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ULLA HINTIKKA

# Changes in Adolescents' Cognitive and Psychosocial Functioning and Self-Image During Psychiatric Inpatient Treatment

Doctoral dissertation

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for public examination in Auditorium, Tietoteknia building,  
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Department of Psychiatry  
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## Abstract

Few previous studies have characterized adolescent inpatients' cognitive functioning, self-image and working alliance using structured assessment measures. The present study set out to investigate gender differences, cognitive functioning, self-image and psychosocial functioning, changes in these parameters, and the role of working alliance during inpatient treatment of adolescents. Comparisons were made between girls and boys, between patients with major depression and conduct disorders, and between those with and without suicide attempts.

The study sample consisted of 63 adolescents aged 13 to 18 years (40 girls and 23 boys) referred from March 1997 to the end of December 1999 for psychiatric treatment to the adolescent psychiatric inpatient unit of Kuopio University Hospital, Finland. More girls than boys were admitted to inpatient care. Mood and conduct disorders were the most common diagnoses. Girls more commonly had poor family relationships but more peers than boys. Violent and destructive behaviour were more common among boys, and they performed worse in tests assessing nonverbal cognitive performance and total immediate recall memory than girls. Both girls and boys had an impaired IQ at entry. Major impairment in functioning in several areas such as school, family relations, judgment and thinking was found among both genders.

The psychosocial functioning and cognitive performance of inpatients improved during treatment. There were also improvements in intrapsychic constructs: in the psychological self-image, especially body-image, and in relationships with family members, particularly among emotionally-disturbed adolescents. Cognitive performance was significantly enhanced among subjects both with a good and with a poor working alliance. According to multivariate analyses, a better quality of working alliance and a greater number of therapy sessions were associated with positive changes in cognitive performance and self-image.

When subjects with major depression and conduct disorder were compared, nonverbal cognitive and general cognitive performance, body and self-image, and overall psychosocial functioning improved in both groups of subjects during treatment. More positive changes in self-image and family functioning were found among subjects with MDD.

Suicidal adolescents' treatment compliance and outcome were as good as those of non-suicidal patients. Their psychosocial functioning, cognitive performance, and both the psychological self and body-image improved during treatment. Positive changes in body-image associated significantly with a higher probability of improvement in psychosocial functioning, while a higher GAS score at entry was associated with a lower probability of functional improvement.

In clinical practice, attention needs to be paid to structured assessment of adolescent psychiatric inpatients. This study suggests need-adapted treatment to combine at least regular individual therapy, pharmacotherapy, family interventions, and a school program. Since a good working alliance between the therapist and the adolescent patient seems to modify the treatment outcome, particular attention to creating a good alliance with the patient and intensive involvement of the parents in treatment are recommended. Prospective studies with a sufficient follow-up after discharge and well-designed intervention studies among adolescent inpatients are needed.

National Library of Medicine Classification: WS 350, WS 463

Medical Subject Headings: Adolescent; Adolescent Behavior; Adolescent, Hospitalized; Adolescent Psychiatry; Body Image; Child Behavior Disorders; Cognition; Conduct Disorder; Depression; Depressive Disorder; Finland; Hospitalization; Inpatients; Mental Disorders; Mental Health Services; Psychiatric Status Rating Scales; Self Concept; Suicide, Attempted; Treatment Outcome; Violence



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## Tiivistelmä

Nuorisopsykiatrista osastohoitoa on tutkittu vähän ja aikaisempia perusteellisia strukturoituja arviointimenetelmiä käyttäneitä hoidon seurantatutkimuksia on niukasti. Tämän tutkimustyön tarkoitus on ollut paneutua juuri hoidon aikana tapahtuviin muutoksiin nuoren kasvutapahtumassa. Selvitettiin osastohoitoon tulevien nuorten kognitiivista ja psykososiaalista toimintakykyä sekä minäkuvaa ja perhevuorovaikutusta. Erityisesti tutkittiin potilaiden oiretasoista, kognitiivista ja psykososiaalista toipumista ja terapeuttisen yhteistyösuhteen merkitystä nuorisopsykiatrisen osastohoidon aikana. Tutkimukseen kuului sukupuolten välisiä vertailuja, diagnoosiryhmittäin verrattiin masennuksesta ja käytöshäiriöistä kärsivien nuorten toipumista sekä itsemurhaa yrittäneiden ja ei-psykoottisten potilaiden hoitosuhteen, psykososiaalisen toimintakyvyn, kognitiivisen tason ja minäkuvan muutoksia suhteessa psykososiaaliseen toipumiseen.

Tutkimusaineistona oli 63 prospektiivisesti 1.3.1997–1999 välisenä aikana Kuopion yliopistollisen sairaalan nuorisopsykiatrian suljetuille osastoille hoitoon otettua 13–18 -vuotiaista nuorta, joista tyttöjä oli 40 ja poikia 23. Tutkimus on osa Kliininen Laatu- ja tutkimusprojekti depression hoidon tulostutkimusta Kuopion yliopiston psykiatrian klinikassa. Tyttöjä lähetettiin hoitoon enemmän ja heitä oli enemmän hoidossakin kuin poikia. Yleisimmät psykkiset häiriöt olivat depressio ja käytöshäiriö. Tyttöillä oli enemmän ikäovereita. Tyttöjen perhesuhteet olivat useammin ristiriitaisemmat kuin poikien. Pojille oli tyypillisempää väkivaltainen ja tuhoava käyttäytyminen tulovaiheessa. Kognitiivinen suoritustaso ja muistisuoriutuminen jäivät pojilla heikommiksi kuin tytöillä. Tyttöjen ja poikien älyllinen suoriutuminen oli heikentynyt, kouluasuoriutumisessa, päätösten tekemisessä ja loogisessa ajattelussa tulovaiheessa. Perhesuhteissa oli varsinkin tulovaiheessa ongelmia.

Kaikkien nuorten psykososiaalinen ja kognitiivinen toimintakyky paranivat osastohoidon aikana. Kun verrattiin nuoria, joiden terapeuttinen hoitosuhde toimi hyvin niihin nuoriin joiden hoitosuhde toimi keskitasoa heikommin, todettiin että hyvä hoitosuhde ja lukuisammin toteutuneet terapiakerrat edistivät nuorten kognitiivista toipumista.

Depressiivisten nuorten psykologinen minäkuva, erityisesti ruumiinkuva ja kanssakäyminen perheen kanssa paranivat osastohoidossa selkeämmin verrattuna käytöshäiriöstä kärsiviin nuoriin. Nuorten psykososiaalinen toiminta ja ei-verballinen sekä yleinen kognitiivinen toimintakyky että minäkuva ja ruumiinkuva paranivat merkittävästi molemmissa ryhmissä.

Itsemurhaa yrittäneet nuoret sitoutuivat hoitoonsa yhtä kiinteästi kuin muutkin ei-psykoottiset osastolla hoidossa olleet nuoret. Psykososiaalinen toimintakyky sekä kognitiivinen suoriutuminen että ruumiinkuva ja psykologinen minäkuva paranivat hoidon aikana. Lisäksi psykososiaaliseen toipumiseen liittyi merkittävästi parantunut ruumiinkuva monimuuttuja-analyysin mukaa. Tulovaiheen huomattava psykososiaalisen toimintakyvyn alentuminen ennusti heikompaa toimintakyvyn paranemista.

Nuorisopsykiatristen osastopotilaiden huolellinen arviointi on perusteltua käyttäen strukturoituja menetelmiä tarkoituksenmukaisesti. Tämän tutkimuksen tulokset puhuvat sen puolesta, että tuloksellinen osastohoito edellyttää erityyppisten interventioiden, kuten säännöllisen yksilöllisen ja terapeuttisen hoitosuhteen, perheinterventioiden sekä psyykenlääkehoidon ja suunnitelmallisen kouluohjelman yhdistämistä. Suositeltavaa olisi kehityspsykologinen, tarpeen mukainen hoitomalli, mikä huomioisi oireiden ja ongelmien hoidossa sukupuolen ja psyykenhäiriön puhkeamisen sekä yksilö- että perhetason vuorovaikutuksen eri nuoruusiän kehitysvaiheissa. Terapeuttisen yhteistyösuhteen ja perhesuhteiden hoitamisen nuoren potilaan kanssa tulisi kiinnittää erityistä huomiota. Nuorilla, joilla oli hyvä yhteistyösuhde ja hyvät perhesuhteet hoidon alussa tarvitsivat vähemmän lääkitystä ja heidän perheminäkuvansa oli parempi hoidon päättyessä verrattuna niihin nuoriin, joilla oli heikot perhesuhteet hoidon alussa. Tutkimuksen alueella tarvitaan strukturoituja menetelmiä soveltavia osastopotilaiden pitkiä seurantatutkimuksia ja nuorisopsykiatrista osastohoitoa koskevia interventiotutkimuksia.

Yleinen suomalainen asiasanasto: hoitosuhde; itsemurhayritykset; Kuopion yliopistollinen sairaala; käytöshäiriöt; masennus; minäkuva; nuoret; nuorisopsykiatria; psykiatrinen hoito; psyykinen toimintakyky; ruumiinkuva; seurantatutkimus; suoriutuminen; toimintakyky; toipuminen









*To adolescent psychiatric inpatients*



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Kuopio, October 2007

*Ulla Hintikka*

Ulla Hintikka

## Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
BDI	Beck Depression Inventory
BASC	Behaviour Assessment System for Children
BD	Bipolar Disorder
BMJ	British Medical Journal
CA	Chronological age
CAFAS	Child and Adolescent Functional Assessment Scale
CAF	Global Assessment Scale of Functioning Scale
CAP	Children Attention Profile
CBT	Cognitive Behavioral Therapy
CD	Conduct Disorders
CI	Confidence Interval
CGAS	Children's Global Assessment Scale
DSH	Deliberate Self Harm
DSM	Diagnostic Statistical Manual
F	Distributed test value
FIQ	Verbal Intelligence Quotient Intelligence Quotient
GAPD	Global Assessment of Psychosocial Disability
GAS	Global Assessment Scale
HOS	Health Orientation Scale
HSQ-R	Home Situations Questionnaire – Revised
ICD	International Statistical Classification of Diseases and Related Health Problems
IQ	Intelligence Quotient
LLT	List Learning Test
MA	Concept of Mental Age
MCQ, MAC-Q	the Memory Complaint Questionnaire
MD	Mood Disorder
MDD	Major Depressive Disorder
MST	Multisystemic Therapy
NEPSY	Luria-Nebraska Neuropsychological Battery
ns	nonsignificant

OR	Odds Ratio
OSIQ	Offer Self-Image Questionnaire
p	p-value
PIQ	Nonverbal Intelligence Quotient
RSES	Rosenberg Self-Esteem Scale
SCID	Structured clinical interview for DSM-III-R
SD	Standard Deviation
SDQ	General Self Scale of the Self-Description Questionnaire
SOFAS	Social Occupational Functioning Assessment Scale
SSQ-R	School Situations Questionnaire - Revised
TSCS	Tennessee Self-Concept Scale
VIQ	Verbal Intelligence Quotient
VMI	Visual Motor Integration
WAI	Working Alliance Inventory
WAIS-R	Wechsler Intelligence Scale for Adults
WCST	Wisconsin Card Sorting Test
WISC-III-R	Third edition of the Wechsler Intelligence Scale for Children
WMS-R	Wechsler Memory Scale
Z	normally (with expected value zero and standard deviation one) distributed test value)

## List of original publications

Original publications are referred to in the text by the Roman numerals I – IV.

- I Hintikka U, Pelkonen M, Hintikka J, Laukkanen E, Lehtonen J.  
Gender-specific differences in cognitive functioning and self-image among admitted adolescent psychiatric inpatients. *Psychiatr Fenn* 2002;33:51-66.
- II Hintikka U, Laukkanen E, Marttunen M, Lehtonen J.  
Good working alliance and psychotherapy are associated with positive changes in cognitive performance among adolescent psychiatric inpatients. *Bulletin of the Menninger Clinic*. Fall 2006;70(4):316-335.
- III Hintikka U, Viinamäki H, Pelkonen M, Hintikka J, Laukkanen E, Korhonen V, Lehtonen J.  
Clinical recovery in cognitive functioning and self-image among adolescents with major depressive disorder and conduct disorder during psychiatric inpatient care. *Am J Orthopsychiatry* 2003;73(2):212-222.
- IV Hintikka U, Marttunen M, Pelkonen M, Laukkanen E, Viinamäki H, Lehtonen J.  
Improvement in cognitive and psychosocial functioning and self image among adolescent inpatient suicide attempters. *BMC Psychiatry* 2006, 6:58:1-10.

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## Contents

1. INTRODUCTION	19
2. REVIEW OF LITERATURE	20
2.1 Bio-psychosocial development in adolescence	23
2.2 Cognitive development in adolescence	27
2.3 Self-image in adolescence	28
2.4 Psychosocial functioning in adolescence	30
2.5 Measurement of cognitive performance	31
2.5.1 Standardized tests	31
2.5.2 Self-report methods	33
2.6 Measurement of self-image	34
2.6.1 Questionnaires based on interviews	34
2.6.2 Self-report methods	35
2.7 Measurement of psychosocial functioning	36
2.8 Psychiatric disorders in adolescence	38
2.8.1 Mood disorders	39
2.8.2 Anxiety disorders	40
2.8.3 Eating disorders	41
2.8.4 Conduct disorders	41
2.8.5 Adolescent substance use	42
2.8.6 Schizophrenia and other non-affective psychoses in adolescence	43
2.9 Suicidal behavior in adolescence	43
2.10 Adolescent psychiatric inpatient treatment	45
2.10.1 Psychodynamic developmental treatment model	46
2.10.2 Cognitive-behavioral treatment model	47
2.10.3 Multimodal adolescent psychiatric assessment and treatment	48
2.10.4 Working alliance	51
2.11 Empirical research among adolescent psychiatric inpatients	52
2.11.1 Research on cognitive performance	54
2.11.2 Research on self-image	55
2.11.3 Research on psychosocial functioning	56
2.11.4 Research on working alliance	56
2.11.5 Research on suicide attempters	57
2.11.6 Summary of research on adolescent psychiatric inpatient treatment	58
3. AIMS OF THE STUDY	59
4. SUBJECTS AND METHODS	60
4.1 Study design and patients	60
4.2 Inpatient treatment program	63
4.3 Data collection and assessment methods	64
4.3.1 Sociodemographic and clinical backgrounds	66
4.3.2 Assessments of cognitive functioning	67
4.3.3 Assessment of Self-Image	67
4.3.4 Assessment of psychiatric disorders	68
4.3.5 Assessment of symptoms of depression	68
4.3.6 Assessment of psychosocial functioning	69

4.3.7	Assessment of working alliance	69
4.3.8	Assessment of family functioning	70
4.4	Statistical analyses	70
5	RESULTS	72
5.1	Gender differences in clinical characteristics, cognitive functioning and self-image (Study I)	72
5.2	The impact of good working alliance on changes in cognitive performance during treatment (Study II)	73
5.3	Clinical improvement in cognitive functioning and self-image among adolescents with major depression and conduct disorder during treatment (Study III)	75
5.4	Improvement in cognitive and psychosocial functioning and self image among adolescent inpatient suicide attempters (Study IV)	76
6	DISCUSSION	80
6.1	Main findings	80
6.2	Gender-specific differences in cognitive functioning and self-image (Study I)	80
6.3	Good working alliance and psychotherapy associate with positive changes in cognitive performance (Study II)	82
6.4	Clinical improvement in cognitive functioning and self-image among adolescents with major depression (MDD) and conduct disorder (CD) during treatment (Study III)	82
6.5	Improvement in cognitive and psychosocial functioning and self image among adolescent inpatient suicide attempters (Study IV)	84
6.6	Methodological considerations	86
6.6.1	Study methods	86
6.6.2	Limitations	88
7	CONCLUSION AND IMPLICATIONS	89
7.1	Clinical implications	89
7.2	Implications for future research	90
8	REFERENCES	91

ORIGINAL PUBLICATIONS I TO IV

## 1 INTRODUCTION

The time from adolescence to adulthood, i.e. from the ages of approximately 12 to 22 years, is characterized by rapid physiological and psychological changes, cognitive maturation and intensive readjustment to the family, school, peers and other elements of social life, as well as preparation for adult roles.

The incidence and prevalence of psychiatric disorders increases during adolescence and many major adult disorders have their onset in adolescence. Approximately one fifth of the adolescent population suffers from a diagnosable psychiatric disorder, with anxiety, depressive and conduct disorders being among the most common. One third of those who had used services at the age of eight had a psychiatric disorder in late adolescence and early adulthood, and among men, 10.4% had a psychiatric disorder according to the national military register (Sourander et al. 2005). Nevertheless, the use of psychiatric services in adolescence is rare (Aalto-Setälä et al. 2001, Sourander et al. 2005), indicating significant under-treatment. Despite an increase of 137% in Finnish adolescent psychiatric beds in the 1990s, the treatment needs of adolescents are not sufficiently met (Laukkanen et al. 2003). The number of psychiatric beds in different Health Districts varied from 0 to 7.4 per 10 000 12 -17-year-olds.

It has been estimated that the annual incidence of new cases of adolescent psychiatric inpatients is about 12 – 14 per 10 000. Psychiatric inpatient treatment is comprehensive and expensive and should be provided only for the most severe disorders and crises because of becoming institutionalized. In Finland, few studies have been conducted to evaluate the treatment outcome of hospitalized adolescent psychiatric patients, or possible predictors of the outcome. Previous research suggests that short-term treatment gains are reasonable while long-term follow-up studies suggest that particularly severely impaired adolescent psychiatric inpatients have a high risk of a poor long-term prognosis in terms of rehospitalisation, working capacity, morbidity and mortality.

This prospective study was part of systematic evaluation of inpatient treatment in the Clinical Quality project of an outcome study among inpatients at the Department of Psychiatry, Kuopio University Hospital. The present study set out to assess gender differences, cognitive functioning, self-image and psychosocial functioning, changes in these parameters, and the role of working alliance during the inpatient treatment of adolescents.

## 2 REVIEW OF THE LITERATURE

Due to the complexity of adolescent development there is no one unified theory of development in adolescence (Calam 2001). One central theory in understanding individual development is the attachment theory, which reflects on the network of relationships in the family and broader social context (Ainsworth 1978). Attachment theory views development as a goal-directed process of change, during which new competencies and adaptive patterns emerge from the reorganization of previous patterns, structures, and competencies. Attachment theory is based on four basic assumptions. Firstly, development is dialectical and paradoxical, which means that development is a dynamic process embodying structure and process, organization and activity, differentiation and integration, continuity and discontinuity, stability and change. Secondly, development is relational and contextual. In human development, the individual is seen as emerging or differentiating from within a matrix of relationships and remaining independent within a relational context throughout the lifespan. Thirdly, development is constructivist and metaphoric. Development is co-construction of meaning and knowledge through the coordination of actions, affective communication, language, awareness, and shared experience. All human categories are metaphoric, constructed from experience, constrained by biology, and finding stability in the consensual domain of human meaning systems. Fourthly, development is cybernetic and recursive.

Research on infants and their caregivers has identified four types of attachment: secure, avoidant, ambivalent and disorganized (Rosenstein & Horowitz 1997). These studies have shown that the prior attachment status is predictive of later behaviour. Secure attachment is beneficial to development across the lifespan, while insecure attachment is associated with poor peer relationships in childhood and poor social competence in adolescence (Calam 2001).

Rutter and Rutter (1993) emphasized that the individual is an active rather than a passive participant in her or his own development, and that the meaning of transitions and their interpretation is also important. Protective factors and different ideologies in the family have an impact on an adolescents' development. Individual development seems to be a complicated mix of both continuity and discontinuity. If development is generally considered to be more discontinuous and subject to the influence of the current context, then a great deal of change could occur with proper interventions and environmental changes (Kausch Rihter 1997). It seems that certain aspects of the individual may be more continuous, such as temperament and self-image, while other aspects may

be more discontinuous, such as behavioural expression changes across developmental stages (Offer et al. 1990). Cognition demonstrates the possibility of continuity and discontinuity. While the results of intelligence tests in middle childhood are predictive of performance in adolescence, they do not predict performance in adulthood. Furthermore, while intelligence as measured by standardized tests tends to be relatively stable with advancing age, cognitive ability does not (Kausch Rihter 1997). Throughout adolescence, gains continue to be made in the practical use of abstract thought, social cognition, information processing, and perceptual ability (Kausch Rihter 1997).

