza and colleagues (2000), and Qualter and Munn (2002). The correlations between the dimensions varied between .58 and .61 for children and between .59 and .61 for adolescents. Therefore, these dimensions do correlate with each other, but are based on the series of confirmatory factor analyses and discrete dimensions of the feelings of loneliness.

Although it is easy to understand the conceptual difference between these two aspects (Weiss, 1973), their developmental significances and consequences to children's, and later on, adolescents' socio-emotional well-being are still relatively understudied. It has been found that emotional loneliness, the oppressive feeling that there is nobody who understands you and nobody whom you can rely on and lean on, is devastating to self-esteem, and promotes the progression of social isolation, social phobia, depression, and suicide attempts (cf. Heinrich & Gullone, 2006). Moreover, styles of communication may influence the subtype of loneliness that is experienced. For example, Moody (2001) found that low levels of social and emotional loneliness were both associated with high degrees of face-to-face networking with friends, whereas high levels of Internet use were associated with low levels of social loneliness and high levels of emotional loneliness.

Stability of loneliness among children and adolescents

Besides the fact that this two-factor solution was supported by the data of each of the three measurement points for children and adolescents, the stability was also found to remain within these two factors. The results of article 3 already indicated at least average stability in loneliness in childhood. The strongest stability values occurred in social loneliness, especially for girls (.72 and .71). The lowest estimate occurred for boys' emotional loneliness (.53).

In considering lower secondary school adolescents, the stability between the first and second (.66 for social and .45 for emotional), and second and third measurement points (.83 for social and .73 for emotional), was similar for social but not for emotional loneliness. For emotional loneliness, the stability was statistically significantly lowest for the first period in lower secondary school. That is to say, for example, those who felt emotionally lonely at the beginning of the first school year, may, however, have found a close friend by the end of the school year. Vice versa, those having close emotional ties with peers at the beginning of the year might have lost them during the first school year.

Therefore, the first year in lower secondary school seems to be a period when adolescents tend to build new important emotional friendships in the context of a new school. Later on, those who were successful in creating a close friendship maintains these relationships while others who were not so successful, remain lonely. The stability analysis of social loneliness, however, showed that the scale of loneliness is already quite stable during the first year in a new school. This may indicate that adolescents create their social networks relatively quickly and also maintain them during the following school years. A strong interrelation between social competence and loneliness (eg. Clinton & Anderson, 1999) may also indicate that socially skilful adolescents interlink into new social networks relatively quickly and effectively, while other, less skilled adolescents remain outsiders.

Berndt and Hoyle (1985) studied the stability of children's and adolescents' friendships during the school years. According to their study, children in the lower classes of elementary school made more new friends during the school year than they lost old ones, but adolescents in the eighth grade lost more old friends than gained new ones. These results support the finding that the stability of loneliness becomes stronger as a child moves from childhood to adolescence. In other words, the older the adolescents are the harder it is to create new social networks, at least in the same school. It may indicate that adolescents, especially boys, become more concerned with having a friend to trust and share their personal thoughts and feelings with and are thus reluctant to generate new friendships to compensate the frustrated ones.

In our own following study that includes the complete data from the beginning of lower secondary school until the end of lower secondary school, adolescents' loneliness was found to be very stable after the first semester (Junttila, Laakkonen & Niemi, 2009).

The estimates for over-time stability between each semester for social loneliness were .76 / .86 / .89 / .84 / .81. For emotional loneliness the estimates were .46 / .80 / .82 / .84 / .73. This result further highlights the importance of the first months after a transition into new school environment.

The emotional loneliness of boys

One gender difference in children's and adolescents' loneliness must be noted. In line with the evidence presented in Koenig and Abram's (1999) review, there were no statistically significant differences between the genders in social or emotional loneliness at the beginning of grade four. However, compared to girls, the emotional loneliness of boys at the end of fourth grade as well as in the fifth, seventh, and eighth grade was notably higher. During elementary school, the effect sizes for this difference were statistically significant at the second ($d = .48$) and the third ($d = .51$) measurement points. During lower secondary school, the effect sizes were even larger: .53 for the seventh grade autumn, .68 for the seventh grade spring, .64 for the eighth grade autumn, .62 for the eighth grade spring, .77 for the ninth grade autumn and .66 for the ninth grade spring (Junttila, et al., 2009). At this age the peer relationships may become more important, and on the other hand more complicated than before. According to Noakes and Rinaldi (2006), girls tend to have more relationship maintenance goals and use more conflict-mitigating strategies than boys. According to their results, eighth graders generated more effective solutions in the conflict situations than their fourth grader (mean age 9.5) counterparts, and this effect was stronger in particular for girls. Thus we may hypothesize that this age brings up new social challenges which girls are more skilled in handling than boys.

4.2. Interrelations and consequences of social competence and loneliness

the second of the two main aims was to discuss the interrelations between and consequences of children's and adolescents' social competence and loneliness. The interrelations between social competence and loneliness were studied within articles 2 and 3 – first focusing on the global phenomena of social competence and loneliness with combined data for girls and boys, and secondly, by separating social and emotional dimensions of loneliness and co-operating skills from social competence.

The consequences to other significant elements of children's and adolescents' socio-emotional well-being and school success were studied within articles 2 and 4. For elementary school children, peer-evaluated social competence and self-evaluated loneliness were related to their teacher-evaluated motivational orientation and academic skills measured with a series of standardized tests. For lower secondary school adolescents, loneliness was related to their social anxiety and social phobia.

Interrelations between peer evaluated social competence and loneliness

In article 2, children's loneliness was regressed onto their peer-evaluated social competence. Further on, in article 3, the separated dimensions of loneliness were regressed onto girls' and boys' peer-evaluated co-operating skills.

Concerning the global constructs in article 2, the relationship between children's social competence and loneliness was statistically significant and negative, indicating that the lower their peer-evaluated social competence was, the greater the feelings of loneliness they reported. These results are in line with the studies by Bukowski, Hoza and Boivin (1993), Clinton and Anderson (1999) and Lau and Kong (1999) in that children's social competence interrelates with their feelings of loneliness. Still, as stated by Stednitz and Epkins (2006), the findings on the relations between social skills and loneliness are not particularly clear because most research has not considered child gender. Indeed, no previous research concerning relationships for separate genders and the social and emotional dimensions of loneliness was found.

Therefore this relationship was studied in more detail by separating the genders and the dimensions of loneliness and using only the strongest dimension of social competence, which were the co-operating skills. In article 3, the path coefficients were somewhat higher for girls than for boys, and for social than for emotional loneliness. That is, the highest paths were found between girls peer-evaluated co-operating skills and their social loneliness (-.27/-.29) whereas the lowest paths occurred between boys' peer-evaluated co-operating skills and their emotional loneliness (-.14/-.14).

Interrelations between social competence and learning

Since the most salient developmental tasks of children and adolescents is to succeed in school on both an academic and social level (Bernier, et al., 2004), it seems warranted to also investigate the interrelations between children's social competence, loneliness, motivational orientation and academic achievement. Previous studies have shown a strong linkage from children's motivational orientation (e.g. Salonen et al., 1998; Vauras et al., 2009) and social competence (e.g. Kavale & Forness, 1996; Nowicki, 2003) to their academic achievement and success in school. Nevertheless, only a few studies have investigated the relationships between these two important phenomena (Gonida et al., 2008; Junntila et al., 2008; Zsolnai, 2002). One of the preconditions of both motivation and social competence is the individual's positive self-evaluation and positive attitude towards their social environments. Also, the positive acceptance of others, active participation and effective communication are important elements of both motivation and social competence. Therefore, to go on with the important elements in children's school life, the relationships between peer-evaluated social competence and teacher-evaluated motivational orientation were examined. Also, learning achievement was evaluated with a series of standardized tests.

The results of article 2 revealed statistically significant paths between a child's social competence and motivational orientation (0.30) and a child's social competence and academic skills (0.14). Although still under studied, this relation between children's social competence and motivational orientation theoretically seems to be arguable. In particular, the ego defensive externalizing orientation and impulsive and disruptive behaviour exists quite similarly in the context of classrooms. Ego defensively oriented children tend to protect themselves from failing in the learning tasks by, for example, anger-, anxiety- or irritation-related reactions (Olkinuora & Salonen 1992; Salonen et al., 1998; Vauras et al., 2001). These behaviour patterns are also relevant in the phenomena of children's impulsive and disruptive behaviour (see, e.g., Baer & Nietzel, 1991; Kaplan, et al., 2002).

All in all, these results underline the importance of a child's social competence in school because social competence appears to have straight relationships to a child's motivational orientation, academic skills and loneliness. It is important to notice that the social competence was evaluated by peer ratings, motivational orientation by teacher ratings and academic skills by a series of standardized Finnish linguistic and mathematical tests. Thus it is possible to argue that the relationships are rather objectively existent in relation to the subjective errors due to the lack of independence between measurement sources (cf. Jones & Prinz, 2005).

Consequences of loneliness to social anxiety and social phobia

It seems that adolescents are particularly vulnerable to loneliness due to the increased importance of friendship during this developmental stage (e.g. Inderbitzen-Pisaruk, et al., 1992; Le Roux, 2009). The emergences of more severe social anxiety and social phobia in adolescence are the likely results of the combined action of co-morbidity of social phobia and the more stressful, even potentially traumatizing, social interactions with peers and broader social environment (Ranta, 2008).

Taking into consideration the existing research evidence, it is impossible to judge which of these phenomena, loneliness, social anxiety or social phobia, can be seen as causes and which as consequences (Rapee & Spence, 2004). However, based on the assumed temporal continuum, I started the structural equation model for article 4 with adolescents' loneliness, continued with social anxiety and concluded with social phobia. This order is in line with the previous research finding of the prevalence and age of the onset of loneliness (Heinrich & Gullone, 2006), social anxiety (Essau et al., 1999) and social phobia (Wittchen et al., 1999). This order may also be argued based on Rapee and Spence's (2004) review, which points out that it is important to notice when a personality trait or behavioural problem turns into a functional impairment causing distress.

Based on the results, the interrelations between loneliness, social anxiety and social phobia were already quite strong within the first measurement point at the beginning of lower secondary school (from loneliness to social anxiety .64; and from social anxiety

to social phobia .77). After one year in a new peer and learning environment, the interrelations between the adolescents' socio-emotional problems were a little higher: from loneliness to social anxiety .66; and from social anxiety to social phobia .84. The strongest relationship was between social anxiety and social phobia (cf. Wittchen et al., 1999). Still, the direct effect from loneliness to social anxiety (.64 / .66) and indirect effect from loneliness to social phobia (.50 / .55) are noteworthy. To summarise, since the experience of loneliness and social anxiety are already relatively stable during the first year of lower secondary school, it is probable that these lonely and anxious adolescents will also have problems creating satisfying social contacts in the future (cf. Milsom, et al., 2003). Subsequent social avoidance and adverse social outcomes probably reduce opportunities for further psychosocial development and perpetuate the assumption that social events will lead to negative outcomes (Banerjee & Henderson, 2001).

4.3. Intergenerational transmission of loneliness

The third main aim of this study was to evaluate whether loneliness, like social competence (Putallaz & Heflin, 1990), shyness (Kagan, et al., 1988), social avoidance (Filsinger & Lamke, 1983), social anxiety (Bögels, van Oosten, Muris & Smulders, 2001), and depression (Hammen, et al., 2004; Landman-Peters et al., 2008) could be intergenerationally transmitted from parents through learning or inheritance. If this is the case, is it then a child's social or emotional loneliness, or both, that are intergenerationally transmitted and is there a direct or indirect (e.g. via parenting self-efficacy, a child's social competence) transmission of loneliness?

I will first focus on families as units consisting of both parents' loneliness and parenting self-efficacy (article 2). In that case, the expectation is that mothers' and fathers' loneliness represent a combined element which, along with their combined parenting self-efficacy, interact with the child's socio-emotional and academic behaviour. In the other study (article 3), these paths are studied in more detail by separating the mothers' and fathers' loneliness as well as daughters' and sons' social and emotional loneliness. In that way, we are able to observe if the mother's or father's loneliness interacts differently with the social and/or emotional loneliness of her/his daughter/son.

Intergenerational transmission within families

In article 2 the families were analysed as units where children learn models for social and academic behaviour. In that article the loneliness of mothers and fathers and parenting self-efficacy (PSE) were combined and related to their child's social competence and loneliness.

First of all, the relationship between the loneliness of parents and their PSE was strongly negative, indicating that parents who had less feelings of loneliness had stronger beliefs in their PSE. This result supported the hypothesis that parents who have supportive social

networks have stronger PSE. In all likelihood, this indicates that mothers and fathers, who have friends and relatives to rely on and to share their problems and stresses with, are more self-confident and trustful in their own competence and capabilities to be a good enough parents. Likewise, parents with strong feelings of loneliness, perhaps even depression, may more easily feel non-eficacious and give up trying as parents when the problems seem to accumulate.

Furthermore, PSE was related to a child's peer-evaluated social competence and to their feelings of loneliness. In accordance with Swick and Hassell (1990), a positive relationship was found between the PSE of parents and their child's social competence. There may be numerous reasons for this. First of all, the parenting self-efficacy includes aspects of behaving empathetically, taking care of others, attending to and listening to others. These aspects are also part of socially competent behaviour and can be learned in the home environment by modelling, reinforcing, and coaching (see Putallaz & Heflin, 1990). By taking an active role in their children's social lives, parents may directly affect the quality of their children's peer relations and social competence (Kochanska, 1993; Ladd, 1992).