According to Offer and Offer (1975), there are three general patterns of psychosocial development in adolescence: continuous growth, surged growth and tumultuous growth. (Golombeck & Marton 1992) found that adolescents aged 10 to 19 years fell into three general patterns of personality functioning: consistently clear, fluctuating, and consistently disturbed (Kausch Rihter 1997).

Hauser (Hauser et al. 1991) and colleagues (1991) emphasized family interaction in the development in adolescence and focused on impulse control and moral style, interpersonal style, conscious preoccupations, and cognitive style. The developmental stages run from pre-conformist through conformist to post-conformist types. In childhood or adolescence most people reach the conformist stage, in which an individual would follow external rules, be helpful and nice, be concerned with appearances and acceptability, have conceptual simplicity and use stereotypes and clichés. In the post-conformist stage a person is autonomic, can evaluate and use moral and social cognition (Shapiro & Kalogerakis 1997).

Theories on parental perceptions of separating children emphasize adolescence as a developmental phase of separation and individuation (Stierlin et al. 1971). Parental perceptions may be separation-inducing or separation-inhibiting and ambiguous or conflicting. Separation in adolescence is part of a continuous movement towards relative mutual individuation in which parents and children participate. The aim of this process is mature interdependence of the parties. Adolescents become less dependent on their parents; through school and peer contacts they make available alternative models for forming self-image and identity. With new cognitive tools at their disposal, and increasing claims to be given credence for their judgments, adolescents can play powerfully on their parents' vulnerabilities by labelling them as bad parents or failures in life. Due to the psycho-physiological momentum of adolescence, they move away from their parents towards new

relationships outside the family. To the extent that adolescents become more autonomous, they tend to immunize themselves against their parents' expectations and perceptions of them. In addition to clarifying parental expectations and perceptions, the task of liberation takes place, meaning that adolescents free themselves from the impact of parental perceptions and expectations, which by now have taken hold of them. These developmental tasks will help separating adolescents to differentiate their own self-image, own motivation and aspirations from those held by their parents.

The neurobiological basis of developmental theories is not well known, possibly because the contribution of nature and nurture is more indistinct than in the maturation of emotional responses (Solantaus 2000). It can be assumed that the reactions of caregivers during a child's first years of life are eventually internalized as distinct neural circuits, which may be only incompletely subject to modification through subsequent experience (Kausch Rihter 1997).

A recent development in object theory has focused on the individual as relationship-seeking. The theory emphasizes internal working models or mental representations associated with affect that may be conscious or unconscious, and that date back to early experiences in childhood (Pervin 2003a). Cognitive theory includes a number of different approaches, illustrated in the works of Kelly (1999), Bandura (1999) and Beck (1961). Generally, these approaches focus on maladaptive and irrational cognitions that are viewed as causing problematic emotions and behaviour (Pervin 2003a). Kelly's personal construct theory focuses on threats to the constructs and new ways of predicting events (Hayes et al. 1999). Bandura's social cognitive theory focuses on the role of negative, maladaptive self-efficacy beliefs in anxiety and depression (Bandura 1999). Modelling and guided participation are suggested as useful procedures for change, and all therapeutic change is viewed as being the result of changes in self-efficacy beliefs. Beck's (1961) views are illustrated in his approach to depression, which emphasizes the cognitive triad of depression (i.e. negative schema concerning the self, world, and future). Interventions involve the identification and correction of dysfunctional beliefs and negative schema through an active, structured, collaborative effort between therapist and patients to logically examine beliefs and develop new ways of behaving.

## 2.1 Bio-psychosocial development in adolescence

Adolescence is a transitional phase of development from childhood to adulthood between the ages of about 12 to 22 years. The developmental goals of adolescence are to separate little by little from childhood images of parents and to develop the psychosexual and social self (Rantanen 2000b). The emergence of puberty starts the transition at around the age of 11 (range 8 to 13) years for females and 13 (range 10 to 14) years for males (Aalberg & Siimes 1999). The onset of puberty is triggered by hypothalamic regulation which is followed by hormonal changes and the start of sexual maturation and bodily growth. Height and weight increase earlier in girls than boys; by the age of 12, girls are taller and heavier than boys. The primary sex characteristics (e.g. the growth of genitals) develop first, followed by the development of secondary sex characteristics (e.g. pubic hair, enlarged breasts and hips in girls, lowered voice in boys). Menstruation and ejaculation start at that age (Aalberg & Siimes 1999). Female and male sex hormone levels increase slowly throughout adolescence and correspond to bodily changes. Hormone levels also influence central nervous system functioning, including mood and behaviour. With the physical changes accompanying puberty, both boys and girls tend to become preoccupied with their appearance. They begin to show emotions in a different way, due to development of the frontal cortex. Cortical growth and remodelling continues from birth through childhood and adolescence to stable adult levels (Crews et al. 2007). There are critical periods of cortical development when specific experiences drive major synaptic rearrangements and learning. Adolescence is the final period of development during which talents, reasoning and complex adult behaviours mature. This maturation of behaviours corresponds with periods of marked changes in neurogenesis, cortical synaptic remodelling, neurotransmitter receptors and transporters, as well as major changes in hormones. Frontal cortical development takes place later in adolescence and probably contributes to refinement of reasoning, goal and priority setting, impulse control and evaluating long- and short-term rewards.

Changes in the hierarchy of attachment figures begin in adolescence (Bowlby 1969). Romantic partners replace parents as primary attachment figures, and attachment is directed toward groups and institutions. In adolescence, relationships with parents come again to the fore and are heightened in intensity compared to preadolescence (Rosenstein & Horowitz 1997). Attachment figures come to be used to foster the adolescent's own capacity to master challenges, as allies according to Rosenstein and Horowitz, 1997 in Table 1.

**Table 1.** Attachment figures in adolescence.

<b>Attachment Figure</b>	<b>Psychic State</b>	<b>Identity Cohesion</b>	<b>Relationships towards parents</b>	<b>Relationships towards others</b>	<b>Self regulation</b>
<b>Secure</b>	autonomous	firm	coherent and consistent	relatively independent and objective	good
<b>Avoidant</b>	dismissing	insecure	negative	affective and idealized	poor and dismissive
<b>Ambivalent</b>	preoccupied	cyclical	blames and anger	conflicted	disavowal
<b>Disorganized</b>	unresolved	diffusion	distress	disorganized	incoherent and disoriented

Those with secure autonomous attachment value relationships and regard attachment-related experiences as pleasurable. Characteristics of avoidant, dismissing attachment are dismissing the importance of relationships or dismissing the extent of the impact of the relationships on the self. Ambivalent, preoccupied attachment is characterized by cyclical efforts to gain security from the attachment figure and avoidance of that figure. Disorganized, unresolved attachment characterizes adolescents who do not possess a coherent and functional strategy for regulating distress on separation (Table 1).

Epidemiological studies have shown that most young people pass through adolescence without extensive turmoil (Offer & Schonert-Reichl 1992). Characteristic behaviours for many adolescents include high levels of risk taking, exploration, novelty and sensation seeking, social interaction and play behaviours (Crews et al. 2007). Throughout adolescence the peer group gradually shifts from same-sex groups in early adolescence and dyads to opposite-sex groups and finally dyads (Kausch Rihter 1997). Blos (1979b) has described adolescence as "the second individuation process", which ends with a cohesive identity and sense of self, allowing for independent functioning. The adolescent becomes capable of taking over functions that were previously performed by parental ego supports and parental introjections. According to Erikson's (1968) psychosocial theory the



formation of identity takes place along a sequel of developmental tasks that have to be solved one by one, and unaccomplished tasks persist as problems in subsequent developmental stages. The primary task is the formation of identity, the sustained separation from social, residential, economic and ideological independence on one's family of origin.

Three biopsychological phases of adolescence have been distinguished: early, middle and late adolescence (Kausch Rihter 1997). During early adolescence from the age of 12 to 14 years, rapid physical changes associated with puberty occur and the adolescent has to accept the changes in her or his body and incorporate the changes into the self-image. Adolescents are still attached to their families and sexual fantasies are generally repressed (Sadock et al. 2004). A characteristic of this stage is that sexuality is directed outwards: rude jokes, hero worship, and idealization of movie and music stars. Masturbation is one of the ways to gain acquaintance with one's newborn sexual body (Rantanen 2000b). The changes associated with puberty coincide with increased academic demands and the social expectations of teen culture (Kausch Rihter 1997). Early adolescents commonly want to be alone and may regress to babyish behaviour. Changes in cognition and moral development also are beginning to occur, along with the development of abstract thinking. The early adolescent begins to be able to take into account other people's viewpoint, and form the adolescent model of egocentric thinking, manifesting itself in self-consciousness. Both boys and girls begin to show a strong interest in the opposite sex, and about half report infrequent petting. However, sexual intercourse in early adolescence is relatively uncommon.

According to Furman (1988), the concept of object removal is fundamental in understanding the evolution of adolescent development. Object removal is irreversible, proceeds in one specification only and is exclusively involved against incestuous desires; these desires are focused on another, new object is then peer group. Interest in the opposite sex begins among same-sex peers and later occurs among opposite-sex companions. However, there is a regressive pull towards infantile parental figures and their substitutes, which is threatening to a young adolescent. Adolescent individuation is a reflection of those structural changes that accompany the emotional disengagement from internalized infantile objects. Blos (1967) emphasizes that successful disengagement from infantile internalized objects is a prerequisite for finding new, extra-familial love objects (Blos 1967). Aggression is another powerful force that is removed from infantile objects and can enhance the identification process (Wechsler 1946).

Mid-adolescence covers the years from around 15 to 16 and is the time of physicality, eroticism, showing off and dating (Blos 1979a). This is the period when the adolescent increasingly moves from family and parents toward peers and friendships (Rantanen 2000b). As she/he separates and individuates from significant others, she/he redefines relationships and starts bickering with parents over everyday issues (Kausch Rihter 1997). In general, adolescents report positive feelings towards their families (Offer et al. 1981). Adolescent's attachment changes to non-family figures by mourning, and diminution of the mental representation of the parents takes place during this phase. Mid-adolescents are very sensitive to separation and body-image because their sexual identity and the psychological and social self are developing most during this phase (Rantanen 2000b). The revision of the body-image includes giving up the grandiose, omnipotent fantasies of childhood and early adolescence and coming to terms with a reality that has both potential and limitations. Intrapsychic events and new capacities alter the adolescent's relationship with the social world via regression (Blos 1979a). Cognitive and moral thinking continue to increase, although the use of formal thought and conventional morality depends on the content and context. Only some individuals advance to post-conventional morality, involving a sense of social contract between the individual and society and universal ethical principles (Kohlberg & Lickona 1976).

Late adolescence covers the years from 17 to 19 and beyond, when the adolescent has increasing interest and involvement in career choice and sexual identity, personal life style, and in moral and ethical values (Erikson 1968). During this phase an adolescent has developed the ability to fall deeply in love (Aalberg & Siimes 1999, Blos 1979a). Changes in the body confront the adolescent with the achievement of a final sexual identity by the end of adolescence. Radical revision of the body-image, the ego ideal and fantasy life is a necessary part of the process, which continues throughout adolescence. Late adolescents gradually develop a sense of personal continuity over time and an integrated, coherent theory of the self, more as advanced cognitive abilities allow them to resolve diverse self-attributes that are sometimes more apparent in one social role than another. The social network continues to expand, and most adolescents experience dating before ending high school. Self-support is achieved when the adolescent has developed gender and sexual identity for love-affairs and vocational goals at around 20 to 22 years; she or he is ready to transfer to young adulthood.

## 2.2 Cognitive development in adolescence

At the same time as the onset of physical and sexual maturity begins the adolescent cognitive process (Crews et al. 2007). Cognition develops inductively and deductively. Social cognition is a construct of cognition, meaning the ability to think about people, social relationships and social institutions (Calam 2001). The role-taking ability continues to develop through adolescence and results in an ability to appreciate other people's perspective and argue effectively. At the core of good peer relations lies social cognition, and conceptions of morality and social convention. Moral principles of fairness, justice and equality begin to be considered in a more abstract way (Kohlberg & Lickona 1976), and the adolescent realizes that social conventions serve a functional purpose in regulating and coordinating actions between people (Steinberg & Morris 2001). Adolescents who show a higher level of these social cognitive abilities appear better able to behave in more socially competent ways (Calam 2001).

Developmental theories focus on remodelling and nurturing processes in cognitive development. Adolescence represents an important period of brain development, particularly for the cerebral cortex (Crews et al. 2007) and parietal (areas of language and spatial orientation changing around the ages of 11–13 years) and prefrontal areas involved in integrating information from senses, reasoning and other "executive functions" (Gogtay et al. 2004). These age-related changes in cortical structure involve improved cognitive functioning in adolescence. Behavioural studies have shown that performance in tasks including inhibitory control, decision making and processing speed continues to develop during adolescence (Rosenzweig & Bennett 1996). Selective attention, working memory and problem solving consistently improve, correlating with frontal cortical synaptic pruning and myelination during adolescence (Blakemore & Choudhury 2006). Inhibitory control involves executive functions that continue to improve from adolescence to adulthood (Crews et al. 2007).

The adolescent's thinking, observation, sensomotor behaviour, language, memory functions, problem-solving skills and social skills become more abstract, conceptual, logical, adaptable and future-oriented (Piaget et al. 1977). Piaget's (1977) theory explains thinking by schemes; these include repertoires of physical actions associated with particular objects, people or contexts. They are mental actions such as classifying and comparing, developing in adolescence into a process of deductive analysis or systematic reasoning operations (Calam 2001). Schemes are modified and

adapted through assimilation, where new experiences are taken in and incorporated into existing schemes, often with some modification of the incoming information, and accommodation, where existing schemes are modified to fit new experiences or create new schemes when new information cannot be made to fit existing ones.

According to Piaget (1977), the child develops from a sensor motor stage (birth to 2 years) and preoperational stage (2 to 7 years) by knowing object permanence and symbolization to a sense of immanent justice, phenomenistic causality and animistic thinking to the level of concrete thinking. At the age 7 to 11 years egocentric thought is replaced by operational thinking, which involves attending to the outside, and the child develops the ability to formulate hypotheses. In this stage of concrete operations a child can serialize, order and group things. From the age of 11 years to the end of adolescence is the stage of formal operations and 50-60% of 18- to 20-year-olds use formal operations (Calam 2001). Adolescents achieve abstract thinking in terms of the capacity for deductive logical thinking in cognitive development, which is the highest level of thinking in late adolescence (Piaget et al. 1977). This ability to think in terms of abstract concepts enables adolescents to use more advanced reasoning and logical processes and helps in the formulation of arguments and counter-arguments, friendships, responsibility and ideology (Calam 2001). Adolescents are able to solve abstract problems in mathematics and science, to understand educational and occupational choices and training as well as moral connotation. A further important aspect of thinking is that of met cognition, the ability to think about thinking.

### **2.3 Self-image in adolescence**

The concept of self-image (Offer et al. 1981) in adolescence is based on Erikson's (1959, 1968, 1981) psychosocial theory of personality development and identity formation. Adolescence provides a particular challenge to the concepts because personality is generally taken to imply consistency across time and place, but adolescence is a period of substantial biological, psychological and social change (Calam 2001). The self is interesting in its phenomenological experience, in how an adolescent processes information and in organizing personality functioning (Pervin 2003b). Temperamental differences, including personality, tend to persist through childhood to adolescence (Kagan et al. 1999) and they may be illustrated with reference to inherited variations in brain neurochemistry (Calam 2001). Attachment security with caregivers is predictive of a wide range of cognitive and social competencies later in childhood, many of which are relevant

to personality functioning (Bowlby 1988). Object relation theorists emphasize mental representations of the self, others, and the self in relation to others, as well as individual efforts to avoid blows to self-esteem and to maintain a cohesive sense of self (Pervin 2003b). The self-representations are multidimensional, affect laden, associated with motives and possible conflicts, and often unconscious. The social cognitive view of the self is based on concepts and research from cognitive psychology. The self is treated as an important schema that influences the processing of information and has implications for motivation and behaviour. In the social cognition view, a multiplicity of selves (e.g. family of selves, possible selves) and cultural variation in the fundamental nature of the self are emphasized. Neuroscientists' current view is that self-consciousness depends on the integrative functioning of multiple brain structures (Pervin 2003b). The concept of self-esteem has now been widely studied and is globally viewed as an important aspect of personality functioning. (Calam 2001). Self-esteem depends on how the adolescent relates with her/his peer group.

Theoretical work has pointed to the importance of self during adolescence (Erikson 1959;1968;1981) as a result Marcia's formulation of identity (Marcia 1966;1980) and other theoreticians who have investigated the relationship of identity and adjustment in adolescents. Identity is a sub-concept of personality and is seen as a self-concept. Koenig et al. (1984) found that self-concept, which differs from self-image, is relatively stable from adolescence onward (Koenig et al. 1984). On the other hand, self-image, which is a sub-concept of identity development, continues through adolescence and keeps developing over time, being a life-long process (Offer et al. 1981, Calam 2001). Marcia (1966) suggested four types of identity status: 1) identity diffusion, with an avoidance of commitment and decision making; 2) identity foreclosure, with the tentative acceptance of the views of others, e.g. parents; 3) moratorium, a state of crisis with active attention to major decisions and exploration of possibilities but no firmly resolved commitments; and 4) identity achievement, where crisis is resolved and firm commitments are made to ideals and plans. Individuals who have achieved identity are more likely to be better adjusted in a range of social situations.

One of the most widely empirically studied concepts is self-image (Offer et al. 1981). Its theoretical basis lies in Erikson's (1968) concept of ego identity and Marcia's operationalized concept of identity (Marcia 1966). Self-image includes eleven psychosocial areas (Offer et al. 1981). 1) Impulse Control refers to the extent to which the ego apparatus of adolescents is strong enough to

ward off the various pressures that exist in their internal and his external environments. A person whose defensive structure is poorly organized has a low frustration tolerance, while a person with a well-developed ego apparatus is able to delay gratification. 2) Emotional Tone shows the degree of affective harmony within the psychic structure. 3) Body and Self-Image indicates the extent to which adolescents have adjusted to feel about their body. 4) Social Relationships are concerned with object relationships and with friendship patterns. 5) Morals includes moral attitudes, work values and ethical values. 6) Vocational and Educational Goals are one of the specific tasks of adolescents including learning and planning for their vocational future. 7) Sexual Attitudes concern how adolescents feel about their sexual attractiveness, experiences and behaviour. 8) Family Relationships concern how adolescents relate to their parents and the kinds of relationships they have with their father and mother. 9) Psychopathology relates to the signs and psychopathological symptoms adolescents state they have, if any. 10) Mastery of the External World and 11) Superior Adjustment deal with the view of adolescents on how they cope with their world. These areas can be grouped into five “selves”. The Psychological Self of the adolescent deals with the emotions teenager experience, their sense of control over their impulses, and their conception of their body. Social Self assesses adolescents’ perceptions of their interpersonal relationships, their moral attitudes, and their vocational and educational goals. Sexual Self measures how adolescents cope with their sexual feelings and impulses during adolescence and serves as a template for their future sexual behaviour. Familial Self measures the feelings and attitudes teenagers have towards their families and family functioning, and Coping Self focuses on the strength an individual possesses.

#### **2.4 Psychosocial functioning in adolescence**

There is consensus about the usefulness of assessing psychosocial functioning in clinical work, as well as in epidemiological studies and treatment research (Schorre et al. 2004). Psychosocial functioning consists of aspects of an individual’s psyche, behaviour and relationships with others and society (Sadock et al. 2004). Rating scales chart symptoms, functioning, the way of life, and attitudes to treatment. The development of global assessment of functioning started in the 1950s and 1960s (Schorre et al. 2004). The Menninger Foundation developed a measure to quantify the term “mental health”, and as a result the Health-Sickness Rating Scale (HSRS) was published by Luborsky 1962. In children and adolescents, psychosocial functioning is generally seen as a marker of the severity of psychiatric disorder and social disability (Dyrborg et al. 2000).

## **2.5 Measurement of cognitive performance**

Measurement of cognitive performance depends on the theoretical model and whether pure intelligence, cognitive strategies of thinking and ability or attributions or social competence in different situations are assessed. Intelligence can be defined as an ability to assimilate factual knowledge, recall either recent or remote events, reason logically, manipulate concepts, translate the abstract to the literal and the literal to the abstract, analyze and synthesize forms, and to deal meaningfully and accurately with problems and priorities deemed important in a particular setting (Sadock et al. 2004). Intellectual ability tests, intentional capacity tests and neuropsychological screening tests and test batteries have been developed for the measurement of cognitive performance. Self-report methods in the measurement of cognitive performance are mostly lists of attributions. Social integration of children and quality of peer relationships are manifestations of social competence and related to the development of behavioural disorders (Saile 2007).

### **2.5.1 Standardized tests**

The standardized and most widely-used mental ability test series for preschool children, schoolchildren and adults (e.g. standardized from 15 to 17 years old) were developed by David Wechsler 1946. Wechsler Intelligence Scales are composite tests made up of a variety of tasks testing different skills and capacities, and test administration and scoring are invariant across time and examiners. The tests are based on Alfred Binet's (1905) concept of mental age (MA), which is the average intellectual level of a particular age (Binet 1905). An intelligence quotient (IQ) is the ratio of MA to CA (chronological age), multiplied by 100 ( $IQ=MA/CA \times 100$ ). Any composite collection of distinctive tests, each assessing specific aspects of cognition and each suited for use apart from the rest of the test, is actually a test battery. The third edition of the Wechsler Intelligence Scale for Children (WISC-III-R) can be administered to 6- to 17-year-old children and adolescents and the Wechsler Intelligence Scale for Adults can be administered to individuals from the age of 15 years (WAIS-III-R) to yield a verbal IQ, a performance IQ, and a combined full-scale IQ. The verbal subtests consist of vocabulary, information, arithmetic, similarities, comprehension, and digit span (supplemental) categories. The performance subtests include block design, picture completion, picture arrangements, object assembly, coding, and mazes (supplemental), and symbol search (supplemental). An average full-scale IQ is 100; 70 to 80 represent borderline intellectual

function; 80 to 90 is in the low average range; 90 to 109 is average; 110 to 119 is high average; and above 120 is in the superior range.

Wechsler Intelligence Scales have been considered as one test with many parts: they are individually-administered test batteries (Wechsler 1992). Orientation, the awareness of self in relation to one's surroundings, requires consistent and reliable integration of attention, perception, and memory. For example, impairment of particular perceptual or memory functions can lead to specific defects of orientation. The short-term storage capacity reflects the basic dimensions of attention: how fast the attention system operates, and how much it can process at once. In WAIS-R tests, attention capacity is measured by the digit span test, which exposes the subject to increasingly larger or smaller amounts of information with instructions to indicate how much of the stimulus was immediately taken in by repeating what was seen or heard or indicating what was grasped in some other kind of immediate response (Lezak 1995, 356-357, 367). The visual search and visual scanning test digit symbol focuses on concentration and direct visual shifting (Wechsler 1992). All visual perception tests require visual attention and concentration for successful performance. Vocabulary level has long been recognized as an excellent guide to the general mental ability of intact and verbal expression (Lezak 1995, 536, 539). Constructional performance combines perceptual activity with motor response and always has a spatial component (Lezak 1995, 559). More than any other kind of test, the WAIS-R comprises building and assembling tasks involved with the spatial component in perception, at the conceptual level, and in motor execution. The manner in which patients work at block design can reveal a great deal about their thinking processes, work habits, temperament, and attitudes towards themselves (Wechsler 1992). Patients' problem-solving techniques reflect their work habits, orderliness and planning. The tests of concept formation differ from most other tests in that they focus on the quality or process of thinking more than the content of the response.

The Wisconsin Card Sorting Test (WCST) assesses abstract reasoning and flexibility in problem solving (Heaton et al. 1993). Stimulus cards of different colour, form and number are presented to the patient to sort into groups according to a principle established by the examiner but unknown to the patient. The examiner or a computer system tells whether the responses are correct or incorrect, and the number of trials required to achieve 10 consecutive correct responses is recorded. Stimuli are changed when the patient has learned the system and the procedure is repeated several times. A



person with damage to the frontal lobes or the caudate and some persons with schizophrenia give abnormal responses.

The most widely-used memory test batteries are the Wechsler Memory Scale (WMS-R) (Wechsler 1996) to measure the memory quotient, including orientation, short-term and recent and visual memory and the Benton Visual Retention Test to measure short-term memory loss and orientation (Benton & Olsson 1974).

The Luria-Nebraska Neuropsychological Battery (Golden et al. 1981) according to Lurija (1977) assesses sensory-motor, perceptual and cognitive functions, measuring 11 clinical and 2 additional domains of neuropsychological functioning. For example, it measures a wide range of cognitive functions: memory, motor functions rhythm (tactile, auditory) and visual functions, receptive and expressive speech, writing, spelling, reading, and arithmetic. This test is designed for persons at least 15 years of age and the children's NEPSY version can be used with 3- to 12-year-olds (Korkman 2000). The NEPSY consists of 37 sets of tasks that assess psychic functioning in memory, visual-motor, sensor-motor, and linguistic functioning and attention and executive functioning.

Visual conceptualization and visual-motor skills are assessed using drawing tests. For example, the Developmental Test of Visual-Motor Integration (VMI) (Beery 1997) can be used from the age of 2 to adulthood and the Benton Visual Motor Gestalt Test (Bender 1953) and Benton Revised Visual Retention Test (Benton 1963) are also suitable for adolescents and adults. The norms for these tests are mostly international (Sadock et al. 2004).

### **2.5.2 Self-Report methods**

The Behaviour Assessment System for Children (BASC) (from 6 to 18yrs) is an attention capacity test consisting of rating scales for teachers and parents and a self-report scale of personality permitting multireporter assessment across a variety of domains in the home, school, and community (Reynolds & Kamphaus 2002). The Home Situations Questionnaire-Revised (HSQ-R) and the School Situations Questionnaire-Revised (SSQ-R) (from 6 to 12 years old) were developed 1981 by Barkley and Russell (Barkley 2006). Both tests permit parents and teachers to rate a child's and adolescent's specific problems with attention or concentration. Scores for a number of problem

settings, mean severity, and factor scores for compliance and the leisure situation are provided (Sadock et al. 2004). The Child Attention Profile (CAP) (from 6 to 12 years old) is a brief measure allowing teacher's weekly rating of the presence and degree of a child's inattention and overactivity (Diamon & Deane 1990). Normative scores for inattention, overactivity, and total scores are provided (Sadock et al. 2004). The self-report scales are valid for clinical use, and adaptive scales, i.e. measuring ADHD components, are also available.

Subjective memory disturbance can be assessed using the Memory Complaint Questionnaire (MAC-Q) (Crook et al. 1992). In the MAC-Q participants are asked to describe, using a Likert scale, their ability to perform common tasks involving memory in everyday life and the overall memory decline experienced.

## **2.6 Measurement of self-image**

There are several ways to measure self-image, including self- or observer-rated measures and structured or open-ended interviews, and they can be standardized or not. A great deal of research has been carried out on the relationship between psychiatric illness and self-esteem. Empirical research on adolescents' self-concept has primarily focused on self-esteem, which alone will not describe self-image. Self-esteem is comprised of overall well-being, closely tied to valued domains and skills in activities, reflection, and mastery of a range of domains with increasing age (Calam 2001).

### **2.6.1 Questionnaires based on interviews**

The General Self Scale of the Self-Description Questionnaire (SDQ) is designed to measure eight different dimensions of self-perception (Marsh et al. 1983). The internal consistency and convergent and divergent validity of the SDQ has been reported to be adequate across studies (Marsh et al. 1983). The SDQ was designed to measure how effective and capable adolescents perceive themselves to be, their level of self-confidence and self-respect, and their level of pride in and satisfaction with themselves as individuals. The body image assessments of the Physical Appearance Scale of the SDQ (Marsh et al. 1983) were designed to measure youths' perceptions of their own physical appeal, how their physical appearance compares with that of their peers, and the way in which their physical appearance is viewed by others (Marsh & Richards 1990). The internal

consistency (Cronbach's alpha) of the Physical Appearance Scale was found to be 0.86. The Peer Relations Scale of the SDQ (Marsh 1984) was designed to measure adolescents' perceptions of how easily they make friends, how much others want them as friends, and their popularity (Marsh & Richards 1990).

The Parenting Questionnaire (Statistics Canada, 1999) was originally created by Lempers, Clark-Lempers, and Simons in 1989 to measure adolescents' perceptions of their parents' behaviour towards them (Lempers et al. 1989). Assessments of parental behaviour included two aspects of parental rearing behaviour, specifically parental rejection and parental nurturance. The reliability and construct validity of this measure were from adequate to strong.

### **2.6.2 Self-report methods**

The most frequently used self-report scale is Rosenberg Self-Esteem Scale (RSES) (Rosenberg 1965), which is also one of the best validated self-report instruments for the measurement of self (Vispoel et al. 2001). It consist of ten statements, five positively and five negatively phrased, scored on a four-point Likert scale, and it is assumed to measure global self-esteem. The total RSES score can vary 10 to 40, with a higher score indicating higher self-esteem. It does not measure deep-stated feelings of self-worth.

The Tennessee Self- Concept Scale (TSCS) (Fitts 1972) has been used in analysis of the relationship between self-image and mental health (Koenig et al. 1984). The TSCS uses 82 questions rated on a five-point Likert scale to assess self-concept and its eight subscales assess satisfaction, behaviour, physical, moral, personal, family, social, and academic self-concepts. The self-concept is represented as a profile depicting various areas of functioning. These studies suggest that knowledge can have positive or negative effects on the self-concept (Gordon et al. 2005).

The Health Orientation Scale (HOS) is particularly applicable as it assesses psychological variables related to physical health. The 10 subscales include personal health consciousness, health image concern, health anxiety, and health esteem, and confidence, motivation to avoid unhealthiness, health internal control, health external control, health expectations, and health status (Snell et al. 1991).

The Offer Self-Image Questionnaire (OSIQ) (Offer et al. 1981) is a self-descriptive test designed to evaluate the functioning of teen-aged adolescents in eleven content areas. These areas can be grouped into five “selves”. The underlying assumption of the inventory is that the adolescent can master one area of functioning while failing to master another and it is congruent with current views on the multifaceted nature of the self-concept. The OSIQ consists of 130 items, which make up the following scales: 1. Psychological Self: Impulse Control, Emotional Tone, Body and Self- Image, 2. Social Self: Social Relationships, Morals, Vocational and Educational Goals, 3. Sexual Self: Sexual Attitudes, 4. Familial Self: Family Relationships, 5. Coping Self: Mastery of the External World, Psychopathology, Superior Adjustment. The OSIQ has been widely used to assess the self-image of adolescents, and also referred youths (Ostrow et al. 1982), and it has been validated among Finnish adolescents (Laukkanen et al. 2000).

## **2.7 Measurement of psychosocial functioning**

Global scales for the assessment of psychosocial functioning consider psychological, social and occupational functioning on a hypothetical continuum of mental health and illness (American Psychiatric Association 1987). These instruments are useful for grading the subjects’ functional status or overall severity of the disorder without reference to specific symptomatology (American Psychiatric Association 2003). These measures can be used in screening disturbances and as outcome measures in clinical settings (Hodges et al. 1998). In general, findings support the validity of the scales. Rating scales are structured or non-structured and scales of different length are rated by the rater or patient.

The Global Assessment Scale, GAS (Endicott et al. 1976) used in clinical research or in clinical practice is a scale for assessing the psychosocial functioning of patients. The scale is a modification of the HSRS and scores range from 1 to 100. The scale is divided into ten equal intervals: 1 to 10, 11 to 20 etc. The GAS provides a written description for each interval covering both symptom severity and social functioning. A low score indicates poor global psychosocial functioning. The GAS has been used with adolescents and children down to 9 years of age, including mixed groups of adolescents and adults, and follow-up studies of children and adolescents into adulthood.

The Children’s Global Assessment Scale, CGAS (Shaffer et al. 1983), is based on the GAS and designed for use with children from 4 to 16 years of age (Dyrborg et al. 2000), with anchor points

adapted for this age group. The scale allows the rater to assimilate and synthesize his or her knowledge about many different aspects of the patient's social and psychiatric functioning, and condense it into a single clinically meaningful index of the severity of disturbance. A modified CGAS scale for the lay rater and self-reporting has also been published by Bird et al. 1996.

DSM-III-R introduced a hybrid of GAS and CGAS called the Global Assessment of Functioning Scale, GAF (American Psychiatric Association 1987), intended for all ages ranging from 0 to 90, because "nobody with a diagnosis in DSM could have a superior functioning." GAF was developed in the early 1990s to rate Axis V in the DSM and provides a measure of overall functioning related to psychiatric symptoms. It assesses functional status, impairment and symptom severity (Patterson & Lee 1995). In (American Psychiatric Association 1994), GAF in the DSM-IV was changed to a scale ranging from 0 to 100. A modified GAF scale for self-reporting has also been published (Marteinsdottir et al. 2001).

In ICD-10 the Global Assessment of Psychosocial Disability (GAPD) axis reflects the patient's psychological, social and occupational functioning at the time of the clinical evaluation. (Rutter 1996). The intention is that the GAPD reflects functioning during the period of the disorder. The content and scoring of the scale are analogous with, for example, the GAF. It measures impairment in functioning as a consequence of psychiatric disorder or a specific disorder of psychological development or mental retardation. Impairment due to physical (or environmental) limitations should not be coded.

The major criticism of the GAS and GAF has been that they confound psychiatric symptoms and functioning, causing individuals with significant symptoms to score low even when their social or occupational functioning is relatively good. To overcome this criticism, the Social Occupational Functioning Assessment Scale (SOFAS) was developed (Patterson & Lee 1995). It is used to assess a subject's functional status, impairment and general symptom severity but not symptoms. The scale does not try to discriminate between functional changes related to psychiatric and nonpsychiatric causes. It is a clinician-rated 100-point scale based on all available information, with a clear description of each interval. Ratings are generally made for the previous week, but longer intervals can also be used (Sadock et al. 2004).

The Child and Adolescent Functional Assessment Scale (CAFAS) is used as an outcome measure or as a measure of performance-based outcome (Hodges et al. 1998). The CAFAS consists of five scales for the youth and two for the caregiver. The scales are Role Performance, i.e., how effectively the youth fulfils societal norms in school, home, and community, Behaviour Towards Self and Others, i.e., the appropriateness of the youth's daily behaviour, Moods/Emotions, i.e., modulation of the youth's emotional life, Thinking, i.e., ability of the youth to use rational thought processes, and Substance Use, i.e., youth's substance use and extent to which it is appropriate or disruptive. The total score refers to the sum of the five scales assessing the youth, with a range from 0 to 150. In clinical practice the information can be used in three levels: individual item endorsement, the level of impairment in each of the individual scales, and a summary score of overall dysfunction.

## **2.8 Psychiatric disorders in adolescence**

Mental disorders are conceptualized as clinically significant behavioural or psychological syndromes associated with present distress or disability or with a significantly increased risk of suffering death, pain, disability, or loss of freedom (American Psychiatric Association 1994). Intense but normal conflicts associated with maturing are usually not associated with marked deterioration in school, vocational, or social functioning or with severe subjective distress (Kaplan et al. 1994). Experimenting with new things and testing boundaries appears to be characteristic in adolescence. However, persistent disequilibrium is not part of normal adolescent development, and needs to be assessed as psychopathology (Rutter et al. 1976).

From a mental health perspective, adolescence is an important developmental period because many major psychiatric disorders appear in adolescence (Kim-Cohen et al. 2003) and the overall prevalence of psychiatric disorders increases by approximately two-fold from childhood to adolescence (Rutter et al. 1976). In a study of the rate of and factors associated with psychiatric disorders and self-perceived problems, about 4.6% of boys at military call-up had a psychiatric disorder and 23% reported behavioural or relational difficulties (Sourander et al. 2005). The same study of 2347 Finnish 18-year-old boys reported that an early onset of problems was strongly associated with the recognition of psychiatric disorder and perceived difficulties 10 year later. Being a bully in childhood predicted an antisocial personality and substance abuse, whereas being bullied predicted anxiety disorders 10 to 15 years later (Sourander et al. 2007). In an

epidemiological study of childhood predictors of behavioural ratings among 609 children at the age of 8 years and later at the age of 16, girls' self-reports of internalized distress predicted internalizing problems later in adolescence and parents' reports of emotional problems in childhood predicted internalized problems among boys and girls. Further, parental reports of hyperactivity predicted externalizing problems among boys and teachers' reports of conduct problems predicted externalized problems among both genders (Sourander & Helstela 2005).

Prevalence estimates for psychiatric disorders in adolescence differ according to the age and sex distribution and pubertal status of the population studied (McGee et al. 1992). Another possible reason for the variability in prevalence estimates among adolescents is that the disorders may not yet have stabilized. Furthermore, prevalence estimates also vary due to mixed and heterogenic samples, differences in study methodology, and varying periods for reporting the prevalences. In general, the estimates range from 15% to 25% for any psychiatric disorder in the adolescent general population (Hintikka et al. 2000, Laukkanen et al. 1998, Roberts et al. 1998, Verhulst et al. 1997). In studies of mixed child-adolescent samples the 3- to 6-month prevalence varies between 14% to 34% for any psychiatric disorder (Offord et al. 1987, Shaffer & Fisher 1996, Steinhausen et al. 1998). In mid- to mid-late adolescent samples, correspondingly, the six-month prevalence varies between 10% and 25% (Fergusson et al. 1993, Lewinsohn et al. 1993, McGee et al. 1990, Verhulst et al. 1997), and among late adolescents the 12-month prevalence has been around 37% to 40% (Feehan et al. 1994, Newman et al. 1996). Prevalences are higher for females than males, except for substance use disorders, conduct and personality disorders (Aalto-Setälä et al. 2001). Psychiatric comorbidity is common in adolescence; the estimates for any comorbidity in adolescent psychiatric disorders have varied between 35% to 50%, and the prevalence in a Finnish study was 39% (Aalto-Setälä et al. 2001, Newman et al. 1996). Comorbidity between mood and anxiety disorders and between conduct and substance use disorders seems to be particularly common (Feehan et al. 1994, Haarasilta et al. 2003, Newman et al. 1996).

### **2.8.1 Mood disorders**

Mood disorders (MD) comprise unipolar major depression, bipolar mood disorders and dysthymia. MD is one of the most prevalent (4.7-20%) disorder categories in early and middle adolescence, twice as prevalent in adolescence as in childhood and twice as common in adolescent females as males (Angold & Costello 1993, Cooper & Goodyer 1993). The core symptoms of major depressive

disorder (MDD) include depressive mood with other cognitive, behavioural and somatic symptoms. The diagnosis of MDD requires persistent and intensive depressed mood or loss of interest or pleasure for at least two weeks accompanied by at least 4 additional symptoms (change in appetite or weight, sleep disturbance, psychomotoric agitation or retardation, fatigue, self-accusations, or suicidality).

MDD in adolescence is highly recurrent and predicts ongoing and later depressive and anxiety disorders, suicidal ideation and suicide attempts, poor household and work capacity, and poor quality of life (Geller et al. 2001, Lipman et al. 1994).

Bipolar disorder (BD) is characterized by cycling manic or hypomanic and usually depressive episodes. The lifetime prevalence of BD in adolescence is estimated at 0.4-1.4% (Lewinsohn et al. 1995, Lewinsohn et al. 2003), and the point prevalence at 0.9% with no significant gender difference (Aalto-Setälä et al. 2001). The essential feature of BD is one or more manic or hypomanic episodes, usually accompanied by one or more major depressive episodes. BD is sub-classified as mixed, manic, or depressed, depending on the clinical features of the current episode. In many cases there are two or more cycles and phases of remission within a year. Among adolescents, mood episodes may not always be clearly recognized and rapid cycling is common.