Moreover, previous research has implied that children's loneliness may be inherited by parents via learned behaviour models (e.g., Solomon, 2000) or parental guidance and involvement (cf. Lawhon, 1997). Additionally, it has been suggested that this has been learned, or at least reinforced in early peer relationships (e.g., Asher & Wheeler, 1985; Boivin & Hymel, 1997). In the model of article 2, the relationship between parental behaviour and children's loneliness was mediated via children's peer-evaluated social competence. The results indicated that in line with the studies by Bukowski et al., (1993), Clinton and Anderson (1999) and Lau and Kong (1999), children's social competence interrelates with their feelings of loneliness.

To summarise, these relationships indicate that parents who feel they have social networks that are supportive enough for them not to feel lonely have a stronger belief in their parenting self-efficacy, and their children are perceived as socially competent in their peer networks. Consequently this lessens the possibilities of the child being lonely. Thus, it is possible to argue that both parental and a child's own social behaviour and competencies are important aspects in relation to the child's social and emotional well-being in school.

Intergenerational transmission between parent-child dyads

Based on article 2, the combined loneliness of mothers and fathers has an indirect, but statistically significant relation to the global loneliness of their children. However, in the study by Bögels and colleagues (2001), a mother's, and not a father's, social anxiety had a relationship with their child's social anxiety. In contrast to their study, Le Roux (2009) indicated that an adolescent's attitude towards their father was the strongest predictor for loneliness, in a sense that adolescents who have a negative attitude towards their

fathers are inclined to be lonelier. Therefore, it is not possible to ignore the possibility that the intergenerational transmission may be divergent between the mother-daughter, mother-son, father-daughter, and father-son dyads (cf. Richaud De Minzi, 2006).

Therefore, in article 3, the data of mothers and fathers and girls and boys were separated, and, consequently, the statistically significant relationships were traced to be between the parents' (both a mother's and a father's) loneliness and their daughter's co-operating skills. For boys, the only predicting variable in this model was the peer-evaluated co-operating skills.

Comparing these results to previous studies, it is worth noting that in the Lobdell and Perlman (1986) study, all of the children were female, while in the study by Henwood and Solano (1994), the genders were analysed together. However, in the Bögels and colleagues (2001) study of social anxiety, the genders of the offspring were separated. Therefore, it is only possible to compare the results of this dissertation and the previous studies on the intergenerational transmission of loneliness in terms of the parent's and not the children's gender. Henwood and Solano (1994), and Lobdell and Perlman (1986) found a significant relationship between the loneliness of mothers and their children. Likewise, Bögels and colleagues (2001) found a significant regression between a child's and a mother's social anxiety, which based on the results of article 4 has strong relations to loneliness. According to their study, this may be due to the fact than in the Netherlands, mothers are on average, more intensively involved in the rearing of their children than men. Therefore, according to them, mothers may have more influence on the socio-emotional well-being of their children.

To summarise, whereas Henwood and Solano could not confirm a significant association between a father's and their child's loneliness, Lobdell and Perlman did. In article 3, the relationship between parents and their children's loneliness was indirect in a sense that a mother's and a father's loneliness predicted their daughter's peer-evaluated co-operating skills, which in turn predicted higher levels of both social and emotional loneliness. Therefore, and despite the facts that families can be perceived as units, as in article 3, the loneliness of mothers and fathers can be quite strongly correlated (.50). The question then arises, why is the relationship between parents and their daughter's loneliness stronger than the similar relationship between parents and their son's? When compared to the respective areas of research, it is known that, for example, depression and anxiety (Landman-Peeters et al., 2008), are more often transmitted by parents to their daughters than to their sons, and that parental divorce increases a daughter's, but not a son's likelihood of divorce (Du Feng, Giarrusso, Bengtson & Frye, 1999). It may be that daughters are more strongly affected by parental depression and/or its correlates, such as loneliness (see Landman-Peeters et al., 2008; Sheeber, Davis & Hops, 2002).

What is also noteworthy is a study by Lieberman and colleagues (1999). According to their study, the nature of the mother-child and father-child relationship changes during adolescence in a sense that mothers maintain the emotional involvement with their

child, while the relationship with fathers, as evaluated by both daughters and sons, falls lower and thus influences loneliness.

On the basis of these questions, and based on the fact that “loneliness can be regarded as an epidemic of modern society that is becoming increasingly problematic for millions of people” (Le Roux, 2009, pp. 219), a longitudinal study following the loneliness of mothers, fathers and their daughters and sons during the significant developmental thresholds is needed. According to Le Roux (2009), the rising divorce statistics, the lack of involvement by fathers and the increasing mobility of modern society are all contributing to higher levels of loneliness. For adolescents, these phenomena are especially problematic. Based on the strong social and emotional loneliness stability coefficients already evident in childhood in article 3, I would argue that the signs of loneliness should be noticed even earlier than adolescence.

5. Methodological Considerations

Below I will discuss the main measurement scales in the light of measurement validity and reliability. As described in the introduction, 1) *content validity* refers to the question of whether the test is capable of capturing the whole content of the phenomenon under examination, 2) *concurrent validity* refers to concurrence of the scores with other valid tests developed to measure the same phenomenon, whereas 3) *divergent validity* refers to discrepancy with different phenomena, and 4) *discriminative validity*, to the scale's ability to discriminate between subjects. Concerning measurement reliability, I will discuss issues in *internal consistency reliability* (the homogeneity of items per content) and *test-retest reliability* (coefficients of stability over time).

Multisource assessment of social competence scale (MASCS)

When developing the multisource assessment of the social competence scale, this study had two main aims, 1) that the scale should be simple and short enough that school psychologists, social workers and teachers could use it in order to evaluate children's and adolescents' self-, peer-, teacher-, and parent-evaluated social competence, and 2) the scale should include at least the pro- and antisocial dimensions of social competence, since these were the dimensions most frequently found in the research literature (cf. Anderson-Butcher, et al., 2008; Danielson & Phelps, 2003; Renk & Phares, 2004; Rydell, Hagekull & Bohlin, 1997; Semrud-Clikeman, 2007). The results of the confirmatory factor analyses confirmed these dimensions. However they further divided into the subscales of co-operating skills and empathy, and impulsivity and disruptiveness. All of these dimensions were supported by previous research.

Considering the content validity, we must notice that social competence is defined in numerous ways (see e.g. Kavale & Forness, 1996; Merrell & Gimpel, 1998; Renk & Phares, 2004; Semrud-Clikeman, 2007). Therefore, it is not possible to argue that the MASCS includes all the possible dimensions ever defined to be an aspect of social competence. However, it is possible to argue that these dimensions capture not only the pro- and antisocial but also the behavioural and affective aspects frequently defined as elements of social competence (see e.g. Sheridan & Walker, 1999; Rubin & Rose-Krasnor, 1992; Kavale & Forness, 1996; Merrell & Gimpel, 1998; Renk & Phares, 2004).

While developing MASCS, no another "golden standard" measurement to evaluate the same phenomenon was used. However, in order to consider the concurrent validity, the multisource nature of the scale is noteworthy. In a sense the concurrent validity of self, peer and parent evaluations were correlated to teacher evaluations and vice versa between all the four agents. A congenial detail is that in order to test the concurrent validity of the Greek version of the *Feelings Toward Group Work Questionnaire*, Goudas, Magotsiou and Hatzigeorgiadis (in press) used the MASCS as the scale to which the

concurrent (convergent) validity was correlated for. According to their study, the correlations between these scales occurred as hypothesized and thus gave support for the concurrent validity.

The divergent validity of MASCS was tested while using structural equation modelling with children's loneliness, motivational orientation and academic skills (article 2). In the model all of the observed variables were found to have significant factor loadings on the appropriate latent variables. Therefore, despite the fact that the phenomena had statistically significant paths to each other, they were clearly autonomous elements of children's social and learning behaviour. With regard to the discriminative validity of the MASCS, the teacher evaluations in particular separated the high from the low achieving children (see also Figure 5) and genders (see also Figure 4), much as had occurred in previous research (Kavale & Forness, 1996; Nowicki, 2003; Renk & Phares, 2004; Swanson & Malone, 1992).

The internal consistency of MASCS factors across different raters can be found in article 1. To summarise, albeit the number of items per each factor was relatively low, all the Cronbach's alphas were within reasonable limits, that is .68 for the three-item factor Empathy in self ratings and between .94 for the six-item factor Co-operating skills in peer evaluations. Of course, a higher value of reliability would certainly be desirable for the self-rated empathy, but it is common for self ratings, especially when the raters are young children, that the internal consistency alphas are low. Moreover, since the factor consisted of only three items, this low alpha was predictable (cf. Gliner et al., 2001). However, the goodness of fit indexes for CFA were fine, especially for self ratings (χ^2 (df) = 166.78 (84), RMSEA = 0.05, NNFI = 0.95, SRMR = 0.03). So it is possible to consider this structure to be satisfactory for all the raters.

Further evidence for the factor structure, measurement validity and reliability of MASCS with different samples, cultural backgrounds and age levels, can be found in the published articles listed below. To summarise, they all find MASCS to be appropriate for the given sample and age groups. Some of them, for example the study by Holopainen, Lappalainen, and Savolainen (2007) produced higher validity and reliability estimates with secondary education adolescents than I did in my original data.

- 1) "*Validity and reliability of the Greek version of the multisource assessment of social competence scale*" by Magotsiou, Goudas & Hasandra (2006). The sample consists of three studies with 209, 192, and 147 Greek sixth-grade students' self ratings.
- 2) "*Sosiaalinen kompetenssi toisen asteen koulutuksessa ja nuorten oppimisvaikeudet*" (Social competence and learning disabilities during the secondary education) by Holopainen, et al., (2007). The sample consists of 585 Finnish ninth grade students' self ratings.

- 3) *“Perception of children’s social competence in Greece: Self-reports from students, teachers and parents”* by Metallidou et al. (2008). Sample consists of 415 Greek fourth grade students’ self, teacher, and parent ratings.
- 4) *“Teacher evaluated motivational orientation and multisource evaluated social competence: Issues in validity, cultural differences and interrelations”* by Junttila et al. (2008). The sample includes 318 Finnish and 415 Greek 10-year-old elementary school children’s self, teacher and parent ratings.
- 5) *“Pupils’ motivational orientation and social competence: The role of parenting and teacher efficacy in different cultural contexts”* by Gonida et al. (2008). The sample includes 318 Finnish and 415 Greek 10-year-old elementary school children’s self, teacher and parent ratings.
- 6) *“Self- and peer assessment of social competence”* by Goudas, Magotsiou and Hatzgeorgiadis (2009). The sample consisted of 114 sixth grade Greek students’ self and peer ratings.
- 7) *“The effects of a cooperative physical education program on students’ social competence”* by Goudas and Magoutsiou (in press). The sample consisted of 114 sixth grade Greek students’ self- and peer ratings.

To summarise, the advantage of the MASCS seems to be that its structure is applicable for multiple evaluators (see Renk & Phares, 2004; Semrud-Clikeman, 2007). Since evaluations of a child’s social competence may be affected by several factors including gender, ethnicity, additional talents, skills and attractiveness, as well as the setting in which the child is in or the environment, culture and gender and position of the person completing the evaluations, it is prudent to gather information in a multisource manner (Semrud-Clikeman, 2007). While the multisource nature was the biggest challenge to developing the scale, this method contributes largely to the validity and usability of the scale, which will be discussed later on in the Pedagogical Considerations section.

Scales to measure children’s, adolescents’ (PNDL) and parents’ (UCLA) loneliness

Despite the fact that Weiss defined the dimensions of social and emotional loneliness as early as 1973, only a few studies considering these dimensions in children’s loneliness (see Hoza et al., 2000) exist. Although social and emotional loneliness are at least partially overlapping, they both have their own unique and distinct nature and thus effect on a child’s socio-emotional well-being. For example, a child may lack a close friendship/best friend, but may still have a satisfactory peer group. On the other hand, the child may have a best friend but be rejected or otherwise be an outsider of the existent peer groups. Therefore, a comprehensive understanding of the relative and unique effects of both social and emotional loneliness requires that they are studied together (Bukowski,

et al., 1993; DiTommaso, et al., 2004; DiTommaso & Spinner, 1997; Hoza et al., 2000; Parker & Asher, 1993).

In order to evaluate both of these dimensions, I used a translated and modified version of the Peer Network and Dyadic Loneliness scale developed by Hoza and colleagues (2000). Despite using a reduced amount of items, the two-factor structure was confirmed for both the sample of children (in article 3) and for adolescents (in article 4) during all the measurement points at elementary as well as at lower secondary school. Since these are the dimensions most traditionally (Weiss, 1973) and frequently (e.g. Asher, et al., 1990; Bukowski, et al., 1993; Clinton & Andersson, 1999; DiTommaso, et al., 2004; Hoza et al., 2000; Parker & Asher, 1993; Qualter & Mann, 2002) defined to constitute loneliness, it is possible to argue that the scale has satisfactory content validity.