Dysthymic disorder is characterized by chronic depressive symptoms that are usually less severe than in MDD. Many cases are of early onset, beginning in childhood. The prevalence of dysthymia in adolescence is around 3% to 4% and it is equally prevalent in both sexes (American Psychiatric Association 1994, Lewinsohn et al. 1993, Lewinsohn et al. 1995). The core symptoms of dysthymic disorder are chronic depressive symptoms with a duration of at least 1 year, and persistent or intermittent course (Sadock et al. 2004). The course of dysthymia is generally chronic, the average episode length being more than 3 years and recovery is usually gradual over time.

### **2.8.2 Anxiety disorders**

DSM IV (American Psychiatric Association 1994) considers a group of nine disorders (panic disorder, agoraphobia, specific phobia, social phobia, obsessive-compulsive disorder, posttraumatic stress disorder, acute stress disorder, generalized anxiety disorder, and anxiety disorder not otherwise specified) to be the primary anxiety disorders. The core feature of anxiety disorders is



overwhelming anxiety causing functional impairment. The prevalence of anxiety disorders has been estimated at 6% to 10%, and anxiety disorders are generally more common among adolescent females than males (Aalto-Setälä et al. 2001, Kashani et al. 1987). Longitudinal studies show that anxiety disorders in adolescence carry a relatively high risk for later mood or anxiety disorders, particularly MDD (Sadock et al. 2000), or may be an early sign of a psychotic disorder (Ranta et al. 2001).

### **2.8.3 Eating disorders**

Eating disorders consist of anorexia nervosa, bulimia nervosa and atypical eating disorders. The one-month prevalence of eating disorders is 3.7% (Aalto-Setälä et al. 2001), that of anorexia nervosa around 0.3 to 1%, and that of bulimia nervosa between 2 to 3% among adolescent girls (Hendren & Bernson 1997). Atypical eating disorders are probably even more common (Ebeling et al. 2003). The prevalence of eating disorders among boys is approximately one-tenth of that in girls.

Anorexia nervosa is characterized by wilful and purposeful behaviour directed towards losing weight. A characteristic of bulimia nervosa is binge eating, defined as eating more food than most people in similar circumstances and in similar period of time, accompanied by a strong sense of losing control. By adulthood, 5 to 10% of anorexia nervosa patients die as a result of the disorder, and another 25% remain chronically ill. About 40% recover and others function well with mild eating disorder symptoms (Sadock et al. 2004).

### **2.8.4 Conduct disorder**

The essential feature of conduct disorder (CD) is a repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated. The prevalence of CD varies depending on the nature of the population sampled and methods of ascertainment: for males under 18 years of age, the rates range from 6% to 16%; for females, from 2% to 9% (Aalto-Setälä et al. 2001). Symptoms of conduct disorder are grouped into four main groupings. The four symptom groups are aggressive conduct that causes or threatens physical harm to other people or animals, destruction of property, deceitfulness or theft, and serious violations of rules. Three or more of these characteristics of behaviour must have been present during the past 12 months, with at least one behaviour present in the past 6 months (American Psychiatric Association

1994). Childhood-onset CD is defined by the onset of at least one criterion characteristic of CD prior to 10 years of age, while in the adolescent-onset type the onset is after the age of 10 years (DSM-IV). These two types of CD differ with regard to the characteristic nature of the presenting conduct problems, developmental course and prognosis, and the gender ratio. Conduct disorder in adolescence is associated with subsequent adjustment problems, psychiatric morbidity and suicidal behaviour as well as comorbidity in learning disorders and attention deficit hyperactivity disorders. Conduct disorder also predicts poor psychosocial functioning and antisocial personality disorder in adulthood (Geller et al. 2001, Offord & Bennett 1994).

### **2.8.5 Adolescent substance use**

Substance abuse is defined as a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances. Substance dependence is a maladaptive pattern of use for at least 12-months characterized by escalating use, the development of tolerance and withdrawal symptoms after stopping use (American Psychiatric Association 2000). The most commonly used substance in Finnish adolescents is alcohol (Aalto-Setälä & Marttunen 2003). Substance use generally starts with occasional experimenting and progresses to regular use and finally to abuse and dependence. Individuals who start drinking before the age of 15 are four times more likely to become alcohol dependent later in their life (Crews et al. 2007). Substance use disorders are generally more frequent among adolescent males than females.

In Finland, the one-year prevalence of substance use disorders is 6.2% in adolescence, that of alcohol abuse 2.1% in adolescence, and that of alcohol dependence 1.4% among young adults (Aalto-Setälä et al. 2001). The one-year prevalence in late adolescence of cannabis abuse in Finland is 2.7% (Aalto-Setälä et al. 2001). Individuals with substance abuse continue to use alcohol despite the knowledge that it poses significant social or interpersonal problems for them (e.g. violent arguments with others while intoxicated). School and job performance suffer either from the after-effects of use or from actual intoxication. The person may use substances in physically hazardous circumstances (e.g., driving an automobile) and legal difficulties may arise because of alcohol use (e.g., arrest for intoxicated behaviour or for driving under the influence) (American Psychiatric Association 2000).

### **2.8.6 Schizophrenia and other non-affective psychoses in adolescence**

A characteristic of psychotic disorders is that one cannot distinguish and control inner or external signals and orientate oneself to external reality (Rantanen 2000a). Drug-induced psychoses are characterized by confusion, disorientation, anxiety, agitation, and disturbances of perception. Brief psychotic disorder is an illness that has an acute onset of positive psychotic symptoms, and lasts less than one month, and involves complete recovery.

The onset of schizophrenia occurs before the age of 25 in approximately 60% of those affected (Flaherty 1997). In adolescence, the prevalence of schizophrenia is estimated to be 50 times that of younger children with rates of 1-2 per 1000 and early-onset schizophrenia under the age of 13 years is more prevalent in boys than girls (Flaherty 1997, Rantanen 2000a).

The cardinal symptoms of schizophrenia are 1) disturbance of thinking such as disturbance of the content of thinking, hallucinations, delusions and ideas of reference, 2) formal thought disturbance manifested as difficulties in maintaining a focus of conversation and organised thinking, 3) disturbance in mood and affect varying from apathetic states to periods of intense anxiety and irritation, 4) deterioration in psychosocial functioning and 5) other symptoms such as social inappropriateness, sloppiness, oddness and pseudocyesis. An earlier age of onset is associated with a worse prognosis. Generally, females have a better outcome than males. The risk of suicide is high: one-fourth of patients with schizophrenia attempt suicide and 8% to 10% eventually kill themselves.

### **2.9 Suicidal behaviour in adolescence**

Suicidal behaviour is common in many psychiatric syndromes and disorders. Suicidality refers to all suicide-related behaviours and thoughts, including completing or attempting suicide, suicidal ideation or communications (Bridge et al. 2006). Suicidal gestures such as indirect self-destructive and deliberate self-harm behaviour are defined as repeated exposure to life-threatening danger without suicidal intent. Suicidal ideation, attempts and gestures, and completed suicide are frequently associated with psychiatric disorders, particularly mood disorders.

Suicidal ideation is defined as one's thoughts, wishes or threats to die and suicide planning without any overt suicide attempt (Beck et al. 1988b). The prevalence of suicidal ideation in adolescence is approximately 15 to 25%, ranging in severity from thoughts of death and passive ideation to specific suicidal ideation with an intent or plan (Grunbaum et al. 2004). The latter is much less frequent, with annual incidence rates of 6.0 to 6.5% and 2 to 2.3% in adolescent girls and boys, respectively (Lewinsohn et al. 1996). Approximately half of adolescent psychiatric patients have suicidal ideation (Lönnqvist et al. 1999).

A suicide attempt is defined as self-injurious behaviour with a nonfatal outcome accompanied by evidence that the person intended to die (American Psychiatric Association 2003). Suicidal intent is defined as the subjective expectation and desire for a self-destructive act to end in death.

The lifetime prevalence of suicide attempts among 15- to 19-year-olds is reported to range from 3.0 to 7.1% (Cyranowski et al. 2000, Sadock et al. 2004) with higher rates in females than males, particularly in the older adolescent age range (Andrews & Lewinsohn 1992, Ferguson & Lynskey 1995, Lewinsohn et al. 1996). Annual suicide attempt rates among adolescents requiring medical attention are of the order of 1 to 3% (Grunbaum et al. 2004). Approximately one in five (20%) adolescent psychiatric patients has attempted suicide (Lönnqvist et al. 1999).

Completed suicide is defined as self-inflicted death with evidence that the person intended to die (American Psychiatric Association 2003). Suicide is a major cause of death among adolescents in most western countries (Weber 2000). The rates for completed suicide are particularly high in the Russian Federation and former Soviet states, along with New Zealand, Finland, and Ireland (Bridge et al. 2006). Male suicide rates in adolescence are approximately 4 to 5 times higher than the female rates. In Finland, about one third of all deaths among 15- to 19-year-old males are suicides (Pelkonen & Marttunen 2003). Up to two thirds of adolescents who have committed suicide have had suicidal ideation communicated to somebody and one third has had a history of prior attempts. Psychiatric disorders and psychiatric comorbidity are common among young suicide victims (Marttunen et al. 1991).

Deliberate self-harm (DSH) is a subcategory of self-destructive behaviour which involves acts of directly hurting oneself physically (Lundh et al. 2007). The self-reported lifetime prevalence of

DSH has been reported at 12.4%, and the self-reported 12-month prevalence at 6.9 to 8.4% (DeLeo & Heller 2004, Hawton et al. 2002).

Psychiatric disorders, particularly mood, substance use and disruptive disorders, and previous suicide attempts are the most important risk factors for suicidal behaviour (Bridge et al. 2006, Marttunen et al. 1991). A family history of suicide, low income, family adversity, parental divorce, and other psychiatric disorders increase the risk of suicidal behaviour (Agerbo et al. 2002, Brent 1995, Goldston et al. 1996, Goldston et al. 1998, Goldston et al. 1999). Moreover, numerous personality traits and cognitive styles have proved to be risk factors for suicide attempts (Beautrais et al. 1999). Estimates of the risk of repetition of suicidal behaviour range from 10% in a 6-month follow-up to 42% in a 21-month follow-up, with a median recurrence rate of 5 to 15% per year (Bridge et al. 2006). Suicidal behaviour in adolescence has also been reported to be a risk factor for mental disorders later in adulthood (Pedersen & Aarkrog 2001).

### **2.10 Adolescent psychiatric inpatient treatment**

In general, the treatment of psychiatric disorders in adolescence should take place in a least a restrictive setting. Thus, when inpatient treatment is needed, the inpatient period should be part of a continuum of service use and the developmental trajectory of the adolescent (Green 2006). The outcome of inpatient treatment heavily depends on previous family adaptation, the adolescent's social functioning and psychiatric symptomatology. Thus, the assessment should focus on these aspects, and on the needs and motivation of the patient and family. Preadmission evaluation may lead to a decision not to admit or to admit. Hospitalization is usually needed when there is a need for detailed assessment in complex cases (Green 2006), or when it is useful for the assessment to take place away from the family. This may be the case, for instance, when the role of the family in the adolescent's problems is unclear, or when complex symptoms seem confined to home. Another indication for hospitalization is escalating psychiatric symptomatology despite intensive outpatient treatment. In these cases the ward gives access to intensive nursing in a controlled environment including acute risk management of self-harm or family disruption associated with psychiatric disorder. Furthermore, hospitalization may be needed for controlled trials of specific interventions. When an adolescent is hospitalized, she/he and the family need to be informed about the indication for admission and why it is the preferred option.

Preadmission work for building a therapeutic alliance is important because social competency is a key variable predicting adaptation in the ward (Green 2006). Patients with severe mental disorders may be unable to form a stable therapeutic alliance without the external support of hospital structure (Chiesa et al. 2003). The first goal of hospitalization should be stabilizing the situation, whatever crisis precipitated the admission, while at the same time protecting the patient (Ravitz 2003). After this an adequate diagnosis needs to be formulated, pharmacological treatment started when needed, assessment and education of the family started, and post-hospital treatment resources identified. The most effective way to facilitate a smooth transition out of the hospital is to identify, at the time of admission, a case-manager whose responsibilities include finding out what services are available after the patient's discharge (Ravitz 2003).

During the past decades, the length of stay has decreased, and the nature of treatment has had to change (Ravitz 2003, Sadock et al. 2000). Hospitalization is just a part of a continuum of care that offers a wide range of residential, intensive outpatient, and home-based services. Despite the economic motive to decrease the utilization of the inpatient care, there is considerable agreement that inpatient treatment is not only clinically appropriate but necessary under a wide variety of clinical conditions. Intensive forms of community support and intensive home-based models of psychiatric care have been developed as alternatives to hospitalization. An example is multisystemic therapy (MST) (Henggeler et al. 1994) which emphasizes service intensity and outreach provision and that a small change accomplished in the young person's own social ecology may be more beneficial than a larger change in a removal setting.

### **2.10.1 Psychodynamic developmental treatment model**

Psychopathology and change are areas within the focus of psychoanalytic theory, and based on clinical work with patients (Pervin 2003c). In the psychodynamic model, an individual psychotherapeutic relationship is at the core of treatment in a therapeutic community that also includes institutional and ward rules. The main focus of a psychodynamic face-to-face relationship is the inpatient's internal experiences and her/his perception of reality, and how external factors, awareness of external stresses, losses or life events impinge on the internal reality of the patient (Alanen 1997, Weaver 2001). The treatment process aims at the formation of integrated therapeutic strategies, focusing on individual psychodynamics, the interaction process, and large group and institutional dynamics (Chiesa et al. 2003), Yrjö Alanen (1997) calls it need-adapted treatment.

Attachment theory emphasizes the importance of intimate relationships and biological functions of intimate relationships between individuals, and the central role of caregivers' predictable and helpful responses when the child faces frightening or adverse situations to facilitate the development of a secure attachment (Bowlby 1988).

An adolescent inpatient unit has the opportunity to provide a caring and containing environment (Bion 1961), beginning with negotiating a contract for admission with clear aims and objectives that can provide material for the content of the therapeutic work carried out during treatment. The experience of consistent and responsive care provided by the staff may be new for the patient, and over a period of time could be internalized and as such give the adolescent a new repertoire for relating to people in a positive way. Through a change in internalized attachment constructs the treatment may affect the trajectory of the adolescent's personality development. A good therapeutic alliance with adolescent patients requires a sustained transference relationship with a developmental object on the level of emotions and actions between the adolescent and therapist, preferably with sessions at least once a week (Blos 1970). The therapeutic relationship provides structure and attention in dealing with the emotional and behavioural problems as they arise in the course of treatment (Winnicott 1965).

### **2.10.2 Cognitive-behavioural treatment model**

Cognitive-behavioural individual treatment models such as cognitive-behavioural therapy (CBT) are incorporated into individualized treatment planning (Green 2006). Cognitive treatment is active, problem-oriented and can be conducted with individuals or groups and has a coherent theoretical foundation (Wood 2001). Cognitive therapy derives from the phenomenological perspective that an individual's view of himself and the world is central, and that personal conceptualization or meaning is based on previous experiences. Important cognitive phenomena to focus on during a CBT assessment are self-statements, beliefs, attributions, self-efficacy, expectations and assumptions (Wood 2001).

The cognitive theory of depression developed by Beck (Beck 1961, Beck et al. 1988a) is based on three key concepts: negative automatic thoughts, cognitive distortions, and dysfunctional beliefs. These concepts are also valuable when wider use of CBT for adolescent psychiatric disorders is considered. Negative automatic thoughts can negatively influence mood states and self-criticism,

lead to thoughts that the future is hopeless and not amenable to change, and misinterpretations of the world. Cognitive distortions are habitual errors in logical thinking that alter reality and lead to various types of automatic thoughts. These cognitive errors, such as all-or-nothing thinking, selective abstraction, personalization, fortune telling and emotional reasoning, may lead to dysfunctional core beliefs and schemas. Core beliefs are absolutistic statements about oneself, others and the world. They are relatively stable patterns of thinking that govern the ways in which external situations are interpreted. These beliefs develop and shape in the course of life experiences.

It is helpful to use three layers of cognitive functioning and work from a superficial level to a deeper level of understanding in the therapy of inpatients. A typical program is a short-term, time-limited and problem-oriented individual therapy program, planned to take place during an 8- to 12-week period, and be part of a multimodal treatment program. Behaviour therapy comprises graded exposure to the feared or avoided stimulus with prevention of the typical response. This is based on the premise that anxiety is reduced by habituation, which is facilitated by both exposing patients to the problematic stimulus and by preventing or modifying their responses. CBT encourages a wider understanding of symptoms extending from behaviours and physical reactions to include thoughts, mood and environmental influences by using charts and diaries (Wood 2001).

### **2.10.3 Multimodal adolescent psychiatric assessment and treatment**

Therapeutic modalities in most adolescent inpatient units are generally need-adapted treatment (Alanen 1997). In Finland there are three major ways of influencing patients therapeutically in a hospital ward community: a humane environment, organized interaction, and pre-planned treatment programs. In order to accomplish treatment goals it is necessary to have a general therapeutic philosophy that informs the interventions in the inpatient unit. The unit should be safe, supportive and consistent. A complete multidisciplinary assessment including a clear diagnostic formulation, physical and neurological examination needs to be carried out for inpatients (Sadock et al. 2004). Psychiatric assessment of an adolescent combines information from the patient, parents and caregivers, past records, and outpatient clinician and paediatrician with observation and evaluation of the patient in the inpatient setting. Data collection should concern the patient's difficulties and symptoms and the patient's strengths, talents, areas of positive adjustment, and support systems. Standardized interviews and rating scales are useful tools for consistent assessment of psychiatric disorders and symptoms. Psychological testing (cognitive and projective) are methods that give



specific knowledge about cognitive performance, social and academic activities, the impact on ongoing development and psychopathology, and interaction with significant others.

Openness, unprejudiced elimination of unnecessary and detrimental hierarchies, and an effort to integrate the therapeutic activities are among the goals of psychotherapeutic communities treating patients (Alanen 1997). Programs are designed to treat self-esteem, consolidating a stable sense of identity, improving confidence to manage independent living and the formation of realistic vocational goals. Specific therapies are recommended. Personal nurses play a crucial role in helping the patient in a psychotherapeutic community (Alanen 1997). Individual work consists of psychodynamic therapy, cognitive and behaviour therapy, and enhancing daily living skills. Both psychodynamic and cognitive approaches emphasize that group activities and creative therapies such as art and drama therapies and activities on the ward provide an opportunity for the adolescents' to work on their emotional difficulties as well as relationship issues in ways that do not depend too heavily on verbal communication skills. Factors that may contribute to effective milieu management in general include an operant conditioning paradigm that rewards verbal communication, compliance with rules, and appropriate social interaction with peers and family, and that discourages a lack of communication, behavioural impulsivity, and antisocial interactions. Family sessions will be successful if based on an interactional approach and emphatic understanding (Alanen 1997). Finally, effective treatment involves intensive family interventions that focus on the identification of specific problems and specific solutions to those problems as well as supporting parenting and improving communication in the family (Alanen 1997, Novick & Novick 2005). Family work emphasizes pleasure in the appearance and functioning of the body, a constant relationship with peers and focus on the consolidation of gender identity and realistic self- and object representations (Novick & Novick 2005).

The therapeutic milieu is a term subject to numerous interpretations but little empirical research (Alanen 1997, Green 2006). The milieu philosophy can range from behavioural to psychodynamic but it has to be flexible so that each patient's individualized treatment program can be implemented. Systemic models have emphasized the ward's open system character and its potentially mediating role in improving the goodness of fit between young patients and their environment so that the central agencies are parents and collaboration. Other models have emphasized the ward environment as a corrective emotional experience with high levels of warm staff communication, peer contact and active behavioural control whole families.