Considering divergent validity, the question is whether this scale developed to measure loneliness evaluates the exact phenomenon of loneliness or also some nearby phenomena. As mentioned above, based on article 2, children's loneliness and social competence were clearly separate phenomena. For adolescents in article 4, two even closer phenomena, social anxiety and social phobia, were used. According to simultaneous confirmatory factor analyses as well as to the second order latent variable structural equation model, all of these three phenomena (loneliness, social anxiety, social phobia) as well as their factors (social loneliness, emotional loneliness, fear of negative evaluation, social avoidance and distress in new situations, social avoidance and distress in general, and social phobia) were unique constructs. Moreover, the fact that stability remains within the two dimensions of loneliness supports its divergent validity.

The discriminative validity – the scale's ability to discriminate between subjects – may be considered not only with the loneliness score's strong relationship with the lack of social competence (Bukowski et al., 1993; Clinton & Anderson, 1999; Lau & Kong, 1999), but also, in the light of previous results, between genders. According to Koenig and Abrams's (1999) review, gender differences are not apparent in childhood loneliness but emerge during adolescence and adulthood, with males tending to experience more loneliness than females. However, when separating social and emotional loneliness, Hoza and colleagues (2000) found that 11- to 13-year-old boys reported more dyadic (emotional) loneliness than girls of the same age. In line with those results, no statistically significant differences between the genders in social or emotional loneliness in grade four (article 3) were found. However, compared to girls, the emotional loneliness of the fifth (article 3), seventh and eighth (article 4) grade boys was notably higher. A later study revealed that this pattern of boys' higher emotional loneliness continues at least until the end of lower secondary school (Junttila et al., 2009).

The internal consistency of the PNDL scale was tested with Cronbach's alphas. All alphas were within reasonable limits, starting from .81 for social and .77 for emotional loneliness for the fourth grade and rising up to .86 for social and .90 for emotional

loneliness in the eighth grade. This strengthening of the internal consistency alpha values of self ratings while moving from childhood into adolescence is similar to the pattern in the MASCS self ratings (cf. article 1, and Holopainen et al., 2007).

In order to evaluate parents' loneliness, a revised UCLA loneliness scale (Russell, et al., 1980), which has been a commonly utilized measurement of adults' loneliness in a variety of populations over three decades (see Vassar & Crosby, 2008), was used. In their study, Vassar and Crosby (2008) used the Reliability Generalization method (Vacha-Haase, 1998) in order to examine the variability in reliability coefficients across studies utilizing the UCLA scale. The results showed that the mean internal consistency reliability coefficient across samples for the UCLA was .87 with a standard deviation of .06. In article 2 the internal consistency reliability coefficient for the Finnish sample was .84 for mothers (n=430) and .83 for fathers (n=335). For the larger samples in article 3, the coefficient was .84 for both the data of mothers (n=834) and fathers (n=661). Remembering that the Finnish version only had half of the original items, it is possible to consider that it is reliable for evaluating the global loneliness of parents.

However, a regrettable limitation for this scale was the fact that, with its current form, it was not possible to divide the parents' loneliness into social and emotional loneliness. Had this been possible, a more precise picture of the intergenerational transmission of loneliness could have been developed. According to Hoza and colleagues (2000), the UCLA Loneliness Scale focuses on social, rather than emotional loneliness. Indeed, despite the fact that UCLA is strongly based on the bi-dimensional assumption of loneliness (Weiss, 1973), the existent research has not been able to confirm the social and emotional dimensions of this scale (see DiTommaso & Spinner, 1993; Vassar & Crosby, 2008). Consequently, in our following study (*The Family Functioning, Parental Relationship and Mental Health - The Intergenerational Transmission and Associations with Child Development*) we used the wider version of this UCLA scale and were able to confirm the social and emotional loneliness factors (Junttila, Uusimäki & Rähä, unpublished manuscript). Therefore, for further studies we will be able to separately analyse these important aspects of mothers' and fathers' loneliness in relation to their social anxiety, depression and marital problems, for example.

The test-retest reliability refers to the stability of the scores which the scale produces over time. However, when the administrations of the scale are several weeks or months apart, the underlying phenomenon being measured may change. Consequently, the low test-retest reliability may not necessarily indicate insufficient reliability for the measurement scale, but is dependent on the developmental changes on the underlying phenomenon (Cliner, 2001; Ranta, 2008).

The stability of both social and emotional loneliness over six-month time periods were studied in article 3 (from fourth to fifth grade) and 4 (from seventh to eighth grade). Despite the fact that these estimates were meant to evaluate the developmental changes against the continuity of children's and adolescents' loneliness, they can also be considered

as test-retest reliability coefficients. To summarise, all the stability coefficients were statistically significant and did strengthen when moving to the upper grades. In childhood, the strongest stability values occurred in social loneliness, especially for girls (.72 and .71) and the lowest estimate occurred for boys' emotional loneliness (.53). During lower secondary school, the stability coefficients were .66 and .83 for social and .45 and .73 for emotional loneliness (genders combined). In comparing these coefficients to the concurrent estimates in Boomsma and colleagues study (2005) of adolescent and adult loneliness, the coefficients in my study were somehow stronger. However, instead of the six-month time period used in this study, theirs covered a period of 2-4 years.

6. Pedagogical Considerations and Challenges for Future Research

“What should young people do with their lives today? Many things, obviously. But the most daring thing is to create stable communities in which the terrible disease of loneliness can be cured.” – Kurt Vonnegut

The clear benefit of recognising risks in children’s and adolescents’ socio-emotional well-being

Based on the results of this dissertation as well as on previous research, it seems clear that the signs of children’s and adolescents’ socio-emotional risks should be screened and identified as early as possible. Social competence proved to be a strong predictor of children’s loneliness, motivational orientation and academic skills (article 2). Further on, it was found to function as a mediator between parents and their daughter’s loneliness (article 3), as well as between parents’ parenting self-efficacy and a child’s (both daughters and sons) loneliness (article 2). In a later study (Holopainen, et al., 2009) social competence, especially the co-operating skills, served as a mediator for school burn-out and depression among adolescents and young adults.

On the other hand, loneliness was found to be already relatively stable during the elementary school years (article 3) and later on to be even more constant and to have strong interrelations to lower secondary school adolescents’ social anxiety and social phobia (article 4). Among the available research on loneliness, it is possible to find several reasons why the signs of children’s loneliness should be taken into consideration (see Heinrich & Gullone, 2006 for a review). Prevention or intervention after the first signs of loneliness are identified may save the adolescent from more serious mental health problems and, like Essau and her colleagues (1999) along with Bodden, Dirksen and Bögels (2008) have noted (1999), in light of scarce resources, it is an important and cost-effective policy implication.

A measurement tool to be used in schools

Since the development of social competence in children and adolescents has been closely related to positive socio-emotional outcomes in later life, evaluating the consistency of multisource ratings when assessing social competence exhibited by children and adolescents is important for the promotion and evaluation of effective interventions focused on improving social competence across settings (Renk & Phares, 2004). In order to have a measurement tool to screen the possible problems in children’s social competence during the school years, the purpose of article 1 was to construct a relatively short and practical measurement instrument that takes into account the perspectives of relevant social agents, such as the self, peers, teachers, and parents.

The MASC scale was also published as part of the Centre for Learning Research series of measurement scales (Kaukiainen, Junttila, Kinnunen & Vauras, 2005) and is therefore currently used in many schools in Finland, especially by special education teachers and school psychologists.

While evaluating pupils' social competence, it is important to notice that the teacher's ratings are affected by several factors, including a pupil's gender, ethnicity, and other skills such as motivation or academic skills, as well as the setting in which the child is in or the environment, culture and gender and position of the teacher completing the evaluations (Semrud-Clikeman, 2007). In article 1, the evaluations between the raters had statistically significant correlations to each other, but they were still quite low in magnitude. Interesting patterns can be found while comparing the self, peer, teacher, and parent ratings of different groups of children. In figure 4, the differences for girls and boys co-operating skills, empathy, impulsivity and disruptiveness as evaluated by self, peers, teachers, and parents are presented. As can be seen, the differences between the genders were especially strong among the teachers' evaluations (Cohen's d ES .44; .61; .68; .79).

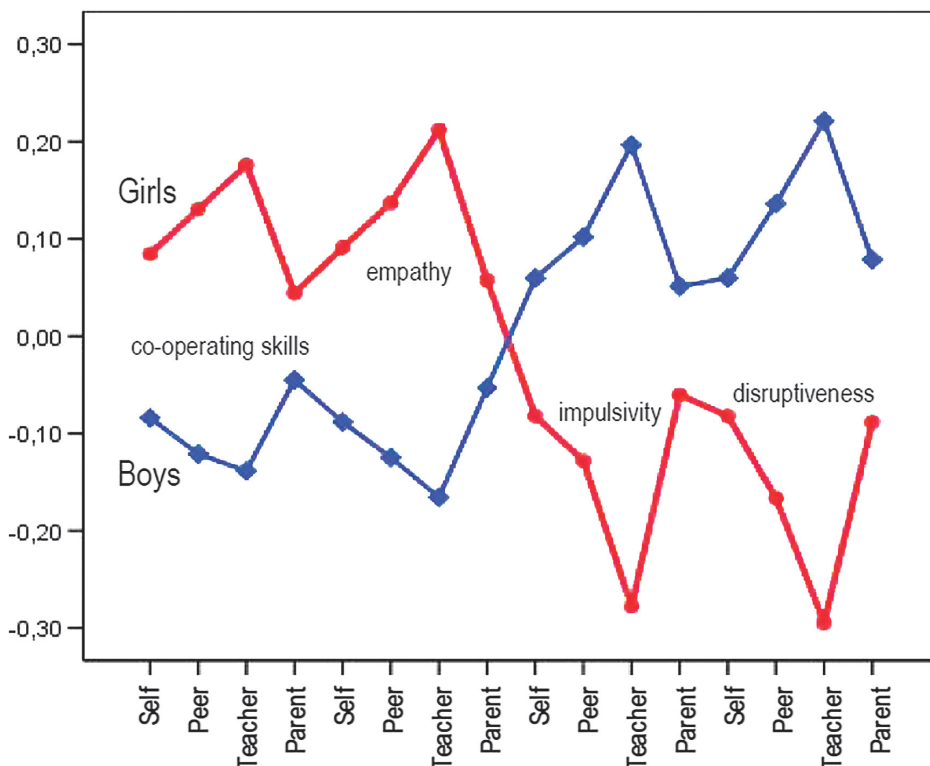


Figure 4. The multisource evaluated social competence of girls and boys (Junttila & Vauras, 2007).

In the next figure (figure 5), the same evaluations are presented between the groups of low achieving children, average learners, and high achieving children. The effect size (d) of differences in teacher evaluations between low and high achievers prosocial behaviour (co-operating skills and empathy) was .92. For antisocial behaviour (impulsivity and disruptiveness) it was .50.

These results raise the question of what causes the differences in teacher ratings of genders and differently achieving students so high? The difference between girls and boys became even stronger when there were more than twenty children in a class (Junttila & Vauras, 2007). This indicates that the more children there are in a class, the more difficult it is for a teacher to evaluate, or even see, all the individual aspects of a child's behaviour. Thus, gender stereotypes may more easily colour the evaluations. School culture and the dominant norms and values defining preferred social behaviours are important in the understanding of social competence in the classroom. Since ethnic minority students are given significantly lower social competence ratings by teachers (see Mpofu, et al., 2004), the question arises whether the group of low-achievers is comparable to the group of ethnic minority students in the sense that teacher may have prejudicial expectations while rating their social competence. Through these achieving-level specific behaviour prejudices, high-achieving students may be expected to behave prosocially, whereas impulsive and disruptive behaviours are expected from the low-achieving students.

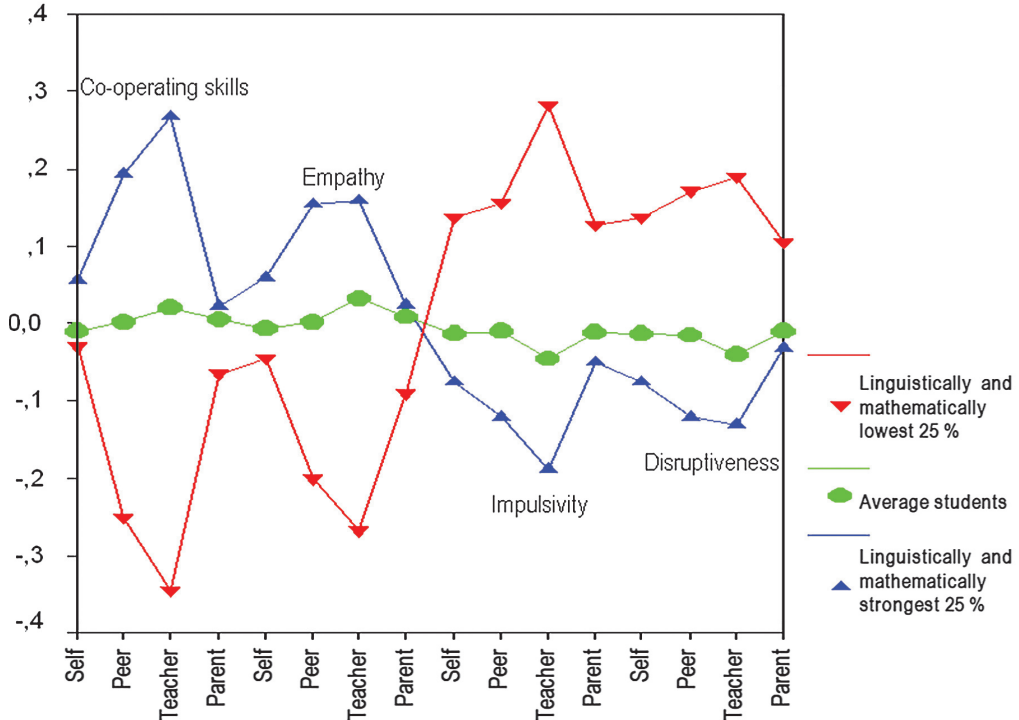


Figure 5. The multisource evaluated social competence of low-, average- and high achieving children (Junttila & Vauras, 2007).