Community meetings offer staff and patients the opportunity to deal promptly and effectively with day-to-day milieu problems (Ravitz 2003). During these meetings, patients should be encouraged to support and confront their peers regarding behaviour on the unit, individual therapeutic goals, and family issues. Often, multiple group therapeutic interactions are provided each day in the form of group psychotherapy, psycho-educational groups, e.g., substance abuse, gender-related topics, social skills training and anger management, as well as activity therapy and psychodrama and a little free time (Hintikka et al. 2006).

The multidisciplinary team documents a treatment plan, which includes problems, psychodynamics, assessments and goals and is updated weekly (Alanen 1997, Hintikka et al. 2006). The problems are specific symptoms, behaviours, emotions, or dysfunctions that must change for the patient to be treated in a less restrictive level of care.

Individual therapy should be individualized to the patient's current needs and it is the core of treatment (Alanen 1997, Hintikka et al. 2006). Psychotherapeutic interventions should be directed by the multidisciplinary treatment plan.

Family sessions are an essential part of inpatient treatment of adolescents (Hintikka et al. 2003, Novick & Novick 2005). The assessment and treatment strategies must be stressed, declaring the dysfunctional dynamics and supporting and developing the family strengths to further motivate patients in their other modalities of treatment. Family sessions should be scheduled as soon as possible after admission. They are important in stabilizing crises and should focus on developing practical solutions.

Group therapy is used for addressing social and interpersonal issues (Hintikka et al. 2006). In the groups the patients can process issues brought up in the milieu with peers and staff and can mirror appropriate family interactions. Patients can learn to use peer feedback and support in managing and understanding their issues in the therapy groups.

Occupational therapy programs enhance adaptive functioning of the patients (Hintikka et al. 2006). Recreational therapy demonstrates social interactive skills and deficits and promotes the ability to work together to solve tasks.

Art therapy programs, individually or in groups, enhance emotional development and strengthen and structure emotions, how an adolescent feels and how she or he copes with feelings (Wadeson 2000).

Educational evaluation is necessary in the inpatient setting, and an educational program is ideal during the inpatient stay. The teaching staff must be part of the multidisciplinary team so they can follow through with treatment interventions and goals (Hintikka et al. 2003, Sadock et al. 2004).

Psychotropic medication should address specific symptoms of a diagnosed disorder (Hintikka et al. 2003). The adolescent and the parents need to be informed about the indication and the risks and benefits of the psychopharmacological intervention.

#### **2.10.4 Working alliance**

Establishing a good working alliance in an inpatient unit may be a crucial factor for effectively implementing the structured programs of the ward (Gallop et al. 1994, Hintikka et al. 2006). The central agents of patients' improvement are the members of staff via the therapeutic relationship, which serves both parental and therapeutic functions, providing structure and discipline, as the staff members are in continuous contact with patients in the course of the day (Blos 1979b, Flynn 2000). The few studies of working alliance that have focused on adolescents have mainly involved behaviourally oriented short-term treatment programs in outpatient and school settings (Kazdin & Kazdin 2003). Shirk and Karver (2003) found in their meta-analysis that the association between relationship variables and the outcome in child and adolescent therapy was modest. This association was moderated by the type of patient problems and five methodological factors: timing, source of relationship measurement, type and source of outcome and shared versus cross-source measurement of the relationship and outcome variables. The type, mode, structure and context of treatment did not moderate associations between relationships and the treatment outcome. However, the association was consistent across developmental levels and across diverse types and contexts of therapy. Studies on working alliance have mostly been based on the psychodynamic perspective of the working relationship (Greenson 1965). A good working alliance is characterized by the therapist and client mutually endorsing and valuing outcomes that are the target of the intervention (Bordin 1979). The quality of mutuality in the working alliance is a primary ingredient in its effectiveness (Bordin 1981).

### **2.11 Empirical research among adolescent psychiatric inpatients**

There have been quite many epidemiological register-studies with age groups varying from childhood to early adulthood. However, there has been a lack of treatment assessed with structured diagnostics and with other intrapsychic methods, where the studied sample has been examined at entry and on discharge. In a follow-up Danish study by Pedersen and Aarkrog (2001), 56% of adolescent inpatients were diagnosed as psychotic or as borderline cases. One third of patients with schizophrenia had an early onset. The length of stay was 3-4 months, with a range between a few days and more than a year. Boys predominated in the age group of 12-15 years and girls in the age group of 16-21 years. Most admissions were at the adolescents' own request, and 27% of the inpatients submitted to family pressures. During a 20-year follow-up of the sample, 45% of previous adolescent psychiatric inpatients were rehospitalized and about a quarter of them became heavy users of psychiatric services.

According to clinical outcome findings of the British prospective multi-centre study of four adolescent inpatient units, the patients showed substantial improvements including improved relationships with peers and parents, greater emotional independence, the development of more adaptive responses to external stresses and to internal anxiety, improvement in affective symptomatology, the establishment of a work identity and changes in behaviour (Rothery et al. 1995, See also Study III, Table 1). Data on 276 hospitalizations included 57% female admissions, 23% of whom were 16 years or older. Almost two thirds of the admissions were of adolescents in their 15<sup>th</sup> and 16<sup>th</sup> year. The length of treatment varied from 4.4 to 7.7 months and diagnoses according to ICD-9 were: schizophrenia 9%, MDD 7%, CD 21%, anorexia nervosa 11%, neurotic disorders 14%, and adjustment disorders 14%. The improvement of relationships (65%) and age-appropriate maturational development (52%) were more commonly targeted treatment goals than intrapsychic (44%) or symptomatic (38%) change (Hintikka et al. 2003). Supportive psychotherapy (12% to 30%) and group psychotherapy (15% to 55%) were reported as having a positive role in the goal-outcome. Overall, the immediate clinical outcome of inpatient treatment was reasonably good, even for those adolescents who had schizophrenia or conduct disorder (See also Study III, Table 1).

According to a review of 22 studies of inpatient psychiatric treatment of adolescents aged 13 to 19 years with a follow-up of at least 6 months, published from 1942 to 1980, the majority of non-psychotic adolescents were functioning at an adaptive level several years after discharge (Gossett et

al. 1983). Out of the psychotic subjects, approximately one third were adequately adjusted on follow-up (Gossett et al. 1980, Pelkonen 1990). Pfeiffer and Strzelecki (1990) concluded in their review of 34 studies published from 1975 to 1991 that healthier patients responded more favourably to inpatient psychiatric treatment. Adolescents with psychotic disorders or undersocialised aggressive conduct disorders responded less favourably to inpatient psychiatric treatment. Symptoms such as alienation, psychosexual problems, acting-out, psychotic symptoms and low energy levels were associated with a negative outcome. Poor cognitive performance in schizophrenia, predict a poor outcome, although these functioning improve in emotional disorders during treatment (Green 2006).

Several features of the treatment program seem to modify the inpatient treatment outcome. According to Pfeiffer and Strzelecki (1990), well organized treatment and a positive treatment alliance are common positive predictors of adolescent inpatient treatment (Green 2006). Planned interventions in treatment, a good working-alliance, a cognitive-based problem-solving skills training package, planned discharge and good aftercare correlate positively with the treatment outcome (Blanz & Schmidt 2000). Most follow-up studies report some positive outcomes, with more than half of the patients demonstrating a positive long-term outcome (Blanz & Schmidt 2000).

Studies on the outcome of inpatient treatment show widely differing results for specific disorders (Green 2006). In a study of 113 psychotic adolescent patients, 73% were readmitted during 12.5 years after their primary discharge, whereas the psychotic patients had a mean intervening time of only 22 months (Pedersen & Aarkrog 2001). Twenty per cent of 111 adolescent patients with emergency admissions remained depressed and suicidal on 2-4 year follow-up; 59% attempted suicide shortly after discharge and two patients committed suicide (Ivarsson et al. 1998). According to a six-month follow-up study, 18% of 100 depressed inpatients reported suicidal behaviour (King et al. 2001) and 25% of 180 adolescent inpatients attempted suicide within 5 years of discharge (Goldston et al. 1999). Adolescent inpatients with emotional and conduct disorder showed progress seven years post-discharge (Pelkonen 1990). Half of the subjects who had not been on pension during the 20-year follow-up had received a diagnosis of conduct disorder on discharge, and half of the pensioned had a psychotic disorder (Pelkonen et al. 1998). Inpatients had double the rate of comorbid diagnoses compared to outpatients and they showed a poorer outcome (Blanz & Schmidt 2000).

Comprehensive inpatient treatment itself probably leads to a significant improvement in psychosocial functioning and behaviour (Green et al. 2001). The patients' functional achievements and family functioning seem to be important factors influencing the treatment outcome. Patients with a higher IQ generally fare moderately better after treatment. Gender, age and emergency or elective admission seem to have little predictive value and the length of stay only a modest association with outcome. Parental psychopathology, difficulties in separation from parents, interrupted relationships and parental marital conflict associate with a poor outcome, whereas parental involvement in treatment and the discharged patient's good subsequent adjustment associate with a good treatment outcome (Pfeiffer & Strzelecki 1990). A diagnosis of a severe psychiatric disorder predicted rehospitalisation (Pedersen & Aarkrog 2001). A follow-up study of 61 adolescent in-patients in Finland examined associations between being on a disability pension 20 years after hospitalization, and the patients' psychopathology and treatment-related factors during hospitalization and during a seven-year follow-up (Pelkonen et al. 1998). Of the former in-patients, 27% had not been on a disability pension, 20% had short-term pension periods, and 53% were pensioned after 20 years. Subjects whose overall psychosocial functioning had improved and who had not utilized in-patient services until the seven-year follow-up had a better prognosis in terms of working capacity.

Research on adolescent psychiatric inpatients varies from uncontrolled general descriptive studies of inpatients to controlled studies of the treatment-specific disorders. Reviews of particularly older studies have been criticized for their methodological limitations such as small sample sizes, using retrospective chart material, the lack of comparison groups, poorly defined measures of unknown reliability, limited systematic information on diagnoses, and high rates of attrition (Blanz & Schmidt 2000). Treatment goals related with symptomatic change usually show more improvement than goals related to broader issues such as interpersonal relationships, intrapsychic functioning or age-appropriate maturational tasks (Green 2006).

### **2.11.1 Research on cognitive performance**

Selected recent studies on adolescent inpatients are presented in study III, Table 1. Some studies have evaluated cognitive functioning but have not used standardized methods (Geller et al. 2001). Cognitive functioning, work identity as well as psychosexual status changed positively during intensive psychiatric inpatient care including individual therapy (Rothery et al. 1995). According to

Goldston et al. (2001), the clinical outcome may be assessed using cognitive factors such as problem solving. Compas et al. (1997) concluded that cognitive and interpersonal factors may contribute to recovery from depressive symptoms, but only among the most distressed adolescents (Compas 2006). Rothery et al., (1995) reported that overall immediate improvements have been found in cognitive functioning and established schooling after psychiatric hospitalization, even in adolescents with conduct disorders (Rothery et al. 1995). Cognitive performance may be poor due to the burden of the disorder and associated psychosocial factor (Schwartz et al. 2000).

### **2.11.2 Research on self-image**

Self-image is based on the bodily affects, the so-called body-self or body ego, which is based on development in infancy (Lehtonen et al. 2006) but is newly activated in adolescence. Emotionally disturbed adolescents have been reported to have a poor self-image, less sophisticated identity and more negative attitudes towards developmental body changes than nonclinical controls (Brennan & O’Loidean 1980, Fine et al. 1993, Koenig 1988, Laukkanen et al. 1998, Steinhausen & Vollrath 1993). Self-image is an important element in coping strategies and is thus essential, in addition to treatment interventions (Goldston et al. 2001), as an outcome factor (Enns et al. 2003, Schwartz et al. 2000) among youths. One of the most predictive Psychological Self scales was the “Emotional tone” sub-scale in adolescent depression in a study comparing a normal population with adolescent patients having anorexia nervosa and bulimia nervosa (Erkolahti et al. 2002). Fine et al. (1993) found self-image to be an important predictor in the treatment of adolescent outpatients with depression. A small study on inpatient psychotherapy for 15 adolescents (Schroeder et al. 1991) used the Offer Self-Image Questionnaire as an outcome measure and reported that it reflected psychotherapeutic effects during treatment. An increase of 8 or more points on the standard scale between the first and fourth week was associated with a favourable outcome, while an increase of 7 points or less indicated a less favourable outcome. Prospective and longitudinal designs in studying the role of self-image in development and in the maintenance of psychopathology have been recommended for adolescent inpatients.

### **2.11.3 Research on psychosocial functioning**

According to recent studies, psychosocial and behavioural functioning among adolescents with severe psychiatric disorders has improved during inpatient treatment (Green et al. 2001) and during intensive residential treatment (Leichtman et al. 2001). In a study of 52 inpatients aged 12 to 18 years, 72% rated themselves “better” on discharge than at admission, 10% “the same” and 6% rated themselves “worse” (Jaffa & Stott 1999). The mean length of stay was 10 weeks. The mean CGAS rose significantly by 19 points during treatment. The patients with lower initial CGAS ratings made greater improvements than those with higher initial ratings. On discharge, 12 patients received a rating of 60 or over. In Finland, adolescent inpatients improved in psychosocial functioning during long-term hospitalization and on 7-year register follow-up 30% of the adolescents appeared to have normal, socially varied lives (Pelkonen 1990). Over a third reported their psychosocial functioning to be satisfactory, and one fifth were coping well, but one fifth of the inpatients felt themselves unhealthy and slightly peculiar. Green and co-workers (2001) found improvements in psychosocial and family functioning among young adolescent psychiatric inpatients (Green et al. 2001), (see study III, Table 1). Good relationships with staff and family members were most highly correlated positively with the change in global psychosocial functioning (Shirk & Karver 2003).

### **2.11.4 Research on working alliance**

According to (Gallop et al. 1994) the patients’ perception of working alliance may be a critical factor in the decision to remain in the treatment program. Only a few studies have been published on working alliance in adolescent inpatients (Hintikka et al. 2006). In a prospective study of 55 patients of inpatient and day-patient care Green and coworkers (2001) found that alliance with the adolescent predicted health gain during admission, including a good outcome in externalizing disorder (Green et al. 2001). A follow-up study in Finland (Pelkonen 1990) found that adolescent patients treated for more than three months as inpatients formed a closer therapeutic relationship with their individual case managers than those who were treated for less than three months, and their outcome was good. The study results of working alliance in the treatment of delinquent boys in community-based programs have indicated that positive working alliance in treatment related to positive psychological changes and predicted lower rates of recidivism (Florsheim et al. 2000). Moreover, the better the working alliance, the better the patients acknowledged certain characteristics of themselves, such as hostility (Hatcher & Barends 1996). On the other hand, in



contrast with several studies of working alliance (Eltz et al. 1995, Florsheim et al. 2000, Shirk & Karver 2003) and in a study on delinquent adolescents. Hersoug and coworkers (2002) reported that early working alliance was not predictive for the outcome and it did not predict the quality of working alliance. (Hersoug et al. 2002, Shirk & Karver 2003) also found working alliance to be only modestly associated with the outcome. However, relationship variables were most highly correlated with measures of change in global functioning. Good working alliance seems to be associated with improvements in cognitive and psychosocial functioning.

#### **2.11.5 Research on suicide attempters**

Suicidal behaviour is common among adolescent psychiatric inpatients. The reported rate of suicide attempts among adolescent inpatients has varied from 17% to 55% (Goldston et al. 1996, Haavisto et al. 2003, Mäkikyrö et al. 2004), and that of suicidal ideation from 33% to 57% (Haavisto et al. 2003, Mäkikyrö et al. 2004). Inpatient attempters and non-attempters were found to be similar in their psychiatric status, gender, race and socioeconomic status (Morano et al. 1993). Previous studies have reported risk factors and critical treatment components for adolescent suicide attempts to include more hopelessness and neuroticism (Beautrais et al. 1999), suicidal ideation and depressive mood (Barbe et al. 2004, Enns et al. 2003), however, loss and low family support exist more frequently than among non-attempters ((Morano et al. 1993). Adolescents with previous suicide attempts and those with repeated attempts more commonly have affective and substance use disorders than non-suicidal youths and display externalizing behaviours and psychic distress as well as depressive symptoms and anger (Brent 1995). Moreover, they often have a long-term history of suicidal behaviour associated with poor parent-child communication (Shaffer & Pfeffer 2001). In a study of adolescent inpatients, (Horesh et al. 2004) found that high self-disclosure to the family and to older adults was associated with suicidal thinking, suicide attempts and suicidal attitudes and was thus a risk factor.

In a study of adolescent inpatients undergoing long-term treatment, negative feelings towards the body, poor protection of the body and body aberration were factors that differentiated suicidal and non-suicidal inpatients (Orbach et al. 2001). Multiple attempters probably experience more intense but not more long-lasting crises (Joiner et al. 2000). Follow-up reports have noted that distress symptoms, poor cognitive functioning, low self-esteem, and problems in interactions with family

members associate with a poor treatment outcome in adolescent suicide attempters (Schwartz et al. 2000), while a positive outcome associated with a high IQ (Gossett et al. 1980).

#### **2.11.6 Summary of research on adolescent psychiatric inpatient treatment**

There clearly is lack of follow-up studies in which comprehensive assessments are made both at admission and on discharge (Ravitz 2003). Few studies of the outcome of inpatient treatment of adolescents using structured assessments have been published (Blanz & Schmidt 2000). Most previous studies on adolescent inpatients have not used structured diagnostic interviews, broad neuropsychological test batteries to measure cognitive functioning, structured clinical scales or structured independent assessments of treatment progress (Geller et al. 2001). Most studies have characterized non-selected samples and gender differences among adolescent inpatients with severe mental disorders as seen in ordinary clinical practice. While self-image has been studied among non-clinical or outpatient samples of adolescents, previous research has not focused on adolescent inpatients. Differences between diagnostic groups in cognitive functioning and self-image and changes in these parameters during hospitalization have not previously been investigated. Previous research on working alliance has mainly been carried out on adults. A prospective study of 55 patients in inpatient and day-patient care (Green et al. 2001) found that alliance with the children and adolescents predicted health gain during treatment, including a good outcome in externalizing disorder. Research on working alliance in adolescent psychiatric patients and particularly its role in improvement during treatment has been little studied. Measurement of both the working alliance and outcome should be assessed from multiple perspectives and with multiple methods (Shirk & Karver 2003).

### **3 AIMS OF THE STUDY**

The aims of the present study were to examine:

- 1 Gender-specific differences in clinical and referral characteristics, cognitive functioning and self-image among 13- to 18-year-old adolescents admitted to an adolescent psychiatric inpatient unit (Study I).
- 2 The role of working alliance in psychodynamically-oriented individual psychotherapy during psychiatric inpatient treatment of adolescents, and to determine whether working alliance was associated with changes in cognitive performance, psychosocial functioning and the patients' self-image (Study II).
- 3 Differences between psychiatric adolescent inpatients with MDD and with CD in clinical characteristics, cognitive functioning, self-image and family interaction and to study changes in these measures during treatment (Study III).
- 4 Changes in psychosocial functioning, cognitive performance and self-image during treatment among subjects with and without suicide attempts and to study factors that associate with improvement in psychosocial functioning (Study IV).

## 4 SUBJECTS AND METHODS

### 4.1 Study design and patients

During the study period from 1 March 1997 to 31 December 1999 114 referrals comprising 68 girls and 46 boys were received for adolescent psychiatric inpatient care (Figure 1). Of these 88 youths aged 13 to 18 years, comprising 53 girls and 35 boys, were admitted for psychiatric treatment to adolescent psychiatric 10- and 5-bed inpatient wards at Kuopio University Hospital. The units operated as a tertiary care centre for a catchment area covering about 253 800 inhabitants in 1999, including 17 400 adolescents (7%). The catchment area contained a mixture of urban, semiurban and rural populations. Adolescents having a principal diagnosis of substance abuse were referred to another treatment unit and were excluded from the study sample. All patients and their parents provided written informed consent before entering the study. Approval for the study was obtained from the Ethics Committee of Kuopio University Hospital and the University of Kuopio.

Inclusion criteria for the study were that the adolescent: 1) was aged between 14 and 18 years (birthday that year), 2) was not referred only for brief intervention due to a temporary crisis (less than four weeks), 3) was able to co-operate, and 4) suffered from a clinically significant psychiatric disorder ascertained by a psychiatrist specialized in adolescent psychiatry. Of the admitted 88 adolescents, 74% met these criteria (Figure 1). Two boys declined to participate. The study sample thus consisted of 63 adolescent psychiatric inpatients, 40 females and 23 males ( $p = 0.03$ ). There was no statistically significant difference in the mean age between girls and boys ( $15.0 \pm \text{SD } 1.0$  versus  $15.2 \pm \text{SD } 0.9$  years). Sociodemographic and clinical characteristics of the study subjects at baseline are summarized in Table 2.

The socioeconomic status of each patients' family was charted with inquiry into work description. The subjects' family SES according to the mothers' occupation was blue collar worker (agriculture, self-employed person, factory or construction work, etc.) in 26%, white-collar worker in 57.3% (office work), and other in 16.7% of cases (service occupation, etc., studying, housewife or house husband, without occupation, retired, house servant).

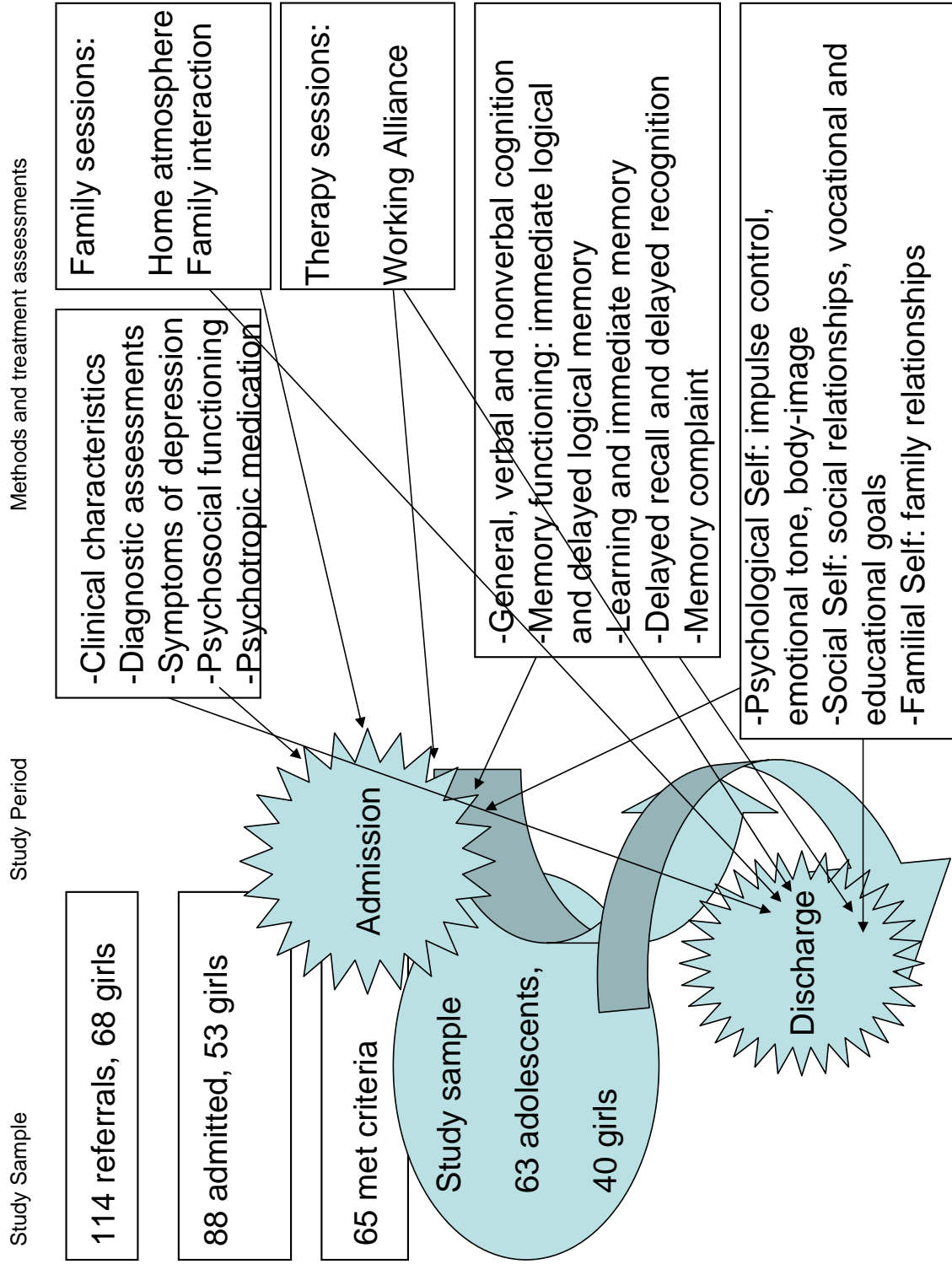


Figure 1. Study design.

**Table 2.** Study subjects and their sociodemographic and clinical characteristics.

Characteristics at baseline	Study I	Study II	Study III	Study IV
<b>N of subjects</b>	63	45	39	55
<b>Sample</b>	All consenting patients	Patients with working alliance assessments at intake and discharge	Patient with diagnosis of MDD or CD	Patients with non-psychotic disorders
<b>Girls n (%)</b>	40 (63.5%)	29 (64.4%)	24 (61.5%)	37 (67.3%)
<b>Age, mean (SD)</b>	15.0 (1.0)	15.6 (1.0)	15.1 (0.9)	15.1 (1.0)
<b>Diagnoses</b>	MD: 39 (62%), PD: 7 (11%), CD: 11 (18%), other: 6 (9%)	MD: 30 (67%), PD: 5 (11%), CD: 6 (13%), other: 4 (9%)	MDD:28 (72%), CD: 11 (28%)	MD: 39 (71%), CD: 11 (20%), other: 5 (9%)
<b>Previous suicide attempts</b>	16 (25%)	12 (27%)	14 (36%)	16 (29%)
<b>Alcohol/ drug misuse</b>	33 (52%)	23 (51%)	24 (61%)	30 (54%)
<b>Previous psychiatric treatment</b>	53 (84%)	37 (82%)	23 (59%)	46 (84%)

(MD=Mood Disorder, MDD=Major Depressive Disorder, CD= Conduct Disorder, PD= Psychotic Disorder)

#### 4.2 Inpatient treatment program

The decision to hospitalize the patient as well as diagnostic assessment were made by a psychiatrist. Treatment schedules were individualized from a range of psychosocial treatment modalities and included a session with the case manager nurse at least once a week, psychotropic medication when appropriate, art, sport and occupational group therapy (Table 3).

**Table 3.** Interventions during adolescent inpatient treatment.

<b>Inpatients</b> N=62*			
	<b>Girls</b>	<b>Boys</b>	<b>Total</b>
<b>Number of _____</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
<b>Individual therapy sessions</b>	35 (20.7)	29 (23.8)	33 (21.9)
<b>Psychiatric assessments</b>	4 (4.4)	3 (2.1)	4 (3.8)
<b>Psychologist assessments</b>	8 (2.7)	9 (3.9)	8 (3.2)
<b>Social worker assessments</b>	4 (2.5)	5 (5.5)	4 (3.9)
<b>Occupational therapist assessments</b>	11 (9.0)	12 (9.5)	12 (9.1)
<b>Family sessions</b>	5 (3.6)	7 (6.5)	6 (4.9)
<b>Team sessions</b>	5 (6.7)	8 (7.5)	6 (7.0)
<b>Group therapy sessions</b>	14 (13.7)	15 (13.5)	14 (13.5)
<b>Days attending school</b>	56 (41.8)	72 (52.2)	62 (46.0)
<b>Duration of the inpatient treatment weeks</b>	22 (12.3)	28 (18.5)	24 (15.1)
<b>Psychotropic medication on discharge</b>	<b>Boys N (%)</b>	<b>Girls N (%)</b>	<b>Total N (%)</b>
- no medication	21 (53.8)	12 (52.2)	33 (53.2)
- antidepressants	12 (30.8)	2 (8.7)	14 (22.6)
- antipsychotic medication	2 (5.1)	8 (34.8)	10 (16.1)
- anxiolytic medication	-	1 (4.3)	1 (1.6)
- mood stabilizer	4 (10.3)	-	4 (6.5)

\*one patient denied assessments on discharge

Family sessions were conducted once every three weeks, mostly led by a social worker and psychiatric nurses. The treatment schedule was focused and individually evaluated at entry, after two weeks and then once every six weeks by the multidisciplinary treatment team. Each patient's current mental status was monitored four times a day, and psychiatric nurses reported this to team members on the ward once a day, and to the team including hospital school teachers once a week. The adolescents spent every second weekend at home. To determine the appropriate time for discharge from hospital the medical staff assessed psychosocial functioning, suicidality, and the safety of the foster environment. They also discussed with the adolescent and her/his parents whether it was safe to enter outpatient treatment. The decision to discharge the patient was made by a psychiatrist after these assessments.

On the wards each adolescent received individual psychotherapy, two 45-minute sessions weekly, conducted by the case manager nurse, who was a member of the multidisciplinary team. Psychotherapy was conducted under supervision. The nurses had been trained in a two-year course on psychodynamic psychotherapy as a part of multidisciplinary treatment. This training applied the perspective of psychodynamic developmental theory, which particularly involves the working alliance. The case manager nurses used techniques such as helping the adolescent to name feelings and control wishes and impulses to relate with others, and to see others as thinking and feeling human beings. Goals were seen in adolescents' behavioural changes in reciprocal interactions with nurses, parents, friends, and teachers and also in how the adolescents identified their symptoms and behaviour. Case manager nurses also interacted with other patients in the ward but did not have regular therapy sessions with them.

#### **4.3 Data collection and assessment methods**

Data were gathered at treatment entry and on discharge (Table 4), and included assessments by a psychiatrist, a psychologist and medical staff members as well as self-rated measures. Self-rated and other assessments were organized by a clinical psychologist and psychiatric nurses. Staff members were trained in carrying out all procedures in a standardized manner.

Staff members recorded the numbers of different interventions during the treatment (therapy sessions with the individual case management nurse, sessions with the psychiatrist, psychologist, social worker and occupational therapist, family sessions, treatment meetings of the staff, group



therapy sessions and number of school days; Table 3). Planned medication was assessed by a psychiatrist at entry and on discharge (no medication, antidepressant, antipsychotic, anxiolytic, mood stabilizer).

**Table 4.** Aims, variables and assessment methods.

Aims of the Study	Variables	Assessment Methods
<b>Study I</b> - gender-specific differences at entry	- clinical and referral characteristics  - mental disorders and symptoms - psychosocial functioning - cognitive performance  - self-image	- self-rated questionnaire - assessments with inquiry by psychiatrist - psychologist and medical staff - SCID, BDI, - GAS - Wais-R, LLT, WMS, Mac-Q - OSIQ
<b>Study II</b> - effects of working alliance on the treatment outcome	- working alliance - cognitive performance, - patients' self-image - psychosocial functioning	- WAI - Wais-R - OSIQ - GAS
<b>Study III</b> - differences between inpatients with MDD and CD and outcome factors during treatment	- changes in clinical characteristics,  - mental disorders and symptoms - psychosocial functioning - cognitive functioning, - self-image - family interaction	- self-rated questionnaire - assessments with inquiry by psychiatrist, psychologist and medical staff - SCID, BDI, - GAS - Wais-R, LLT, Mac-Q, - OSIQ - Home atmosphere inquiry, - Reciprocal interaction inquiry
<b>Study IV</b> - changes in psychosocial functioning, cognitive performance and self-image associated with improvement in psychosocial functioning among suicide attempters	- clinical characteristics,  - mental disorders and symptoms - cognitive performance - self-image - psychosocial functioning	- self-rated questionnaire, - assessments with inquiry by psychiatrist, psychologist and medical staff - SCID, BDI - Wais-R, WMS, LLT - OSIQ - GAS

#### 4.3.1 Sociodemographic and clinical backgrounds

Data on parental socio-demographic and socio-economic backgrounds asking from parents included: 1) the marital status of the biological parents (married, divorced, separated (each: no/yes)), 2) whether the family received living allowances, 3) mental health problems among family members and 4) death of the mother or father (no/yes). Data on family characteristics were collected during semi-structured interviews with the parents conducted by staff members. The patients' academic achievement, including behavioural problems (many/some or none), were assessed at entry together with hopelessness (one item yes/no) and alcohol and drug misuse in a semi-structured interview by a psychiatrist from patient. Data on indirect self-destructive behaviour defined as repeated exposure to life-threatening danger without suicidal intent and having been bullied at school during the previous six months were collected in the same psychiatrist interview at entry. Prior psychiatric treatment and the time interval between suicide attempts and referral to inpatient treatment were assessed by psychiatrist. Anhedonia, current depressive mood, and suicidal ideation were assessed using the questions of the SCID I interview. Clinical backgrounds included an inquiry concerning the adolescents' daily smoking, use of alcohol, illicit drugs and alcohol, and use of several drugs together (each: no/yes) asked from patients with inquiry by staff members. In addition, during an interview conducted by a psychiatrist, information was gathered on the existence of a sexual relationship (no/yes), a history of violent behaviour towards other people or destroying property during the previous 6 month (no/yes). The adolescents were also asked about the number of their peers by staff members. Contacts with general health services during the previous 12 months and the presence of any somatic illness were also screened (no/yes) during the parents sessions by staff members. Finally, information was collected on who had taken the initiative in referring the adolescent to the hospital (a relative, any professional such as the teacher, social worker or health care professionals), who had referred the adolescent to the hospital (secondary health care services, other public health services including primary care, social services, private doctors), whether the adolescent had previously been monitored for psychiatric symptoms in any health care services, and the time taken from referral to admission (immediately from the emergency room, 0-2 weeks, over 2 weeks) were collected by staff members during parents' interview in family sessions.

### **4.3.2 Assessment of cognitive functioning**

The adolescents' cognitive performance (FIQ) was assessed by a clinical psychologist using five sub-tests of the Wechsler Adult Intelligence Scale – Revised (WAIS-R), adapted for use in the Finnish population (Wechsler 1992). The verbal intellectual level (VIQ) was assessed using three scales (Similarities, Vocabulary and Digit Span) and nonverbal performance intelligence (PIQ) was assessed using two scales (Digit Symbol and Block Design). Similarities is a test of verbal concept formation and reasoning in which subjects explain what each of a pair of words has in common (Lezak 1995), 605). In the Vocabulary test, responses to open-ended vocabulary questions can be evaluated for conceptual level and complexity of verbalization, and the Digit Span test is a the format used for measuring the span of immediate verbal recall (Lezak 1995), 356-357, 367). Digit Symbol was used to assess orientation and attention. The task in Block Design is to use blocks to assess constructional functions. Cronbach's alphas were 0.69 at entry and 0.70 on discharge for the WAIS-R scales. Immediate and delayed logical verbal memory was assessed using the Logical Prose Subtest, Story Recall A, from the Wechsler Memory Scale (WMS) (Wechsler 1996). The List Learning Test (LLT) was used to assess learning and recall (Lezak 1995), using version A at entry and B on discharge. Cronbach's alphas were 0.82 to 0.89. Subjective memory disturbance was assessed using the Memory Complaint Questionnaire (MCQ) (Crook et al. 1992). Cronbach's alphas were 0.81 to 0.84.

### **4.3.3 Assessment of Self-Image**

Self-Image was assessed using the OSIQ self-descriptive test (Offer et al. 1981). This is test designed to evaluate the functioning and adequate psychological sensitivity and skills in reliable self-assessment of teen-aged adolescents in eleven content areas. These areas can be grouped into five “selves”: Psychological Self, Social Self, Sexual Self, Familial Self and Coping Self. This study assessed the scales impulse control, emotional tone, body and self-image of Psychological Self, social relations and vocational and educational goals of the Social Self and the family relationships scale of Familial Self. The constituent items for the morals, mastery of the external world, psychopathology, superior adjustment and sexual attitudes scales were excluded because previous studies have demonstrated that these scales have a low internal consistency (Siefen et al. 1996, Steinhausen et al. 1988). After these exclusions the total OSIQ scale included 66 statements that all were rated according to six-point responses (6 for “completely true for me” to 1 for “not at

all true for me”). In this study Cronbach’s alphas were 0.93 for the total OSIQ scale, 0.88 for Psychological Self, 0.85 for Social Self and 0.87 for Family Relationships.

#### **4.3.4 Assessment of psychiatric disorder**

Psychiatric diagnoses according to DSM-III-R (American Psychiatric Association 1987) criteria were assigned using the SCID I (Spitzer et al. 1992), and thereafter transformed to DSM-IV diagnoses (American Psychiatric Association 1994) at the end of the treatment using all available information. The SCID-I interview is a clinician-administered, semi-structured interview. It begins with an overview section that obtains demographic information, work history, the chief complaint, the history of present and past periods of psychiatric illness, treatment history, and assessment of current functioning with open-ended questions to elicit responses in the subject’s own words. The main body of the SCID-I consists of nine diagnostic modules: Mood Episodes, Psychotic Symptoms, Psychotic Disorders Differential, Mood Disorders Differential, Substance Use, Anxiety, Somatoform Disorders, Eating Disorders, and Adjustment Disorders. The principal diagnoses were used for psychiatric disorders in this study. According to DSM-IV-TR, the principal diagnosis is the condition chiefly responsible for the signs and symptoms of the individual (Sadock et al. 2004). There were used diagnoses assessed at entry in the Study I, while in the Studies II to IV were used diagnoses assessed on discharge.

#### **4.3.5 Assessment of symptoms of depression**

In addition to SCID-I interviews the 21-item Beck Depression Inventory (BDI) (Beck et al. 1961) was used to assess the subjects’ depressive symptoms (Beck et al. 1988a). In BDI a numerical value is assigned to each statement, each area represented by four statements describing symptom severity along an ordinal continuum from absent or mild (a score of 0, e.g. “I do not feel sad”) to severe (a score of 3, e.g. “I am so sad or unhappy that I can’t stand it”). Patients were asked to identify the statement that best described their feelings at that moment. Item scores were summed to obtain a total score for depressive symptom severity. The range of the BDI sum score is 0-63. The following interpretation of severity of depression scores were used; 0-9, minimal depressive symptoms; 10-18, mild to moderate; and ; 19-29, moderate to severe depressive symptoms, and 30 to 63, severe depressive symptoms (Beck et al. 1988a). In addition to SCID-I interviews the 21-item the self-destructiveness item of the BDI was used to indicate suicidal ideation.

#### **4.3.6 Assessment of psychosocial functioning**

A team of 6–8 staff members assessed the psychosocial functioning of the patients at entry and on discharge in a round-table discussion using the Global Assessment Scale (GAS) (Endicott et al. 1976). Staff members were trained in the use of GAS in a video training program. GAS is a 100-point single-item observer-rating scale rating psychosocial functioning on a hypothetical continuum from excellent functioning to extremely poor functioning. Scores on the scale, ranging from 1 (poor) to 100 (excellent), are divided into 10 ranges of functioning. A written description of each 10-point interval covers both symptom severity and social and occupational functioning. The GAS provides a summary score that reflects the level of the patient's overall functioning. Psychosocial functioning was assessed as the lowest level of functioning during the previous 6 months (baseline) and during the previous month (repeated measures). The change in the GAS score was used as an outcome variable in Studies II, III and IV.

#### **4.3.7 Assessment of working alliance**

Working alliance was assessed using the Working Alliance Inventory Scale (Horvath & Greenberg 1986). (Horvath & Greenberg 1989). The version used was the Working Alliance Inventory Revision (WAI) (Horvath & Greenberg 1986), which is based on Bordin's model of therapeutic alliance (Bordin 1979). The WAI is a 36-item self-reported inventory consisting of three subscales ("Task", "Goal", and "Bond"), each consisting of 12 items rated according to a 7-point Likert scale (never, rarely, occasionally, sometimes, often, very often, always); for example "I believe the way we are working with my problem is correct"/ "\_\_\_\_\_ believes the way we are working with her/his problem is correct" (Horvath & Greenberg 1986). The Task subscale is an agreement between the therapist and the client on the techniques, procedures or behaviours that will be used to accomplish the goals of therapy. The Goals subscale can be described as the client's and therapist's formulation and agreement upon what is hoped to be accomplished in therapy. The Bond subscale describes the relationship between the client and the therapist. Versions have been constructed for the client, therapist and observer.

Therapists and patients separately rated their own versions for the Working Alliance Inventory after eight sessions (at entry) and before discharge. The clients' scores were used as an outcome measure.

At study entry, the internal consistency of the client version of the Working Alliance Inventory (WAI-C) was good (Cronbach's alpha 0.96, subscales 0.85 and 0.92) as was also the internal consistency of the therapist's version (WAI-T) (Cronbach's alpha 0.95, subscales 0.84 - 0.90). On discharge, Cronbach's alpha was 0.95 for the WAI-C (subscales 0.86 - 0.90), and 0.94 (subscales 0.85 - 0.88) for the WAI-T. Congruence between patients' and therapists' WAI ratings at entry and on discharge was good. All correlations between patients' and therapists' WAI ratings were statistically significant at study entry and on discharge ( $r = 0.39 - 0.57$ ), except for the Bond subscale on discharge.

#### **4.3.8 Assessment of family functioning**

Assessments of the "Versatility of shared activities with parents" and "The atmosphere of the parent-child interaction" were included in family functioning (Narusk & Pulkkinen 1994). Reciprocal interaction between the adolescent and parents was assessed using five questions on how often they shared in the following activities with their parents: 1) discussions, debates, 2) visits to cultural institutions (theatre, cinema, concerts etc.), 3) sports, 4) a preferred hobby (other than sports), 5) trips, tours, 6) outdoor recreation, 7) excursions with their parents. The ratings of the scale in Versatility of shared activities with parents were made with a 5-point Likert scale for daily, a few times a week/in a month/ in a year, or never (Narusk & Pulkkinen 1994). Cronbach's alphas for the scale were 0.66 to 0.67.

The parent-child interaction was assessed using a total score from eight questions as 1) warm and caring, 2) conflicted, 3) supporting and encouraging, 4) trustworthy and understanding 5) open, 6) strict, 7) unjust and 8) indifferent with 5-point Likert scales (fits completely/mainly/somewhat /mainly not/not at all) (Narusk & Pulkkinen 1994). Cronbach's alphas were 0.84 to 0.87.

#### **4.4 Statistical analyses**

Pearson's chi-squared test, Fisher's exact test, tests for two-binomial proportions and logistic regression were used for categorical variables. The Student's t-test, paired sample t-test and the Mann-Whitney U-test or Wilcoxon signed-rank test, depending on the data distribution, were used for continuous variables. Differences between and within groups at entry and on discharge were tested using the Student's t-test, Pearson's chi-squared test, Fisher's exact test, Mann-Whitney U-

test, paired samples t-test, and Wilcoxon signed rank test. All tests were applied on a two-tailed basis. Logistic regression modelling was used to assess which variables associated with the dependent variable (improvement of 10 points or more in GAS score), and the results were presented as ORs with 95% confidence intervals in the study (Study IV). Multivariate regression analyses were conducted to assess whether clinical and treatment variables were associated with the outcome (study II – IV). Repeated measures analysis of variance was used in Study IV and a backward selection method was used in order to find the final reduced model in Study IV.

Multivariate models used were Hotelling's test and Discriminant analysis (Study I). The overall differences between variables were assessed using Hotelling's test. A step-wise discriminant analysis was performed to identify the factors that best described the differences between girls and boys (Study I). Normality and homoscedasticity were visually checked. A probability value  $p < 0.05$  indicated statistical significance. Statistical analyses were performed with the SPSS for Windows 10.0 and 14.0 statistical packages, and post hoc sample-size estimation was carried out with the nQuery Advisor® 4.0 program.

## 5 RESULTS

### 5.1 Gender differences in clinical characteristics, cognitive functioning and self-image among adolescent psychiatric inpatients (Study I)

About 60% of the subjects ( $n = 37$ ) were referred by secondary health care professionals. Nearly half of the patients (43% of girls,  $n = 16$ , and 48% of boys,  $n = 11$ ) had been immediately referred from the emergency room. Thirty-eight percent of girls ( $n = 15$ ) and 39% of boys ( $n = 9$ ) had a waiting time of over two weeks before admission. There were no gender differences in the socio-economic characteristics of the subjects' families. Health care contacts were more common among girls (Study I, Table 1; 84%,  $n = 32$ ). Girls had more peers (95%,  $n = 35$ ) and more often had sexual relationships (54%,  $n = 20$ ) than boys, and girls (83%,  $n = 33$ ) were also more often smokers. One third of the girls (30%,  $n = 11$ ) had misused alcohol and drugs. Previous suicide attempts were more common among girls (38%,  $n = 14$ ), while violent behaviour was more common among boys.

The patients' principal diagnoses (DSM-IV) were mood disorders ( $n = 39$ ), conduct disorder ( $n = 11$ ), psychotic disorders ( $n = 7$ ), anxiety disorders (generalized anxiety  $n = 1$ ; social phobia  $n = 2$ ) and eating disorders (anorexia nervosa  $n = 3$ ). The subgroup of mood disorders included subjects with major depressive disorder ( $n = 28$ ), bipolar disorders ( $n = 8$ ) and dysthymia ( $n = 3$ ). There was no statistically significant difference in the overall distribution of psychiatric diagnoses between girls and boys.

Neither were there any statistically significant differences between girls and boys in GAS and BDI scores at study entry. All patients had a general IQ of 70 or more.

Girls performed better than boys in several measures of cognitive performance and memory (Study I, Table 2). Significant differences were found in general intelligence (FIQ) and subscales (VIQ, PIQ), immediate recall, delayed recall and delayed recognition.

The total OSIQ scale scores differed significantly according to gender (Study I, Table 3). Psychological Self-Image, including Impulse Control scores and Familial Self scores, were lower in girls than in boys in the total sample.



Among subjects with a mood disorder (MD) there was no gender difference in the GAS score. However, girls had significantly higher mean BDI sum scores than boys. Girls in the MD group displayed better total learning and immediate memory, delayed recalls and delayed recognition than boys (Study I, Table 2). Psychological Self-Image including Impulse Control scores and Familial Self were also lower in girls than in boys in the MD subgroup. However, Body Image scores were lower among girls only in the MD group.

Step-wise discriminant analyses showed that poor family relationships, the presence of age-mates and better total immediate recall characterized girls, whereas violent behaviour and poor non-verbal cognitive performance characterized boys (Study I, Table 4). In the MD subgroup, poor impulse control and the presence of age-mates characterized girls, whereas poor total immediate recall score characterized boys.

## **5.2 The impact of good working alliance on changes in cognitive performance during treatment (Study II).**

The impact of working alliance on changes in cognitive performance was studied in the 45 subjects with complete data on working alliance. The DSM-IV psychiatric diagnoses in the two groups (good working alliance/ poor working alliance) were major depressive disorder (n = 8/13), dysthymia (n = 2/1), bipolar disorder (n = 3/3), conduct disorder (n = 4/2), psychotic disorders (n = 3/2), eating disorders (n = 2/0), and anxiety disorders (n = 1/1).

There were no differences between good and poor working alliance groups in age and gender or in factors related to treatment (Study II, Table 1). Almost half (47%) of the subjects received psychotropic medication at entry. There were no between group differences in psychiatric diagnoses or psychotropic medication on discharge.

The mean scores in the global WAI-C scale were higher than the threshold value (median of global score, 175) in the good working alliance group on discharge (Study II, Table 2). Nineteen of the 23 adolescent inpatients in the good working alliance group maintained global WAI-C scores above the threshold value, while 5 of the 22 adolescents in the poor working alliance group improved the alliance during treatment and moved above the threshold of the good working alliance group.

The group difference in the change between entry and discharge was not significant for the global working alliance scale ( $p = 0.09$ ), task working alliance scale ( $p = 0.08$ ), bond working alliance scale ( $p = 0.15$ ) or goal working alliance scale ( $p = 0.16$ ), but all the scores were continuously better in the good alliance group than in the poor alliance group ( $p < 0.0005$ ).

Cognitive performance improved significantly in both good and poor working alliance groups during treatment (Study II, Table 2). In the good working alliance group, 21 (91%) subjects improved in schooling compared with 18 (82%) subjects in the poor working alliance group ( $p = ns$ ). The improvement in Psychological, Social and Familial Self-Image was significant in the poor working alliance group and in the whole sample. There was a trend for a positive change in the Psychological Self-Image in the good working alliance group during treatment (Study II, Table 2).

The group difference in the change between entry and discharge was not significant for the WAIS-R scale, GAS scale, Psychological, Social Self scale and Familial Self scale. The Social Self score was significantly better in the good working alliance group than in the poor working alliance group ( $p = 0.038$ ). There was also a trend towards continually better scores for the Familial Self ( $p = 0.072$ ) in the good than in the poor working alliance group.

For the good working alliance group the final regression model explained 87% of the variation in cognitive performance on discharge (Study II, Table 3a). The significant variables were the global scale score for working alliance, the number of therapy sessions and cognitive performance (IQ) at entry. For the poor working alliance group and for the whole sample the only significant predictor was cognitive performance at entry.

The final multivariate regression models for psychosocial functioning, Psychological, Social, and Familial Self-Image are shown in Tables 3b-e of study II. In these whole sample regression models, psychosocial functioning at entry associated significantly with improvement in psychosocial functioning (Study II, Table 3b), and Psychological Self-Image at entry associated with improvement in Psychological Self-Image (Study II, Table 3c) both in the poor working alliance group and in the whole sample. A higher score in Social Self-Image at entry, a low number of therapy sessions and a longer duration of treatment associated significantly with improvement in Social Self-Image (Study II, Table 3d) in the whole sample and a higher score in the Social Self-Image at entry in the poor working alliance group. Finally, in the whole sample, a low number of

therapy sessions and lack of psychotropic medication associated with improvement in Familial Self-Image, while in the good working alliance group a higher score in Familial Self-Image at entry and lack of psychotropic medication associated with improvement in Familial Self-Image (Study II, Table 3e). In this patient group there was statistical trend that a longer duration of treatment predicted better Familial Self on discharge.

### **5.3 Clinical improvement in cognitive functioning and self-image among adolescents with major depression (MDD) and conduct disorder (CD) during treatment (Study III)**

Previous suicidal ideation and suicide attempts, indirect self-destructive behaviour and previous inpatient care were more common in the MDD group than in the CD group (Study III, Table 3). Subjects with both MDD and with CD had poor psychosocial functioning [mean GAS-score 40.4 (SD 10.1) in MDD, 42.9 (SD 5.7) in CD]. The mean BDI score was significantly higher in the MDD than in the CD group [mean BDI- score 10.4 (SD 10.1) in MDD, 3.3 (SD 2.1) in CD,  $p = 0.02$ ].

Verbal cognitive performance was decreased in both groups. General cognition was also poor in the CD group at entry (Study III, Table 4). Adolescents with MDD had more memory complaints (MAC-Q) than those with CD.

The mean scores of the Psychological Self, Social Self and Familial Self and all sub-scale scores were lower in the MDD group than in the CD group, except in vocational and educational goals (Study III, Table 5). Home atmosphere and reciprocal interaction scores were also lower in the MDD group than in the CD group at entry (Study III, Table 5).

On discharge, there were no between-group differences in cognitive functioning, memory functioning (Study III, Table 4), or family functioning (Study III, Table 5). Neither were there differences in GAS scores [52.3 (SD 8.6) in MDD, 51.4 (SD 5.4) in CD,  $p = ns$ ] or in BDI scores [6.0 (SD 7.2) in MDD, 2.8 (SD 1.0) in CD,  $p = ns$ ] between the two groups.

After treatment the total OSIQ scores in the Psychological Self, Social Self and Familial Self were lower in the MDD group than in the CD group (Study III, Table 5).

Psychosocial functioning significantly improved in both groups during treatment (GAS score at entry versus on discharge (MDD group,  $p < 0.0005$ ; CD group,  $p = 0.003$ ). General cognitive performance and nonverbal cognitive performance improved in both groups, while verbal cognitive performance and total immediate recall improved in the MDD group (Study III, Table 4). Although the Psychological Self and its two subscales (impulse control and emotional tone), as well as vocational and educational goals, improved only in the MDD group (Study III, Table 5), body-image improved in both groups. The home atmosphere progressed only in the MDD group during treatment.

The only difference between the MDD and CD groups in changes in cognitive performance, self-image and family functioning during treatment was in the reciprocal interaction score. The mean difference in changes at entry and on discharge in reciprocal interaction scores was 5.0 points between the MDD and the CD groups ( $p = 0.02$ ).

In the final multivariate regression model explaining 79% of the variance in cognitive performance on discharge ( $p < 0.001$ ), the general IQ score at entry was the only significant variable ( $p < 0.001$ ). In the final multivariate regression model explaining 29% of the variance in Psychological Self-Image on discharge, none of the single variables were statistically significant.

#### **5.4 Improvement in cognitive and psychosocial functioning and self image among adolescent inpatient suicide attempters (study IV)**

There were no significant differences in the proportion of girls or in the mean age of the subjects between the suicide attempters and non-attempters. Twenty-nine percent of the study sample attempted suicide, and suicide attempts were significantly more common among girls (38%,  $n = 14$ ) than boys (11%,  $n = 2$ ). The principal psychiatric diagnoses (DSM-IV) in the groups (suicide attempters/non-attempters) were major depressive disorder ( $n = 13/15$ ,  $z = 2.88$ ,  $p = 0.004$ ), dysthymia ( $n = 0/3$ ,  $z = 1.14$ ,  $p = \text{ns.}$ ), bipolar disorder ( $n = 2/6$ ,  $z = 0.29$ ,  $p = \text{ns.}$ ), conduct disorder ( $n = 1/10$ ,  $z = 1.62$ ,  $p = \text{ns.}$ ), eating disorders ( $n = 0/3$ ,  $z = 1.14$ ,  $p = \text{ns.}$ ) and anxiety disorders ( $n = 0/2$ ,  $z = 0.92$ ,  $p = \text{ns.}$ ). Eleven (69%) of the suicide attempters and 23 (59%) of the non-attempters had comorbid psychiatric disorders ( $z = 0.69$ ,  $p = \text{ns.}$ ).

Suicidal ideation, hopelessness, current depressive mood, indirect self-destructive behaviour, and alcohol and drug misuse and a family history of being on living allowances were more common among the suicide attempters than non-attempters (Study IV, Table 1). There was no statistically significant between-group difference in psychosocial functioning at entry (mean GAS score  $\pm$  SD: suicide attempters  $41.8 \pm 8.3$  versus non-attempters  $39.3 \pm 8.7$ ,  $p = ns.$ ).

Except for the higher use of psychotropic medication among suicidal patients during treatment, no statistically significant differences were found in treatment variables between subjects with and without suicide attempts (Study IV, Table 2). There was no statistically significant difference in the mean duration of inpatient treatment between suicide attempter and non-attempter adolescents ( $M = 175$  days,  $SD = 99$  vs.  $M = 145$  days,  $SD = 81$ , respectively).

There was a statistically significant improvement in mean ( $\pm$  SD) GAS scores from admission to discharge in both groups: among suicide attempters from  $41.8 (8.3)$  to  $52.1 (9.1)$  ( $p = 0.003$ ) and among those with no suicide attempts from  $39.1 (9.7)$  to  $51.2 (8.1)$  ( $p = 0.001$ ). GAS scores did not differ between the groups on discharge. Two patients in the suicide attempter group (12.5%) and one (2.6%) in the non-attempter group, all females, attempted suicide during the treatment.

When adjusted for baseline suicidal ideation the rate of positive change in suicidal ideation was 55.6% among patients with suicide attempts and 21.1% among non-attempters with no statistically significant difference between the two groups ( $OR = 0.62$ , 95% CI 0.40-9.65). The rate of positive change in indirect self-destructive behaviour was 46.7% among suicide attempters and 21.6% among non-attempters ( $OR = 2.6$ , 95% CI 0.50-13.7) and in hopelessness 80.0% among suicide attempters and 51.1% among non-attempters ( $OR = 6.28$ , 95% CI 0.61-64.9). Depressive mood declined in 35.7% of suicide attempters and 33.3% of non-attempters ( $OR = 0.87$ , 95% CI 0.18-4.08), and anhedonia in 28.6% of the attempters and 31.3% of the non-attempters, respectively ( $OR = 0.43$ , 95% CI 0.01-2.30).

In unadjusted comparisons, general cognitive performance (FIQ), as well as verbal (VIQ) and nonverbal cognitive performance (PIQ) improved during treatment in both patient groups (Study IV, Table 3). Non-attempters' learning memory improved during treatment.

In adjusted comparisons, the improvement in verbal cognitive performance, and in the vocabulary subscale, was more pronounced among the suicide attempters (Study IV, Table 3, column “Subjects Effects”). More severe depressive mood associated with less improvement in general cognition [ $F(1, 36) = 4.14, p = 0.049$ ] and non-verbal cognition [ $F(1, 36) = 7.26, p = 0.011$ ] including the block design subscale [ $F(1, 36) = 6.95, p = 0.012$ ] and the digit symbol subscale [ $F(1, 36) = 7.92, p = 0.008$ ]. Use of medication associated with improvement in non-verbal cognitive performance [ $F(1, 36) = 4.11, p = 0.050$ ]. General cognition [ $F(1, 36) = 6.64, p = 0.014$ ], as well as non-verbal cognitive performance [ $F(1, 36) = 6.24, p = 0.017$ ] and the digit symbol subscale [ $F(1, 36) = 4.15, p = 0.049$ ] changed in both groups during treatment and the changes were similar in the two groups. The number of therapy sessions associated with improvement in immediate logical memory (Study IV, Table 3). The higher the number of therapy sessions (Study IV, Table 3) and the number of days attending school, the better was the improvement in the vocabulary subscale during treatment [ $F(1, 36) = 5.62, p = 0.023$ ].

In unadjusted comparisons the total OSIQ scores in the Psychological Self improved during treatment in both patient groups. (Study IV, Table 4). Among subjects with no suicide attempts, Social self and Familial Self scores also improved. In adjusted comparisons there were no between-group differences (Study IV, Table 4, column “Subjects Effects”). A high number of therapy sessions associated with improvement in Psychological Self, the Body Image subscale and Familial Self (Study IV, Table 4, column “Main Effect”). A more severe depressive mood tended to associate with less improvement in the Psychological Self [ $F(1, 36) = 4.02, p = 0.053$ ], including improvement in the impulse control subscale [ $F(1, 36) = 5.06, p = 0.031$ ]. The more severe the anhedonia, the lower was the change in the social relationships subscale [ $F(1, 36) = 4.85, p = 0.034$ ].

Ten patients (63%) in the suicide attempter group improved in their GAS score by 10 points or more compared with 22 (56%) in the non-attempter group. The predictors showing statistical significance of less than 0.2 in the univariate analysis (number of therapy sessions, duration of inpatient treatment, GAS score at entry, an improved body-image and number of team sessions) and being classified as a suicide attempter or not were entered into the multivariate stepwise logistic regression model.

The final multivariate logistic regression model explained 26.2% of the variance in the change in psychosocial functioning (GAS score) during treatment (Study IV, Table 5). Having an improved body-image associated significantly with a higher probability of improvement in psychosocial functioning while higher GAS score at entry was associated with lower probability of functional improvement.

## **6 DISCUSSION**

### **6.1 Main findings**

More girls than boys were admitted to inpatient care. Mood and conduct disorders were the most common diagnoses. Girls more commonly had poor family relationships but more peers than boys. Violent and destructive behaviour were more common among boys, and they performed worse in tests assessing nonverbal cognitive performance and total immediate recall memory. Both girls and boys had a low IQ. Major impairment in functioning in several areas such as school, family relations, judgment and thinking was found among both genders.

When the impact of working alliance on the change in cognitive performance was examined, it was found that cognitive performance improved significantly among subjects with both good and poor working alliance. However, according to multivariate analyses, a better quality of working alliance and a greater number of therapy sessions were associated with positive changes in cognitive performance.

Subjects with major depression and conduct disorder were compared. Nonverbal cognitive and general cognitive performance, body and self-image, and overall psychosocial functioning improved both among subjects with MDD and with CD during treatment. More positive changes in self-image and family functioning were found among subjects with MDD.

Psychosocial functioning, cognitive performance, and both the psychological self and body-image improved during treatment among patients who had attempted suicide. Their treatment compliance and outcome were as good as those of non-suicidal patients. Having an improved body-image associated significantly with a higher probability of improvement in psychosocial functioning.

### **6.2. Gender-specific differences in cognitive functioning and self-image (Study I)**

The fact that more girls than boys were admitted may be due to the higher prevalence of mood disorders in girls (Cyranski et al. 2000), or girls may be more likely than boys to report emotional problems (Sourander et al. 1999) and seek professional help. The diagnostic distribution and relatively low level of psychosocial functioning of the study subjects were comparable with



those reported previously (Pelkonen 1990). Girls in this sample had a total IQ equal to or ten points lower, and boys ten to twenty points lower than has been reported among non-clinical 16-year-olds (Thompson & Molly 1993). General and verbal cognitive performance of girls in this study was at the same level as found in previous studies on inpatient girls. These findings are in accordance with studies by Kato and co-workers (Kato et al. 1995) and (Piedmont et al. 1989) suggesting that various psychiatric disorders and clinical symptoms may be associated with different types of deficits in cognitive functioning.

For the OSIQ scale the findings are consistent with previous studies reporting poor self-image among emotionally disturbed adolescents (Brennan & O'Loidean 1980) and those with depression (Fine et al. 1993). In this sample, the means of the OSIQ scores were lower than in non-clinical adolescents (Brennan & O'Loidean 1980). Multivariate analysis revealed significant differences in self-image between boys and girls. Both girls and boys had a poorer self-image than found in a previous study on adolescents with psychiatric disorders (Brennan & O'Loidean 1980). Boys had behaved violently towards other people and destroyed things more often than girls. Previous studies have reported that violent behaviour is a common manifestation of psychotic pathology in inpatient boys and can be a risk factor for committing suicide (Inamdar et al. 1982). The prevalence of suicide attempters among girls (35%) and boys (9%) in this study was comparable with the respective figures of 32% and 13% reported by Larsson and Ivarsson in a 2- to 4-year follow-up of depressive symptoms, suicidal ideation, and suicide attempts among adolescent psychiatric inpatients (Ivarsson et al. 1998).

The poor psychosocial functioning both in the total sample and in the MD group among both genders indicates major impairment in functioning in several areas such as school, family relations, judgment and thinking (American Psychiatric Association 1987). The findings in the MD group regarding impulse control, body image and family relationships were in accordance with a study on a group of depressive adolescents (Hintikka et al. 2002). Differences found in this study between female and male inpatients with mood disorders suggest that there may already be gender differences in the manifestation of depression during adolescence, as was also suggested by Compas and co-workers (Compas et al. 1997). Taken together, it seems that hurting ones' body and quarrelling with parents is more common among depressed girls, while behaving violently towards others and not reporting ones' depressive mood is more common among depressed boys. Girls seem to recognize their own problems better than boys and are able to seek professional help earlier. It

seems that boys have longer histories of mental symptoms than girls before referral to psychiatric consultation. Concentration and attention problems more common among boys and their perceptual immediate responses are poor.

### **6.3 Good working alliance and psychotherapy associate with positive changes in cognitive performance (Study II)**

It seems that patients who have better Familial Self-Image need fewer therapy sessions and less psychotropic medication during treatment and they can reconstruct good family relationships on discharge. Intensive individual therapy as part of inpatient treatment may also promote the improvement of cognitive performance, and interpersonal factors such as self-image, including social and familial relationships. A positive working alliance seems to predict positive changes in cognitive functioning and positive changes in family relationships among disordered adolescents. Such changes in adolescents' psychological and cognitive performance accord with the findings of newly studies (Schwartz et al. 2000). Thus, assessing the quality of working alliance early in treatment may help to predict the treatment outcome.

There may be a threshold value for a good working alliance at entry, and crossing this threshold could indicate a positive consistency in working alliance during treatment. It has found also in Norwegian study that good working alliance early in treatment could to be a better predictor than working alliance developing later during treatment (Hersoug et al. 2002).

The medication effect was controlled and was not associated with the outcome or with good or poor working alliance. After multimodal treatment, the patients would be expected to return close to the premorbid levels for tasks involving memory, processing speed, and perceptual organization, as well as gain a better level of psychosocial functioning.

### **6.4 Clinical improvement in cognitive functioning and self-image among adolescents with major depression (MDD) and conduct disorder (CD) during treatment (Study III)**

At admission, cognitive and memory functions were poorer among patients with MDD and CD compared with non-clinical 16-year-old adolescents (Thompson & Molly 1993). Verbal cognitive performance and general cognitive performance were up to fourteen points lower in the CD group

and ten points lower in the MDD group compared with 16-year-old students in the study of Thompson and Sota (1998). Lahey et al. (1995) found that below-average verbal intelligence was associated with persistence of symptoms of conduct disorders.

The finding of poor psychosocial functioning at entry among subjects in both groups accords with that of significant impairment in psychosocial functioning among depressed adolescent inpatients and outpatients with MDD and co-morbid CD in the study by Puig-Antich et al. 1993. Psychosocial functioning improved significantly in both groups during treatment, indicating overall clinical recovery. Psychological, Social and Familial Self-images were poorer in the MDD group than in the CD group, and poorer than found in non-clinical samples of adolescents (Slap et al. 1994). Pelkonen (1990), in her earlier longitudinal study, found that adolescents continued to recover their psychosocial functioning after discharge, especially those who had undergone longer treatment periods and who had received psychotherapy during the inpatient period.

Psychological, Familial and Social Self, except sub-scores of vocational and educational goals, were poorer in the MDD group than in the CD group. The Psychological Self, with impulse control, emotional tone and body image as well as vocational and educational goals, improved significantly in the MDD group during treatment. These findings are consistent with previous studies reporting poor self-image (Fine et al. 1993), and low self-esteem (Dori & Overholser 1999) to associate with depression. One explanation for the findings in the CD group might be that adolescents with CD are defensive, as was noted in a study on juvenile delinquent inpatients (Ostrow et al. 1982). An overall improvement in self-image during treatment in this study suggests a stronger clinical recovery in the MDD group than in the CD group.

During treatment, reciprocal interaction with the family increased slightly in the MDD group but decreased in the CD group, although reciprocal interaction with the family was better in the CD group than in the MDD group at entry. This finding suggests that during the inpatient period, adolescents with CD could not receive sufficient support to improve reciprocal interaction with their families. They may have been more defensive when assessing their family life. Taken together, these findings and those of previous studies (Leichtman et al. 2001) suggest that the development of family-oriented treatment programs for severely disturbed adolescents, especially inpatients with CD, is needed.

The background data on adolescents and their families are consistent with a previous review (Pfeiffer & Strzelecki 1990). The findings in this study are comparable with rates previously reported among inpatients (Dori & Overholser 1999). In this study, slightly more than a quarter of patients with CD had displayed indirect self-destructive behaviours but less than ten per cent had attempted suicide. However, suicide attempts have been found to be rare among inpatients with CD (Borst et al. 1991), while other kinds of self-destructive behaviours are reported to be common (Apter et al. 1988). On discharge, both CD and MDD patients groups improved their cognitive and psychosocial functioning, although family relationships were better among the MDD group. Taking these differences into account, one can assume that different kinds of treatment interventions should be recommended for the MDD and CD groups. Need-adapted treatment has been suggested (Alanen 1997) for both groups in primary treatment. Both adolescents with MDD and CD need structured diagnostics, evaluation of family functioning, problem solving and empathy (Wynne 1984). Adolescents with MDD would probably benefit from treatment programs consisting of individual psychotherapy aiming at correcting cognitive distortions or interpersonal problems. Such programs could include developmental psychotherapy, where one emphasizes working through traumatic experiences and memories, and handling body-image and emotions. Need-adapted treatment for youths with CD could include a long-term structured habilitation program with vocational schooling and residential care with a holding social care system.

### **6.5 Improvement in cognitive and psychosocial functioning and self image among adolescent inpatient suicide attempters (Study IV)**

The proportion of adolescent inpatients that had attempted suicide in this sample (29%) falls within the range previously reported (17–55%) (Goldston et al. 1996, Mäkikyrö et al. 2004). The finding that suicide attempts were significantly more common among female than male adolescent inpatients also replicates previous findings. In accordance with previous research on sex, living allowances and morbidity (Agerbo et al. 2002, Beautrais et al. 1998, Borst et al. 1991, Brent 1995, Grøholt et al. 2000, Shaffer & Pfeffer 2001) multiple distress symptoms and economic hardship in the family associated with suicidality in this study. Consistently with previous research, a strong association between suicide attempts, depression and substance abuse (D'Eramo et al. 2004), and hopelessness (Shaffer & Pfeffer 2001), was found. Inpatients with suicide attempts also more commonly displayed indirect self-destructive behaviour and had poorer attitudes and feelings towards the body and body protection than those in the non-suicidal group, which is consistent with

previous studies on suicidal adolescents (Goldston et al. 1996, Orbach et al. 2001, Pfeffer et al. 1992).

The findings of this study suggest that the IQ profile among suicide attempters may be lowered due to the burden of clinical symptoms and associated psychosocial factors. This is in accordance with previous studies reporting suicidal behaviour to be associated with poor social and problem-solving skills and other cognitive deficits (Brent et al. 1994, Pinto et al. 1996, Wagner et al. 2000). The results of the present study are also in line with the finding from a previous five-year follow-up study that a positive outcome associated with a high IQ (Gossett et al. 1980).

Positive changes among adolescents who had attempted suicide were recorded in attitudes towards the Psychological Self, with respect to reported bodily experiences in Body Image, but no changes were found in attitudes towards parental treatment and bonding in Familial Self. Suicidal adolescents may have had a low tactile sensitivity and responsiveness and a low emotional investment in the body because of mental pain influenced by internal and external sources such as loss (Orbach 2003), wounding in earlier family life and poor interaction with parents (Cetin 2001), especially with significant others when the nascent body is developing during nursing (Lehtonen et al. 2006).

Although the adolescent inpatients in this study were emotionally deeply wounded and had a poor body and familial self, recovery in psychosocial functioning was associated with positive changes in the body and self-image. One explanation for the poor recovery in familial relationships may be that the clinical interventions were insufficient to counteract problems in parental and family life or that a longer time is needed for this type of recovery. It seems that a sufficiently long comprehensive psychiatric inpatient treatment including individual psychotherapy and family sessions may be an effective treatment modality for adolescent suicide attempters with severe psychiatric problems (Pelkonen & Marttunen 2003). Hopelessness, suicidal ideation and depressive mood appear to be critical components in the treatment of suicidal adolescents (Enns et al. 2003), and significant indicators of future suicidality (Goldston et al. 2001). Particular attention should be paid to relieving hopelessness and depressive mood in the treatment of adolescent suicide attempters.

## **6.6 Methodological considerations**

This prospective study consisted of unselected consecutively referred adolescent inpatients from a real-life clinical setting, as recommended for adolescent therapy research (Kazdin & Kazdin 2003). The relatively long duration of the inpatient stay enabled changes in self-image and cognitive functioning to be assessed. The study design combined psychological, psychiatric, self-rated, and medical-staff perspectives and used well-validated measures for assessing cognitive performance, self-image, depressive symptoms, psychosocial functioning, working alliance and family functioning, and a structured interview in diagnostics. The subgroups that were compared were homogenous in terms of age and the mean duration of inpatient treatment. The two-group pre-post test study design made it possible to compare the same sample at entry and on discharge quite reliably. All assessment methods were selected using different models of adolescent mental disorders: symptomatic improvement from clinical psychiatry; developmental maturational task accomplishment; intrapsychic functioning according to psychodynamic theory; and relationship and maturational changes from social psychology, psychiatry, and systems theory. Previous studies on psychiatric inpatients have recommended that the assessment of such intrapsychic constructs as cognitive functioning and assessment of self-image in combination with specific and global indices of symptoms and behavioural measures should be used (Pfeiffer & Strzelecki 1990). Furthermore, all scales in our study had moderate or good internal consistency according to suggested reliability standards (Barker & Pistrang 2002).

### **6.6.1 Study methods**

Cognitive performance (FIQ) was assessed by a clinical psychologist using five sub-tests of the Wechsler Adult Intelligence Scale - Revised, adapted for use in the Finnish population (Wechsler 1992). The tests were selected for emotionally-disturbed patients and equivalents using the corresponding norms for the ages of 16 to 17 years. The WAIS-R test is commonly used in clinical practice and its reliability is reportedly good (Lezak 1995). The subscales of Similarities, Digit Span, Digit Symbols and Block Design that were used in this study are suitable for emotionally-disturbed patients, and their scaled scores do not differ from those of the Wechsler Intelligence Scale for Children (Thompson & Molly 1993, Thompson & Sota 1998).

The Offer Self-Image Questionnaire (OSIQ; Offer et al. 1981) is designed to evaluate the functioning, psychological sensitivity and skills of teen-aged adolescents in eleven content areas. The internal consistency of some subscales has reportedly been good while others seem less useful (Offer et al. 1981). A limitation is that only six sub-scales were used. However, the scales with highest internal consistency reflecting the subjects' specific responses to developmental needs were chosen. The scales used also showed good internal consistency in this sample (Cronbach's alpha 0.93 for the total OSIQ scale, 0.88 for Psychological Self, 0.85 for Social Self and 0.87 for Family Relationships).

The semi-structured SCID I interview for psychiatric diagnoses (Spitzer et al. 1992) has been reported to be a valid and reliable diagnostic tool. As part of the interview, anhedonia and current depressive mood were inquired. The reliability of the final DSM-IV diagnoses was not tested, but the use of all available information in the diagnostic process most probably enhanced reliability.

The 21-item Beck Depression Inventory (Beck et al. 1961) is a widely used self-rating scale to assess depressive symptoms in research on adolescent depression. The BDI has been reported to be a valid tool for assessing depression in clinical samples of adolescents (Bennett et al. 1997). The internal consistency of the scale was also good in this sample (Cronbach's alpha 0.90 at baseline and 0.91 on discharge). The self-destructiveness item of the BDI was used to indicate suicidal ideation in study III as in many previous studies on suicidality among adolescents (Kaltiala-Heino et al. 1999).

Psychosocial functioning was measured using the Global Assessment of Functioning Scale (GAS) (Endicott et al. 1976). It has previously been widely used in adolescent samples and round-table assessments after education for rating the GAS were used in order to improve the reliability of the ratings.

The Working Alliance Inventory (WAI) scale (Horvath & Greenberg 1986) was used because, compared with other scales assessing therapeutic alliance, the Working Alliance Inventory scale provides the strongest correlation between patients' and therapists' ratings of alliance (Hatcher et al. 1995). The patients' ratings were used because they have been reported to be a better predictor of the outcome than therapist and observer ratings (Horvath & Symonds 1991). The patients' and therapists' assessments of working alliance (WAI) were relatively stable, suggesting relatively good

stability of the WAI scales as also previously reported (Horvath & Greenberg 1986). The internal consistencies of the scales in this study were also good and comparable with those reported previously. The internal consistencies of the scales used to assess reciprocal interaction and the emotional home atmosphere (Narusk & Pulkkinen 1994) were acceptable in this study sample.

### **6.6.2 Limitations**

The main methodological limitation was the relatively small sample size, hampering many subgroup analyses. Due to the small sample, the risk of false-negative findings cannot be ruled out. Secondly, there were only two ratings of working alliance, cognitive and psychosocial functioning, and Psychological, Social, and Familial Self-Images during treatment, precluding the assessment of changes in different phases of the treatment. However, more frequent measures might distort assessments of cognitive performance due to learning. Thirdly, the WAI is primarily an adult instrument, and not all adolescents may have the maturity to evaluate the alliance construct (DiGiuseppe et al. 1996). Since the first measurement of working alliance took place after eight sessions, there may have been confounding treatment effects on this measure.

The use of a control group would have been desirable in assessing clinical outcomes (Leichtman et al. 2001). Ethical and practical aspects need, however, to be taken into account when considering appropriate control groups for young inpatients. One cannot leave severely disordered adolescents untreated or offer them less intensive care. Finally, these findings may not be directly generalized to other adolescent patients with less severe features of psychosocial impairment.



## 7 CONCLUSIONS AND IMPLICATIONS

Mood and conduct disorders were the most common disorders in adolescent psychiatric inpatients. All patients had severe impairments in general functioning. Distinct gender differences in background and cognitive performance were found. It seems that hurting oneself, wounding ones' own body and expressing ones' worries to other adults than the parents is common among depressed girls. Girls also outwardly express their distress more commonly by drinking and smoking and having early sexual experiences than boys. In most cases, the inpatients' psychosocial functioning and cognitive performance improved during treatment. There were also improvements in intra-psyche constructs: the psychological self-image, especially body-image, improved and relationships with family members improved particularly among emotionally-disturbed adolescents. The findings suggest that a good working alliance and regular and frequent therapy sessions promote positive changes in cognitive performance and self-image, including family and social interaction, during a comprehensive inpatient treatment program. Besides, adolescents who had a good working alliance and positive family relationships at treatment entry less commonly required psychotropic medication and had a better Familial Self on discharge than those adolescents with poor family relationships at entry.

During hospitalization, nonverbal cognitive and general cognitive performance, body and self-image, and overall functioning improved among inpatients both with major depression and conduct disorder, although more positive changes in self-image and family functioning were found among subjects with major depression. In patients who had attempted suicide, treatment compliance and outcome were as good as those of non-suicidal patients. Improved body-image associated significantly with a higher probability of improvement in psychosocial functioning.

### 7.1 Clinical implications

In clinical practice, attention needs to be paid to structured assessment of adolescent psychiatric inpatients. The use of structured measures for internal psychological constructs like cognition and self-image together with a combination of specific and global indices of psychosocial functioning are recommended. Assessment of psychosocial functioning using GAS or GAF scales by medical staff at entry and on discharge provides an opportunity to assess the impact of treatment. Focused assessments of cognitive performance, e.g. using the WAIS-III-R scales, seems plausible. The use

of standardized methods (e.g. the Rochester revision of the Beavers-Timberlawn Family Evaluation Scale) for the assessment of family functioning are also recommended for sessions with parents and adolescent (Beavers 1976). Assessment of working alliance offers a way to evaluate the therapeutic relationship in longer-term treatment. Due to the complexity of developmental issues in adolescence, theoretical and practical knowledge of adolescents' development and disturbances should be highlighted in adolescent psychiatric clinics. The social and linguistic impairments of the inpatients need to be carefully considered. To be effective, the treatment of adolescent inpatients needs to combine a range of therapeutic modalities. This study suggests a need to combine at least regular individual therapy, pharmacotherapy, family interventions, and a school program. Attention should be paid to the bodily self and development of the self-image during adolescence with different kind of group interventions. Since good working alliance between the therapist and the adolescent patient seems to modify treatment outcome, particular attention to creating a good alliance with the patient and intensive involvement of the parents in treatment are recommended.

## **7.2 Implications for future research**

Further research on the possibly different needs of girls and boys admitted to psychiatric inpatient care seems to be warranted based on the findings of gender differences in background and psychological characteristics in this sample. Secondly, as working alliance seems to modify the treatment outcome, future research on working alliance in the treatment of adolescents and on its role in outcomes is needed. Prospective studies with a sufficient follow-up after discharge are needed in order to determine whether the treatment gains persist, and to elaborate the predictors of the longer-term outcome. Further research on potentially mediating variables, such as motivation, family context and working alliance is also warranted, since these factors may be particularly important in deciding on admission and predicting the treatment outcome. Finally, well-designed intervention studies among adolescent inpatients are needed.

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