These days it is not uncommon, at least in Finland, that teacher and parents are in disagreement over a child's behaviour. Generally this creates a situation in which it is impossible to make plans that would benefit the child the most. Therefore it might be worthwhile to collect evaluations of the child's social behaviour from the child her/himself as well as from the classmates, and possibly even from other teachers teaching the child, a special education teacher, a school psychologist, etc. in order to have a more comprehensive view of the child's behaviour in different context and in the eyes of different people. In a case in which the peers agree with the teacher's perspective of a child's misbehaviour, the parents would probably be more willing to agree with the concerns of the teacher. In a case in which the teachers' perception is at a discrepancy to other's perceptions, an accurate analysis of the interrelationship between the teacher and the child should be done. Moreover, while planning an intervention to help a child with low social competence and consequent risk for further socio-emotional problems, it is worth being aware of what she/he and her/his peers and other significant agents thinks about her/his social behaviour.

The need for longitudinal studies

Although the methodological issues of articles 2 and 3 defined the paths to be recursive from parents to children, it should not be forgotten that the signs of a child's well-being and social competence positively influence the self-efficacy beliefs of his/her parents and vice versa. According to Bronson (2000), some children have an innate competence to persuade their caregivers to satisfy their physical needs and to help them regulate their emotional and behavioural reactions. Indeed, the child may also actively influence her/his parents' behaviour and beliefs in their own parenting capabilities (Schoenrock, Bell, Sun & Avery, 1999). Therefore, it would be useful to study the interrelations between parents' and their children's social and emotional well-being by using a longitudinal research design in which the parents' loneliness is also followed for a longer period. This would allow us to study the factors most likely to produce or protect against the emergence of later psychological and social problems, and likewise, the developmental origins of these problems. In this way, both the description and analysis of different risk profiles and individual and contextual resources or protective patterns (e.g. associations between feelings of connectedness to school, social competence and support, heritable traits) could be identified. These resources and protective factors may act as a buffer against the negative effects of the risk factors, foster resilience, and affect the future course of development.

Longitudinal studies are also needed to model the temporal order of these phenomena, to identify antecedent expressions of dysfunctional development before the onset, manifestation and formal diagnosis of clinical disorders that are perhaps still at a normal or "under-threshold" range on the continuum of loneliness and social anxiety but are nevertheless identifiable. The above findings also suggest the need for

more thorough analyses on the interrelations and continuities of parental support, social competence, loneliness, social anxiety and social phobia of children and adolescents. So the challenge is to identify, as early as possible, both the risk factors and protective and resilience factors, and to intervene accordingly, especially during developmental transitions, when the direction of development might more easily be influenced. According to article 3, young, school-aged children already experience long-term social and emotional loneliness. In this respect, the observed role of co-operating skills is an important finding from an interventional point of view. Lower levels of loneliness of mothers as well as fathers predicts higher levels of co-operating skills for daughters, which in turn predict lower levels of social and emotional loneliness for daughters. This path provides schools and educators with a genuine means of intervening in a child's loneliness. Indeed, an intervention and development project based on these result was conducted in Turku in collaboration with Health, Teaching and Education, and Sport service centres, as well as with the Turku University and local parents association during 2007-2009 with funding from the Finnish Ministry of Social Affairs and Health (Kuronen, 2009). The aim of this "Family forum" was to offer families a place to get together in order to meet other parents and discuss parenting issues while children enjoyed free and fun sports activities with peers. Even though the funding has ended, the activity seems to have been carried on by parents with the support of the local school service centre.

To summarise, when planning resources to increase children's social and emotional well-being, their global situation (including not only their peer relationships and social competence, loneliness, social anxiety and academic achievement in the school context), their external and internal social support relationships and the efficacy beliefs taking place in their families should be taken into account.

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Appendix

Appendix 1. Summary of the measurement scales and their reliability and validity estimates

Measurement scale	Factors (items per factor) and their α^*	CFA fit indexes** in relation to the sample size
1. Multisource Assessment of Social Competence Scale (MASCS) developed in the article 1 on the basis of SSBS by Merrell & Gimpel (1998).	Self evaluations: Co-operating Skills (5) $\alpha = .80$ Empathy (3) $\alpha = .68$ Impulsivity (3) $\alpha = .80$ Disruptiveness (4) $\alpha = .74$ Peer evaluations: Co-operating Skills (6) $\alpha = .94$ Empathy (2) $\alpha = .90$ Impulsivity (3) $\alpha = .93$ Disruptiveness (4) $\alpha = .92$ Teacher evaluations: Co-operating Skills (5) $\alpha = .89$ Empathy (3) $\alpha = .84$ Impulsivity (3) $\alpha = .88$ Disruptiveness (4) $\alpha = .89$ Parent evaluations: Co-operating Skills (5) $\alpha = .80$ Empathy (3) $\alpha = .71$ Impulsivity (3) $\alpha = .80$ Disruptiveness (4) $\alpha = .74$	Self evaluations (n=963): χ^2 (df) = 166.78 (84) RMSEA = 0.05 NNFI = 0.95 SRMR = 0.03 Peer evaluations (n=974): χ^2 (df) = 227.69 (81) RMSEA = 0.06 NNFI = 0.98 SRMR = 0.02 Teacher evaluations (n=974): χ^2 (df) = 233.31 (81) RMSEA = 0.06 NNFI = 0.96 SRMR = 0.04 Parent evaluations (n=889): χ^2 (df) = 222.92 (83) RMSEA = 0.06 NNFI = 0.93 SRMR = 0.05
2. Finnish version of the Peer Network and Dyadic Loneliness Scale (PNDL) translated and modified in the article 3 for children and in the article 4 for adolescents on the basis of PNDL by Hoza, Bukowski, & Beery (2000).	Children's self evaluation: Social loneliness (5) $\alpha = .81$ (4 th gr. aut.) $\alpha = .84$ (4 th gr. spring) $\alpha = .85$ (5 th gr. aut.) Emotional loneliness (5) $\alpha = .77$ (4 th gr. aut.) $\alpha = .81$ (4 th gr. spring) $\alpha = .84$ (5 th gr. aut.) Adolescents' self evaluation: Social loneliness (5) $\alpha = .82$ (7 th gr. aut.) $\alpha = .87$ (7 th gr. spring) $\alpha = .86$ (8 th gr. aut.) Emotional loneliness (5) $\alpha = .79$ (7 th gr. aut.) $\alpha = .84$ (7 th gr. spring) $\alpha = .90$ (8 th gr. aut.)	Children's self evaluation: 4 th gr. autumn (n=981): χ^2 (df) = 76.80 (34) CFI = 0.98 TLI = 0.97 RMSEA = 0.04 SRMR = 0.03 4 th gr. spring (n=943): χ^2 (df) = 129.08 (34) CFI = 0.95 TLI = 0.94 RMSEA = 0.05 SRMR = 0.04 5 th gr. autumn (n=930): χ^2 (df) = 158.25 (34) CFI = 0.95 TLI = 0.93 RMSEA = 0.06 SRMR = 0.04 Adolescents' self evaluation: 7 th gr. autumn (n=381): χ^2 (df) = 68.19 (34) CFI = 0.96 TLI = 0.95 RMSEA = 0.05 SRMR = 0.04 7 th gr. spring (n=186): χ^2 (df) = 58.01 (34) CFI = 0.96 TLI = 0.95 RMSEA = 0.06 SRMR = 0.05 8 th gr. autumn (n=181): χ^2 (df) = 48.52 (34) CFI = 0.97 TLI = 0.97 RMSEA = 0.05 SRMR = 0.05

<p>3. Social Anxiety Scale for Adolescents (SAS-A) validity and reliability tested in article 4. The original version by La Greca & Lopez (1998) was translated by Ranta, Niemi and Uhmavaara (2006).</p>	<p>Fear of Negative Evaluation (8) $\alpha = .84$ (7th gr. aut.) $\alpha = .89$ (7th gr. spring) $\alpha = .88$ (8th gr. aut.) Social Avoidance and Distress in General (4) $\alpha = .63$ (7th gr. aut.) $\alpha = .79$ (7th gr. spring) $\alpha = .80$ (8th gr. aut.) Social Avoidance and Distress in New Situations (6) $\alpha = .76$ (7th gr. aut.) $\alpha = .81$ (7th gr. spring) $\alpha = .83$ (8th gr. aut.)</p>	<p>7th gr. autumn (n=381): χ^2 (df) = 181.17 (116) CFI = 0.96 TLI = 0.96 RMSEA = 0.04 SRMR = 0.05 7th gr. spring (n=186): χ^2 (df) = 197.17 (116) CFI = 0.93 TLI = 0.92 RMSEA = 0.06 SRMR = 0.07 8th gr. autumn (n=181): χ^2 (df) = 244.32 (116) CFI = 0.93 TLI = 0.88 RMSEA = 0.08 SRMR = 0.08</p>
<p>4. Social Phobia Inventory (SPIN) validity and reliability tested in article 4. The original version by Davidson (2000) first published by Connor et al., (2000) was translated by Ranta (2006).</p>	<p>Social Phobia (17) $\alpha = .89$ (7th gr. aut.) $\alpha = .92$ (8th gr. aut.)</p>	<p>7th gr. autumn (n=381): χ^2 (df) = 196.48 (117) CFI = 0.90 TLI = 0.89 RMSEA = 0.06 SRMR = 0.05 8th gr. autumn (n=181): χ^2 (df) = 247.65 (117) CFI = 0.90 TLI = 0.89 RMSEA = 0.08 SRMR = 0.06</p>
<p>5. Teacher Evaluations of the Children's Motivational orientation (MOSCS) validity and reliability tested in article 2.</p>	<p>Task Orientation (8) $\alpha = .94$ Social Dependence Orientation (5) $\alpha = .64$ Ego Defensive Externalizing Orientation (4) $\alpha = .88$ Ego Defensive Internalizing Orientation (3) $\alpha = .87$</p>	<p>Teacher evaluation (n= 430) χ^2 (df) = 940.55 (358) NNFI = 0.95 RMSEA = 0.05 SRMR = 0.09</p>
<p>6. Reading and Mathematical Skills used in article 2.</p>	<p>- Decoding skills and reading comprehension measured with Finnish Standardized Reading Test for elementary school children (Lindeman, 1998) - LULA – understanding of number relationships (Räsänen, 2004) - RMAT – basic arithmetic operations (Räsänen & Koponen, 2005)</p>	<p>Reported in the original scale manuals (Lindeman, 1998; Räsänen, 2004; Räsänen & Koponen, 2005).</p>
<p>7. Finnish version of the Revised UCLA Loneliness Scale translated and modified for the articles 2 and 3 for mothers and fathers on the basis of UCLA by Russell, Peplau, & Cutrona (1980).</p>	<p>Mothers' self evaluations: Loneliness (10) $\alpha = .84$ (article 2; n=430) $\alpha = .84$ (article 3; n=834)</p> <p>Fathers' self evaluations: Loneliness (10) $\alpha = .83$ (article 2; n=335) $\alpha = .84$ (article 3; n=661)</p>	<p>In article 3: Mothers' self evaluations (n=834): χ^2 (df) = 112.98 (29) CFI = 0.95 TLI = 0.92 RMSEA = 0.06 SRMR = 0.04 Fathers' self evaluations (n=661): χ^2 (df) = 82.03 (29) CFI = 0.96 TLI = 0.94 RMSEA = 0.05 SRMR = 0.03</p>

<p>8. Parenting self-efficacy scale (PSE) developed in the article 2 on the basis of Self-Efficacy for Parenting Tasks Index (SEPTI) by Coleman & Karraker (2000).</p>	<p>Mothers' self-evaluations: Nurturance (3) $\alpha = .61$ Discipline (3) $\alpha = .71$ Recreation (2) $\alpha = .53$ Participation (3) $\alpha = .59$ (One-factor solution (11) $\alpha = .83$)</p>	<p>Mothers' self-evaluations (n=430): χ^2 (df) = 63.83 (37) CFI = 0.96 RMSEA = 0.04 SRMR = 0.04</p>
	<p>Fathers' self evaluations: Nurturance (3) $\alpha = .61$ Discipline (3) $\alpha = .69$ Recreation (2) $\alpha = .51$ Participation (3) $\alpha = .56$ (One-factor solution (11) $\alpha = .81$)</p>	<p>Fathers' self evaluations (n=335): χ^2 (df) = 41.02 (37) CFI = 0.99 RMSEA = 0.02 SRMR = 0.04</p>

* Cronbach's alphas as an indicator of internal consistency reliability coefficient

** χ^2 (df) = chi-square (degrees of freedom); RMSEA = Root Mean Square Error of Approximation; NNFI = Non-Normed Fit Index, which is equal to TLI = Tucker and Lewis Index; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual.