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List of commonly used abbreviations

AAI	Adult Attachment Interview
ADHD	Attention Deficit Hyperactivity Disorder
AQS	Attachment Q-Sort
ASD	Autism Spectrum Disorder
BEIP	Bucharest Early Intervention Project
CAI	Child Attachment Interview
CAMHS	Child and Adolescent Mental Health Service
CBJ	Comité Bijzondere Jeugdzorg
CBSA	Competentiebelevingsschaal voor Adolescenten
CBSK	Competentiebelevingsschaal voor Kinderen
CGAS	Children's Global Assessment Scale
CGG	Centrum Geestelijke Gezondheidszorg
CI	Confidence Interval
CLB	Centrum voor Leerlingenbegeleiding
COS	Centrum voor Ontwikkelingsstoornissen
DAD	Disinhibited Attachment Disorder
DSM-IV-TR	Diagnostic and Statistical Manual for Mental Disorders 4th edition – Text Revision
ECR-R	Experiences in Close Relationships – Revised
ERA	English and Romanian Adoptees
GAF	Global Assessment of Functioning
ICD-10	International Classification of Diseases and Related Health Problems 10th revision
IQ	Intelligence Quotient
ISCED	International Standard Classification of Education
ISEI	International Socio-Economic Index of Occupational Status
IWM	Internal Working Model
MCAST	Manchester Child Attachment Story Task
NOSI	Nijmeegse Ouderlijke Stress Index
PAika	Psychiatrische Afdeling voor infants, kinderen en adolescenten
PBI	Parental Bonding Instrument
PSI	Parental Stress Index
PTSD	Post-Traumatic Stress Disorder
RAD	Reactive Attachment Disorder
SDQ-P (f)	Strengths and Difficulties Questionnaire – Parent form (father)
SDQ-P (m)	Strengths and Difficulties Questionnaire – Parent form (mother)
SDQ-S	Strengths and Difficulties Questionnaire – Self-report
SDQ-T	Strengths and Difficulties Questionnaire – Teacher form
SES	Socio-Economic Status
SON	Snijders-Oomen Non-verbal Intelligence Tests
SPPA	Self-Perception Profile for Adolescents
SPPC	Self-Perception Profile for Children
SSP	Strange Situation Procedure
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UZ Brussel	Universitair Ziekenhuis Brussel
WAIS	Wechsler Adult Intelligence Scale
WHO	World Health Organization
WISC	Wechsler Intelligence Scale for Children
WPPSI	Wechsler Preschool and Primary Scale of Intelligence

> **In-text citations and the list of references were formatted in accordance with APA guidelines (American Psychological Association, 2010; Habraken, 2012).**

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I. ABSTRACT

Background. Internationally adopted children are referred relatively often to mental health services. Recent meta-analyses have demonstrated a catch-up after adoption compared with post-adoption peers in several developmental domains (e.g. self-perception, IQ, physical growth). However, attachment remains an important concern. Late adoptions, early-life adversity and discontinuity of care are known risk factors for the development of secure attachment. Studies on the intergenerational (non-biological) transference of attachment have identified parental attachment security as a protective factor.

Aims. To test 4 main hypotheses: (1) A clinical sample of internationally adopted children displays more problems than post-adoption peers and other (non-clinical) adopted children in one or more of the following developmental domains: (a) emotional, behavioural and social functioning, (b) cognitive and educational functioning, (c) self-perception and (d) attachment. (2) Attachment disorders and insecure attachment are associated with poorer outcomes in other developmental domains. (3) Securely attached adoptive parents constitute a protective factor for the development of attachment problems in adopted children. (4) Adopted children's attachment problems are a source of high parenting stress levels.

Methods. In a retrospective study, we evaluated a clinical sample of 34 internationally adopted children with regard to these developmental domains. We compared the results obtained in recent meta-analyses to our own, to compare our cohort with post-adoption peers and other (non-clinical) adopted children. We studied the correlation between outcomes in different developmental domains. We performed an additional non-interventional, cross-sectional study to explore the adoptive parents' bond with their own parents, their partners and their adopted children and the stress experienced in raising their adopted children, using self-report measures.

Results. The children in our cohort came from a high-risk background (late adoptions, early-life adversity and discontinuity of care were highly prevalent). They displayed comparatively more problems in emotional, behavioural and social functioning, cognitive and educational functioning and attachment, but not self-perception. Attachment disorders (38%) and insecure attachment (26%) were highly prevalent in our cohort, but were not found to be associated with significantly poorer outcomes in other developmental domains. Though most adoptive parents were classified as securely attached, this was not found to be a protective factor for the development of attachment problems in their adopted children. Adopted children's attachment problems were a source of high parenting stress levels.

Conclusions. Attachment disorders and insecure attachment were the most important concerns in our clinical sample of internationally adopted children. Our results highlight the importance of a comprehensive, individually attuned approach.

II. INTRODUCTION

The profile of the adopted child has changed over the last few decades (Nickman et al., 2005): while domestic adoption has become rare, international adoption of children with special needs is on the rise. Several factors have contributed to this evolution. Due to more effective birth control, legalisation of abortion and economic well-being, the number of children given up for adoption domestically has decreased. Consequently, international adoption has become a more popular option. At the same time, recent prosperity and modified adoption policies in many developing countries have made it possible for most children to find a new family in their native country. However, children with special needs (such as physical and/or mental disabilities, developmental, emotional or behavioural disturbances), older children and groups of siblings still have difficulty finding adoptive parents in their own country. These children are more frequently adopted internationally (Fensbo, 2004).

It is well established that adopted children are at higher risk for referral to mental health services, for various reasons (Juffer, & van IJzendoorn, 2005). Problems arise more frequently in several developmental areas during the first years after adoption, especially if the child was not adopted at birth. It seems likely that early-life adversity, rather than the adoption process itself, is the main culprit. Indeed, many adopted children have not always been looked after adequately. Most of them have spent the first years of their lives in institutions, where the dire living circumstances (e.g. in Romanian orphanages) have been well documented (e.g. Chisholm, Carter, Ames, & Morison, 1995; Rutter et al., 2007a). Others have suffered neglect or abuse within the "care" of their biological and/or foster family, or have had to survive on their own on the streets. These early-life hardships are detrimental to a child's development, but genetic, pre- and perinatal factors may contribute as well. It remains difficult to determine the impact of each of these factors, as the information adoptive parents receive about their child's biological family, pregnancy, birth and first years of life is often limited at best.

Large meta-analyses conducted in the past decade have demonstrated a massive catch-up after adoption in several developmental domains, such as physical growth, cognitive development, school achievement, self-esteem, attachment security and behavioural problems (van IJzendoorn, & Juffer, 2006). Adopted children tend to fare much better than their peers who stayed behind in institutionalised or foster care (i.e. *pre-adoption peers*). Adoption could therefore be considered a highly successful social intervention. Yet this catch-up is not always complete in comparison with *post-adoption peers* (i.e. non-adopted, biological children born in the country of adoption), particularly with regard to physical growth and attachment. The latter remains an important concern, heavily influencing other areas of development and thus co-determining the outcome of adoption.

In this study, a cohort of 34 internationally adopted children referred to the Psychiatric Department for infants, children and adolescents (PAika) of the UZ Brussel (Brussels University Hospital) between 2005 and 2012 was analysed in detail.
First, we mapped basic demographic information, such as age, gender, country of origin and adoptive family constellation.
Second, we performed a retrospective analysis of our centre's assessment of these children (both in-patient and out-patient assessments). This includes the information obtained from anamnesis, observations and diagnostic testing at referral to PAika and at follow-up. We studied the presence or absence of a number of known risk and protective factors for the

outcome of adoption (e.g. age at adoption, pre-adoption care, early-life adversity) and examined the referral to PAika (reason for referral, help sought prior to referral).

We compared the findings in our *clinical* group with recent meta-analyses describing post-adoption peers and other (non-clinical) adopted children. We focused on the following developmental domains:

- emotional, behavioural and social functioning
- cognitive and educational functioning
- self-perception
- attachment

We reviewed the diagnoses made on all 5 DSM-IV-TR Axes and the therapeutic proposals.

Attachment disorders and insecurity were a major concern in our group. Because of growing interest in the intergenerational transference of attachment, we supplemented our study with a non-interventional, cross-sectional study to assess the adoptive parents with regard to their bond with (a) their own parents, (b) their partners and (c) their adopted children. Furthermore, we evaluated the stress experienced by the adoptive parents in raising their adopted children.

We are well aware that this group is not representative of the entire population of internationally adopted children. As the children in our cohort have all been referred to a Child and Adolescent Mental Health Service (CAMHS), they would be expected to display more problems in one or several developmental domains. Therefore, simply comparing our findings with recent larger scale studies would likely not reveal anything unexpected. Instead, we wished to explore why these children and / or their families ended up being referred to a CAMHS and how these referrals ought to be approached in the future.

The primary aim of this study was to test 4 main hypotheses:

(1) *A clinical sample* of internationally adopted children displays more problems than post-adoption peers and other (non-clinical) adopted children in one or more of the following developmental domains:
    a. emotional, behavioural and social functioning
    b. cognitive and educational functioning
    c. self-perception
    d. attachment
(2) Attachment disorders and insecure attachment are associated with poorer outcomes in other developmental domains.
(3) Securely attached adoptive parents constitute a protective factor for the development of attachment problems in adopted children.
(4) Adopted children's attachment problems are a source of high parenting stress levels.

By means of this study, we wished to look for ways to optimise the evaluation and follow-up of internationally adopted children referred to a CAMHS and to make suggestions for future research, based on our results.

III. BACKGROUND

III.1. Adoption

> **Definition**
> Adoption can be defined as *the legal placement of abandoned, relinquished, or orphaned children within an adoptive family* (Juffer, & van IJzendoorn, 2007). Unlike guardianship, adoption is a *permanent* measure, which' primary aim is to protect the child. While every child has the right to grow up within a family, not every parent has the right to raise a child (Belgische Federale Overheidsdiensten, 2011b).

III.1.a. Adoption in Belgium
Adopting a child implies going through an extensive and complicated procedure that in most cases will take several years to complete, requiring a lot of patience and perseverance.
The different steps of this procedure are listed on the Belgian federal government website (Belgische Federale Overheidsdiensten, 2012). They vary according to the type of adoption: adopting within Belgium or internationally, adopting minors or adults, adopting the children of one's partner, etc.

In theory, (hetero- and homosexual) couples that are married or have been living together officially for at least 3 years as well as single men and women have the right to adopt, if they meet certain conditions. These **conditions** differ according to the type of adoption, but some of them are universal (Belgische Federale Overheidsdiensten, 2012):
- An adoptive parent-to-be needs to be at least 25 years of age and at least 15 years older than the adopted child (or at least 18 years of age and 10 years older if adopting the children of one's partner).
- Adoptive parents-to-be are required to follow preparatory courses designed to inform them on the adoption process. Afterwards, a juvenile court judge will decide if the parents are found eligible and competent to adopt. This implies having the necessary "social and psychological skills".
- The legal parents of a minor have to agree with the adoption. From the age of 12 years on, the adopted child has to give his or her permission as well.

III.1.b. International adoption procedure
The procedure for the international adoption of children is very complex and is thus usually facilitated through a licensed adoption agency. Though it is also legally possible to independently organise the adoption of a child (within the Flemish Community only), close supervision by 'Kind & Gezin' is always required[1].
The different steps in the international adoption procedure are described in detail on the Belgian federal government website (Belgische Federale Overheidsdiensten, 2011a) and the Flemish Association for Child and Adoptive Family website (Vereniging voor Kind en Adoptiegezin vzw, n.d.), as summarised in Addendum 1.
On average, the duration of a complete international adoption procedure - from application until arrival of the adopted child - will take between 2 and 5 years (Kind & Gezin, 2012a).

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[1] Kind & Gezin (*Child & Family*) is a Flemish government agency which' primary aim is to support the well-being of young children and their families. It is also responsible for setting the criteria that adoption agencies have to meet (Kind & Gezin, 2012c).

In short, the international adoption of a child requires the following steps:
  (1) Preparation for adoption (creation of personal file, preparatory course)
  (2) Verdict on eligibility to adopt (based on principal criteria and in-depth social inquiry)
  (3) Mediation by adoption agency (between parents and foreign authorities)
  (4) Adoption procedure in country of origin
  (5) Recognition of adoption by Belgian Federal Authority
  (6) Registration at municipality of adoptive family's home town

III.1.c. Statistical data

The Belgian federal government website (Belgische Federale Overheidsdiensten, 2013) provides statistical information on international adoption.

Since September 1st 2005, a total of 3234 children (83 of whom were older than 18 years of age) have been adopted from 93 different foreign countries. The largest groups were from Ethiopia, China and Kazakhstan.

Country of origin	n	Country of origin	n
1. Ethiopia	915	6. Thailand	131
2. China	632	7. Russia	130
3. Kazakhstan	304	8. Haiti	91
4. Colombia	171	9. France	76
5. South Africa	141	10. Mali / RDC Congo	73

Table 1. Most common countries of origin of internationally adopted children in Belgium.

In total, 331 children (10.2%) came from European countries (198 of whom from Eastern Europe), 1385 (42.8%) from Africa, 347 (10.7%) from America (332 of whom from Latin America), 1169 (36.1%) from Asia and 2 (0.1%) from Oceania.
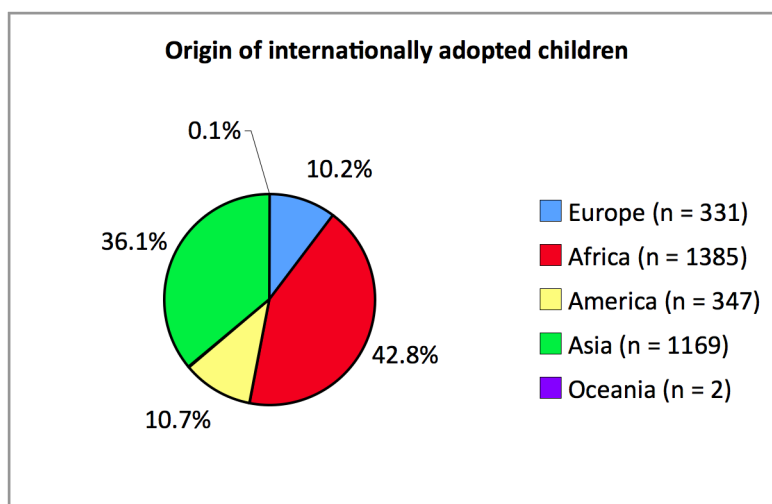
Figure 1. Origin of internationally adopted children in Belgium.

Most internationally adopted children were adopted by two parents: 2781 (or 86.0%), while 453 (14.0%) were adopted by a single parent.

Number of adoptive parents
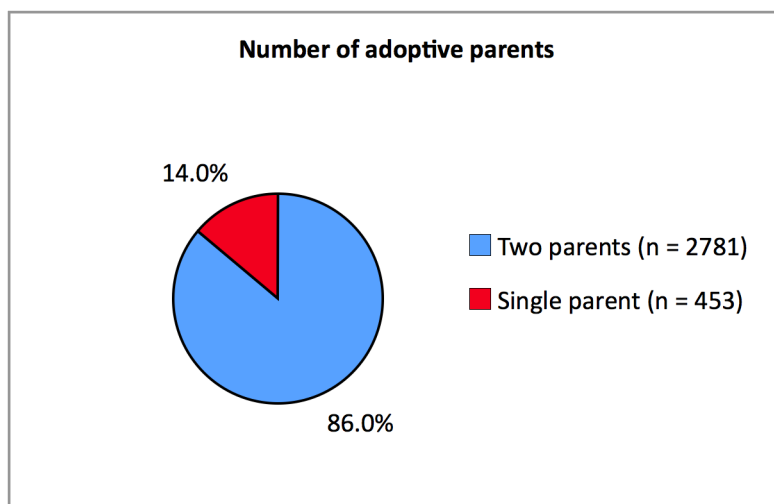
Figure 2. Number of adoptive parents for internationally adopted children in Belgium.

Age at adoption is broken down into 4 categories on the federal government website: under 4 years of age (n = 2524 or 78.0%), between 4 and 15 years of age (n = 593 or 18.3%), between 15 and 18 years of age (n = 34 or 1.1%) and older than 18 years of age (n = 83 or 2.6%).
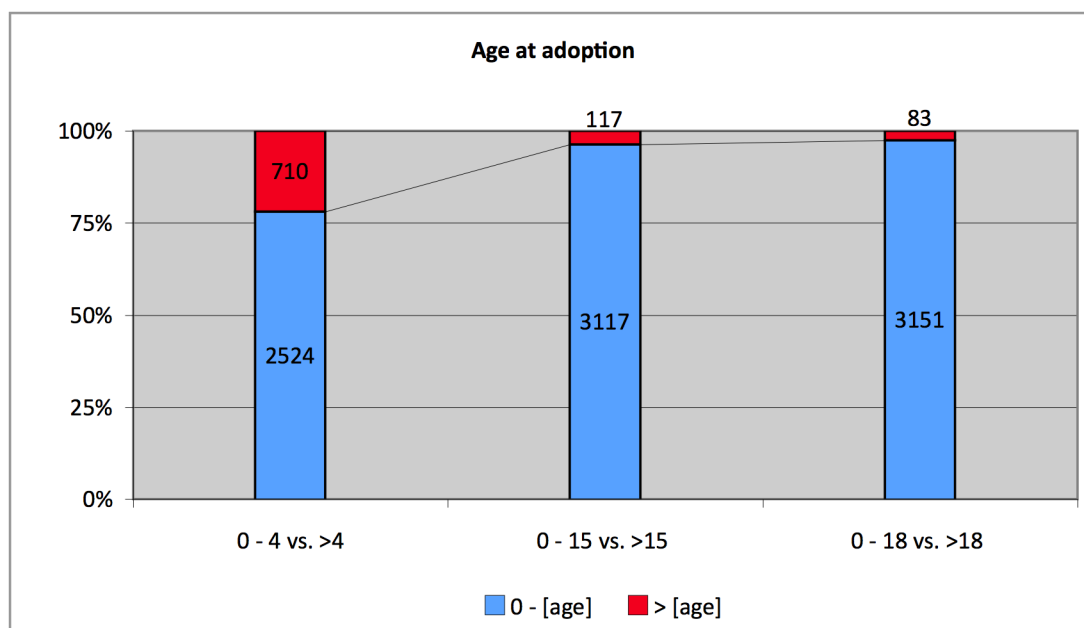
Figure 3. Age at adoption of internationally adopted children in Belgium.

There is no apparent reason for breaking down the data in this way, as there are no legal differences associated to the age groups, other than the over 18 group. In fact, from a legal point of view, a more logical division would have been under 12 years of age (no need for child's consent), between 12 and 18 years of age (child's consent required) and older than 18 years of age (different procedure for the adoption of an adult).

For research purposes, a distinction is often made between "early" and "late" adoption. The line is usually drawn somewhere between 4 months and 2 years of age, most often at either 6 months, 1 year or 2 years. The age at adoption has important implications for the outcome of adoption, which will be discussed further on.

Using data provided by the Flemish and French-speaking communities, we can compare international and domestic adoptions in Belgium (Direction de l'adoption, Autorité centrale communautaire, 2012; Kind & Gezin, 2012b).
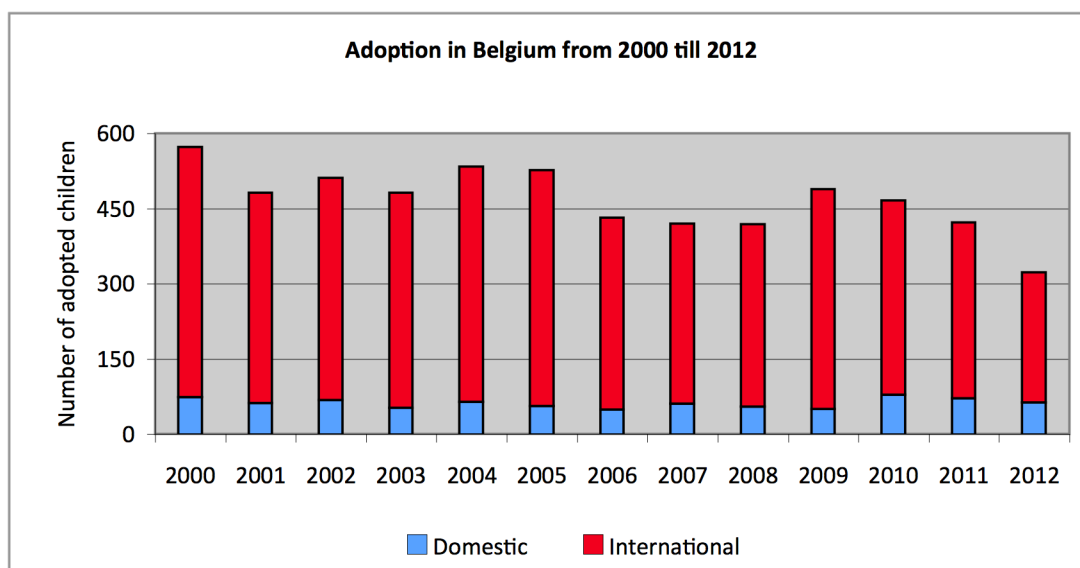
Figure 4. Number of domestic and international adoptions in Belgium from 2000 till 2012.

The number of international adoptions by Belgian families is far greater than the number of domestic (i.e. national) adoptions. Between 2000 and 2012, a total of 6079 adoptions took place: 5278 international adoptions (86.8%) compared with 801 domestic adoptions (13.2%). This corresponds with roughly 400 international adoptions and 60 domestic adoptions per year.

Year	Domestic adoptions		International adoptions		Total
	n	%	n	%	n
2000	73	12.7%	500	87.3%	573
2001	62	12.9%	419	87.1%	481
2002	67	13.1%	444	86.9%	511
2003	52	10.8%	430	89.2%	482
2004	64	12.0%	470	88.0%	534
2005	56	10.6%	471	89.4%	527
2006	49	11.3%	383	88.7%	432
2007	61	14.5%	359	85.5%	420
2008	55	13.1%	364	86.9%	419
2009	50	10.2%	439	89.8%	489
2010	78	16.7%	388	83.3%	466
2011	71	16.8%	351	83.2%	422
2012	63	19.5%	260	80.5%	323

Table 2. Domestic and international adoptions in Belgium from 2000 till 2012.

III.2. Profile of the internationally adopted child

International adoptions involve more than 40,000 children moving between more than 100 countries worldwide every year (Juffer et al., 2005). It is an ever growing phenomenon, which has attracted a lot of interest in research over the years.

Since the 1960s and 70s, the number of domestic adoptions has decreased dramatically in the Western world (Fensbo, 2004). The introduction of cheap, easy and effective birth control methods on a large scale has had a powerful demographic impact. Women have become able to invest in their education and professional life, contributing to their societies' economic prosperity. This development has led women to start their families at a later age and have fewer children. Today, couples are able to plan how many children they want to have and when to have them. Along with the legalisation and growing acceptance of termination of (early) pregnancy for non-medical reasons, this evolution has made the number of unwanted children born into our societies decrease strongly.

The downside is that by postponing the start of a family life, more and more couples struggle to have children of their own, as their fertility decreases with age. Indeed, infertility is a very common reason for considering adoption (Bimmel, Juffer, van IJzendoorn, & Bakermans-Kranenburg, 2003). Yet on a national level, "the demand" (aspiring adoptive parents) largely exceeds "the supply" (children placed for adoption). Therefore, aspiring parents have to look for alternatives, the most obvious being international adoption.

If we look at international adoption on a worldwide scale, there is a clear movement of adopted children from developing countries to the Western world. However, in recent years, many developing countries have modified their adoption policies. The primary objective has shifted towards finding adoptive parents *within the country of origin* if possible (Kind & Gezin, 2012d). As some developing countries have started to catch up with the Western world, they too have seen an increase in the number of aspiring adoptive parents domestically. Thus, more and more children can be placed with families in their native country. However, children with special needs, such as physical or mental disabilities, developmental, emotional or behavioural disturbances, as well as older children and groups of siblings still have difficulty finding adoptive parents in their own country (Fensbo, 2004).

By consequence, the profile of the adopted child has evolved over the last few decades: from unwanted babies given up for adoption at birth, to unwanted babies born abroad, to (groups of) (older) children (with special needs). It is not surprising that this has not made the adoption process any easier for either the children or their new parents. Though we now know a little more about the challenges that lie ahead, it remains difficult to truly prepare adoptive parents and children for all the difficulties they may face.

Today's internationally adopted children have often suffered inadequate pre- and perinatal care, neglect, abuse, malnutrition, etc. before their adoptive placement. This difficult start contributes to the problems these children face later on in their lives and helps to explain why they are overrepresented in mental health referrals (Juffer et al., 2005). As will be discussed further on, large studies have shown that (internationally) adopted children display comparatively more developmental delays, attachment problems, internalising and externalising behavioural problems and a significantly higher risk for suicide, psychiatric illness and social maladjustment than non-adopted biological children (i.e. post-adoption peers), although it is important to note that the majority of adopted children function well (Hjern, Lindblad, & Vinnerljung, 2002).

III.3. Risk and protective factors

Adoption can be perceived as a risk factor or as a curative intervention in the development of adopted children. As van IJzendoorn et al. (2006) explain, adopted children are much better off than their pre-adoption peers who were left behind in institutionalised or foster care, but compared to non-adopted biological children (i.e. post-adoption peers), they still display more problems in several developmental areas.

When interpreting the results of a study on adopted children, it is crucial to know whom they are being compared to. Though many studies use non-adopted biological children as a control group, it is perhaps more relevant to compare with non-adopted peers left behind in institutionalised or foster care. After all, adopted children have already been put in a challenging situation; the main question is how to overcome it most effectively.

Studies comparing adopted children with left-behind peers might paint an overly optimistic picture of adoption, giving the impression that adoption has almost no downsides. This may raise adoptive parents' expectations too high, setting them up for disappointment. Instead, studies ideally use 2 control groups, indicating the benefits of adoption compared to institutionalised care, without disregarding the challenges to be faced.

To compare adopted children to control groups, the following terms are often used:
- *Post-adoption peers* are non-adopted biological children born in the country of the adoptive family
- *Pre-adoption peers* are children who stayed behind (in institutionalised or foster care) in the adopted child's country of origin

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It is important to realise that an association between adoption and a positive or negative outcome does not necessarily imply *causality*. For example, adopted children are slightly smaller on average than their post-adoption peers (i.e. non-adopted, biological children), but this does not mean that adoption leads to a decrease in height.

In 2007(a), van IJzendoorn, Bakermans-Kranenburg and Juffer performed a meta-analysis of 33 articles (including over 3,000 children) to study the influence of pre- and post-adoption care on physical growth in internationally adopted children. They found that at adoptive placement, these children showed large delays in height, weight and head circumference. The longer they had been in institutionalised care, the more they lagged behind. However, after adoption they gained up on non-adopted biological children (i.e. post-adoption peers), almost equalling their stature and weight. The catch-up for head circumference seemed slower though and ultimately remained incomplete. Older age at adoption was identified as a risk factor for incomplete catch-up.

The initial delay observed for all 3 growth parameters can probably be attributed in large part to malnutrition and neglect in the first few months or years after birth. This period is crucial for brain development, which may explain why post-adoption catch-up for head circumference was found to be slower and ultimately incomplete.

The incomplete catch-up observed in late adoptions may be partly due to an earlier onset of puberty, caused by a drastic change in diet after adoption. Another explanation put forward is that the prolonged stay in institutionalised care could have left a permanent mark on the children's physical development.

Of course, it is possible that these children remain shorter than their post-adoption peers, in spite of reaching their full growth potential. Even with optimal nutrition, they

may end up seemingly "lagging" in stature because of their different genetic background (e.g. Asian and South American children), although this could be controlled for using percentile scores adjusted for country of origin.

Yet this model is probably still too simplistic. Physical growth is determined by many factors, which interact in ways we do not fully understand yet. Pre- and post-natal growth, as a result of environmental exposure (e.g. nutrition), maternal factors and genetics play an important role, but do not explain the whole picture. Children require emotional nurturing as well to grow; emotional stress and neglect during childhood are known to be associated with a deceleration in growth, from which a child may not always fully recover.

As Rutter (2012, 2013) explains, the concept of *risk* and *protective factors* is inferred from the observation that individuals react differently when faced with a comparable level of adversity. The heterogeneity in people's responses to all kinds of stress can be explained by a dynamic model, in which positive and negative experiences (environment), as well as a genetic susceptibility, interact to determine the outcome.
This model may seem straightforward, but is actually rather complex. For example, negative experiences would logically have a sensitising effect by increasing *vulnerability*, but they could also prime a person for future hardships, leading to greater *resilience*.

While risk factors are associated with greater vulnerability, protective factors boost resilience. The accumulation of risk factors impedes a child's development, but protective factors can buffer the negative effects. Therefore, identifying these factors is of great clinical relevance: preventing the presence of risk factors and / or stimulating the development of protective factors can lead to a better outcome.
However, many risk factors cannot be influenced. For instance, a history of child abuse and neglect, perinatal complications, teenage motherhood and parental mental illness have all been identified as risk factors for a child's development. This amplifies the importance of protective factors that *can* be reinforced, such as a stable and nurturing adoptive family, deeply invested adoptive parents, a secure attachment relationship with the adoptive parents and support by the social environment (e.g., peers, teachers).

III.4. Outcome of adoption

Defining the "outcome" of adoption is not a straightforward matter. Perhaps the most appropriate measure of adoption's success or failure is the rate of disruption[2] before age 18. In the USA, several studies conducted in the 1980s and 90s found disruption rates between 10 and 16% for "special needs children" who were generally adopted after age 3.

More recently, two UK-based studies found higher rates of disruption (23 to 38%) for children adopted *from public care* between ages 3 and 11 (Rees, & Selwyn, 2009; Rushton, & Dance, 2006). However, these children came from high-risk backgrounds, with traumatic childhoods involving abuse, neglect and/or time in (institutionalised or foster) care. Substance abuse, mental illness and violent relationships were common among their biological parents. The authors identified several independent risk factors: older age at placement, discord with and/or rejection by post-adoption siblings, time spent in care prior to adoption and a high level of behavioural problems.

The continuation of adoption is not the only measure of its success. If all ongoing adoptions were described as "successful", this would not paint a realistic picture.
Parental satisfaction can be considered a valuable indicator of adoption success or failure (as well as the children's own evaluation of their adoption). In Rees et al.'s (2009) study, 28% of parents described rewarding, happy placements and 62% described continuing difficulties tempered by rewards. Rushton et al. (2006) painted a more positive picture, with 49% of placements continuing positively and 28% continuing with substantial ongoing difficulties.

In Britain, the English and Romanian Adoptees (ERA) study team has been following a large cohort of children adopted in the UK, born in either the UK (n = 52) or Romania (n = 165), along with a "normal" non-adopted control group. Parental satisfaction was evaluated when their children were 4, 6 and 11 years of age, by means of a semi-structured interview (Castle et al., 2009). Positive and negative evaluations were coded separately on 3-point scales ("not rewarding" / "somewhat rewarding" / "very rewarding" and "not challenging" / "somewhat challenging" / "very challenging" respectively).
In the ERA study, all the domestic adoptions took place before 6 months of age. At age 6, 95% of parents in this group expressed positive evaluations of the adoption, while 22% reported negative evaluations. In the Romanian group, a distinction was made between children adopted before and after 6 months of age. In the <6 months group, 86% of parents expressed positive evaluations and 39% negative evaluations, compared to 96% and 25% respectively in the >6 months group (a somewhat unexpected observation).
At age 11, parental satisfaction remained remarkably stable, with positive evaluations being 98% in the UK-born group, 96% in the Romanian group adopted before 6 months and 82% in the Romanian group adopted after 6 months. However, negative evaluations had increased (35%, 29% and 57% respectively). Nonetheless, parents remained confident about whether or not the adoption would succeed: in the UK-born group, 6% of parents expressed fleeting doubts and 8% serious doubts, compared to (unexpectedly) only 2,5 and 3% respectively in the Romanian group. In the entire cohort, there was only 1 adoption breakdown, of a Romanian girl adopted after 6 months of age.
At age 11, older age at placement was strongly related to negative parental evaluation. Other risk factors observed in the child were hyperactivity, conduct problems, emotional difficulties, disinhibited attachment, peer problems and low cognitive scores. Parental factors, such as socio-economic status, were not predictive of poor outcome.

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[2] *Disruption* is defined as the premature ending of an adoptive placement.

III.5. Recent meta-analyses

III.5.a. Mental health referrals

In 2005, Juffer et al. performed a meta-analysis to examine the rate of adopted children's mental health referrals. They included over 3,000 cases (internationally adopted children) and over 47,000 controls (non-adopted biological children or post-adoption peers) from 7 studies.

As expected, internationally adopted children were referred more frequently, even when controlling for publication bias. The effect size was moderate (d = 0.37). A number of studies reported that, compared to non-adopted children, internationally adopted children were placed into a residential out-of-home setting or mental health facility more frequently and received psychiatric treatment more often as well.

Though the number of studies included in this meta-analysis was relatively small, each of these studies came to the same conclusion: **a substantially higher rate of mental health referrals was observed in internationally adopted children than in the general population**.

Part of the explanation may lie in the lower threshold for adoptive parents to seek professional help. Mental health services may be more easily accessible to adoptive families because of their familiarity with supportive services (due to the adoption process), their higher alertness to possible problems, their higher socio-economic status, etc. However, several authors (Miller et al., 2000; Warren, 1992) have shown that adopted children were referred more frequently, even when controlling for socio-economic status.
Nonetheless, awareness of a child's adoptive status may prompt not only his or her parents, but also his or her school, family doctor or paediatrician, speech therapist, family support service (e.g. Kind & Gezin), … to refer him or her to a CAMHS more rapidly.

Data on mental health referrals of (internationally) adopted children in Belgium are not readily available. In our study, we chose not to focus on *how often* internationally adopted children were referred to our CAMHS, but rather on the *reason for referral*. We also looked at the help sought prior to coming to our centre and at the person(s) asking for an assessment at PAika (parents, school, paediatrician, psychologist, etc.).

Children may be referred to a CAMHS for any number of reasons: developmental delay, anxiety, depression, aggression, eating or sleeping problems, tics, etc. In the case of adopted children, one of the most common motives is a concern about the child's emotional, behavioural or social (dys)functioning.

III.5.b. Emotional, behavioural and social functioning

For a long time, research on (internationally) adopted children focused primarily on behavioural problems, which seemed to be relatively common among these children. Behaviour is easily observable (as opposed to emotions, thoughts or fears, for instance) and can be measured quite objectively. Observing and describing (problematic) behaviour does not explain it though.

In 1999, Peters, Atkins and McKay performed a comprehensive literature review in search of plausible explanations for the **high rate of behavioural problems among adopted children**. They grouped the existing literature into **5 explanatory models**:
 (1) Genetic or biosocial factors
 (2) Pathogenesis of the adoption process
 (3) Long-term effects of impaired pre-adoption childrearing
 (4) Referral bias in adoptive parents
 (5) Impaired adoptive parent - adopted child relations
At the time, they concluded that evidence for each of these models was mixed at best.
We will look in further detail at each of these explanatory models.

1. Genetic or biosocial factors
Adopted children form a very interesting group for research on heritability, as they are exposed to the same environmental factors as their non-adopted post-adoption siblings, but have a different biological background. This explains why a lot of studies on the impact of genetics on behavioural and/or personality traits involve adopted children.

For instance, many researchers have attempted to identify risk factors for the development of criminal behaviour. In the 1980s, several studies demonstrated that there was a stronger correlation between adopted children's antisocial behaviour and a positive biological (i.e. genetic) family history of antisocial behaviour than a positive adoptive (non-related, i.e. environmental) family history (e.g. Mednick, Gabrielli, & Hutchings, 1984). However, it is important to keep the possibility of bias in mind: because of stringent selection procedures, the rate of antisocial behaviour in adoptive families was always very low, which may have overly weakened the environmental impact, thereby artificially inflating the biological impact.
Even if antisocial behaviour were mostly genetically determined, this would not necessarily be the case for other types of (disruptive) behaviour. Furthermore, perpetuating a *genetic model* for the origin of behavioural problems could lead to overly pessimistic expectations with regard to (preventive) interventions designed to mitigate problematic behaviour. A more prudent approach is the so-called *multifactorial model* (proposed by Rutter et al. [1990] among others) in which interacting genetic and environmental factors both contribute to the development of behavioural problems. The amount in which they each play a role for the development of specific traits in adopted children probably varies and remains difficult to determine accurately, as information on the biological family is often limited at best.
Large controlled studies have found no support for a high rate of psychopathology in the biological parents of adopted children (e.g. Loehlin, Willerman, & Horn, 1982). This suggests that it is unlikely that adopted children display more behavioural problems than non-adopted children because of their genetic liability only. However, children placed for adoption by parents with a known psychiatric disorder were at higher risk for psychiatric symptoms.

2. Pathogenesis of the adoption process
Another hypothesis is that adopted children struggle because of the traumatising adoption process itself. The abandonment by one's biological parents may lead to attachment and identity issues and provoke feelings of anger, grief, loss and loneliness, resulting in depression, identity crises, anger bursts, separation anxiety, etc. Joining a new family with its own set of problems and tensions, especially at a

later age, can be stressful too. This early-age emotional burden could make adopted children vulnerable, putting them at greater risk for dysfunctional behaviour in later life.

Though this hypothesis may not seem far-fetched, there is not a lot of evidence to support it. In fact, a large study by Rogeness, Hoppe, Macedo, Fischer and Harris (1988) found that adoption was not a risk factor but a protective factor against depression. Most adopted children assess their adoption positively (e.g. ERA study, see above); only few have issues with regard to their identity and their adoptive status.

However, adopted children as a group are prone to attachment problems. On average, they are less securely attached than non-adopted children (van IJzendoorn et al., 2006), which may in part explain why they go on to display dysfunctional behaviour relatively frequently.

3. Long-term effects of impaired pre-adoption childrearing

Many studies have confirmed that age at adoption is an important predictive factor for the outcome of adoption. For instance, a large study by Verhulst et al. (1992) found that children displayed greater behavioural problems when adopted at an older age. Children who were reared in institutions prior to their adoption tend to fare worse than children placed in foster care. Neglect and abuse are known risk factors for the development of behavioural problems, while the lack of protective factors, such as a secure, nurturing and stimulating environment in the first months or years of life can damage a child's ability to cope with stress, resulting in maladaptive behaviour (e.g. Wierzbicki, 1993).

4. Referral bias in adoptive parents

Studies confirm that adoptive parents consult mental health services more easily than biological parents (even when controlling for socio-economic status, see above: Miller et al., 2000; Warren, 1992), who tend to wait longer before asking advice concerning their child's problematic behaviour. Indeed, there seems to be a lower threshold for adoptive parents to seek professional help.

Several factors contribute to a comparatively high referral rate of adopted children to mental health services (see above). These factors may warp our perspective with regard to the severity and frequency of their problems.

5. Impaired adoptive parent - adopted child relations

Finally, disturbed adoptive parent - adopted child relations could be part of the explanation. Overly involved, smothering parents may provoke oppositional behaviour in their children. Unrealistically high expectations for their adopted children's achievements may leave adoptive parents disappointed, hampering their children in feeling worthy and/or wanted (Verhulst, Althaus, & Versluis-Den Bieman, 1990).

However, large studies have shown that most adoptive parents and adopted children evaluate their relationship positively (e.g. ERA study, see above: Castle et al., 2009). Generally, adoptive parents display high quality of parenting. Of course, in specific cases, severely impaired parenting may contribute strongly to behavioural disturbances.

So are behavioural problems really that common among adopted children? Or are adoptive parents simply more concerned than biological parents, or more likely to consult mental health services?

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In 2005, Juffer et al. conducted a large meta-analysis on behavioural problems in internationally adopted children. Over 15,000 cases (internationally adopted children) and over 30,000 controls (non-adopted biological children) from 47 studies were included. **Adopted children displayed significantly more total, externalising and internalising behavioural problems.** However, the effect sizes were all small (d = 0.06; d = 0.09 and d = 0.07 respectively), indicating that there was a statistically significant but modest difference. All in all, the rate of behavioural problems remained rather low. In other words, though a minority displayed behavioural problems, most internationally adopted children were found to be well adjusted.

The authors tested a number of sample characteristics to evaluate whether they had influenced the results, including pre-adoption adversity, gender and age at adoption.
As expected, adopted children who had undergone traumatising early-life experiences (such as extreme deprivation, neglect, malnutrition or abuse) showed more total and more externalising behavioural problems. No difference was found for internalising problems.
Controlling for gender did not change the outcome (contrary to smaller studies that had found boys at greater risk). Surprisingly, neither did age at adoption: no significant difference was found between children adopted before and after 12 months of age, or before and after 24 months of age, although there was a trend towards less problematic behaviour in early-adopted children.

In our study, we hypothesised that behavioural problems would be more common among children referred to our centre (i.e. the minority described by Juffer et al. [2005] would likely be referred relatively often to a mental health service). First, we evaluated how often behavioural problems prompted adoptive parents to seek help. Using the multi-perspective Strengths and Difficulties Questionnaire (SDQ; Goodman, 2005), we evaluated the presence and impact of emotional, behavioural and social problems. Self-reports were compared with parent- and teacher-reports.

Behavioural problems can lead to difficulties in school, with peers and at home. Of course, the causality can just as well be inverse: conflicts at home can make children act out, setting the bar too high in school can lead to frustration, … Knowing what you should expect from your child is difficult for any parent, but even more so for adoptive parents. Genetics are known to play an important role when it comes to cognitive abilities (see below), but adoptive parents rarely have (any) information about their child's biological family.

For this reason, it is interesting to get a better picture of what children are capable of (e.g. by testing their IQ) and of how they are functioning in school, by asking the different parties involved (children, parents and teachers).

III.5.c. Cognitive and educational functioning

The ongoing debate on nature vs. nurture has drawn interest towards adopted children, e.g. with regard to the heritability of intelligence. On average, adopted children's biological parents have a lower socio-economic status (generally strongly correlated with IQ) than their adoptive parents (Verhulst, Althaus, & Versluis-den Bieman, 1990; Warren, 1992). If intelligence were determined by genetics only, adopted children would be expected to have roughly the same IQ as their biological parents. If it were determined by the environment only, their IQ would end up closer to their adoptive parents' IQ. The consensus is that both genes and environment play a role, but how strong their impact is remains up for debate.

Studies comparing the IQ of adopted children with the IQ of their biological siblings who stayed behind and with the IQ of their birth parents are most suited to look at the impact of adoption (i.e. the environment) on intelligence. Of course, selection bias is possible, as the pre-adoption cognitive status of a child may have influenced whether or not he or she ended up getting adopted.

Such studies have found that adopted children benefit from their adoption and attain higher scores on IQ tests than their own non-adopted biological siblings who stayed behind (e.g. Colombo, de la Parra, & Lopez, 1992) and birth parents (e.g. Plomin, Fulker, Corley, & De Fries, 1997). Their school failure rates are comparatively lower and align with their adoptive families' SES. However, the beneficial influence of the adoptive family fades as the child grows older. Longitudinal studies have shown that adopted children's IQ evolves towards their birth parents' IQ with increasing age (Plomin et al., 1997).

In 2005, van IJzendoorn, Juffer and Klein Poelhuis performed a meta-analysis of 62 studies, examining the cognitive development of more than 17,000 adopted children. They were compared to their pre- and post-adoption peers.

As described by the authors, internationally adopted children are often off to a difficult start: neglect and / or maltreatment in their biological family or institutional setting, malnourishment, etc. These hardships are obvious risk factor for cognitive development. It is well established that poor nutrition during infancy is associated with cognitive problems in later life, because it interferes with the brain's normal development. Several studies have shown that children in orphanages have fewer opportunities to learn and practice new skills, as they spend less time playing with toys, practicing motor skills or interacting with adults (e.g. Kaler, & Freeman, 1994).

Therefore, it comes as no surprise that **adopted children** were found to benefit from their new nurturing and stimulating environment when compared to their non-adopted institutionalised peers. **They scored significantly higher on IQ tests and outperformed their pre-adoption peers academically**, according to van IJzendoorn et al.'s (2005) meta-analysis. **They did not differ from their post-adoption peers in IQ. However, their school performance and language abilities did lag behind significantly.** On further analysis, this proved to be the case only for those children adopted after 12 months of age. Learning problems were more common among adopted children as well, which is reflected in a twofold increase of referrals to special education.

In our study, we evaluated the children's IQ and language skills (an important cause of bias in internationally adopted children), using several IQ and language tests, attuned to the children's age and abilities. We hypothesised that our clinical sample would have lower IQ scores than their post-adoption peers and other (non-clinical) adopted children.

Performing well in school is important to children. It is often reflected in the way they see themselves: good grades reassure them that they are intelligent, praise from their teachers lets them know they are well-behaved, playing with friends makes them feel well-liked. Of course, their self-image is influenced by other factors as well, which can be especially important for adopted children. Do they feel like they fit in with their new family? Are they able to meet their parents' expectations? Do they feel unlovable because their biological parents chose not to keep them? Because of their unique background, a lot of research has focused on adopted children's self-perception.

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III.5.d. Self-perception

The term "self-perception" is a rather broad one. It indicates the way we see ourselves in general, the image or concept we construct of ourselves ("self-image" or "self-concept"). However, upon looking at ourselves, we judge what we see. Our "self-evaluation" can either be positive or negative, leading to high or low "self-esteem", "self-worth" or "self-value". These terms refer to the global value we think we have as a person (e.g. *I am a good / worthwhile person, I am loveable*), rather than our sense of competence in specific domains (e.g. *I am intelligent, I am attractive, I am good at sports*).

In 2007, Juffer et al. performed a series of meta-analyses to study adopted children's self-esteem. They concluded that there was "**no difference in self-esteem between adopted children** (n = 10,977) **and non-adopted comparisons** (n = 33,682) across 88 studies. This was equally true for international, domestic and transracial adoptions." Controlling for gender, age at adoption and age at evaluation did not reveal any significant differences either.
In comparison with non-adopted institutionalised children (i.e. pre-adoption peers), adopted children showed higher levels of self-esteem, though only 3 studies and thus a relatively small number of children (n = 300) were evaluated. The authors concluded that "adoption could be seen as an effective intervention, leading to normative self-esteem".

So where does our self-esteem come from? Leary (2004) stated that the most basic human motive is to belong to a group and feel socially connected. From an evolutionary point of view, this urge is logical, as humans have a better chance of survival and procreation when they live in a group and cooperate. Fulfilling this need (i.e. successfully integrating into a group) will make us feel good, boosting our self-esteem. Therefore, our self-esteem can be seen as a "sociometer": the more we feel like we belong, like we are accepted, the better we feel about ourselves. By the same token, social rejection will lead to lower self-esteem.

Another explanatory model can be found in the attachment theory, put forward by Bowlby (1982). Here, secure attachment is seen as the source from which we draw our self-esteem. Having a close and trusting relationship with primary caregivers allows us to feel like we are safe and protected. Caring, emotionally available and responsive parents make us feel wanted, lovable and worthwhile, creating a sense of self-value and a basic trust in others. This establishes a set of expectations that influences the interactions and relationships we have throughout our lives. Research has shown that securely attached children attain higher scores on self-esteem scales (e.g. Booth-Laforce et al., 2006). The way we see ourselves is also an important predictor for psychopathology. Low self-esteem is known to be associated with depression (Harter, 1999) and externalising behavioural problems (Brent Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005).

However, because adopted children frequently lack a reliable and cherishing parent-child relationship during their first months or years of life, secure attachment is often a concern for them (see below). After adoption, they may feel cut off from their birth parents, struggling to digest their abandonment and rejection. This can lead to self-blame (*I was not loveable enough for my mother to keep me*) and a negative self-image.
Furthermore, adopted children may feel as though they do not entirely fit in with their adoptive family. This is especially true for international (interracial) adoption, where differences in appearance are often striking, and children may have to cope with the loss of their cultural identity as well (Juffer et al., 2007). They may not attain their adoptive parents' expectations or perform poorer (in school, sports, arts, etc.) than their post-adoption siblings, making them feel inadequate, less valuable and out of place. They frequently lag behind in physical growth (see above: van IJzendoorn et al., 2007a) compared to their peers

as well, adding to their sense of inferiority. Altogether, it would seem reasonable to expect at least some adopted children to have a less positive self-image than non-adopted peers, especially in at-risk groups.

Therefore, we evaluated self-perception by means of the Dutch version's of the Self-Perception Profile for Children (SPPC; Harter, 1985) and Adolescents (SPPA; Harter, 1988) in our study. Though Juffer et al.'s meta-analysis (2007) revealed no difference in self-esteem between (internationally) adopted and non-adopted children – even after controlling for risk factors such as age at adoption – we expected more negative self-perception scores in the PAika group.

Having already experienced severe loss, adopted children may have developed stronger social skills early on to avoid future abandonment. If so, these abilities could have led to more and more positive experiences, ultimately rectifying their negative self-image and arming them for the challenges that lie ahead (see above: Rutter, 2012, 2013). Additionally, having a safe and nurturing upbringing by loving adoptive parents, who made a well-motivated decision to make them part of their family, might have helped to override the initial risk factors. The safety of a stable home could have helped to establish a secure attachment pattern – a crucial step in a child's development, influencing their relationships in later life.

III.5.e. Attachment

One of the most important developmental milestones is the formation of a secure attachment relationship with a primary caregiver (Bowlby, 1982). Securely attached infants feel safe and protected, which allows them to explore their surroundings and acquire new skills, accelerating their progress in other domains. By contrast, insecurely attached infants have difficulty coping with stress, which impedes them in their development.

According to Bowlby's theory, children attach to people who care for them instinctively. This makes sense from an evolutionary point of view, as attachment from a child to its parents and vice versa increases the child's chances of survival. Although the (biological) parents are usually the primary attachment figures, any person who takes on a parenting role (i.e. engages in lively social interaction and responds to a child's emotional signals) over a period of time can take their place.

During the first 2 months of life, attachment behaviour (like smiling, babbling or crying) is not differentiated but directed at anyone in the vicinity. This changes gradually over the next few months; infants will increasingly discriminate between familiar and unfamiliar adults. They become more responsive to their primary caregivers, protesting when they leave, appearing happy when they return and clinging to them when they are scared. When they become able to move around, they will start using their attachment figures as a safe base form which to explore. With increasing age, the need for physical proximity will shift towards a need for availability, as the child's independence grows.

Generally speaking, a child's attachment behaviour is geared towards his or her survival: it can be triggered by fear, pain, illness, fatigue, etc. For example, infants are vulnerable without their parents; physical separation from them may cause anxiety or anger, followed by sadness or despair. For an older child, being on his own is no reason to start panicking straight away, but he may feel threatened when his parents are gone for a longer time, no longer communicate with him, appear emotionally unavailable or show signs of rejection or abandonment.

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To assess a child's attachment to a primary caregiver, one of the most commonly used and best-established instruments is Mary Ainsworth's Strange Situation Procedure or SSP (Ainsworth, Blehar, Waters, & Wall, 1978). The procedure takes about 20 minutes and exposes the child (up to 3 years of age) to varying degrees of stress, as described in detail in Addendum 2.

The aim is to classify the **child's attachment** into one of **4 categories**, also described in Addendum 2:
   (1) *Anxious-avoidant attachment (A)*
   (2) *Secure attachment (B)*
   (3) *Anxious-resistant (or ambivalent-resistant) attachment (C)*
   (4) *Disorganised attachment (D)*

A child's attachment style is thought to be adapted to his or her primary caregivers (Goodman, & Scott, 2012, Chapter 32). Parents who are emotionally available, loving, warm and caring allow children to become securely attached. Their parents respond appropriately, promptly and consistently to their needs, which builds trust in their relationship.

However, if parents are inconsistent in their response (sometimes appropriate, sometimes neglectful), children will become ambivalent in their attachment behaviour. Generally, parents of children with an anxious-resistant attachment style will only respond to their child's cues after amplified attachment behaviour. The child's needs are often ignored until another activity is finished. The parenting style is engaged, but only on the parent's own terms: attention is given to the child out of the parent's needs rather than out of the child's initiative.

Parents of children with an anxious-avoidant attachment style often discourage crying and encourage independence. They show little to no response to their child's distress. This may lead the child to believe that communicating his or her needs is pointless, as it has no influence on his or her parent's response.

Finally, traumatising experiences with parents such as frightening behaviour, intrusiveness, negativity, withdrawal, role confusion, maltreatment, violence and abuse are associated with disorganised attachment. When a parent becomes both a source of fear and a source of reassurance, the child will feel conflicted between the urge to flee *from* and *to* his or her parent.

In 2003, Vorria et al. published the Metera study, which was the first to assess attachment security both before adoption (with the caregivers in the institution) and after adoption (with the adoptive parents). Infants in a large residential institution in Greece were assessed at 12 months of age using the SSP and about 2 years after adoption using the Attachment Q-sort (AQS; Vaugn, & Waters, 1990). As expected, the children displayed significantly more insecure attachment (particularly disorganised attachment) to their caregivers in the institution than to their adoptive parents, although the difference was not very large (effect size d = -0.43). Nonetheless, these findings substantiated the evidence in favour of adoption's beneficial effects.

Yet 2 years after adoption, the Metera children still showed significantly less attachment security (d = -0.61) than their post-adoption peers (i.e. biological, non-adopted children). Somewhat surprisingly, infants with a type D attachment style at 12 months of age were significantly more frequently categorised as secure (type B) at follow-up (i.e. after adoption). In other words, their catch-up with regard to attachment was significant but incomplete (Vorria et al, 2006).

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These findings were confirmed in a meta-analysis by van IJzendoorn et al. (2006), which grouped 7 studies that assessed attachment security in **internationally adopted children** using the SSP. They found that **45% were securely attached** (B), **while 55% showed insecure attachment** of the anxious-avoidant (A; 13%), anxious-ambivalent (C; 10%) and disorganised (D; 33%) type. By comparison, the distribution of these attachment styles in non-adopted biological children is as follows: 62% B, 15% A, 9% C and 15% D (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). The obvious conclusion was that **adopted children displayed less secure** (effect size d = -0.76) **and more disorganised** (d = -1.16) **attachment than their post-adoption peers.**

An important risk factor was the age at adoption: early adopted children managed to catch up almost entirely with their post-adoption peers, while children adopted after 12 months of age trailed behind considerably and showed more disorganised attachment.

Compared to pre-adoption peers (i.e. children who were still in institutionalised care), only 2 studies were available (with 162 children in total). These institutionalised children had a combined ABCD distribution of 23% B, 3% A, 4% C and 70% D. Evidently, adopted children showed less disorganised attachment (d = 2.75) and more secure attachment (d = 1.21) than institutionalised children.

Many studies have focused on the <u>consequences of secure vs. insecure attachment</u> during early childhood. The universal conclusion is that **securely attached children have a more favourable** social and psychological **development than their insecurely attached peers**. However, not all securely attached children "fare well" and, by the same token, not all insecurely attached children "do badly". Though insecure attachment during infancy is predictive of a less optimal development in childhood and adolescence, it remains unclear whether this association should be interpreted as a cause-and-effect relationship.

Still, the impact of a child's attachment pattern is undeniable. Securely attached children benefit from harmonious relationships with their parents, siblings, peers and teachers, resulting in positive experiences, which boost their self-confidence. By contrast, insecurely attached children are less compliant with their parents, more quarrelsome with siblings, less popular and more controlling with peers and less likely to ask a teacher for help (van IJzendoorn et al., 2006).

As we know from Bowlby's attachment theory, securely attached children are more likely to explore. Their eagerness to learn and solve problems contributes to their favourable evolution: they have more advanced reading abilities and are better at adapting to new situations and overcoming frustrating barriers than their insecurely attached peers (van IJzendoorn, & van Vliet-Visser, 1988). However, van IJzendoorn, Dijkstra and Bus (1995a) reported little association between attachment and intelligence in their meta-analysis.

By contrast, a disorganised attachment style (D) in infancy is considered especially ominous, as it is associated with emotional dysregulation, externalising behavioural problems (e.g. aggressive behaviour towards peers) and lower cognitive functioning in middle childhood (van IJzendoorn et al., 1999) as well as dissociative behaviour in adolescence (Carlson, 1998).

The type D attachment style remains an enigma: does it reflect attachment insecurity (like type A and C) or is it something entirely other? For type A and C, there is a strong association with parental sensitivity; this is not the case for type D (van IJzendoorn et al., 2007b). Maltreated children and children exposed to multiple socio-economic risk factors (such as low parental education, low income, substance abuse, adolescent mothers and single parenthood) are more likely to develop disorganised attachment styles. However, not all children with this challenging background do; perhaps this can be accounted for by genetic influences, which seem to play a more important role for type D than for type A or C

(Bakermans-Kranenburg, & van IJzendoorn, 2007). Furthermore, there is a much stronger association between the type D attachment style and psychopathology than with type A or C. In conclusion, "the type D category identifies behavioural features of considerable clinical significance, but the meaning of the pattern remains rather unclear" (Rutter, Kreppner, & Sonuga-Barke, 2009).

Another point of debate is whether attachment should be measured on a nominal / categorical scale (i.e. attachment is divisible into 3, 4 or more distinct categories) or ordinal / dimensional scales (i.e. attachment is to be seen as a continuous spectrum). For research purposes, attachment is usually categorised as secure (type B) or insecure, with traditional subdivisions (type A, C and D) as described above. However, the use of dimensional scales might be more interesting, as it has the advantage of being able to "quantify" the degree of security or insecurity, e.g. the *markedness* of a child's proximity seeking vs. avoidance strategy.

In our study, attachment was evaluated clinically, by a team of child and adolescent psychiatrists and psychologists. We hypothesised that the children in our cohort would display comparatively less secure attachment than their post-adoption peers and than other (non-clinical) adopted children.

III.5.f. Attachment disorders

As mentioned above, about 60% of a normal population is considered securely attached (van IJzendoorn et al., 1999). The remaining 40% is insecurely attached, but this should not be considered as a disease or disorder in itself. Rather, an insecure attachment pattern is best seen as a risk factor for suboptimal psychosocial development.

In fact, there are only few children who do not display selective security-seeking behaviour with *any* attachment figure. These children have usually experienced severe deprivation. By consequence, they are severely impaired in all their relationships. Because this pervasive social impairment leads them to experience marked distress, they are said to have an *attachment disorder*.

The definition of a Reactive Attachment Disorder (RAD) according to the Diagnostic and Statistical Manual for Mental Disorders 4th Edition - Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) can be found in Addendum 3.

This definition is very similar to the definitions for Reactive Attachment Disorder (RAD) and Disinhibited Attachment Disorder (DAD) found in the ICD-10 (the 10th revision of the International Statistical Classification of Diseases and Related Health Problems or "ICD-10" is a medical classification list by the World Health Organization). While the DSM-IV-TR distinguishes 2 types of RAD (inhibited and disinhibited), the ICD-10 categorises RAD and DAD as 2 separate entities. DAD according to ICD-10 is comparable to the disinhibited type of RAD according to DSM-IV-TR. The definitions of RAD and DAD according to ICD-10 (World Health Organization, 1993) can be found in Addendum 3 as well.

Both definitions of the *inhibited* attachment disorder include the same core features. These children display very little social and emotional responsiveness, almost no attachment behaviour, even in times of stress, and have marked problems with emotional regulation. While they lack positive emotional responses, their negative emotional responses, such as aggression, fear and irritability, are often pronounced.

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The second type of attachment disorder is characterised by an entirely different clinical picture. Although the *disinhibited* child does seek comfort when distressed, he or she will not do so selectively. Social interactions with unfamiliar people are generally poorly modulated, marked by clinging behaviour in infancy and indiscriminate friendliness in early and middle childhood.

For both the DSM-IV-TR and ICD-10, the following diagnostic criteria are relevant (Goodman et al., 2012, Chapter 17):
    (1) Severity
    (2) Pervasiveness
    (3) Distress or disability
    (4) Onset before age of 5 years
    (5) Not Autism Spectrum Disorder (ASD)
    (6) Mental age over 10-12 months (i.e. not severe mental disability)
    (7) Pathogenic care

So what are the **key differences between attachment disorders and insecure attachment** (Goodman et al., 2012, Chapter 17)?
- *Prevalence*: While insecure attachment is seen in about 40% of all children, attachment disorders are rare.
- *Pervasiveness and severity*: A child may be insecurely attached to one primary caregiver (e.g. his mother) but not to others. Children with an attachment disorder have seriously troubled relationships with all their caregivers.
- *Distress or social impairment*: Attachment disorders cause persistent distress or social disability, whereas insecure attachment does not necessarily.

Children placed in institutionalised care are prone to attachment disorders (Rutter, Kreppner, & O'Connor, 2001). The Bucharest Early Intervention Project (BEIP) was the first randomised controlled trial that evaluated foster care as an intervention for institutionalised children. The BEIP started in 2000 and is currently ongoing (Bos et al., 2011; Zeanah, Smyke, Koga, & Carlson, 2005).
At baseline, institutionalised children unsurprisingly showed significantly more signs of inhibited and disinhibited RAD than never-institutionalised children in the community comparison sample (i.e. "normal" control group), as measured using the Disturbances of Attachment Interview (Smyke, & Zeanah, 1999). Attachment security was also evaluated using the SSP, but assigning children with an attachment disorder to the A, B, C or D categories proved very difficult: only 3% of all institutionalised children showed clear ABCD attachment patterns.
At follow-up (at 30, 42 and 54 months of age), children placed in foster care had a large and significant reduction in signs of inhibited RAD. They also showed statistically fewer signs of inhibited RAD than the children who were still in institutionalised care. Compared to the community comparison sample, they did not have elevated signs of inhibited RAD. The reduction in signs of disinhibited RAD for children placed in foster care was much more limited. In fact, the signs of disinhibited RAD in the intervention group were not significantly lower than in the still institutionalised group (except at 42 months of age).

As previously mentioned, the ERA study research group (Rutter et al., 2007a) has been following a large sample of children in Britain, comparing a control group of "normal" non-adopted British children to a group of adopted children born in Britain (who experienced fairly adequate care prior to adoption) and a group of internationally adopted children born in Romania (who experienced serious deprivation prior to adoption).

At age 6, patterns of marked disinhibited attachment were rare in domestically adopted children but significantly more common in Romanian adopted children and significantly associated with the duration of institutional deprivation.

At age 11, features of mild to marked disinhibited attachment persisted in more than half of the Romanian children, compared to only 8% of children born and adopted within the UK. Moreover, there was no association between the persistence of disinhibited attachment and the post-adoption environment (i.e. the quality of the adoptive homes, evaluated using a family risk index).

The findings of the BEIP and English/Romanian adopted children's study indicate that inhibited RAD is largely reversible, whereas disinhibited RAD is not. Indeed, disinhibited RAD is a disorder characterised by the largely *persisting* failure to develop committed intimate social relationships.

III.6. Profile of the adoptive parent

III.6.a. Attachment in adults

Attachment during adult life can be evaluated using the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). This semi-structured interview asks the respondent for descriptions of his or her childhood attachment relationships, separations, losses and their effect on his or her development and personality. The respondent is asked to illustrate his or her answers with relevant biographical episodes.

The AAI distinguishes between **4 categories**, described in detail in Addendum 4:
  (1) *Dismissing*
  (2) *Autonomous*
  (3) *Preoccupied*
  (4) *Unresolved-disorganised*

The AAI focuses on a person's youth and on the relationship with his or her parents. However, for adults the term "attachment" can also refer to their other close relationships. Recently, public interest in the implications of attachment for romantic relationships has surged, spawning a variety of self-help books.
As described in the AAI classification (see Addendum 4), a person's attachment style influences his or her expectations and behaviour in partner relationships. The AAI is a rather laborious diagnostic tool; consequently, a number of brief questionnaires have been developed to quickly evaluate an adult's attachment to their partner.

One of the best-known and most widely used tools is the Experiences in Close Relationships – Revised questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000). Here, the respondent is asked to rate how much he or she agrees with 36 statements. Together, these statements can be scored on 2 scales:
  - *Attachment anxiety* refers to the fear of separation, abandonment and insufficient love, the preoccupation with the availability and responsiveness of one's partner, the hyperactivation of attachment behaviour. In short: how anxious is the respondent in his or her relationships?
  - *Attachment avoidance* refers to the devaluation of the importance of close relationships, the avoidance of intimacy and dependence, the need for self-reliance and relative inactivation of attachment behaviour. In short: how avoidant is the respondent in his or her relationships?
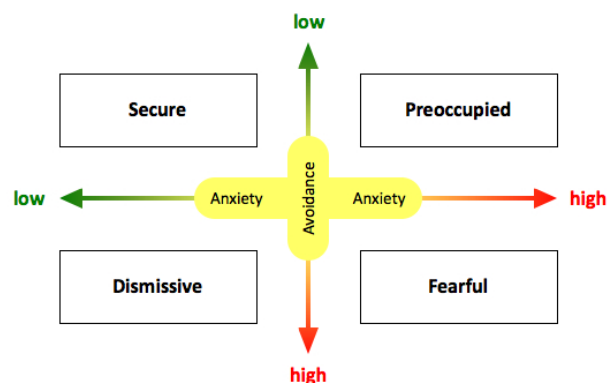
Figure 5. Visual representation of ECR-R scales and attachment types.

By defining cut-off points, categories (like the AAI's *dismissing, autonomous, preoccupied* and *unresolved-disorganised*) can be derived from these scales. Attachment measures that use a categorical model of attachment have the disadvantage of dismissing differences between people in the same category as unimportant. The ECR-R is described in further detail in Addendum 4.

In our study, we used the ECR-R to get an idea of the parents' attachment styles. Though not the gold standard test, it is a quick and well-established research tool, with proven validity (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). As a self-report measure, it has the disadvantage of probing only conscious attitudes towards relationships; therefore, it cannot detect "defence mechanisms" that may distort the respondent's answers (in contrast to the AAI). We expected the distribution of attachment styles to be the same for the parents of our group as for the rest of the population.

The parents' attachment style is important with regard to their child's development. As discussed above, children's attachment patterns tend to be adapted to their primary caregivers' behaviour (Goodman et al., 2012, Chapter 32).
Though secure attachment (type B) is considered optimal, this does not necessarily mean that a child's insecure attachment pattern is maladaptive. Goodman et al. (2012) note that from an evolutionary point of view, it may in fact be a useful adjustment to less favourable circumstances (comparable with stunted growth in case of chronic malnutrition). If a caregiver is dismissing, an avoidant attachment (type A) could be the best survival strategy: it may be better to get some (just enough) care, than being too demanding and risking total abandonment. Conversely, if a caregiver is preoccupied, amplified attachment behaviour (type C) may be the child's most efficient way of getting his or her needs met. Whether disorganised attachment (type D) is ever adaptive, remains unclear.

As mentioned above, the ABCD distribution of children's attachment styles in non-clinical populations is as follows: 62% B, 15% A, 9% C and 15% D (van IJzendoorn et al., 1999). This distribution correlates remarkably well with the AAI distribution in non-clinical adult populations: 55% B, 16% A, 9% C and 19% D for women; 57% B, 15% A, 11% C and 17% D for men (van IJzendoorn, & Bakermans-Kranenburg, 1996). The authors found no significant difference between the 2 genders.

Child's attachment type (SSP)	Caregiver's likely attachment type (AAI)	Approximate prevalence in non-clinical populations
A = Anxious - Avoidant	Dismissing	15%
B = Secure	Autonomous	60%
C = Anxious - Resistant	Preoccupied	10%
D = Disorganised - Disoriented	Unresolved	15%

Table 3. Approximate distribution of children's attachment types (assessed using the Strange Situation Procedure) and their caretakers' likely attachment types (assessed using the Adult Attachment Interview) in non-clinical populations (Goodman et al., 2012).

In a meta-analysis by van IJzendoorn (1995b), the **correspondence between parents' and infants' attachment security was found to be high**: 18 studies (n = 854) showed a combined effect size of 1.06 in the expected direction for secure versus insecure attachment (or 75%). The meta-analysis also looked at the correspondence in attachment style (i.e. ABCD distribution) and found an overall correspondence of 63%, with moderate to high effect sizes (for A/Dismissing d = 0.92; B/Autonomous d = 0.48; C/Preoccupied d = 0.39 and

D/Unresolved d = 0.65). However, it was still unclear how parents' attachment styles were transferred onto the next generation.

III.6.b. Intergenerational transference of attachment

According to Bowlby's attachment theory (1982), everyday interactions between a child and his or her primary caregivers serve as a model for relationships with others in later life. A child's experiences are thus incorporated into his or her "internal working models" (IWMs). These models are formed from a very early age on and are adjusted continuously as a child grows older.

Initially, an infant's attachment behaviour is not differentiated but directed at anyone in the vicinity. Separation from a familiar adult is well tolerated, as long as the substitute care is adequate. Yet during the second half of the first year of life, infants start developing clear attachments to a small number of people (*attachment figures*). Their attachment behaviour becomes attuned to their primary caregivers and vice versa.

Later on, children will use the relationship with their primary caregivers as a model to fall back on when they start interacting with other people. Usually, IWMs are highly stable and become increasingly robust, as we tend to selectively remember only those experiences that reinforce our IWMs, ignoring or forgetting our contradictory experiences. This helps to explain why our attachment classification throughout childhood and even into adulthood is relatively likely to remain constant. Another important reason for this steadiness may be that family circumstances tend to be generally stable, e.g. a mother who is sensitive and responsive to her infant will likely remain so to her child several years later, thereby promoting secure attachment at every age (Goodman et al., 2012).

Even so, dramatic changes sometimes occur in the family situation. These disruptions may interfere with a child's development, leading to a change in his or her attachment pattern. Some changes may be negative (abandonment, incessant conflict, divorce, serious illness, bereavement, etc.), while others can be positive. Of course assessment methods for attachment also change as the child grows older, which may account for some of the discontinuity.

In a longitudinal study by Hamilton (2000), the relation between infant SSP classifications, negative life events and Adolescent Attachment Interview (a variant of the Adult Attachment interview) classifications was examined for 30 children. The author found a stability of 77% for secure versus insecure attachment. Infant attachment classification significantly predicted adolescent classification (p < 0.01); negative life events significantly related to a change in classification (p < 0.05).

However, a recent meta-analysis covering more than 21,000 attachment evaluations did not confirm the strong predictive value of the SSP (Pinquart, Feussner, & Ahnert, 2013). In 2005, Main, Hesse and Kaplan stated that insecure attachment in infancy could very well become secure later on, in particular for infants classified in the A or C categories. In fact, the D category proved to be the best predictor of insecure attachment in adult life. These studies imply that **attachment is not fully determined during infancy or even after childhood, but** that it **can be (positively or negatively) influenced by later experiences**, making the case for a *dynamic, interactional model*.

This brings us to the following question: can insecure attachment in traumatised children be overturned by bringing them into a stable, safe and nurturing environment?

In 2001, Dozier, Stovall, Albus and Bates conducted a study on the concordance between foster mothers' attachment style and their foster infants' (placed in foster care before the age of 2 years) attachment quality, using the AAI and SSP respectively. They found a 72% concordance independent of the age at placement. This is similar to the level seen in biological mother-infant dyads: as mentioned above, van IJzendoorn (1995b) found a 75% mother-infant concordance when considering the 2 main categories (autonomous / non-autonomous and secure / insecure) and a 63% concordance when considering all 4 categories. Dozier et al.'s (2001) findings indicate that infants seem capable of overcoming a disruption in care if new caregivers are available and that attachment is transferred across generations through non-genetic mechanisms.

Recently, several similar studies have reproduced these findings with regard to transference of attachment (in)security from adoptive parents to their adopted children (e.g. Barone, & Lionetti, 2012; Verissimo, & Salvaterra, 2006).
Pace, Zavattini and D'Alessio (2012) conducted a controlled study of late-adopted children (4 to 7 years old) to see how their attachment security evolved during the first months after adoption. They found that overall attachment security had improved significantly after 6 months ($p = 0.008$). However, children whose adoptive mothers had insecure attachment models remained in their initial classification (mostly insecure). In fact, **all children whose attachment upgraded form insecure to secure had securely attached adoptive mothers** ($p = 0.044$).

In order to supplement our evaluation of intergenerational transference of attachment in the PAika group, we asked the adoptive parents to complete the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979). The PBI is a questionnaire designed to assess the (adult) respondent's relationship with his or her own parents, during his or her own childhood. This allowed us to look at the adoptive parents' close relationships across 3 generations: with their own parents, with their romantic partners and with their adopted children.
We hypothesised that secure attachment in adoptive parents would be a protective factor for the development of attachment problems in adopted children.

III.6.c. Parenting stress in adoption
Becoming a parent, either biologically or through adoption, is always a major adjustment: fulfilling a child's physical and emotional needs, while maintaining the right balance between family life, work, social life, etc. is by no means easy. Family roles shift, financial obligations increase, time becomes precious.
Adjusting to these new demands would be hard enough if it were only required once. However, children's needs are continually evolving along with their developmental stage and vary according to a child's unique characteristics. Therefore, adopting a child can be seen as an ongoing process in which families are presented with a series of stressors.

Of course, many stressors are "normal" and mostly unavoidable. However, higher parental stress can impair the quality of parenting children receive and reduce the satisfaction that parents get from raising their child. As Judge (2003) notes, stress affects the caregiver's ability to respond sensitively and appropriately to their child, setting in motion a vicious cycle of negative parent-child interactions that may increase the likelihood that children develop behavioural problems, placing additional stress on parents.

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Several research groups have tried to identify factors that are associated with greater parental stress. In 1998, Mainemer, Gilman and Ames compared families that adopted children who had spent at least 8 months in a Romanian orphanage (RO group) with 2 comparison groups: families with Canadian born, non-adopted children (CB group) and families with adopted Romanian children who had spent less than four months in institutionalised care (RC group). They found higher parenting stress levels in the RO group than in both control groups. Child factors such as behavioural problems and lack of attachment security were predictive of higher parental stress.

In 2003, Judge evaluated parental stress in 109 American families who had adopted children from Eastern Europe. She also found behavioural problems to be associated with increases in both maternal and paternal stress. However, length of stay in institutionalised care was not shown to be predictive of higher parental stress levels in her study.

In a meta-analysis of 13 studies (including 768 mother-child dyads) by Atkinson et al. (2000), **maternal stress** also **proved significantly related to their child's attachment security** (effect size = 0.19).

In our study, parenting stress was measured by means of the Parenting Stress Index (PSI; Abidin, 1983). The PSI consists of 123 multiple choice questions and allows for scoring on 13 subscales, including an attachment scale (see below). We hypothesised that the parents of children with attachment problems would experience higher parenting stress levels.

IV. METHODS

IV.1. Procedure

In this study, we analysed the assessment of all internationally adopted children, referred to the Psychiatric Department for infants, children and adolescents (PAika) of the UZ Brussel (Brussels University Hospital) between 2005 and 2012.

First, we conducted a retrospective study of the information obtained through anamnesis, observations and clinical testing at referral to PAika and at follow-up.
This allowed for mapping the following:
- qualitative data
    - pre-adoption care
    - reason for referral, age at referral
    - help sought prior to referral
- quantitative data
    - cognitive and educational functioning
    - emotional, behavioural and social functioning
    - self-perception
- clinical assessment
    - (in)secure attachment and attachment disorders
    - diagnoses on all 5 DSM-IV-TR axes
- therapeutic proposal

Insecure attachment and attachment disorders were a major concern in our group. Because of growing interest in the intergenerational (non-biological) transference of attachment, we supplemented our retrospective study with a non-interventional, cross-sectional study between January 2013 and April 2013 to assess the adoptive parents with regard to their attachment to (a) their own parents, (b) their partner and (c) their adopted children. Furthermore, we evaluated the stress experienced by the adoptive parents in raising their adopted children.

Participants were asked by telephone if they were willing to take part in our study. If so, additional information was sent via e-mail, along with the informed consent documents.
The participating families were visited at home. First, informed consent was obtained from each participating family member. Second, the purpose of each questionnaire was explained and instructions were given on how to complete them. Participants were told they could ask for clarification if something was unclear, but could not discuss any of the questions with each other. Upon completion, the questionnaires were handed over to the investigator.

The retrospective study and non-interventional, cross-sectional study were approved by the UZ Brussel Medical Ethics Committee.

IV.2. Participants

Thirty-four internationally adopted children were included in our study, belonging to 28 adoptive families.

Most children were seen in the out-patient clinic (68%). However, some were admitted to the PAika in-patient clinic (32%) and / or had already been admitted previously (9%).

Admission to in-patient clinic	n	%
Admission to any in-patient clinic	12	35%
Admission to PAika in-patient clinic	11	32%
Previous admission	3	9%

Table 4. Admission to in-patient clinic.

Our group consisted of 13 girls (38%) and 21 boys (62%), aged between 5 and 17 at the end of the year 2012.
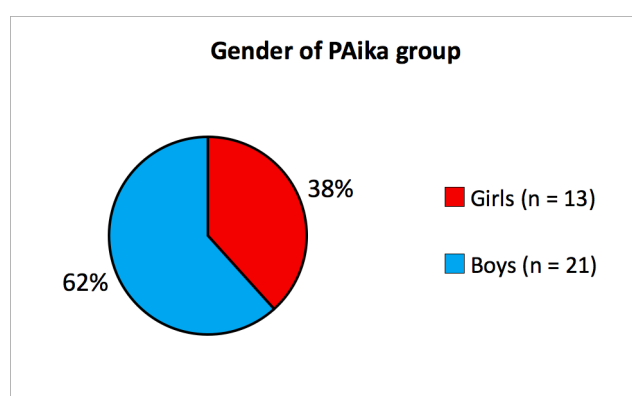
Figure 6. Gender distribution of internationally adopted children assessed at PAika.

Their age at referral was normally distributed, with a mean age of 9.3 years (9.2 years for the girls only; 9.3 years for the boys only) and standard deviation of 3.7 years. The median age was 9 years (9.5 years for girls only; 9 for boys only). Ages ranged from 3 to 17 years.

Age at referral	n	Mean ± SD (years)	Median (years)	95% CI (years)	Range (years)
All children	34	9.3 ± 3.7	9.0	8.0 – 10.6	3 – 17
Girls only	13	9.2 ± 4.5	9.5	6.5 – 12.0	3 – 15
Boys only	21	9.3 ± 3.2	9.0	7.8 – 10.7	6 – 17

Table 5. Age at referral of PAika group.

They were referred between 1 and 15 years after adoption (mean = 5.3 years and median = 4 years). The number of years after adoption was not normally distributed.

These children were born in 12 different countries. The most common countries of origin were Ethiopia (n = 6), Kazakhstan (n = 6) and Colombia (n = 5).
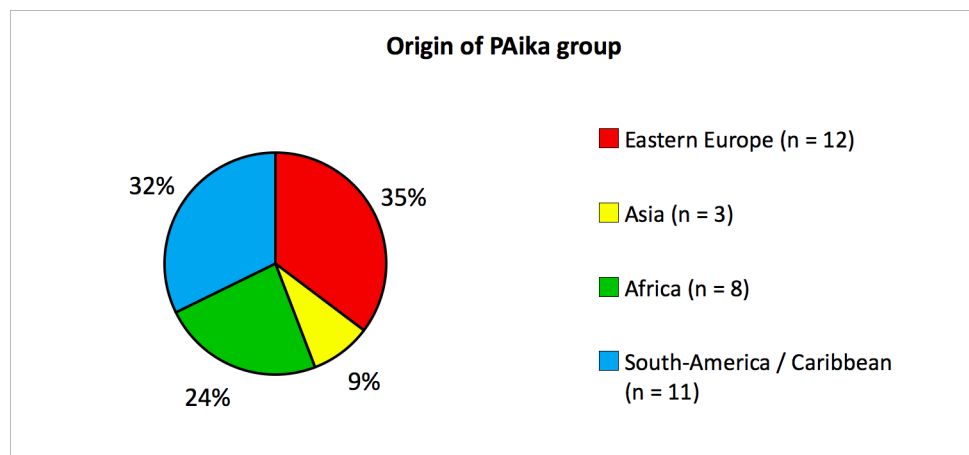
Figure 7. Origin of children in the PAika group, clustered by continent.

Most adoptive parents did not have biological children of their own (56%). After adoption, most adopted children had biological (44%) and/or adopted (74%) siblings; there were only 3 single-child families (9%).

Family constellation		
Total number of children per family	**n**	**%**
1 child	3	9%
2 children	15	44%
3 children	9	26%
4 children	5	15%
5 children	2	6%
Number of adopted children per family	**n**	**%**
1 adopted child	9	26%
2 adopted children	20	59%
3 adopted children	5	15%
Number of biological children per family	**n**	**%**
No biological children	19	56%
1 biological child	8	24%
2 biological children	3	9%
3 biological children	4	12%
Adopted child's place in child row	**n**	**%**
1st child (oldest child in family)	15	44%
2nd child	11	32%
3rd child	6	18%
4th child	2	6%

Table 6. Family constellation of internationally adopted children assessed at PAika.

Of the group of 34 children assessed at PAika, 11 were biological siblings. There were 2 brother-sister pairs, 1 pair of sisters, 1 pair of brothers and 1 group of 3 brothers (2 of whom were twins).

Almost all children were adopted into two-parent families: 97% (n = 33). Only 1 boy was adopted by a single mother.

Family constellation (continued)		
Number of parents per family	n	%
1 parent	1	3%
2 parents	33	97%

Table 7. Family constellation of internationally adopted children assessed at PAika (continued).

Thirty-four adoptive parents were included in the non-interventional, cross-sectional study (19 mothers and 15 fathers) out of 55 eligible candidates (28 mothers and 27 fathers), i.e. adoptive parents of internationally adopted children referred to PAika between 2005 and 2012.
7 mothers and 9 fathers declined to take part in the study. 2 mothers and 3 fathers were excluded from the study (language barrier, unable to include in time, unable to contact).

At the end of 2012, the adoptive parents' age ranged from 46 to 60 years. The mean age difference with their adopted child was 36.3 years (36.0 for mothers, ranging from 28 to 48 years and 36.7 for fathers, ranging from 29 to 50 years). The median age difference was 36 years. Data were missing for 2 adoptive mothers and 1 adoptive father. The age difference was calculated for each child separately, i.e. parents of adopted siblings (who were both assessed at PAika) were counted twice (with age differences calculated for each of their children).

Age difference with adopted child	n	Mean ± SD (years)	Median (years)	95% CI (years)	Range (years)
All parents	64	36.3 ± 5.5	36.0	35.0 – 37.7	28 – 50
Mothers only	32	36.0 ± 5.6	36.0	34.0 – 38.0	28 – 48
Fathers only	32	36.7 ± 5.5	36.0	34.7 – 38.7	29 – 50

Table 8. Adoptive parents' age difference with their adopted child.

Adoptive mothers' and fathers' age differences correlated significantly (r = 0.643; p = 0.000).

Most children were adopted into families with a high socio-economic status (SES). Nearly all parents (91%; n = 44) had an International Standard Classification of Education (ISCED; UNESCO Institute for Statistics [UIS], 2012) level 5 (short-cycle tertiary education) or higher diploma[3]: 86% of mothers (n = 19) and 95% of fathers (n = 21).
Data were missing for 6 adoptive mothers and 5 adoptive fathers. Parents of more than 1 adopted child assessed at PAika were only counted once.

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[3] The International Standard Classification of Education (ISCED; UIS, 2012) distinguishes the following categories:
- ISCED level 0   Early childhood education
- ISCED level 1   Primary education
- ISCED level 2   Lower secondary education
- ISCED level 3   Upper secondary education
- ISCED level 4   Post-secondary non-tertiary education
- ISCED level 5   Short-cycle tertiary education
- ISCED level 6   Bachelor's or equivalent level
- ISCED level 7   Master's or equivalent level
- ISCED level 8   Doctoral or equivalent level
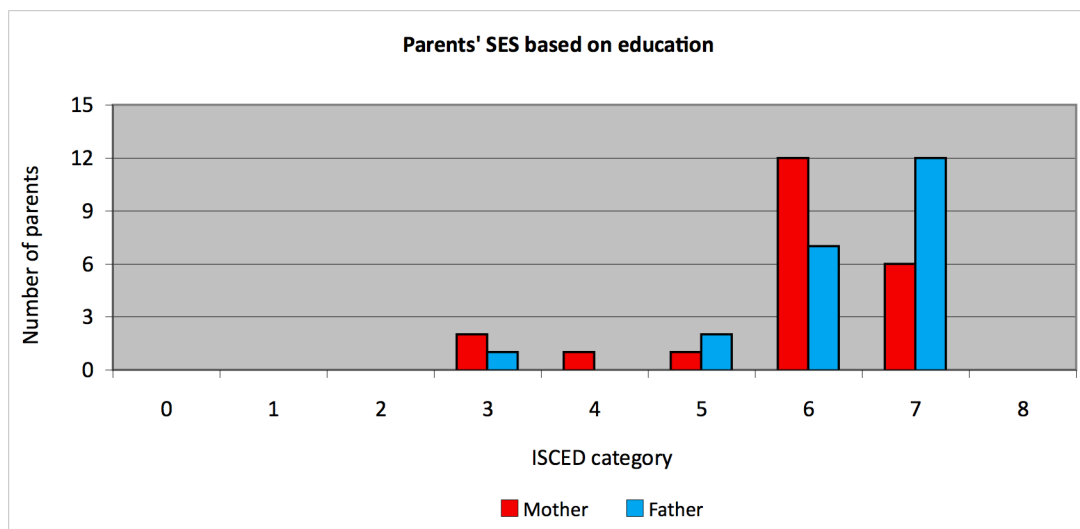
Figure 8. Adoptive parents' SES based on education, broken down into ISCED categories.

The SES was also high based on parents' current occupation, with International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom, De Graaf, & Treiman, 1992) scores ranging between 29 and 85.[4] The ISEI scores were normally distributed, with a mean ISEI score of 62.5 (61.9 for mothers; 63.1 for fathers) and standard deviation of 13.2. The median ISEI score was 65. Data were missing for 5 adoptive mothers and 2 adoptive fathers. Parents of more than 1 adopted child assessed at PAika were only counted once.

ISEI Scores	n	Mean ± SD	Median	95% CI	Range
All parents	48	62.5 ± 13.2	65.0	58.7 – 66.4	29 – 85
Mothers only	23	61.9 ± 14.4	65.0	55.7 – 68.1	29 – 82
Fathers only	25	63.1 ± 12.3	65.0	58.0 – 68.2	42 – 85

Table 9. Adoptive parents' ISEI score.
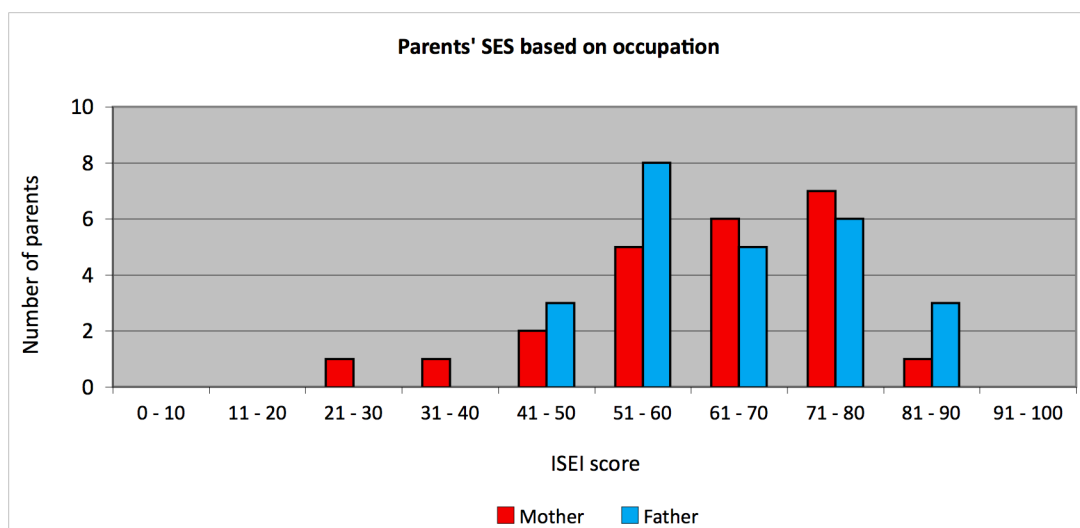
Figure 9. Adoptive parents' SES based on occupation on the ISEI scale.

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[4] On the International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom et al., 1992), each occupation is given a score between 0 and 100, according to the corresponding SES (based on large studies conducted in several countries).

IV.3. Measures

IV.3.a. Retrospective study

IV.3.a.1. Qualitative information

We obtained information on the adoptive children's pre-adoption care and early-life experiences through anamnesis (and sometimes reports from foreign adoption agencies). However, adoptive parents usually did not have much (or any) information, so these data, especially with regard to early-life maltreatment, may be incomplete.

Prior help and referral to PAika were also examined. Reasons for referral were documented as described by the referrers, i.e. not documented *after* all concerns had been explored during an assessment but *before* (e.g. written in a request for assessment at our CAMHS) or *at the beginning* of the first consultation.

IV.3.a.2. Quantitative information

Emotional, behavioural and social functioning

To evaluate the emotional, behavioural and social functioning of this cohort, we used the internationally validated Strengths and Difficulties Questionnaire (SDQ; Goodman, 2005). This questionnaire can be self-administered by adolescents between 11 and 17 years of age (SDQ/S11-17) and/or completed by parents of 4 to 16-year-olds (SDQ/P4-16) and by these children's teachers (SDQ/T4-16). Together, they offer a multi-perspective view of a child's emotional, behavioural and social functioning. We used the validated Dutch versions of these questionnaires (van Widenfelt, Goedhart, Treffers, & Goodman, 2003), as well as the original English versions.

The SDQ consists of 3 sections. First, respondents receive 25 statements about a child's positive and negative attributes (e.g. "*My child is considerate of other people's feelings*"), to be assessed on a 3-point Likert scale: "not true", "somewhat true" or "certainly true". These statements can be grouped into 5 subscales:
1. Emotional problems
2. Conduct problems
3. Hyperactivity/inattention
4. Peer relationship problems
5. Prosocial behaviour

The first 4 subscales generate a Total Difficulties score when added together.

The second part evaluates the impact of these strengths and difficulties, asking the respondent whether the child has a problem and if so, how much of a burden it causes.

Finally, two follow-up questions about the usefulness of an intervention (e.g. therapy) can be completed if relevant.

The SDQ forms were scored using the SDQ scoring website (http://www.sdqscore.org/). Each form was scored twice; if outcomes were different, the form was scored again to trace the mistake(s) made.

Cognitive and educational functioning

Several well-established IQ tests were used to evaluate the children's intelligence: Snijders-Oomen Non-verbal Intelligence Tests (SON-R; Tellegen, & Laros, 2003), Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III-NL; Wechsler, 2009), Wechsler Intelligence Scale for Children (WISC-III-NL; Wechsler, 2002) and Wechsler Adult Intelligence Scale (WAIS-IV-NL; Wechsler, 2012). The choice between these tests was attuned to the child's age and to a clinical estimation of his or her language development.

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The tests were scored according to the instructions provided in the scoring manuals. The "total IQ" scores generated by these tests have a normal distribution and an average score of 100 in a normal, non-clinical population.

Self-perception

To evaluate the children's self-perception, we used the "Competentiebelevingsschaal voor Kinderen" (CBSK; Veerman, Straathof, Treffers, Van den Bergh, & ten Brink, 1997) and "Competentiebelevingsschaal voor Adolescenten" (CBSA; Treffers et al., 2002). These questionnaires are the validated Dutch versions (Veerman, ten Brink, Straathof, & Treffers, 1996) of Harter's <u>Self-Perception Profile for Children</u> (SPPC; Harter, 1985) and <u>Adolescents</u> (SPPA; Harter, 1988).

In these questionnaires, the child is given two opposing statements (e.g. *"Some children have many friends."* versus *"Other children do not have many friends."*) and is asked to choose which statement is most like him or her and to what degree (either *"completely like me"* or *"a little like me"*). For the SPPC (aimed at children aged 8 to 12), there are 6 subscales:
1. Global self-worth
2. Scholastic competence
3. Social acceptance
4. Athletic competence
5. Physical appearance
6. Behavioural conduct

The SPPA (aimed at adolescents between 12 and 18 years of age) allows for scoring on 1 additional subscale:
7. Close friendship

The questionnaires were first scored manually and then checked by recalculating the scores via computer. If outcomes did not match, the form was scored again using both methods to trace any mistake(s) made.

The children's responses were compared to those of the appropriate Flemish control groups (adjusted for age, gender and school type[5]), as instructed in the scoring manuals. Each subscale score corresponds with a percentile score. The mean percentile scores were calculated to create an average self-perception profile.

Clinical assessment

Attachment was evaluated by means of clinical observation and anamnesis. Additionally, some children were tested qualitatively using projective measures, e.g. narrative <u>story stem techniques</u>, in accordance with their age. Here, an interviewer tells or enacts the beginning of a story (e.g. with pictures or dolls), which a child is asked to complete. This set-up reveals the child's internal working model of his or her attachment relationships.

Finally, we examined the diagnoses made on all 5 DSM-IV-TR axes and the therapeutic proposals (including psychotherapy, family therapy, at home support, pharmacotherapy, advice on the best educational setting, etc.).

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[5] For the SPPA *physical appearance* subscale, a distinction is made between adolescent girls in general, technical, professional and special secondary education.

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IV.3.b. Non-interventional, cross-sectional study

Adoptive parents' attachment
Parental attachment was assessed using 2 self-report measures: the PBI and the ECR-R.

The adoptive parents' bond with (attachment to) their own parents was evaluated using the Parental Bonding Instrument (PBI; Parker et al., 1979). Here, each adoptive parent was asked to complete 2 separate (but identical) forms, one for each of his or her parents. We used the validated Dutch translation by Verschueren and Marcoen (1993).

The PBI forms consist of 25 statements about the respondent's relationship with his or her own mother or father, relevant to the first 16 years of his or her life (e.g. *"My mother was affectionate to me"*). For every statement, he or she is asked to choose between 4 possible answers: "very like", "moderately like", "moderately unlike" or "very unlike" (my mother).

The PBI measures 2 dimensions: parental care (affection versus rejection) and parental control (overprotection versus autonomy giving). This results in four quadrants:
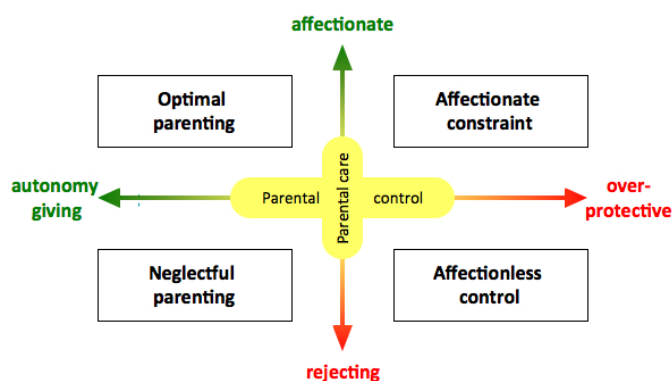
Figure 10. Visual representation of the Parental Bonding Instrument scales and parenting styles.

The PBI was scored and interpreted according to the instructions provided by the original authors (Parker, Tupling, & Brown, n.d.). Each questionnaire was first scored manually and then checked by recalculating the scores via computer. If outcomes did not match, the form was scored again using both methods to trace any mistake(s) made.

With regard to their attachment style in close adult relationships, the adoptive parents were evaluated using the Experiences in Close Relationships – Revised questionnaire (ECR-R) developed by Fraley et al. (2000). We used the validated Dutch version of the ECR-R: "Ervaringen met belangrijke relaties" (Kooiman, Klaassens, van Heloma Lugt, & Kamperman, 2013).

The ECR-R consists of 25 statements that allow for scoring on 2 scales: anxiety (how anxious is the respondent in his or her relationship, e.g. *"I often worry that my partner will not want to stay with me."*) and avoidance (how avoidant is he or she in his or her relationships, e.g. *"I get uncomfortable when a romantic partner wants to be very close."*). The respondent is asked to evaluate how strongly he or she (dis)agrees with these statements on a 7-point Likert scale.

The ECR-R was scored and interpreted according to the instructions provided by one of the original authors (Fraley, 2012). Each questionnaire was first scored manually and then checked by recalculating the scores via computer. If outcomes did not match, the form was scored again using both methods to trace any mistake(s) made.

Parenting stress

Parenting stress was measured by means of the Parenting Stress Index (PSI; Abidin, 1986). We used the validated Dutch version: the "Nijmeegse Ouderlijke Stress Index" (NOSI; De Brock, Vermulst, Gerris, & Abidin, 1992).

The PSI consists of 123 multiple choice questions: parents are asked to indicate whether they agree with a statement (e.g. *"My child gets upset easily over the smallest thing"*) on a 6-point Likert scale, ranging from "completely disagree" to "completely agree". The PSI allows for scoring on 13 subscales:

- 7 Parent Domains
    1. Competence
    2. Social Isolation
    3. Attachment to Child
    4. Health
    5. Role Restriction
    6. Depression
    7. Partner Relationship
- 6 Child Domains
    1. Distractibility / Hyperactivity
    2. Adaptability
    3. Reinforcing by Parent
    4. Demandingness
    5. Mood
    6. Acceptance

The attachment scale is based on 6 questions, regarding the closeness a parent feels to his or her child (e.g. "*It bothers me that I don't feel as much closeness or warmth for my child as I expected.*") and the ability to understand his or her child's behaviour, wishes and needs (e.g. "*It is difficult for me to understand what my child wants or needs.*").

The PSI was scored according to the instructions provided in the scoring manual, to generate attachment stress scores, child domain stress scores, parent domain stress scores, and total stress scores. Each PSI was scored twice manually. When outcomes did not match, form was scored again to trace any mistakes made.

IV.4. Statistical analysis

All data were analysed using IBM SPSS Statistics.

We used Shapiro-Wilk test to evaluate whether a sample (e.g. age at adoption) came from a normally distributed population. If the p-value was greater than 0.05, the null hypothesis (i.e. the sample came from a normally distributed population) was not rejected.

Bivariate correlations were tested using Spearman's rank correlation coefficient (a.k.a. *Spearman's rho*). This correlation coefficient is based on the rank of the data and can be used for variables measured on an ordinal scale. A Spearman's rho of 1 (i.e. maximum value) results when the two variables being compared are always ranked the same way (i.e. when their order is preserved), even if their relationship is not linear. In contrast, this would not result in a perfect Pearson correlation. A correlation was considered statistically significant if the p-value was smaller than 0.05.

To compare the means of 2 groups (e.g. children with and without attachment disorders), we used the Mann-Whitney U test. This non-parametric test tests the null hypothesis that two populations are the same. If the p-value was greater than 0.05, the null hypothesis was not rejected (i.e. the two populations were not significantly different from each other).

To test whether an observed frequency distribution was consistent with an expected distribution (e.g. of attachment styles), we used the chi squared test ("goodness of fit" test). The chi squared test was also used to test whether there was a relationship between 2 categorical variables (e.g. between secure vs. insecure attachment in adopted children and secure vs. insecure attachment in adoptive parents).

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V. RESULTS

V.1. Retrospective study

In this section, we will first discuss the results of the retrospective part of our study. We included 34 internationally adopted children – who were all assessed at the Psychiatric Department for infants, children and adolescents (PAika) of the UZ Brussel (Brussels University Hospital) between 2005 and 2012 – and looked at the information obtained through anamnesis, observations and clinical testing at referral to PAika and at follow-up.

V.1.a. Qualitative information

Age at adoption
At adoption, the children were aged between 0 and 12 years. To make a distinction between "early" and "late" adoptions, we can use several cut-off points. There is no consensus, but generally the line is drawn somewhere between 4 months and 2 years for research purposes (usually, at either 6 moths, 1 year or 2 years).
If we draw a line at 1 year of age, we can divide the group into 18% (n = 6) early adoptions and 82% (n = 28) late adoptions. Taking 2 years of age as the cut-off point, the distribution shifts to 41% (n = 14) early adoptions and 59% (n = 20) late adoptions.
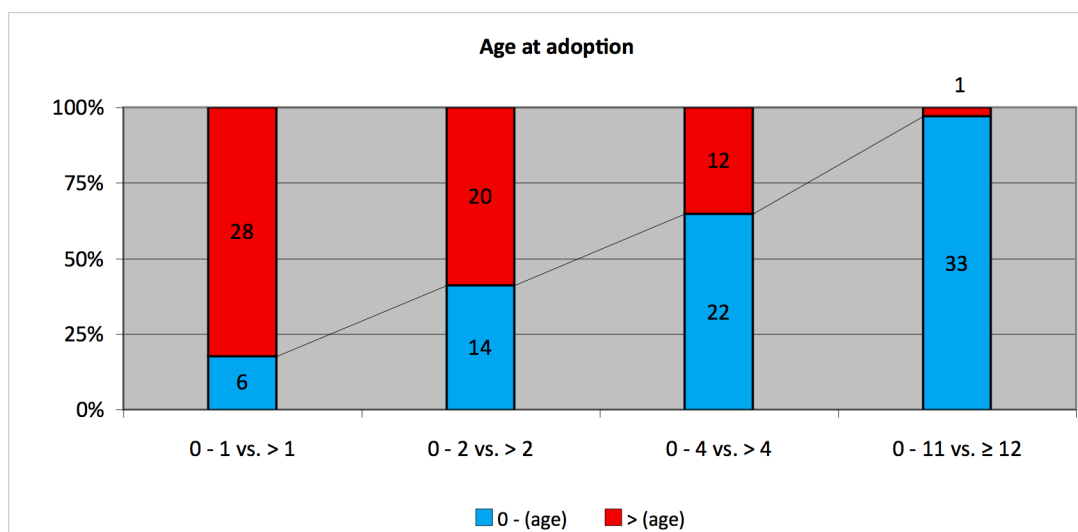
Figure 11. Distinction between early and late adoptions in the PAika group using different cut-off points.

To compare our group with the data provided by the Belgian Federal Government, we have also split the group at 4 years of age. In the PAika group, there were relatively fewer early adoptions (35% older than 4 at adoption), compared to all the internationally adopted children in Belgium since September 2005 (22% older than 4 at adoption).
The child's consent is legally required for adoption from the age of 12; only 1 boy was 12 years old at adoption.

Pre-adoption care
Prior to adoption, the children were taken care of by their biological family (53%) and/or placed in institutionalised (74%) or foster care (26%). Most children had experienced severe hardships in their first years of life, such as abuse (18%), neglect (68%) and/or malnutrition

(38%). However, because most adoptive parents had very little information on their adopted child's pre-adoption care, it is certainly possible that even more children experienced these early-life hardships.
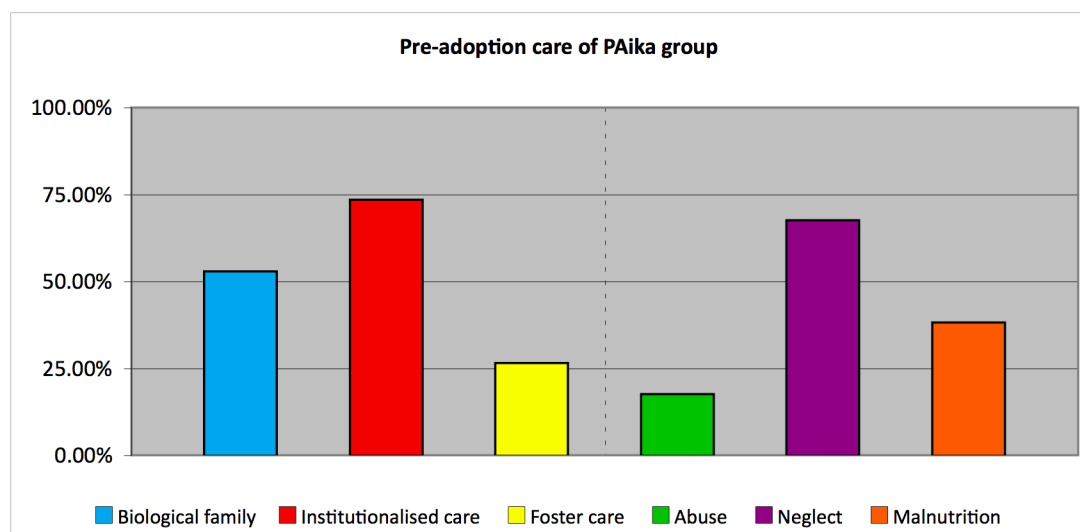
Figure 12. Care prior to adoption and early-life adversity in the PAika group.

Prior help and referral to PAika

For most children in the PAika group (85%), help had been sought prior to coming to PAika often from more than one person or service.

Help sought prior to coming to PAika	n	%
No help sought prior to coming to PAika	5	15%
One or more of the following:	29	85%
Mental Health Care Centre (Centrum Geestelijke Gezondheidszorg - CGG) / Psychologist / Psychiatrist	18	53%
Speech and/or learning therapy	16	47%
Student Guidance Centre (Centrum voor Leerlingenbegeleiding - CLB)	12	35%
Committee for Special Youth Care (Comité voor Bijzondere Jeugdzorg - CBJ)	6	18%
Physiotherapy	5	15%
Support group (e.g. for attachment disorders)	4	12%
Centre for Developmental Disorders (Centrum voor Ontwikkelingsstoornissen - COS) / Neurologist	3	9%
Home / family support	1	3%

Table 10. Help sought prior to coming to PAika by adoptive families.

The adopted children were assessed at our centre upon the parents' request (76%) and / or after referral by one or more of these services (53%).

Service and / or person(s) referring to PAika	n	%
Adoptive parents	26	76%
One or more of the following non-parental referrers:	18	53%
Student Guidance Centre (Centrum voor Leerlingenbegeleiding - CLB)	7	21%
Committee for Special Youth Care (Comité voor Bijzondere Jeugdzorg - CBJ)	5	15%
Mental Health Care Centre (Centrum Geestelijke Gezondheidszorg - CGG) / Psychologist / Psychiatrist	3	9%
Other Child and Adolescent Mental Health Service (CAMHS)	2	6%
Support group (e.g. for attachment disorders)	2	6%
Centre for Developmental Disorders (Centrum voor Ontwikkelingsstoornissen - COS) / Neurologist	1	3%

Table 11. Service and / or person(s) asking for an assessment at PAika.

The most common concerns, listed as the main reason(s) for referral, can be found in table 12. Reasons for referral were documented as described by the referrers, i.e. not documented *after* all concerns had been explored during an assessment but *before* (e.g. written in a request for assessment at our CAMHS) or *at the beginning* of the first consultation. Some of these descriptions may well overlap (e.g. "aggression, violence, anger" and "behavioural problems").

It is important to note that these were not the *only* concerns, but rather the *most pressing* ones that prompted the parents and / or support service(s) to refer the child to our CAMHS. Logically, there can be more than one reason for referring a child.

Main reason(s) for referral	n	%
Behavioural problems	26	76%
Problems in school	15	44%
Aggression, violence, anger	12	35%
Concern about attachment	12	35%
Social problems	9	26%
Developmental or cognitive delay	8	24%
Lack of concentration, hyperactivity	8	24%
Emotional problems	7	21%
Concern about self-image or identity	6	18%
Anxiety	4	12%
Self-harm, suicidality	3	9%
Concern about parenting methods	2	6%
Sleeping problems	2	6%
Concern about autism spectrum disorder	1	3%
Eating problems	1	3%

Table 12. Main reason(s) for referral to PAika.

V.1.b. Quantitative information

Emotional, behavioural and social functioning

In order to assess the children's emotional, behavioural and social functioning, mothers (n = 24), fathers (n = 16), children (n = 16) and teachers (n = 11) completed the Strengths and Difficulties questionnaire (SDQ; Goodman, 2005). SDQ forms were not always completed by all 4 informants (child + 2 parents + 1 teacher), for several reasons:

- Some children were too young (or cognitively unable) to complete the SDQ-S.
- Some parents preferred to complete only 1 SDQ-P form (usually the mother).
- Some parents did not want a teacher to complete the SDQ-T.

The SDQ generates a *total difficulties score*, comprising subscores for *emotional distress*, *behavioural difficulties*, *hyperactivity and attentional difficulties* and *difficulties getting along with other children*.

On average, total difficulties scores were highest based on father-reports and lowest based on self-reports. These scores can be interpreted as "high" based on mother-, father- and teacher-reports and as "slightly raised" based on self-reports.
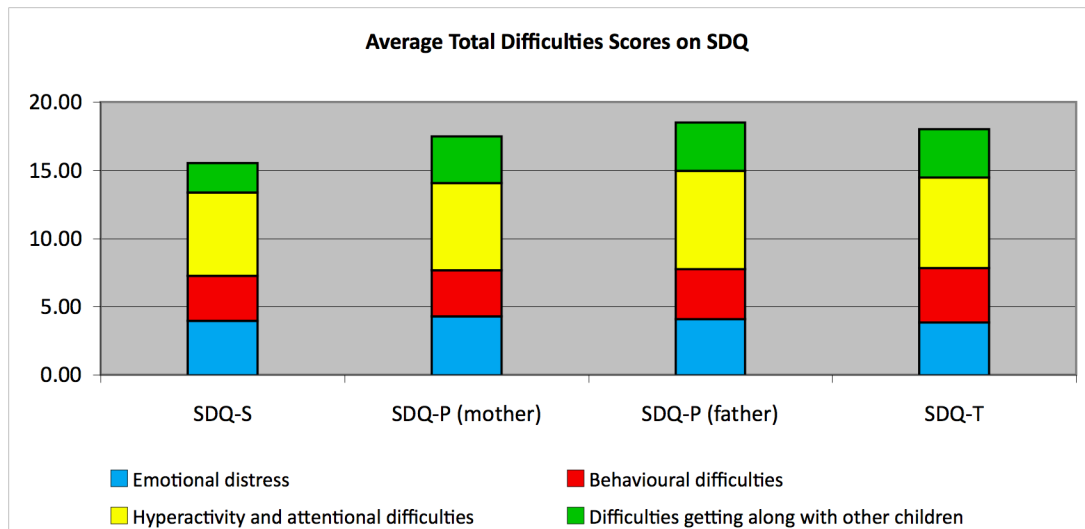
Figure 13. Average total difficulties scores on SDQ.
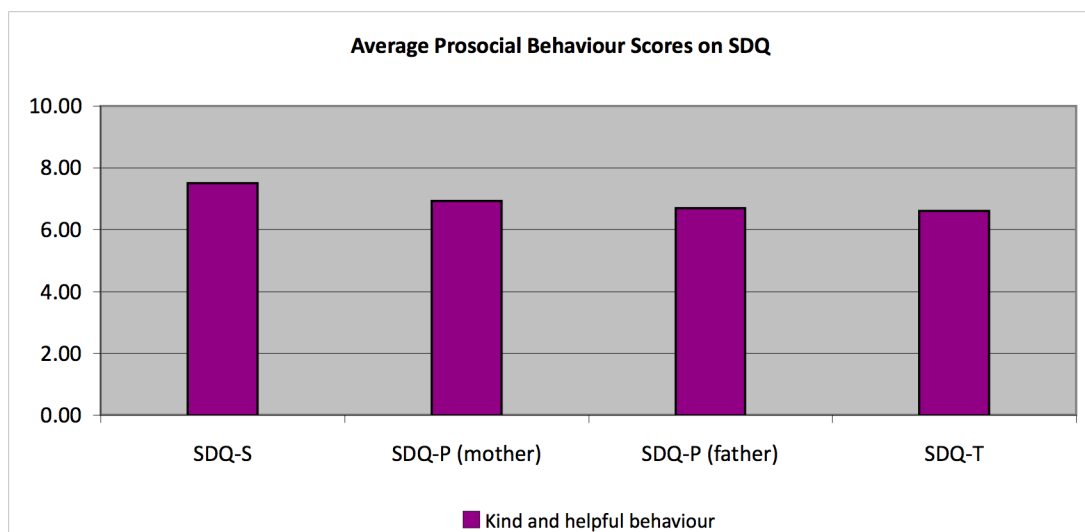
Figure 14. Average prosocial behaviour scores on SDQ.

The SDQ also generates a *prosocial behaviour score* (see above; Figure 14). Here, higher scores indicate more positive behaviour (as opposed to the total difficulties score).
On average, prosocial behaviour scores were highest based on self-reports and lowest based on teacher-reports. These scores can be interpreted as "average" based on self-reports and as "slightly low" based on mother-, father- and teacher-reports.

The SDQ can also generate an *impact score* (see below; Figure 15) if questions on impact are included. Higher impact scores have a negative connotation, i.e. indicate that the problems have a larger negative influence on the child's life.
Average impact scores were lowest based on self-reports and highest based on mother-reports. These scores can be interpreted as "slightly raised" based on self-reports and "very high" based on mother-, father- and teacher-reports.
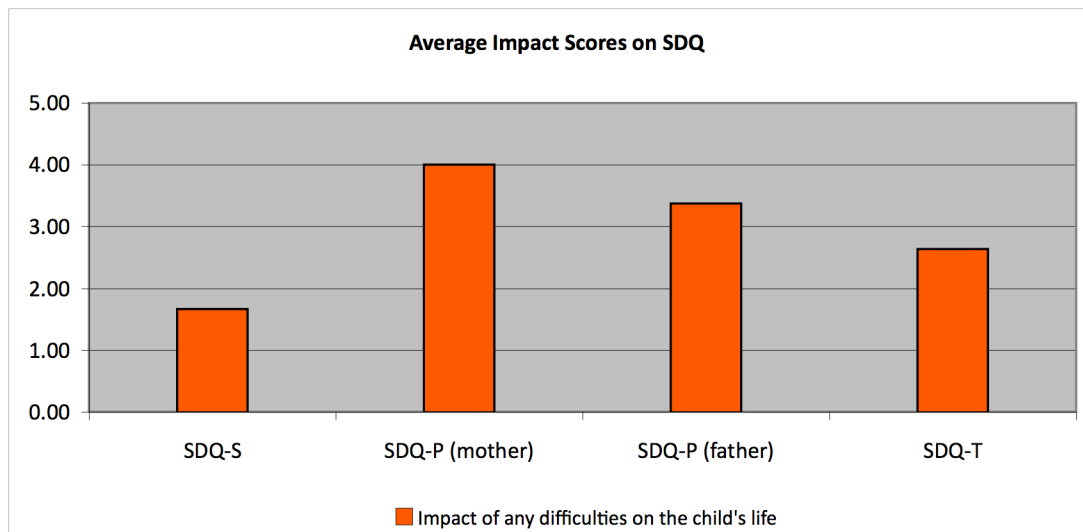
Figure 15. Average impact scores on SDQ.

SDQ scores	SDQ-S (n = 16)		SDQ-P (m) (n = 24)		SDQ-P (f) (n = 16)		SDQ-T (n = 11)	
Total difficulties	15.5	↑	17.5	↑↑	18.5	↑↑	18.0	↑↑
Emotional distress	3.9	=	4.3	↑	4.1	↑	3.8	=
Behavioural difficulties	3.3	=	3.4	↑	3.7	↑	4.0	↑↑
Hyperactivity and attentional difficulties	6.1	↑	6.4	↑	7.2	↑	6.6	↑
Difficulties getting along with other children	2.1	=	3.4	↑	3.6	↑↑	3.6	↑
Prosocial behaviour	7.5	=	6.9	↓	6.7	↓	6.6	↓
Impact of any difficulties on the child's life	1.7	↑	4.0	↑↑↑	3.9	↑↑↑	2.6	↑↑↑

Table 13. Average SDQ (sub)scores for different respondents: self-reports [SDQ-S], mother-reports [SDQ-P (m)], father-reports [SDQ-P (f)] and teacher-reports [SDQ-T]. Interpretation of these scores is symbolised as follows: very high (↑↑↑), high (↑↑), slightly raised (↑), average (=), slightly low (↓), low (↓↓) or very low (↓↓↓).

Correlations between mothers' and fathers' responses were significant for all subscores, except *hyperactivity and attentional difficulties*.

SDQ-P Scores	n	Spearman's rho	p-value
Total difficulties	13	0.780	0.002
Emotional distress	13	0.687	0.010
Behavioural difficulties	13	0.669	0.012
Hyperactivity and attentional difficulties	13	0.528	0.064
Difficulties getting along with other children	13	0.719	0.006
Prosocial behaviour	13	0.840	0.000
Impact of any difficulties on the child's life	13	0.667	0.013

Table 14. Correlation between adoptive parents' SDQ scores.

Because more SDQ-P forms had been completed by mothers (n = 21) than fathers (n = 14), we used the mothers' SDQ-P forms for further correlation analysis. For *total difficulties scores*, only the correlation between mothers' and teachers' scores was significant (p = 0.049). All *prosocial behaviour scores* correlated significantly, but no correlations were found to be significant for *impact scores*.

SDQ Scores	n	Spearman's rho	p-value
Total difficulties scores			
SDQ-S vs. SDQ-P (m)	14	0.229	0.432
SDQ-S vs. SDQ-T	7	0.618	0.139
SDQ-P (m) vs. SDQ-T	10	0.634	0.049
Prosocial behaviour scores			
SDQ-S vs. SDQ-P (m)	14	0.644	0.013
SDQ-S vs. SDQ-T	6	0.851	0.032
SDQ-P (m) vs. SDQ-T	9	0.814	0.008
Impact scores			
SDQ-S vs. SDQ-P (m)	10	0.428	0.217
SDQ-S vs. SDQ-T	3	0.886	0.333
SDQ-P (m) vs. SDQ-T	10	0.519	0.124

Table 15. Correlation between SDQ-scores of different respondents.

Total difficulties scores were significantly lower for early adopted children (i.e. adopted between ages 0 and 1) than for late adopted children on self-reports (p = 0.018), but not significantly on mother- (p = 0.545), father- (p = 0.158) or teacher-reports (p = 0.121).

Total difficulties scores	n	Mean ± SD	Median	95% CI
SDQ-S				
Early adopted (0 – 1 year)	3	8.3 ± 2.5	8.0	2.1 – 14.6
Late adopted (>1 year)	13	17.2 ± 5.3	17.0	14.0 – 20.4
SDQ-P (m)				
Early adopted (0 – 1 year)	5	15.4 ± 5.5	15.0	8.6 – 22.2
Late adopted (>1 year)	19	18.0 ± 7.2	16.0	14.5 – 21.5
SDQ-P (f)				
Early adopted (0 – 1 year)	1	(6.0)	(6.0)	
Late adopted (>1 year)	15	19.3 ± 6.9	18.0	15.5 – 23.2
SDQ-T				
Early adopted (0 – 1 year)	3	11.7 ± 9.1	8.0	-10.9 – 34.2
Late adopted (>1 year)	8	20.4 ± 5.8	21.5	15.5 – 25.3

Table 16. SDQ-scores of early versus late adopted children.

Total difficulties scores were not found to be significantly higher for children who had undergone early-life adversity, such as neglect, malnutrition and / or abuse. No significant differences were found between boys and girls either.

Cognitive and educational functioning

The children's IQ was tested using the several well-established IQ tests (see above and Table 17, below). Four children's IQ was not tested.

IQ test	n
Snijders-Oomen Non-verbal Intelligence Tests (SON)	6
Wechsler Preschool and Primary Scale of Intelligence (WPPSI)	2 [6]
Wechsler Intelligence Scale for Children (WISC)	21
Wechsler Adult Intelligence Scale (WAIS)	1
Total	30

Table 17. IQ tests used to assess adopted children's intelligence.

In a normal, non-clinical population, the "total IQ scores" generated by these tests have a normal distribution with an average score of 100 and standard deviation of 15.

In the PAika group, IQ scores were normally distributed with a mean IQ score of 84.7 and standard deviation of 15.4; the median was 84. This mean score was significantly lower than in a normal population.

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[6] For 1 child, the WPPSI was used to calculate a non-verbal IQ score only (because of an important language delay). Therefore, the total IQ score is missing for this child.
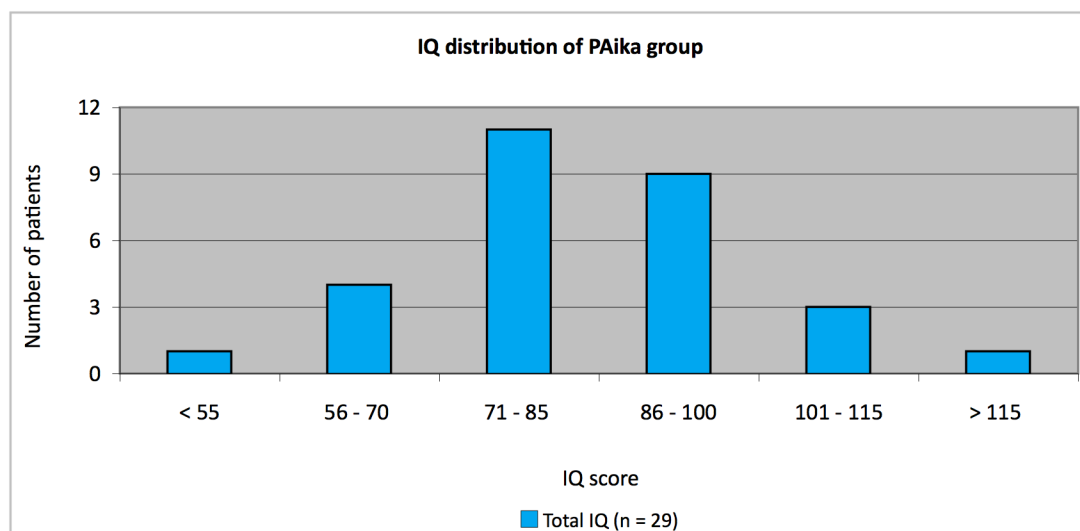
Figure 16. IQ distribution of PAika group.

In our group, there was a concern about the child's linguistic proficiency for roughly two thirds (69%) of the children whose IQ was tested. Nearly all of these children had been adopted at age 2 or older (95%). Language skills were assessed by language and speech therapists. Estimated language delays ranged from 1 year or less to more than 5 years.

The mean IQ score for children without a language delay (n = 9) was 90.2. For children with a language delay, this mean score dropped to 82.2 (n = 20). These mean scores were not significantly different from each other (p = 0.125). However, for children referred to our centre because of a concern about developmental or cognitive delay, mean IQ scores were significantly lower (p = 0.002) than for children referred for other reasons.

IQ scores	n	Mean ± SD	Median	95% CI
Overall IQ scores	29	84.7 ± 15.4	84.0	78.8 – 90.5
Children without language delay	9	90.2 ± 13.3	93.0	80.0 – 100.5
Children with language delay	20	82.2 ± 15.9	82.0	74.8 – 89.6
Children referred for concern about developmental or cognitive delay	7	68.9 ± 12.1	69.0	57.7 – 80.0
Children not referred for concern about developm. or cognitive delay	22	89.8 ± 12.8	89.5	84.1 – 95.4

Table 18. Mean IQ scores for children with and without language delays.

At referral (i.e. *prior* to assessment at PAika), most children went to regular schools (82%), sometimes with additional support measures already in place.

School type	n	%
Regular education	28	82%
with extra support measures	4	12%
Special education	6	18%

Table 19. School type of children in the PAika group.

Many children were behind in school (48%), compared to children of their age. For three children, this information was missing.

Years behind in school	n	%
0 years	16	52%
1 year	10	32%
2 years	5	16%

Table 20. Years behind in school, compared to children of same age.

Self-perception

Self-perception was evaluated using the Self-Perception Profile for children (SPPC or CBSK; Veerman, et al., 1997) and Adolescents (SPPA or CBSA; Treffers et al., 2002). The SPPC or SPPA was completed by 18 children of the 34 children in our cohort. Some children were too young to complete the SPPC. For some children, self-image was not a big concern or was assessed through anamnesis (but this information cannot be quantified).

The children's responses were compared to those of the appropriate Flemish control groups (adjusted for age, gender and school type), as instructed in the scoring manuals. Each subscale score corresponds with a percentile score. The percentile scores were averaged to create an average self-perception profile:
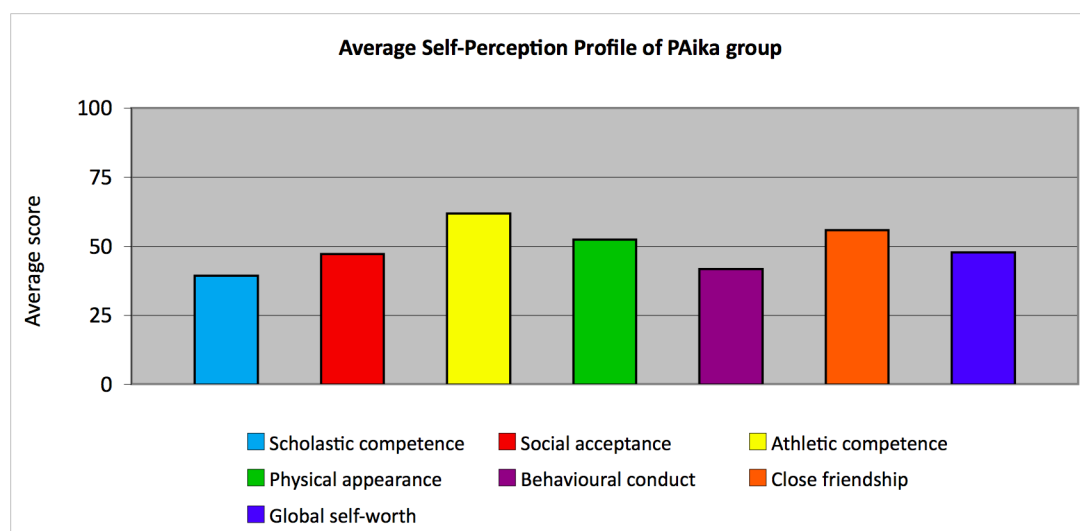
Figure 17. Average self-perception profile of the PAika group.

The children rated themselves relatively lower in terms of scholastic competence (39th percentile) and behavioural conduct (42nd percentile), relatively higher in terms of athletic competence (62nd percentile) and close friendship (56th percentile), and close to average in terms of social acceptance (47th percentile), physical appearance (52nd percentile) and global self-worth (48th percentile).
The overall mean score corresponded with the 49th percentile.

Total difficulties and prosocial behaviour scores on the SDQ-S did not correlate significantly with overall self-perception percentile scores.
Overall mean scores were not significantly different for boys versus girls. Controlling for age at adoption and age at assessment did not reveal any significant differences either.

V.1.c. Clinical assessment

Attachment

Attachment security and attachment disorders were assessed clinically. An attachment disorder was diagnosed for 13 out of 34 children (38%). All these children were at least 2 years old at adoption.

Attachment disorders	n	%
Attachment disorder, any type	13	38%
Unspecified	4	12%
Inhibited	5	15%
Disinhibited	4	12%
No attachment disorder	21	62%
Total	34	

Table 21. Attachment disorders in the PAika group.

For children without an attachment disorder, insecure attachment (type A, C, D or unspecified) was seen in 9 out of 21 children (43%). Based on a chi-squared test, early- (0 – 1 year at adoption) and late-adopted (>1 year at adoption) children were not differently distributed for secure versus insecure attachment (p = 0.577). There were also no significant differences with either a non-adopted control population (i.e. post-adoption peers; p = 0.303) or a control population of other (non-clinical) adopted children (p = 0.688).

Attachment security and styles	n	%	Non-adopt. control pop.	Adopted control pop.
Secure	12	57%	62%	55%
Insecure	9	43%	38%	45%
Anxious-avoidant (A)	4	19%		
Anxious-ambivalent (C)	1	5%		
Disorganised (D)	1	5%		
Unspecified	3	14%		
Total	21			

Table 22. Attachment security and styles of children without attachment disorder in the PAika group.

Though differences were not significant, children diagnosed with an attachment disorder trended towards higher total difficulties scores (p = 0.212) and lower prosocial behaviour scores (p = 0.455) on the SDQ-S than children without an attachment disorder.
Of the group of children without an attachment disorder, securely attached children trended towards higher SDQ-S total difficulties scores (not significant; p = 0.855) and had significantly higher prosocial behaviour scores (p = 0.049) than insecurely attached children.

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SDQ-S scores	n	Mean ± SD	Median	95% CI
Total difficulties scores				
Children with attachment disorder	5	18.6 ± 6.0	17.0	11.2 – 26.0
Children without attachment disorder	11	14.1 ± 5.7	14.0	10.3 – 17.9
Children with secure attachment	6	14.5 ± 6.7	15.5	7.5 – 21.5
Children with insecure attachment	5	13.6 ± 5.0	11.0	7.4 – 19.8
Prosocial behaviour scores				
Children with attachment disorder	5	6.8 ± 2.3	7.0	4.0 – 9.6
Children without attachment disorder	11	7.8 ± 2.1	8.0	6.4 – 9.2
Children with secure attachment	6	9.0 ± 2.0	10.0	6.9 – 11.1
Children with insecure attachment	5	6.4 ± 1.1	6.0	5.0 – 7.8

Table 23. SDQ-S scores for children with and without an attachment disorder.

Similarly, children diagnosed with an attachment disorder trended towards lower average self-perception scores than children without an attachment disorder, though this difference was not significant ($p = 0.325$). Of the group of children without an attachment disorder, securely attached children trended towards higher self-perception scores than insecurely attached children ($p = 0.123$).

SPPC / SPPA percentile scores	n	Mean ± SD	Median	95% CI
Children with attachment disorder	6	41.4 ± 20.8	38.5	19.6 – 63.3
Children without attachment disorder	12	52.3 ± 17.0	45.8	41.5 – 63.1
Children with secure attachment	5	62.2 ± 18.2	67.3	39.5 – 84.8
Children with insecure attachment	7	45.2 ± 13.0	44.2	33.2 – 57.2

Table 24. SPPC / SPPA scores for children with and without an attachment disorder.

There was no significant difference between the IQ scores of children with and without an attachment disorder ($p = 0.302$) or between securely and insecurely attached children ($p = 0.345$).

Total IQ scores	n	Mean ± SD	Median	95% CI
Children with attachment disorder	13	80.6 ± 15.5	82.0	71.3 – 90.0
Children without attachment disorder	16	88.0 ± 15.0	85.0	80.0 – 96.0
Children with secure attachment	8	84.6 ± 14.7	81.0	72.3 – 96.9
Children with insecure attachment	8	91.4 ± 15.4	89.0	78.5 – 104.2

Table 25. Total IQ scores for children with and without an attachment disorder.

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Multi-axial diagnoses

The DSM-IV-TR organises each psychiatric diagnosis into 5 dimensions or axes:

- Axis I   All clinically diagnosed mental disorders (except Axis II)
- Axis II   Personality disorders and mental retardation
- Axis III   General medical condition; acute medical conditions and physical disorders
- Axis IV   Psychosocial and environmental factors contributing to the disorder
- Axis V   Global Assessment of Functioning (GAF)
          or Children's Global Assessment Scale (CGAS)

Axis 1 Diagnoses	n	%
Attachment Disorder	13	38%
Attention Deficit Hyperactivity Disorder (ADHD)	3	9%
Autism Spectrum Disorder (ASD)	2	6%
Learning difficulties / disability / disorder	5	15%
Mood disorder (e.g. depression, dysthymia)	3	9%
Anxiety disorder (e.g. Post-Traumatic Stress Disorder - PTSD)	6	18%
Emotional problems	2	6%
Behavioural disorder	2	6%
Other	1	3%
Any of the above, except attachment disorder	20	59%
Any of the above, including attachment disorder	26	76%

Table 26. Diagnoses made on Axis I for children in the PAika group.

Axis II Diagnoses	n	%
Mental retardation	10	29%
Developmental delay	6	18%

Table 27. Diagnoses made on Axis II for children in the PAika group.

Axis III Diagnoses	n	%
Foetal Alcohol Spectrum Disorder	1	3%
Encephalopathy - unspecified	1	3%
Palatoschisis	3	9%

Table 28. Diagnoses made on Axis III for children in the PAika group.

Axis IV Diagnoses	n	%
Early-life traumatic experiences	19	56%
Difficulties in primary care group	11	32%
Difficulties with fitting in / self-image	5	15%

Table 29. Diagnoses made on Axis IV for children in the PAika group.

Axis V Diagnoses	n	Mean ± SD	Median	95% CI	Range
GAF / CGAS Scores	18	56.8 ± 8.0	60.0	52.8 – 60.8	40 – 70

Table 30. Diagnoses made on Axis V for children in the PAika group.

GAF / CGAS scores were determined for 18 of the 34 children in our cohort (53%). It should be noted that these scores are not representative of the entire group. For children who functioned relatively well, a GAF / CGAS score was often omitted from their multi-axial diagnosis. The Children's Global Assessment Scale (CGAS; Shaffer, Gould, Bird, & Fisher, n.d.) is described in further detail in Addendum 5.

GAF / CGAS Scores		n
70 – 61	Some problems – in one area only	6
60 – 51	Some noticeable problems – in more than one area	9
50 – 41	Obvious problems – moderate impairment in most areas or severe in one area	2
40 – 31	Serious problems – major impairment in several areas and unable to function in one area	1
Total		18

Table 31. Distribution of GAF / CGAS scores of children in the PAika group.

V.1.d. Therapeutic proposal

For every child referred to our CAMHS, our team tried to determine whether or not he or she and/or his or her family needed further help. In almost all cases, several forms of therapy and/or school reorientation were recommended.

After diagnostic assessment at PAika, many adopted children were referred for individual psychotherapy (82%), speech / language / learning therapy (50%) and physiotherapy (21%). For some children (24%), pharmacotherapy was considered useful as well (though in most cases, this was a continuation of an already installed treatment).

Family therapy was suggested for 26% of the children (or 29% of the families). Family guidance and / or support at home were proposed for 47% of the children (or 46% of the families).

Proposal for further management	n	%
Individual psychotherapy	28	82%
Family therapy	9	26%
Family guidance / home support	16	47%
Medication (e.g. risperidone, methylfenidate, aripiprazole, …)	8	24%
Speech / language / learning therapy	17	50%
Physiotherapy	7	21%
Rehabilitation	1	3%

Table 32. Proposal for further management for children (and their families) in the PAika group.

Changing schools was recommended for 21% of the children in our group. Additional school support had already been installed for 12% (n = 4, cf. Table 19) of the children at referral, but was considered necessary for 24% (n = 8) of the children.

For about 1 in 4 children, full- or part-time out-of-home placement was recommended.

Proposal for school trajectory	n	%
Out-of-home placement (full- / part-time)	8	24%
Regular education	23	68%
Special education	11	32%
Additional school support	8	24%
Remain in same (type of) school	27	79%
Change to different type of school	7	21%
From regular to special education	6	18%
From special to regular education	1	3%

Table 33. Proposal for school trajectory for children in the PAika group.

V.2. Non-interventional, cross-sectional study

The second part of our study consisted of a non-interventional cross-sectional study aimed at evaluating the adoptive parents' attachment to (a) their own parents, (b) their partner and (c) their adopted child, and the stress experienced in raising their adopted child.

Adoptive parents' attachment

Parental attachment was assessed using 2 self-report measures: the PBI and the ECR-R.

The adoptive parents' attachment to their own parents was evaluated using the Parental Bonding Instrument (PBI; Parker et al., 1979). The PBI generates a score for *parental control* and *parental care*. Using control population-based cut-off points, a parent-child interaction can be categorised as such: *optimal parenting* (high care, low control), *affectionate constraint* (high care, high control), *neglectful parenting* (low care, low control) or *affectionless control* (low care, high control).

Thus, in the following figures (Figure 18 to 21), the upper left quadrant corresponds with optimal parenting, the upper right quadrant with affectionate constraint, the lower left quadrant with neglectful parenting and the lower right quadrant with affectionless control. The average scores are all very close to the middle, and were therefore not classified in one of these quadrants.
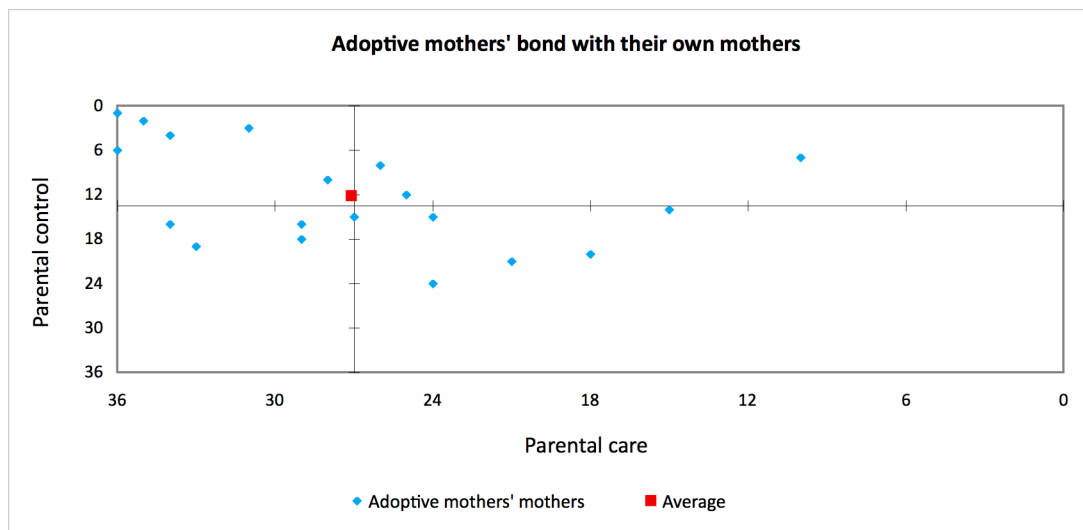
Figure 18. Adoptive mothers' bond with their own mothers.

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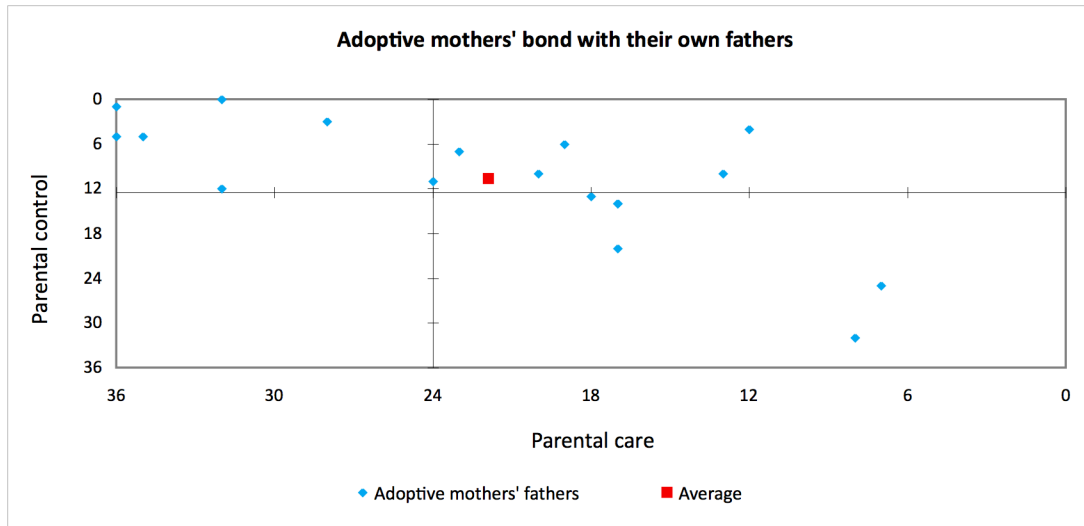
Figure 19. Adoptive mothers' bond with their own fathers.
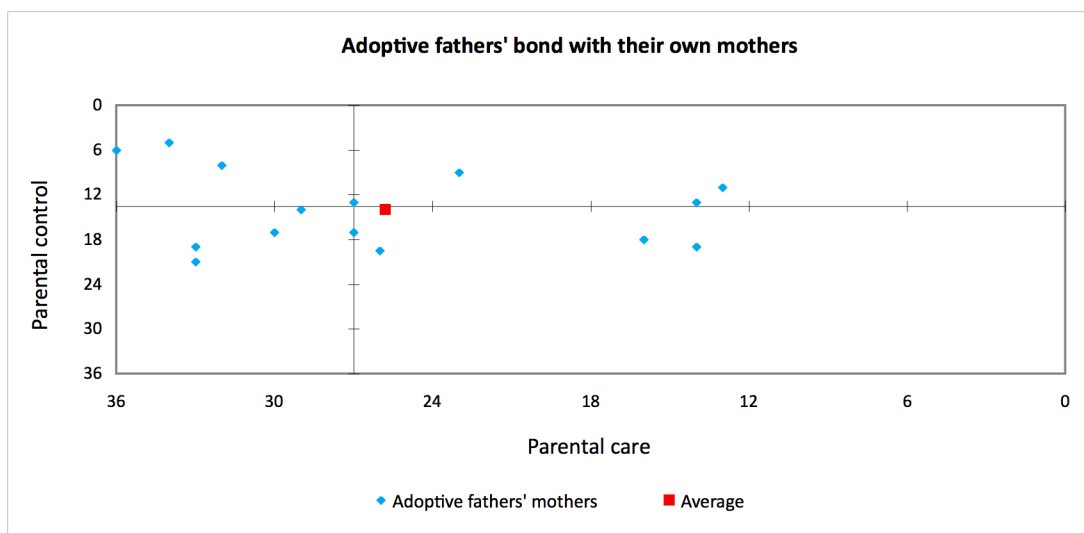
Figure 20. Adoptive fathers' bond with their own mothers.
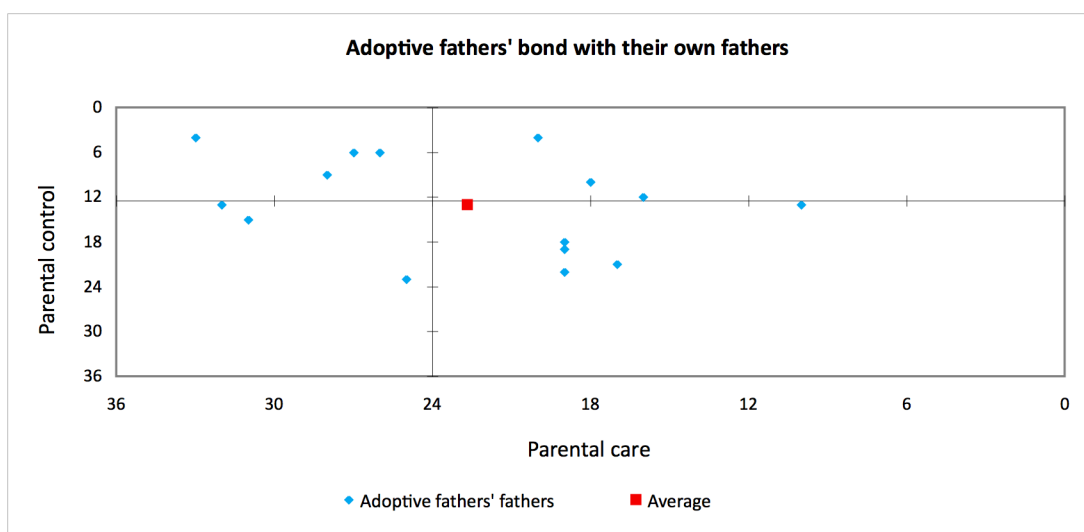
Figure 21. Adoptive fathers' bond with their own fathers.

| Parenting style | Adoptive mothers' | | | | Adoptive fathers' | | | |
| | mother | | father | | mother | | father | |
	n	%	n	%	n	%	n	%
Neglectful parenting	3	16%	5	28%	3	20%	3	20%
Optimal parenting	7	37%	7	39%	4	27%	4	27%
Affectionate constraint	4	21%	0	0%	5	33%	3	20%
Affectionless control	5	26%	6	33%	3	20%	5	33%
Total	19		18		15		15	

Table 34. Categorisation of adoptive parents' bond with their own parents, based on PBI.

The PBI was completed by 18 adoptive mothers and 15 adoptive fathers. Scores for *parental care* correlated significantly (r = 0.602; p = 0.018) between adoptive fathers' mothers and fathers, but not between adoptive mothers' parents (r = 0.448; p = 0.062). Scores for *parental control* correlated significantly within both adoptive mothers' (r = 0.707; p = 0.001) and adoptive fathers' parents (r = 0.571; p = 0.026).

Correlation between PBI scores	n	Spearman's rho	p-value
Parental care scores			
Adoptive mothers' parents	18	0.448	0.062
Adoptive fathers' parents	15	0.602	0.018
Parental control scores			
Adoptive mothers' parents	18	0.707	0.001
Adoptive fathers' parents	15	0.571	0.026

Table 35. Correlation between PBI scores of adoptive parents' parents.

The second self-report measure we used was the Experiences in Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000) to get an idea of the adoptive parents' own attachment styles, as adults. The ECR-R generates scores on 2 scales (*attachment anxiety* and *attachment avoidance*). Control population-based cut-off points can be used to derive the following categories: *secure, preoccupied, avoidant* and *fearful*.
In Figure 22, the upper left quadrant corresponds with secure attachment, the upper right quadrant with a preoccupied attachment style, the lower left quadrant with an avoidant attachment style and the lower right quadrant with a fearful attachment style.
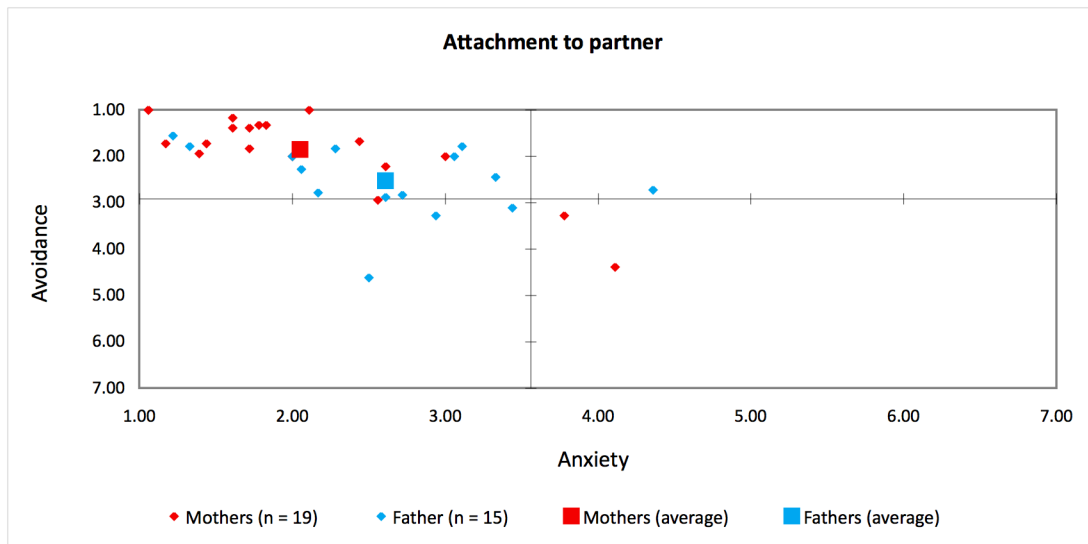
Figure 22. Adoptive parents' attachment security in close relationships, based on ECR-R.

Most adoptive mothers (84% or n = 16) and fathers (73% or n = 11) were assigned to the *secure attachment* category, based on their self-reported ECR-R scores. The average scores for all adoptive mothers and fathers were also calculated and ended up in the same (*secure*) quadrant. We assigned the respondents to attachment categories to compare them to a normal, non-clinical population, based on van IJzendoorn et al.'s (1996) meta-analysis.

	Adoptive mothers		N pop.	Adoptive fathers		N pop.
Attachment style	**n**	**%**	**%**	**n**	**%**	**%**
Dismissive (A)	1	5%	16%	3	20%	15%
Secure (B)	16	84%	55%	11	73%	57%
Preoccupied (C)	0	0%	9%	1	7%	11%
Fearful (D)	2	11%	19%	0	0%	17%
Total	19			15		

Table 36. Categorisation of adoptive parents' attachment styles in close relationships, based on ECR-R scores, compared to normal, non-clinical population percentages (*N pop.*) as found in van IJzendoorn et al.'s (1996) meta-analysis.

Both the adoptive mothers and the adoptive fathers displayed a significantly different distribution (p < 0.001) compared to their respective control populations.

No statistically significant difference was seen in attachment (in)security between children adopted by securely vs. insecurely attached mothers (p = 0.793) or fathers (p = 0.147).

Attachment anxiety and *avoidance* scores did not correlate significantly within couples.

The adoptive parents' *attachment anxiety* scores on the ECR-R did not correlate significantly with their own parents' *parental care* scores on the PBI (an inverse correlation would be expected, i.e. low attachment anxiety would be expected to correlate with high parental care). Similarly, the adoptive parents' *attachment avoidance* scores on the ECR-R did not correlate significantly with their own parents' *parental control* scores on the PBI (an inverse correlation would be expected, i.e. high attachment avoidance would be expected to correlate with low parental control).

Parenting stress

Parenting stress was evaluated using the Parental Stress Index (PSI; Abidin, 1983). Mother-reports were collected for 20 out of 34 children, father-reports for 19 out of 33 children.

The PSI generates a *total stress score*, which consists of a *child domain stress score* and *parent domain stress score*.
The *attachment stress score* is a subscale of the parent domain stress score. It is based on 6 questions, regarding the closeness a parent feels to his or her child and the ability to understand his or her child's behaviour, wishes and needs.

All stress scores were compared to reference values (based on large non-clinical samples), adjusted for the parents' gender. The scores were then categorised as *very high*, *high*, *above average*, *average*, *below average*, *low* or *very low*, compared to the relevant control group.

The mean total stress scores were categorised as *high* for mothers and *very high* for fathers. Mean child domain stress scores were also *high* for mothers and *very high* for fathers. Mean parent domain stress scores were relatively lower: *above average* for mothers and *high* for fathers.
Within the parental domain stress score, the attachment subscale scored relatively high on average: *high* for mothers and *very high* for fathers.

Average PSI Scores	Adoptive mothers (n = 20)		Adoptive fathers (n = 19)	
Total Stress	338.8	↑↑	369.8	↑↑↑
Child Domain	196.4	↑↑	213.6	↑↑↑
Parent Domain	142.6	↑	155.8	↑↑
Attachment	17.2	↑↑	19.8	↑↑↑

Table 37. Average PSI (sub)scores of adoptive mothers (n = 20) and fathers (n = 19). Interpretation of these scores is symbolised as follows: very high (↑↑↑), high (↑↑), above average (↑), average (=), below average (↓), low (↓↓) or very low (↓↓↓).
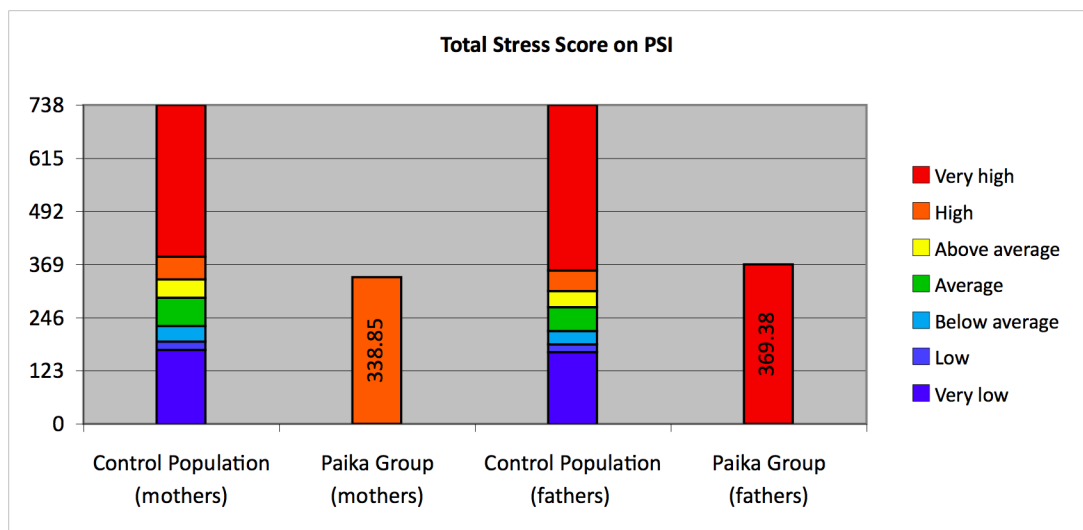
Figure 23. Average total stress scores of the PAika group.
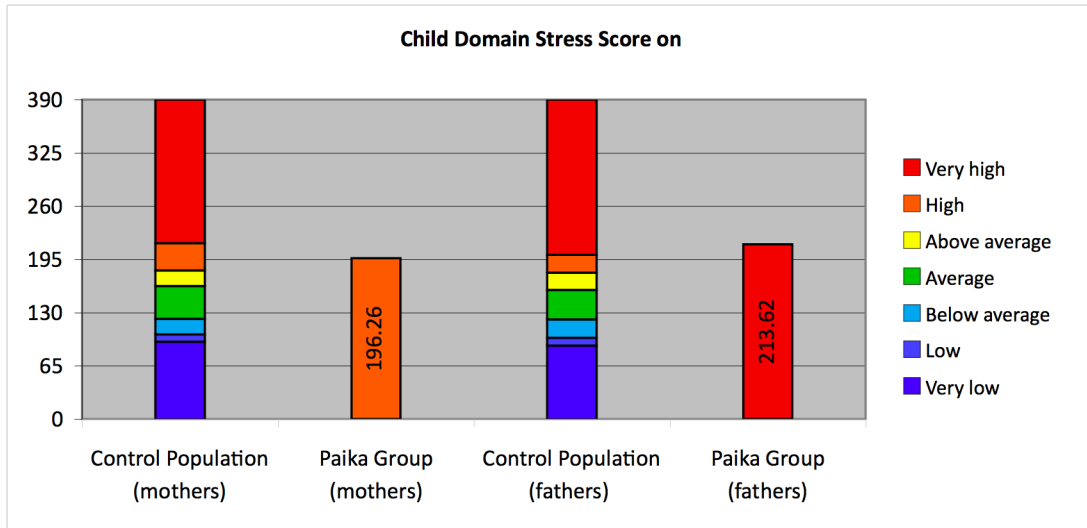
Figure 24. Average child domain stress scores of the PAika group.
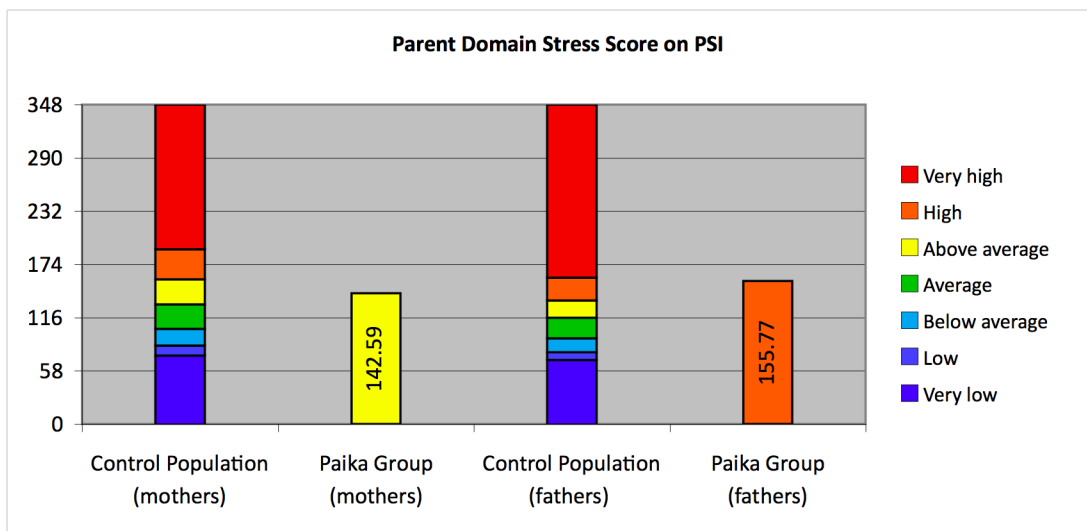
Figure 25. Average parent domain stress scores of the PAika group.
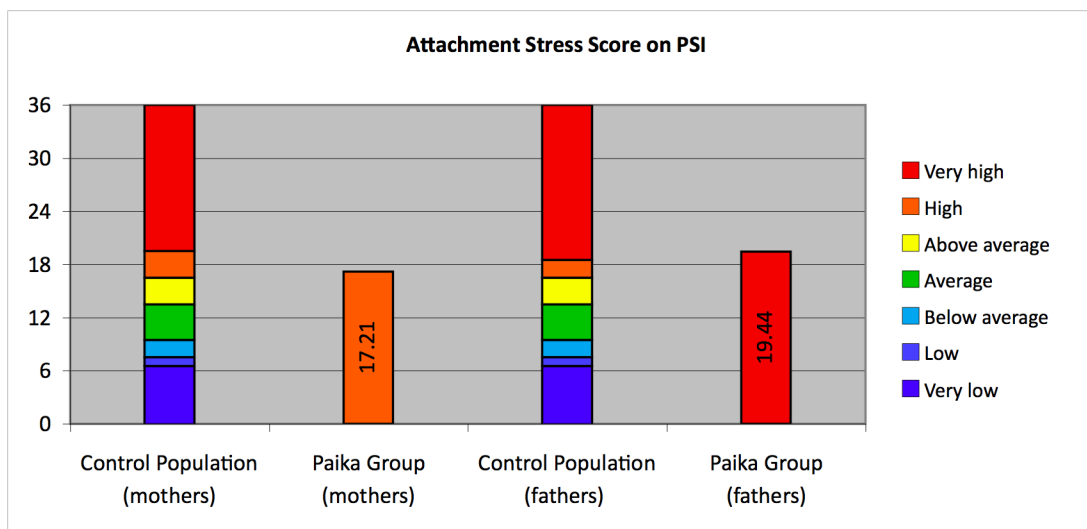
Figure 26. Average attachment stress scores of the PAika group.

PSI scores did not correlate significantly between parents of the same adopted child, except for the parent domain stress score (p = 0.034).

Correlation between PSI scores	n	Spearman's rho	p-value
Total stress scores	14	0.446	0.110
Child domain stress scores	14	0.429	0.126
Parent domain stress scores	14	0.569	0.034
Attachment stress scores	14	0.524	0.054

Table 38. Correlation between adoptive parents' PSI scores.

Total stress scores on the PSI correlated significantly with total difficulties scores on the SDQ-P for adoptive mothers (p = 0.037) and fathers (p = 0.008). Similarly, total stress scores on the PSI correlated significantly with impact scores on the SDQ-P for adoptive mothers (p = 0.005) and fathers (p = 0.004).

An inverse correlation would be expected between total stress scores on the PSI and prosocial behaviour scores on the SDQ-P (i.e. lower stress would correlate with more prosocial behaviour). This inverse correlation was observed for adoptive mothers and fathers, but was only significant for mothers (p = 0.002).

Correlation between PSI and SDQ-P scores	n	Spearman's rho	p-value
Adoptive mothers' scores			
Total stress & Total difficulties	19	0.481	0.037
Total stress & Prosocial Behaviour	19	- 0.664	0.002
Total stress & Impact	19	0.617	0.005
Adoptive fathers' scores			
Total stress & Total difficulties	15	0.658	0.008
Total stress & Prosocial Behaviour	15	- 0.358	0.190
Total stress & Impact	15	0.701	0.004

Table 39. Correlation between adoptive parents' PSI and SDQ-P scores.

Attachment stress scores were higher for children diagnosed with an attachment disorder than for children without an attachment disorder, based on both adoptive mothers' and fathers' responses on the PSI, but the difference was only significant for adoptive mothers (p = 0.047 and p = 0.540 respectively).

Differences between securely and insecurely attached children were not significant, though trended against expectations, as attachment stress scores were lower for insecurely attached children than for securely attached children.

PSI attachment stress scores	n	Mean ± SD	Median	95% CI
Adoptive mothers' scores				
Children with attachment disorder	6	22.2 ± 7.4	21.5	14.4 – 29.9
Children without attachment disorder	14	15.1 ± 6.8	13.5	11.2 – 19.0
Children with secure attachment	8	15.9 ± 5.9	14.5	11.0 – 20.8
Children with insecure attachment	6	14.0 ± 8.3	11.5	5.3 – 22.7
Adoptive fathers' scores				
Children with attachment disorder	9	21.8 ± 9.7	19.0	14.4 – 29.2
Children without attachment disorder	10	18.1 ± 6.4	19.5	13.5 – 22.6
Children with secure attachment	3	23.0 ± 2.6	24.0	16.4 – 29.6
Children with insecure attachment	7	15.9 ± 6.4	16.5	10.0 – 21.9

Table 40. Attachment stress scores for children with and without an attachment disorder.

Age at adoption did not influence the total stress scores: there was no significant difference between total stress scores of early and late adopted children (using 1 year as the cut-off age) for adoptive mothers ($p = 0.813$) or fathers ($p = 0.232$).

VI. DISCUSSION

The group of internationally adopted children referred to PAika between 2005 and 2012 was heterogeneous in many ways. The 34 children were toddlers, school aged children and adolescents (between 3 and 17 years old at referral) and came from 12 different countries from around the world. There were more boys than girls in our group (62% vs. 38%), most with adopted (74%) and / or biological (44%) siblings after adoption and only few without any post-adoption siblings (9%).

As stated in the introduction, we are well aware that this group is not representative of all internationally adopted children in Belgium. Instead, this cohort is more representative of adopted children encountered in a *clinical* setting. It is important to keep in mind that conclusions drawn from this group will therefore not necessarily be applicable to all other internationally adopted children.

To compare adopted children to control groups, the following terms are often used:
- *Post-adoption peers* are non-adopted biological children born in the country of the adoptive family
- *Pre-adoption peers* are children who stayed behind (in institutionalised or foster care) in the adopted child's country of origin

VI.1. Retrospective study

First, we will discuss the results of the retrospective part of our study, in which we examined information obtained through anamnesis, observation and clinical testing.

Pre-adoption care

One of the best known risk factors for various outcome parameters is older age at adoption (e.g. van IJzendoorn et al., 2006; Verhulst et al., 1992). Unsurprisingly, this risk factor was more prevalent in our group, as there were relatively few "early" adoptions compared to all internationally adopted children in Belgium (though we only have data for the age 4 cut-off): 65% of the children in the PAika group were between 0 and 4 years at adoption, compared to 78% in Belgium (Belgische Federale Overheidsdiensten, 2013). For research purposes, the line is usually drawn somewhere between 4 months and 2 years, because these earliest months and years are crucial for a child's development of secure attachment to his or her primary caregiver(s). In our group, these early adoptions were relatively rare: 18% was adopted between ages 0 and 1; 41% between ages 0 and 2.

Furthermore, the majority of the children referred to our centre had suffered severe early-life hardships, such as malnutrition (38%), neglect (68%) and abuse (18%). However, because most adoptive parents had very little information on their adopted child's pre-adoption care, it is certainly possible that even more children endured these traumatic early-life experiences. Many children had had several caretakers, including their biological parents or family members (53%), foster families (26%) and / or workers in institutional care (74%). This difficult start most likely contributed to at least some of their problems after adoption, as early-life adversity and discontinuity of care are also well-known risk factors (Rees et al., 2009; Rushton et al., 2006; Wierzbicki, 1993).

Post-adoption family

By being adopted, the children were brought into stable families who made a conscious decision to include them in their lives. These families had been guided through the adoption process by an adoption agency, following preparatory courses and going through thorough psychosocial inquiries, before being found eligible to adopt by a juvenile court judge.

Nearly all parents were highly educated (bachelor's or master's degree). Based on their occupation, they could also be placed relatively high on the social ladder. Adoptive mothers and fathers were well-matched with regard to education, profession and age. Considering their deprived background, this meant a considerable change in socio-economic status for many of the children in our group (in line with other studies, e.g. Verhulst et al., 1990; Warren, 1992).

Prior help and referral

For most children in our group (85%), help had been sought prior to coming to PAika. This comes as no surprise, given that our centre is a university (i.e. third line) Child and Adolescent Mental Health Service (CAMHS). Often, help had been sought from more than one person or service, which is indicative of the complexity of these children's problems. Other mental health professionals (e.g. Mental Health Care Centres, psychologists or psychiatrists - 53%), speech, language and/ or learning therapists (47%) and Student Guidance Centres (35%) were most frequently involved prior to assessment at PAika. The threshold to consult these first (and second) line services was probably relatively low, especially for high socio-economic status families (as described by Miller et al., 2000; Warren, 1992).

The adopted children were assessed at our centre upon their parents' request (76%) and / or after referral by one or more of these services (53%). Student Guidance Centres (21%), the Committee for Special Youth Care (15%) and other mental health professionals (9%) were the most common non-parental referrers.

Apart from their high socio-economic status, the adoptive parents' familiarity with support services (having already gone through the adoption process) may well have lowered the threshold to seek professional help or advice. Other referrers may also have been on higher alert because of the children's adoption status.

Behavioural problems were the most frequent reason for referral (76%) to our CAMHS. Problems in school (42%), aggression, violence or anger issues (35%) and concerns about the child's attachment (35%) were other important worries. Children were often referred for more than one reason; only the most pressing concerns were listed as the reason(s) for referral.

Reasons for referral were documented as described by the referrers, i.e. not documented *after* all concerns had been explored during an assessment but *before* (e.g. written in a request for assessment at our CAMHS) or *at the beginning of* the first consultation. This explains why there is a certain overlap between different motives (e.g. "violence" could be placed under "behavioural problems"). However, we chose not to alter descriptions, because they point out what referrers perceive to be the problem. Acts of violence might be described as such, or as behavioural problems, emotional problems, anxiety problems, problems in school, etc. Each of these descriptions comes with different connotations and expectations. For example, if parents believe their child hurts his classmates because of an underlying emotional problem (*My child acts out because he is sad*), they may expect different help than if they attribute this behaviour to inadequate impulse control (*My child hurts others without realising what he is doing*).

The rate of referrals for behavioural problems was very high. There are several plausible explanations for this observation.

First, the term "behavioural problems" is very broad, covering both an array of internalising (i.e. harmful towards oneself; e.g. social withdrawal, substance abuse or self-harm) and externalising (i.e. harmful towards others; e.g. physical or verbal aggression, vandalism or theft) problems. Concerns are not always described in detail at referral, but left rather vague at first. Parents may also describe what is worrying them as "behavioural problems" for lack of a better word.

Second, (externalising) behavioural problems are easily observable (as opposed to emotions, thoughts or fears, for instance) and likely get detected more rapidly. They may also be the most obvious sign of an underlying problem (e.g. anxiety disorder).

Third, (externalising) behavioural problems often cause trouble for a child's environment (family), which may prompt them to seek help more quickly.

Emotional, behavioural and social functioning

In our study, we used the multi-informant SDQ to evaluate the children's emotional, behavioural and social functioning. Though not as common as behavioural problems (76%), social problems (26%) and emotional problems (21%) were frequently cited as reasons for referral as well.

As Juffer et al. (2005) demonstrated, behavioural problems are significantly more common among adopted children, even though the difference with non-adopted biological children (i.e. post-adoption peers) is modest. Though the vast majority of adopted children are well-adjusted, a minority displays problematic behaviour.

In our study, adults (mothers, fathers and teachers) agreed that there were important behavioural, emotional and social problems, heavily impacting on the child's life. This was to be expected, given that children were usually assessed upon their parents' request and that Student Guidance Centres were the second most common referrers. Parents and teachers may have wished to emphasise the need for help, possibly even slightly exaggerating certain difficulties.

Nearly all subscores on the SDQ were found to correlate significantly between mother- and father-reports. In other words, parents tended to gauge their child's emotional, behavioural and social functioning equivalently. Parents' (mothers') and teachers' evaluations were also closely matched. The high average total difficulties scores aligned with our hypothesis that emotional, behavioural and social problems would be relatively common in our cohort.

However, the children's self-assessments (SDQ-S) were generally more positive, with lower total difficulties scores, higher prosocial behaviour scores and lower impact scores compared to parent- and teacher-reports. In fact, the mean self-report scores were close to average for all subscores, compared to normal, non-clinical control populations.

It is possible that the children in our group were afraid to admit to experiencing emotional, behavioural or social difficulties (e.g. not wanting to disappoint their parents). Another possibility is that their answers were more positive compared to parents and teachers, because they had different perceptions, based on altogether different expectations.

We found no significant differences for total difficulties scores on the SDQ when controlling for gender, age at adoption or early-life adversity. There was only one exception: on the SDQ-S, children adopted after age 1 had significantly higher total difficulties scores (but not behavioural difficulties scores) than early-adopted children. This same trend was seen for mother-, father- and teacher-reports, but was not found to be significant.

By contrast, traumatising early-life experiences were found to be a risk factor in Juffer et al.'s (2005) meta-analysis, while gender and age at adoption did not significantly influence their results.

Self-perception

The average SDQ-S scores were reflected in the children's mean self-perception profile, where the overall mean score corresponded with the 49th percentile. For the global self-worth subscale, which does not focus on one particular element (like physical appearance or close friendship), the mean score corresponded with the 48th percentile. These scores indicate that our cohort's self-perception was not different from a normal, non-clinical control group (i.e. their post-adoption peers). Thus, our hypothesis that the children in our cohort would attain comparatively lower self-perception scores was not confirmed.

Our results aligned with Juffer et al.'s (2007) findings. Based on their meta-analysis, they found no difference in self-esteem between (internationally) adopted children and post-adoption peers. Controlling for gender, age at adoption and age at evaluation did not reveal any significant differences either.

Similarly, self-perception scores were not significantly different in our study for boys versus girls. Controlling for age at adoption and age at assessment did not reveal any significant differences either.

Subscale percentiles on the SPPC / SPPA ranged from the 39th (for scholastic competence) to the 62nd (for athletic competence) percentile. The relatively negative self-evaluation of scholastic competence was not entirely surprising, given that 48% of the children in our cohort were behind in school by 1 or 2 years compared to same-age peers. By the same token, the self-evaluation of their athletic competence may have been boosted by staying behind and subsequently out-performing their (younger) classmates.

Cognitive and educational functioning

At referral, most children went to regular schools (82%), sometimes with additional support already present (e.g. speech or learning therapy). However, some of the children struggled in school and were later advised to change to special education (see below).

Knowing what you can expect from your child is difficult for any parent, but even more so for adoptive parents. When it comes to cognitive abilities, genetics are known to play an important role (see for example Plomin et al., 1997, as discussed above). However, adoptive parents rarely have (any) information about their child's biological family. For this reason, it is interesting to get a better picture of what children are capable of by testing their IQ.

In the PAika group, IQ scores were normally distributed, with a mean IQ score of 84.7. This low average score may well be an underestimation, given that there was a concern about the child's linguistic proficiency for the majority (69%) of the children whose IQ was tested (with language delays ranging from less than 1 to more than 5 years).

IQ tests consist of verbal and non-verbal tasks. Logically, children will attain lower scores if they do not speak the language well. Internationally adopted children's mother tongue is often different from the language their adoptive parents speak. Therefore, they need time to catch up with their peers in terms of linguistic proficiency, especially after late adoption. Nearly all of the children who lagged behind had been adopted at age 2 or older (95%).

Children without a language delay (n = 9) had a mean IQ score of 90.2. The mean IQ score of a normal non-clinical population (100.0) fell just within their 95% confidence interval. However, for children with a language delay, the mean IQ score dropped to 82.2 (n = 20), which was significantly lower than children without a language delay.

Eight children (24%) were referred because of a concern about developmental or cognitive delay. These children attained a significantly lower mean IQ score (68.9) than a normal non-clinical population and than the children referred for other reasons (89.8).

These results confirmed our hypothesis that the children in our cohort would attain lower IQ scores than post-adoption peers and other (non-clinical) adopted children. Nonetheless, this was perhaps a little surprising, because according to van IJzendoorn et al.'s (2005) meta-analysis, adopted children did not differ in IQ compared to post-adoption peers. However, their school performance and language abilities did lag behind significantly, which was also the case in our cohort. It would be useful to re-evaluate these children's IQs at follow-up, to see if they manage to catch up when language delays have been overcome (e.g. after language and speech therapy).

On the other hand, internationally adopted children encountered in a clinical setting may well have lower IQ scores than non-clinical samples of internationally adopted children. One explanation is selection bias: adopted children with lower IQs will likely be unable to catch up with their post-adoption peers and fall behind in school. They may feel frustrated at not meeting their parents' and teachers' expectations and act out (externalising behavioural problems) or feel unhappy. This may prompt adoptive parents and / or teachers to ask advice from mental health professionals.

Attachment
In another meta-analysis by van IJzendoorn et al. (2006), catch-up for attachment security proved incomplete among adopted children. Adopted children displayed less secure attachment and more disorganised attachment than their post-adoption peers. Older age at adoption was identified as an important risk factor.
In our group, a concern about attachment was one of the main reasons for referral (35%). At first glance, this seems like a very high percentage, given that the attachment theory is not exactly widely known among the general population. What some referrers might label as behavioural or emotional problems may in fact reflect insecure attachment or an attachment disorder. However, many adoptive parents are familiar with the concept of attachment, having heard about it during their mandatory pre-adoption preparatory course or through a support group, or read about it in books about adoption.

Indeed, attachment is a major concern for all adopted children (Rutter et al., 2007b), especially in a clinical setting. In our study, attachment was evaluated clinically, by a team of child and adolescent psychiatrists and psychologists. Instead of using one standardised method (like the Strange Situation Procedure [SSP]), attachment (in)security was evaluated through anamnesis, observation and clinical testing (projective measures including "story stem" techniques). Though this approach has the downside of lacking one standardised diagnostic testing method, it allows for an individually "customised" assessment, which is essential in a clinical setting (see also: Limitations).

Only 35% (n = 12) of the 34 children in our group were categorised as secure in their attachment style. The other two thirds were either insecurely attached (26%) or diagnosed with an attachment disorder (38%).[7]
Of the children without an attachment disorder (n = 21), 57% were securely attached (type B) and 43% insecurely attached (type A, C, D or unspecified). This ratio aligned with the

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[7] Theoretically, an ABCD classification of attachment security is also possible for children diagnosed with an attachment disorder. However, as Zeanah et al. (2005) described in their Bucharest Early Intervention Project study, these children rarely demonstrate clear ABCD attachment patterns. Therefore, we chose not to assign these children to the ABCD categories. If we had, they would not have been securely attached.

findings of van IJzendoorn et al.'s (2006) meta-analysis: 55% secure and 45% insecure among adopted children, compared with 62% secure and 38% insecure among non-adopted controls. Within this subgroup (i.e. children without an attachment disorder), there was no significant difference with post-adoption peers or other (non-clinical) adopted children, based on a 2-way division (secure vs. insecure attachment).

Comparing the 4-way division (ABCD distribution) of our cohort to the meta-analysis' control groups is difficult because of the limited size of our group. This task is further complicated by the fact that 3 children were considered insecurely attached but could not be assigned to the A, C or D category based on our assessment.

However, relatively many children in our group (38%) were diagnosed with an attachment disorder: 5 inhibited (15%), 4 disinhibited (12%) and 4 unspecified (12%). All these children were at least 2 years old at adoption. These children were not securely attached either (see footnote 7). Thus, it is safe to say that our hypothesis was confirmed: the children in our cohort displayed comparatively less secure attachment (namely 35%) than their post-adoption peers (62%) and than other (non-clinical) adopted children (55%) (van IJzendoorn et al., 2006).

Children with a background of serious deprivation are known to be prone to attachment disorders (Rutter et al., 2001). Most of the children in our cohort had been exposed to important risk factors such as severe early-life hardships, including malnutrition, neglect and abuse. Moreover, many of them had experienced discontinuity of care, impeding the formation of a secure attachment relationship. It is likely that these risk factors contributed in large part to the paucity of secure attachment in our cohort.

We expected attachment disorders and insecure attachment to be associated with poorer outcomes in other developmental domains (second hypothesis).

Children diagnosed with an attachment disorder had higher self-reported total difficulties scores and lower prosocial behaviour scores than children without an attachment disorder. Though these differences were not significant, they trended in line with expectations. In the group of children without an attachment disorder, securely attached children did have significantly higher self-reported prosocial behaviour scores than insecurely attached children (as expected, see for instance van IJzendoorn et al., 1999).

Similarly, children diagnosed with an attachment disorder had lower average self-perception scores than children without an attachment disorder. Securely attached children had higher self-perception scores than insecurely attached children. Again, these differences were not significant but leaned towards the expected outcome (e.g. as described in Booth-Laforce et al., 2006).

There was no significant difference between the IQ scores of children with and without an attachment disorder or between securely and insecurely attached children. This was also to be expected, as van IJzendoorn et al. (1995a) reported little association between attachment and intelligence in their meta-analysis.

To sum up, although children with attachment problems tended to perform worse in some other developmental domains as well (namely self-perception and emotional, behavioural and social functioning), differences with securely attached children were not significant.

Multi-axial diagnoses

Attachment disorders were the most common DSM-IV-TR Axis I diagnosis. Other Axis I diagnoses (i.e. clinically diagnosed mental disorders) were made for 59% of the children. Anxiety disorders (18%; e.g. Post-Traumatic Stress Disorder), learning disorders (15%) and Attention Deficit Hyperactivity Disorder (12%) were the most common ones.

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Mental retardation (29%) and other developmental delays (18%), diagnosed on Axis II, were quite common as well. Axis III diagnoses were rare: three children were born with a cleft palate, one child had an unspecified encephalopathy and one child was diagnosed with foetal alcohol spectrum disorder (FASD).

Psychosocial and environmental factors contributing to a mental disorder are described on Axis IV. Because it is impossible to describe all contributing factors, only those with an undeniable impact are usually mentioned. In our group, early-life traumatic experiences (56%), difficulties within the primary care group (32%) and difficulties with fitting in or with their self-image (15%) were regularly placed on this axis.

Finally, an estimation of a child's global functioning is made on Axis V. A patient's CGAS score should be based on his or her worst level of emotional or behavioural functioning in the past 3 months (Shaffer et al., n.d.), regardless of treatments or prognosis. Scores can range from 1 (the very worst) to 100 (the very best). A patient's CGAS score should represent his or her functioning in four major areas: at home with his or her family, at school, with friends and during leisure time.

In our group, CGAS scores were often omitted for children who functioned relatively well; they were determined for just 18 of the 34 children in our group. These children's scores ranged from 40 to 70, indicating *serious problems with major impairment in several areas and inability to function in one area* to *some problems in one area only* (see Addendum 5). Unsurprisingly, children with low CGAS scores were more likely to be admitted to the in-patient clinic. Eleven children (32%) were admitted to our own in-patient clinic; three (9%) had already been admitted prior to assessment at PAika.

Therapeutic proposals

For every child referred to our CAMHS, our team tried to determine whether or not he or she and/or his or her family needed further help. After diagnostic assessment at PAika, many adopted children were referred for individual psychotherapy (82%), speech / language / learning therapy (50%) and physiotherapy (21%). For some children (24%), pharmacotherapy was considered useful as well (though in most cases, this was a continuation of an already installed treatment).

Family therapy was suggested for 26% of the children (or 29% of the families). Family guidance and / or support at home were proposed for 47% of the children (or 46% of the families).

Often, more than one type of therapy was suggested for a child and / or his or her family. This is indicative of the complexity of the problems they face and a consequence of the multidisciplinary approach at our CAMHS, where several aspects of a child's functioning and the context he or she lives in are evaluated.

School problems were a major concern at referral (44%). Most children were in regular education (82%), but many had fallen a year or two behind (48%), signalling that regular education may have been too challenging for at least some of them. IQ tests also revealed limited cognitive abilities for a relatively large part of the cohort. Behavioural problems were another frequent reason for referral (76%), and learning difficulties were diagnosed in 15% of the children.

Thus, it comes as no surprise that changing schools was recommended for some of these children (van IJzendoorn et al., 2005). Usually, this meant a change from regular to special education (18%), but for 1 child, the opposite (i.e. changing from special [primary] education to regular [secondary] education the next school year) was recommended. Additional school support had already been installed for 12% (n = 4) of the children at referral, but was considered necessary for 24% (n = 8) of the children.

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Finally, a noteworthy statistic is the number of children for whom out-of-home placement (full- or part-time) was recommended: roughly 1 in 4 (24%). Taking the high rate of admissions to in-patient clinics (35%) and the length of stay (which easily surpassed a year in some cases) into account as well, this is emblematic of the severity of the problems the families in our cohort faced.

While no adoptions were discontinued officially, for some children the intensity of contact with their adoptive parents became much more limited. Instead of living with their adoptive family, they went to specialised residential schools that offer medical, social and psychological support as well as educational and family guidance (e.g. Medisch-Pedagogisch Instituut [MPI], Observatie- en Behandelingscentrum [OBC]).

Our results highlight the importance of a comprehensive, individually attuned approach. While some children were referred out of precaution, extensive and urgent help was paramount for others.

VI.2. Non-interventional, cross-sectional study

The second part of our study consisted of an additional non-interventional, cross-sectional study aimed at evaluating the adoptive parents' bond with their own parents, their partner and their adoptive children, and the stress experienced in raising their adopted child. This study was conducted between January 2013 and April 2013.

As discussed before, nearly all parents were highly educated. Their socio-economic status (SES) was also high based on their current occupation.

This high SES aligned with expectations, as it is one of the variables taken into account during the psychosocial inquiry (part of the selection procedure) of adoptive parents in Flanders. Although the parents' specific profession does not influence the outcome of the eligibility verdict, their financial situation does (Stroobants, Vanderfaeillie, & Put, 2011). Studies in other countries have also shown that adoptive parents generally have a relatively high SES (e.g. Miller et al., 2000; Warren, 1992).

At the end of 2012, the parents in our group were between 46 and 60 years old. The average age difference with their adopted child was 36.3 years (36.0 years for mothers, 36.7 years for fathers) and correlated significantly between adoptive mothers and fathers. Though not an ideal comparison, in 2008 the average Flemish biological mother's age was markedly lower[8] (Vlaams Agentschap Zorg en Gezondheid, 2011).

More than half of the couples did not have biological children of their own, indicating that infertility may have been one of their motivations to adopt (as described in other studies, e.g. Bimmel et al., 2003), although this information was not systematically collected at assessment. Fertility problems, as well as the duration of the adoption procedure (currently between 2 and 5 years; Kind & Gezin, 2012a), may in part explain why adoptive parents were older than biological parents of similar SES.

Adoptive parents' attachment

Parental attachment security was assessed using 2 self-report measures (PBI and ECR-R). First, the adoptive parents' bond with their own parents was evaluated using the PBI. Nearly all PBI scores correlated significantly between both adoptive mothers' parents and between

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[8] In 2008, the average Flemish mother's age at delivery was approximately 30 years for mothers with an ISCED 5 or 6 diploma, and approximately 31 years for mothers with an ISCED 7 or 8 diploma (Vlaams Agentschap Zorg en Gezondheid, 2011). In our group, the average mother's age at adoption was 36.0 years.

both adoptive fathers' parents. These correlations indicate that both parents of an adoptive parent had relatively similar parenting styles (e.g. an adoptive father's parents, i.e. his mother and father, were relatively likely to have a similar parenting style).

Parenting styles are indicative of parent-child interactions and contribute to the children's internal working models for future relationships (Goodman et al., 2012, Chapter 32). For example, children with neglectful parents may have to learn to be less dependent on others, thereby guarding their distance in other close relationships as they grow older. Analogously, high parental care and control (affectionate constraint) would lead to anxious-ambivalent attachment in children. However, attachment should be seen as a dynamic, interactional concept: a child's attachment style may be influenced by positive or negative experiences as he or she grows older (Main et al., 2005) and shift into a different category by adulthood.

In our study, we used the ECR-R to get an idea of the adoptive parents' attachment style as adults, in close (romantic) relationships.
Most adoptive mothers and fathers were assigned to the *secure* attachment category, based on these self-report generated scores. The average scores for all adoptive mothers and fathers were also calculated and ended up in the same (secure) category. ECR-R scores did not correlate significantly within couples.
It is important to note that the ECR-R only probes conscious attitudes towards relationships and therefore lacks the ability to detect "defence mechanisms" that may distort the respondent's answers (unlike the AAI). Respondents may prefer to think of themselves as understanding and accepting towards their partners, unafraid of being misunderstood or left behind, able to talk about their doubts and worries, when in fact they do not always feel all that secure in their close relationships.

We assigned the respondents to attachment categories to compare them to a normal, non-clinical population, based on van IJzendoorn et al.'s (1996) meta-analysis. Of the adoptive mothers in our study, 84% were categorised as secure (compared to 55% in the meta-analysis' control population); the majority of the adoptive fathers in our group (73%) were also assigned to the secure category (compared to 57%).
Both the adoptive mothers and the adoptive fathers displayed a significantly different 2-way (secure vs. insecure) and 4-way (ABCD categories) distribution compared to their respective control populations. Of course, the groups were very small, which means the distributions could have shifted quickly if more parents had been included. It seems as though, in these very small groups, parents were more likely to be securely attached than in a normal population. If this trend were to be confirmed, it would not be entirely unexpected, as nearly all parents were part of longstanding, stable couples.

Intergenerational transference of attachment
Across generations, we would expect securely attached adoptive parents (based on ECR-R) to have had parents with optimal parenting styles (based on PBI). However, the adoptive parents' ECR-R scores did not correlate significantly with their own parents' PBI scores (inverse correlations would have been expected).
Furthermore, no statistically significant difference was seen in attachment (in)security between children adopted by securely vs. insecurely attached mothers or fathers. This was somewhat surprising, because the correspondence between parents' and infants' attachment security was found to be high in a meta-analysis by van IJzendoorn (1995b) (though not an ideal comparison, as our cohort did not consist of infants only). Thus, our hypothesis that secure parental attachment would be a protective factor for insecure attachment in our group of adopted children was not confirmed.

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Our observations were not in support of the intergenerational transference of attachment model. However, it is important to note that we are not comparing like with like: the PBI and ECR-R generate scores on different (though similar) scales. For the children in our cohort, attachment was assessed clinically, rather than by using 1 standardised method. A better way of evaluating attachment stability across generations would be to have family members of different generations tested using one and the same diagnostic method or tool for every participant (see also: Limitations).

Furthermore, longitudinal studies have shown that insecurely attached adopted children may become secure in their attachment over time, especially if their adoptive parents are securely attached (Pace et al., 2012). Signs of attachment disorders may also reduce by bringing children into a safe, warm and caring environment (as described in the Bucharest Early Intervention Project, see above). Because we did not have a baseline assessment of attachment, we could not know if these children's attachment security had improved since adoption or was yet to improve after our assessment (i.e. catch-up was ongoing; see also: Limitations).

Parenting stress

The adoptive parents' bond with their adopted children was assessed by means of the PSI, which generates an attachment stress score based on 6 questions regarding the closeness a parent feels to his or her child and the ability to understand his or her child's behaviour, wishes and needs. The PSI also produces a total stress score, which consists of a child domain stress score and parent domain stress score.

Unsurprisingly, attachment stress scores were relatively high, compared to non-clinical control groups. The adoptive mothers' average attachment stress score fell into the "high" category; the adoptive fathers' into the "very high" category. Attachment stress scores were also higher for mothers and fathers of children diagnosed with an attachment disorder (though only significantly higher for mothers). Differences between securely and insecurely attached children were not significant, but trended against expectations (Atkinson et al., 2000).

Thus, our hypothesis that adopted children's attachment problems were a source of parenting stress was partly confirmed. Compared to post-adoption peers, parents certainly experienced higher levels of attachment related stress. However, within our cohort, only adoptive mothers' attachment stress scores were significantly higher for children with an attachment disorder. Parents of children with insecure attachment did not have augmented attachment stress scores compared to parents of securely attached children.

The PSI's other stress scores (total, parent domain and child domain stress scores) were also higher on average than in a normal, non-clinical population (i.e. parents of post-adoption peers). In other words, parents *reported* high stress levels. Though stress can be measured more objectively in other ways (e.g. cortisol levels), it is perhaps most relevant to know how parents *experienced* the stressfulness of raising their adopted child.

Of course, high parenting stress levels were foreseeable in our cohort, for several reasons.

First, it is a clinical cohort, which means there is selection bias: the children in our cohort were referred to a CAMHS because there was a concern or problem, which would likely have increased parental stress. Moreover, the adoptive parents were (among) the referrers for most children (76%), which meant that they agreed there was reason for concern.

Second, there were several known risk factors present in our group. Higher parental stress levels are associated with late adoptions, behavioural problems (the main reason for referral in our cohort) and insecure attachment (Atkinson et al., 2000; Judge et al., 2003; Mainemer et al., 1998).

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In our study, correlations between PSI scores and SDQ-P scores (for adoptive mothers and fathers) suggested that behavioural problems were indeed associated with higher parental stress levels. As discussed above, parents of children with an attachment disorder also had higher (attachment) stress scores. However, no difference was found between parents of early and late adopted children (using 1 year of age as the cut-off point).

VI.3. Limitations

There were several limitations to our study, which we will discuss to make suggestions for future research.

Thirty-four children were included in the retrospective part of our study. This rather <u>small group</u> was <u>heterogeneous</u> in several ways: ages ranging between 3 and 17 years at referral; 21 boys and 13 girls; 12 different countries of origin; early and late adoptions; various reasons for referral; different adoptive family constellations; … Based on this sort of sample, it is difficult to draw generalisable conclusions. Once again, we would like to stress that it was not our intention to describe the entire population of internationally adopted children in Belgium. Rather, we chose to look at *a clinical sample* of this population and examined *why* (for what reason) *these* children (this particular group) were referred to a CAMHS.

Because of the limited size of our group, tests appropriate for small samples were used in the statistical analysis of our data. Nevertheless, our results should be interpreted with caution.

Since <u>no control group of our own was used</u>, our results were compared to those of large meta-analyses. However, including one or more of the following control groups could have been interesting:

(1) Non-adopted children referred to a CAMHS
(2) Other internationally adopted children, not referred to a CAMHS
(3) Post-adoption peers, i.e. non-adopted biological children born in country of adoptive family
(4) Pre-adoption peers, i.e. children who stayed behind (in institutionalised or foster care) in country of origin

The first control group (1) could tell us whether *internationally adopted* children (and their families) referred to a CAMHS have different (or more serious) problems than non-adopted children referred to a CAMHS. The second group (2) could tell us why the adopted children in our cohort came to a CAMHS while others did not (i.e. why did they become a clinical sample). The third group (3) is most often used in controlled studies, including the meta-analyses we described, to describe the differences with current peers. The fourth group (4) is their previous peer group, and tells us whether adoption is a successful intervention.

It could also be interesting to compare our group with (a clinical sample of) *domestically* adopted children (to study the influence of a different cultural and / or ethnic background) and with children living in Belgian *foster* families (to study the influence of permanent vs. temporary placement and of the presence of biological parents).

We compared our results to those of large reliable meta-analyses conducted in the past decade, based on studies conducted even longer ago. In the mean time, the profile of the internationally adopted child may have changed significantly (e.g. increase of "special needs" children). Therefore, <u>the results of these meta-analyses may not be representative of today's adopted children</u>.

<u>The non-interventional, cross-sectional study was not blind.</u> The questionnaires used in this part of the study were scored by one researcher, who had prior knowledge of the patient's (and his or her family's) personal history. However, several measures were taken to avoid mistakes. Questionnaire outcomes were double-checked whenever possible. All SPPC/A, PBI and ECR-R forms were first scored manually and then checked by recalculating the scores via computer. All SDQ forms were scored twice by computer (http://www.sdqscore.org/); all PSI forms were scored twice manually. When outcomes did not match, all scoring methods were repeated to trace any mistakes made.

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<u>Some data were missing</u>, in both parts (i.e. the retrospective part and the cross-sectional part) of our study. In a clinical setting, children and their families are generally helped based on a problem-focused approach. This means that if a certain developmental domain (e.g. linguistic proficiency) was not a concern, it was usually not evaluated. This accounts for most of the incompleteness of our data in the retrospective part of our study. Other reasons for missing data were:

- Most adoptive parents did not know much about their child's pre-adoption care, which means it is certainly possible that more children experienced early-life hardships than we assumed in our study.
- Some children were too young to complete the SPPC and / or SDQ-S.
- Some parents preferred to complete only 1 SDQ-P or PSI form (usually the mother).
- Some parents did not want a teacher to complete the SDQ-T.
- Axis V diagnoses were often omitted for children who functioned relatively well.

In the cross-sectional part of our study, data were collected systematically (regardless of clinical concerns). However, 9 mothers and 12 fathers who were theoretically eligible for our study (out of 28 mothers and 27 fathers) were not included:

- 7 mothers and 9 fathers declined to take part in the study
- 2 mothers and 3 fathers were excluded from the study (language barrier, unable to include in time, unable to contact)

<u>Data</u> used in the retrospective part of our study <u>were not collected at one specific moment</u>, but over the course of multiple consultations, often spread out over several weeks or months. This is a logical consequence of our clinical approach, in which we prefer to assess a child and his or her family at various moments over a snapshot judgment.

Though there are many benefits to our methods from a clinical point of view, there are also some disadvantages when it comes to research. After all, while some information does not change (e.g. country of origin, age at adoption), other parameters may fluctuate (e.g. behaviour, self-perception).

Indeed, van IJzendoorn et al. (2006) describe a massive catch-up after adoption in several developmental domains compared with post-adoption peers, but this catch-up does not happen overnight. Children were referred to our CAMHS between 1 and 15 years after adoption, but it is difficult to know when "complete catch-up" for different outcome measures can or should be expected (if ever) for a particular child. By grouping the results (for IQ tests, self-perception profiles, etc.) of our entire cohort together, <u>we may well have mixed children who were in different stages of their catch-up</u>. This may also be the case for attachment security and attachment disorders.

Questionnaires such as the SDQ (which measures a child's emotional, behavioural and social functioning *in the past month*) were only completed once. Thus, we did not evaluate (in the same, systematic way) the improvement or decline in a child's functioning over the course of our assessment (<u>no pre- and post-measures</u>).

Data used in the retrospective part of our study were collected by a multidisciplinary team of psychologists, psychiatrists, language and speech therapists, physiotherapists, nurses and social workers. The constellation of this team changes regularly and is also adapted to the concerns or problems for which a child is referred. This set-up could have lead to <u>inter-examiner variability</u>. However, our multidisciplinary approach is also an important strength, as the team aims to reach consensus on diagnoses and therapeutic proposals, thus reducing the likelihood of inter-examiner variability.

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Though most of the results presented in this dissertation are objective, some are based on inherently subjective estimations of what falls inside the "normal" versus "clinical" spectrum (e.g. CGAS scores).

The results of several questionnaires should be handled with caution, as they are based on self-reports. This was the case for the SDQ-S, SPPC/A, PBI, ECR-R and PSI. These self-report measures have the downside of generating more "norm-appropriate" answers: respondents may (unconsciously) want to avoid painting an overly negative picture of themselves.
The SDQ and PSI were (usually) completed by more than 1 informant. The more balanced picture these multi-perspective tools offer is a strength of our study.

Some of the assessment tools we used are influenced by memory bias. The PBI is a good example: it asks questions about an adult respondent's first 16 years of life. Clearly, this was quite a while ago for the adoptive parents in our study. The way they remember their youth may be far from realistic; the perception of their parents' parenting styles will undoubtedly have been influenced by their own experiences as parents.

In our study, attachment was not "measured" using 1 standardised method (like the SSP in van IJzendoorn's [1995b] meta-analysis). Considering the heterogeneity of our group (in terms of age at referral, for example), this would not have been possible. Instead, attachment was evaluated clinically through anamnesis, observation and clinical testing (projective measures including "story stem" techniques - see above) by a team of child and adolescent psychiatrists and psychologists. Though this approach has the downside of lacking one diagnostic testing method (e.g. the SSP, which would facilitate comparisons with other studies), it allows for an individually "customised" assessment, which is essential in a clinical setting.
Attachment cannot be evaluated with the same test at every age. The SSP (see Addendum 2) was the first standardised measure, but it was designed specifically to assess the bond between an *infant* and one of his/her caretakers. Other diagnostic tools for different age groups have since been developed.
Although these tests are very useful for research purposes, the results should always be interpreted with caution on an individual level. Instead of blindly accepting a score on a number of attachment scales to put a child into an attachment category, a clinician ought to "build" a diagnosis using *all* the information at hand.
Furthermore, a child's attachment style can be specific to a parent-child interaction, rather than applicable to every close relationship. Attachment styles can also evolve as a child grows older. For all these reasons, the diagnosis of secure versus insecure attachment is everything but straightforward.

Our measures were not ideal to test the (non-biological) intergenerational transference of attachment model. The PBI and ECR-R generate scores on different (though similar) scales. These scores were used to assign the parents to the classically described attachment categories. For the children in our cohort, we did not use any attachment scales, but based our assessment on anamnesis, observation and clinical testing instead.
A better way of evaluating attachment stability across generations would be to have family members of different generations tested using one and the same diagnostic method or tool for every participant. However, as this method or tool is unavailable, the SSP and AAI are the most commonly used attachment measures, which would make comparison with other research more straightforward.

Finally, we were unable to test whether secure attachment in adoptive parents helped children overcome their insecure attachment (and / or attachment disorder) over time (as described by Pace et al., 2012). To this end, a longitudinal study is necessary.

VII. CONCLUSIONS

In our study, we assessed a cohort of 34 internationally adopted children referred to the UZ Brussel Psychiatric Department for infants, children and adolescents (PAika).

We wished to test 4 main hypotheses:
(1) *A clinical sample* of internationally adopted children displays more problems than post-adoption peers and other (non-clinical) adopted children in one or more of the following developmental domains:
a. emotional, behavioural and social functioning
b. cognitive and educational functioning
c. self-perception
d. attachment
(2) Attachment disorders and insecure attachment are associated with poorer outcomes in other developmental domains.
(3) Securely attached adoptive parents constitute a protective factor for the development of attachment problems in adopted children.
(4) Adopted children's attachment problems are a source of high parenting stress levels.

We tested our first hypothesis by means of a retrospective study and compared our group to post-adoption peers and other (non-clinical) adopted children, as described in recent meta-analyses.

Based on Juffer et al.'s (2005) meta-analysis, behavioural problems are more common among adopted children, although the difference with post-adoption peers is modest. The vast majority of adopted children are well-adjusted, but a comparatively large minority displays problematic behaviour. This minority is likely to be overrepresented in clinical populations.
In our study, we used the multi-informant Strengths and Difficulties Questionnaire (SDQ) to evaluate the children's emotional, behavioural and social functioning. Based on parent- and teacher-reports, there were serious difficulties in these domains, impacting strongly on the children's lives. The self-assessments were generally more positive. Traumatising early-life experiences are a known risk factor, but this could not be demonstrated in our study.

IQ scores were normally distributed in the PAika group, with a mean IQ score of 84.7. This low average score may well be an underestimation, as children with a language delay attained significantly lower scores. Unsurprisingly, children referred because of a concern about developmental or cognitive delay attained the lowest scores.
Although these results confirmed our hypothesis, they were perhaps a little surprising, because according to van IJzendoorn et al.'s (2005) meta-analysis, adopted children did not differ in IQ compared to post-adoption peers. However, their school performance and language abilities did lag behind significantly, which was also the case in our cohort.

No difference in self-esteem was found between internationally adopted children and post-adoption peers in Juffer et al.'s (2007) meta-analysis. Our results aligned with their findings, as the children in our cohort attained average scores on the Self-Perception Profile for Children (SPPC) and Adolescents (SPPA).

However, attachment was a major concern in our group. By means of a comprehensive assessment based on anamnesis, observation and clinical testing, only 35% of the children in

our cohort were categorised as securely attached (compared to 55% among [non-clinical] adopted children and 62% among post-adoption peers; van IJzendoorn et al., 2006). Other children were insecurely attached (26%) or diagnosed with an attachment disorder (38%), which was the most common DSM-IV-TR Axis I diagnosis in our cohort.

These results were in accordance with van IJzendoorn et al.'s (2006) meta-analysis, in which the catch-up in terms of attachment security proved incomplete among adopted children. Age at adoption was identified as an important risk factor in their study, but this could not be confirmed in our study.

However, most of the children in our cohort had been exposed to important risk factors for attachment disorders such as severe early-life hardships and discontinuity of care. All children diagnosed with an attachment disorder were at least 2 years old at adoption.

Thus, **our first hypothesis was confirmed**: our cohort displayed more problems with regard to emotional, behavioural and social functioning, cognitive and educational functioning and attachment (but not self-perception) than their post-adoption peers and than other (non-clinical) adopted children.

We evaluated the impact of attachment (in)security and attachment disorders on other developmental domains, to test our <u>second hypothesis</u>.

As expected, children with an attachment disorder trended towards less positive self-reported SDQ scores (although not significantly). Securely attached children had significantly higher self-reported prosocial behaviour scores on the SDQ than insecurely attached children.

Similarly, children diagnosed with an attachment disorder trended towards lower self-perception scores, while securely attached children trended towards higher self-perception scores than insecurely attached children (not significantly).

There was no significant difference between the IQ scores of children with and without an attachment disorder or between securely and insecurely attached children. This aligned with van IJzendoorn et al.'s (1995a) meta-analysis, which reported little association between attachment and intelligence.

To sum up, children with attachment problems tended to perform worse in some other developmental domains as well (namely self-perception and emotional, behavioural and social functioning), but differences with securely attached children were not significant. Therefore, although our results aligned with expectations, **our second hypothesis could not be confirmed**.

The second part of our study consisted of an additional non-interventional cross-sectional study aimed at evaluating the adoptive parents' attachment to their own parents, their partner and their adoptive children, and the stress experienced in raising their adopted child.

Against expectations, the results of this additional study were not in favour of recent evidence for the intergenerational (non-biological) transference of attachment model, as correlations between different measures of attachment (Parental Bonding Instrument [PBI] and Experiences in Close Relationships – Revised [ECR-R]) were not found to be significant.

Furthermore, no statistically significant difference was seen in attachment (in)security between children adopted by securely versus insecurely attached mothers or fathers. Therefore, **our third hypothesis could not be confirmed**.

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However, it is important to note that we used different diagnostic methods and tools to assess attachment stability across generations, which does not make for ideal comparisons. From a practical point of view, this was the only feasible option in our clinical setting. Furthermore, a longitudinal study would have been needed to evaluate whether secure attachment in adoptive parents could help the adopted children overcome their insecure attachment (and / or attachment disorder) over time, as described by Pace et al. (2012).

Parents reported high parenting stress levels, compared to non-clinical control groups (i.e. parents of post-adoption peers). Attachment stress scores were higher for parents of children diagnosed with an attachment disorder (though only significantly higher for mothers). No difference was found between parents of securely vs. insecurely attached children. Therefore, our <u>fourth hypothesis</u> was (largely) confirmed. Given the high prevalence of several known risk factors (such as late adoptions, behavioural problems and insecure attachment), these results were to be expected.

Our fourth hypothesis was confirmed: adopted children's attachment problems were found to be a source of high parenting stress levels, compared to non-clinical control groups. Attachment stress scores were also higher for parents of children diagnosed with an attachment disorder.

Though attachment disorders were the most common DSM-IV-TR Axis I diagnosis, co-morbid mental disorders were diagnosed for 59% of the children (e.g. anxiety disorders, learning disorders and ADHD).
Mental retardation (29%) and other developmental delays (18%) were quite common as well (Axis II), while contributing medical conditions (Axis III) were rare. Early-life traumatic experiences and difficulties within the primary care group were among the most commonly described consequential psychosocial and environmental factors (Axis IV).
In our group, CGAS scores (Axis V) ranged from 40 to 70 (though they were determined for just 18 of the 34 children and often omitted for children who functioned relatively well). Unsurprisingly, children with low CGAS scores were more likely to be admitted to an in-patient clinic. In total, twelve children (35%) were admitted to in-patient clinics (for more than a year in some cases).

After diagnostic assessment, most children were referred for individual psychotherapy (82%) and / or other types of therapy (e.g. speech, language or learning therapy, physiotherapy and pharmacotherapy). A systemic approach, including family therapy, family guidance and support at home, was also proposed to many families.
For 24% of the children in our cohort, a full- or part-time out-of-home placement (in specialised residential schools that offer medical, social and psychological support as well as educational and family guidance) was recommended. Along with the high rate of admissions to in-patient clinics, this statistic is emblematic of the severity of the problems the families in our cohort faced.

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Recommendations

Our results highlight the importance of a comprehensive, individually attuned approach. While some children were referred out of precaution, extensive help was urgently needed for others.

Because attachment was the principal concern in our group, exploring this developmental domain is of paramount importance when assessing an (internationally) adopted child. Categorising a child's attachment pattern as secure or insecure is not a straightforward matter; neither is the diagnosis of an attachment disorder. A clinical setting allows for a multidisciplinary evaluation based on anamnesis, observation and diagnostic testing.

Other developmental domains proved to be less of a concern for adopted children in large meta-analyses, but should not be overlooked during the clinical evaluation of an adopted child. Findings in our study indicate that cognitive and educational functioning, as well as emotional, behavioural and social functioning were problematic for a relatively large part of our cohort.

These and other problems may expose adoptive parents to a series of challenges. The high parenting stress levels we observed testify to the need for post-adoption support.

Further research is needed to focus on the follow-up of a *clinical* cohort (in a longitudinal study design) of internationally adopted children throughout childhood and even into adulthood (parenthood). It would be interesting to examine how these children progress with regards to several developmental measures and whether or not further catch-up with their post-adoption peers is observed in this high-risk group.

One of the parameters to keep a closer eye on is attachment. Future research should investigate how these children's attachment problems evolve over time (e.g. after therapeutic interventions) and how this evolution is influenced by the adoptive parents' attachment (in)security. Studying transference of attachment to the next generation (the adopted children's children) would also be interesting.

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IX. ADDENDA

IX.1. Addendum 1: International adoption procedure

The procedure for the international adoption of children is very complex and is thus usually facilitated through a licensed adoption agency. Though it is also legally possible to independently organise the adoption of a child (within the Flemish Community only), close supervision by 'Kind & Gezin' is always required[9].

The different steps in the international adoption procedure are described in detail on the Belgian federal government website (Belgische Federale Overheidsdiensten, 2011a) and the Flemish Association for Child and Adoptive Family website (Vereniging voor Kind en Adoptiegezin vzw, n.d.).

On average, the duration of a complete international adoption procedure - from application until arrival of the adopted child - will take between 2 and 5 years (Kind & Gezin, 2012a).

Aspiring adoptive parents start their project by contacting the adoption department of the Central Authority of the Community (Centrale Autoriteit van de Gemeenschap). This department will create their personal file and send them an application form. After paying the required fee and returning the completed form, they will be assigned a spot in one of the preparatory courses organised near them. This 2-month course consists of several informative sessions about the legal, practical and emotional challenges of adopting a child, and is mandatory for every adoptive parent-to-be.

With the certificate they receive after completing their preparatory course, the parents can apply for an eligibility verdict at a juvenile court. The court will determine whether the necessary conditions (see above) are met. If so, an in-depth investigation performed by social workers, psychologists, etc. will be commissioned. This social inquiry can easily take more than 5 months.

If positive, the eligibility verdict (valid for 4 years) and personal file of the adoptive family will be sent to a licensed adoption agency of their choice (there are 4 in Flanders, 6 in Wallonia and 2 in Brussels). In theory, this means the parents can get their names onto an adoption agency waiting list. However, in 2011 more than 400 eligible aspiring parents had not got onto an official waiting list yet.

The adoption agency will mediate between the parents and the foreign authorities by helping the parents put their personal file together and sending it to the authorities of one or several collaborating countries. It will then in turn send the child propositions received from these countries to the adoptive parents. When allocating a child, the agency will look for the best possible match, taking into account the preferences of the parents and the needs of the children. If the Central Authority of the Community and the adoptive parents approve the child proposition, the adoption agency will prepare the parents for their first meeting with the child and for the adoption procedure in the country of origin.

Once the adoption procedure in the country of origin is completed, the foreign adoption decision needs to be recognised by the Central Federal Authority (CFA) for adoption. This allows the child to obtain the Belgian nationality and legally acknowledges the parent-child relationship. The Belgian embassy can then create a visa for the child, so he or she can be brought to Belgium. Finally, the adoption procedure is completed when the child is registered at the municipality of the town where his or her adoptive family lives.

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[9] Kind & Gezin (Child and Family) is a Flemish government agency which' primary aim is to support the well-being of young children and their families. It is also responsible for setting the criteria that adoption agencies have to meet (Kind & Gezin, 2012c).

IX.2. Addendum 2: Strange Situation Procedure and Attachment Patterns

To assess a child's attachment to a primary caregiver, one of the most commonly used and best-established instruments is Mary Ainsworth's Strange Situation Procedure or SSP (Ainsworth et al., 1978). The procedure takes about 20 minutes and exposes the child (up to 3 years of age) to varying degrees of stress:

(1) Parent (e.g. mother) and infant (e.g. her son) are introduced to a room in which they can be observed through a one-way mirror and/or via video camera. They are alone at first. The boy has time to get accustomed to the room and to start exploring it.

(2) After a short while, a stranger enters. This person first talks with the mother, then approaches the child.

(3) The mother leaves the room inconspicuously (*first separation*). The boy is left alone with the stranger, whose behaviour is attuned to his.

(4) The mother returns, greets and comforts her son (*first reunion*).

(5) The stranger and the mother both leave (*second separation*). The boy is now left alone in the room.

(6) The stranger returns and once again gears his or her behaviour towards the boy's.

(7) Finally, the mother returns, greets and picks up her son (*second reunion*). The stranger leaves the room inconspicuously.
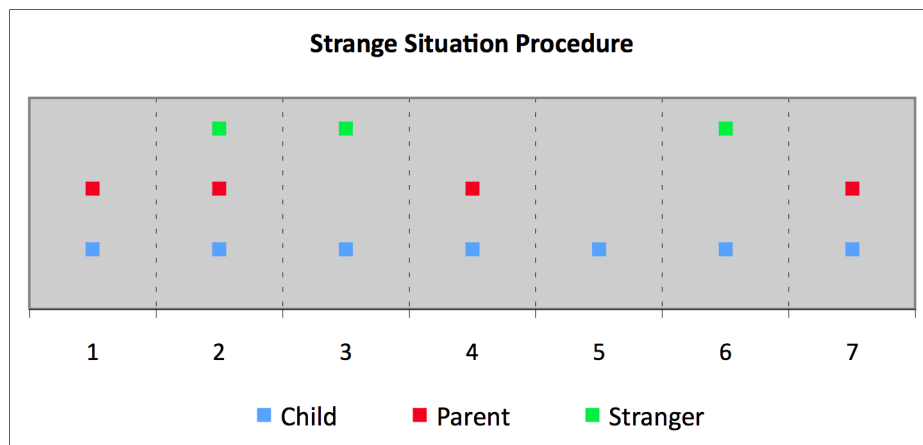

Figure 27. Visual representation of who is present in the room during the different phases of the Strange Situation Procedure.

During this procedure, 4 aspects are observed in the child's behaviour:
- Amount of exploration (e.g. playing with new toys)
- Reaction to parent's departure
- Stranger anxiety
- Reaction to parent's reunion

The aim is to classify the child's attachment into one of **4 categories**:

(1) Anxious-avoidant attachment (A)
A boy who has an anxious-avoidant attachment style will show minimal distress upon separation and will ignore or avoid his mother upon reunion. He will not explore the room very enthusiastically, regardless of who is in it. In other words, strangers or primary caregivers will not be treated very differently (*undifferentiated behaviour*).

(2) Secure attachment (B)

A boy who is securely attached to his mother will explore the room freely and engage with the stranger while his mother is present. He will be visibly upset when she leaves and happy when she returns. When his mother is not around, he will not engage with the stranger (*differentiated behaviour*).

(3) Anxious-resistant (or ambivalent-resistant) attachment (C)

A boy with an anxious-resistant attachment style will be hesitant to explore the room and afraid of the stranger, even when his mother is around. When his mother leaves, he will be extremely distressed. However, when she returns, his reaction can be ambivalent. For instance, he may seek proximity to his mother but be angry and resistant when she tries to comfort him (e.g. cling to her legs but push her away when she tries to pick him up).

(4) Disorganised attachment (D)

A boy without an organised attachment strategy will behave unpredictably during the procedure. For example, he may cry during separation but avoid his mother when she returns. Alternatively, he may approach her upon reunion but then "freeze" or fall to the floor. He may show stereotyped behaviour, like rocking back and forth or repeatedly hurting himself.

IX.3. Addendum 3: Attachment Disorder Definitions

The definition of a Reactive Attachment Disorder (RAD) according to the Diagnostic and Statistical Manual for Mental Disorders 4th Edition - Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) can be found in Table 41.

Diagnostic Criteria for Reactive Attachment Disorder of Infancy or Early Childhood
A. Markedly disturbed and developmentally inappropriate social relatedness in most contexts, beginning before age 5 years, as evidenced by either (1) or (2): (1) Persistent failure to initiate or respond in a developmentally appropriate fashion to most social interactions, as manifest by excessively inhibited, hypervigilant, or highly ambivalent and contradictory responses (e.g., the child may respond to caregivers with a mixture of approach, avoidance, and resistance to comforting, or may exhibit frozen watchfulness). (2) Diffuse attachments as manifest by indiscriminate sociability with marked inability to exhibit appropriate selective attachments (e.g., excessive familiarity with relative strangers or lack of selectivity in choice of attachment figures).
B. The disturbance in Criterion A is not accounted for solely by developmental delay (as in Mental Retardation) and does not meet criteria for a Pervasive Developmental Disorder.
C. Pathogenic care as evidenced by at least one of the following: (1) Persistent disregard of the child's basic emotional needs for comfort, stimulation, and affection. (2) Persistent disregard of the child's basic physical needs. (3) Repeated changes of primary caregiver that prevent formation of stable attachments (e.g., frequent changes in foster care).
D. There is a presumption that the care in Criterion C is responsible for the disturbed behaviour in Criterion A (e.g., the disturbances in Criterion A began following the pathogenic care in Criterion C).
Inhibited Type: if Criterion A1 predominates in the clinical presentation **Disinhibited Type**: if Criterion A2 predominates in the clinical presentation

Table 41. Diagnostic criteria for Reactive Attachment Disorder of Infancy or Early Childhood according to DSM-IV-TR.

This definition is very similar to the definitions for Reactive Attachment Disorder (RAD) and Disinhibited Attachment Disorder (DAD) found in the ICD-10 (the 10th revision of the International Statistical Classification of Diseases and Related Health Problems or "ICD-10" is a medical classification list by the World Health Organisation).

While the DSM-IV distinguishes 2 types of RAD (inhibited and disinhibited), the ICD-10 categorises RAD and DAD as 2 separate entities. DAD according to ICD-10 is comparable to the disinhibited type of RAD according to DSM-IV. The definitions of RAD and DAD according to ICD-10 (World Health Organization, 1993) can be found in Table 42 and Table 43.

Reactive Attachment Disorder of Childhood

A. Onset before the age of five years.

B. Strongly contradictory or ambivalent social responses that extend across social situations (but which may show variability from relationship to relationship).

C. Emotional disturbance as shown by lack of emotional responsiveness, withdrawal reactions, aggressive responses to one's own or other's distress and/or fearful hypervigilance.

D. Evidence of capacity for social reciprocity and responsiveness as shown by elements of normal social relatedness in interactions with appropriately responsive non-deviant adults.

E. Does not meet criteria for pervasive developmental disorders.

Table 42. Diagnostic criteria for Reactive Attachment Disorder of Childhood according to ICD-10.

Both definitions of the *inhibited* attachment disorder include the same core features. These children display very little social and emotional responsiveness, almost no attachment behaviour, even in times of stress, and have marked problems with emotional regulation. While they lack positive emotional responses, their negative emotional responses, such as aggression, fear and irritability, are often pronounced.

The second type of attachment disorder is characterised by an entirely different clinical picture. Although the *disinhibited* child does seek comfort when distressed, he or she will not do so selectively. Social interactions with unfamiliar people are generally poorly modulated, marked by clinging behaviour in infancy and indiscriminate friendliness in early and middle childhood:

Disinhibited Attachment Disorder of Childhood

A. Diffuse attachments as a persistent feature during the first five years of life (but not necessarily persisting into middle childhood). Diagnosis requires a relative failure to show selective social attachments manifest by:
  (1) A normal tendency to seek comfort from others when distressed.
  (2) An abnormal (relative) lack of selectivity in the persons from whom comfort is sought.

B. Poorly modulated social interactions with unfamiliar persons. Diagnosis requires at least one of the following: generally clinging behaviour in infancy; or attention-seeking and indiscriminately friendly behaviour in early or middle childhood.

C. The general lack of situation-specificity in the above features must be clear. Diagnosis requires that A and B above are manifest across the range of social contacts experienced by the child.

Table 43. Diagnostic criteria for Disinhibited Attachment Disorder of Childhood according to ICD-10.

IX.4. **Addendum 4: Attachment in adults**

Attachment during adult life can be evaluated using the Adult Attachment Interview (AAI; George et al., 1985). This semi-structured interview asks the respondent for descriptions of his or her childhood attachment relationships, separations, losses and their effect on his or her development and personality. The respondent is asked to illustrate his or her answers with relevant biographical episodes.

The AAI distinguishes between **4 categories**:

(1) **Dismissing**
Respondents can recall only a few emotionally charged childhood memories, but minimise negative aspects (idealised picture of parents discordant with specific details recalled) and deny their impact on their personality and relationships. Closeness and attachment behaviours are not held in high esteem but repressed and rejected. They prefer feeling independent and self-sufficient.

(2) **Autonomous**
Respondents value attachment and describe close relationships in a balanced way. They coherently recall several episodes illustrating emotionally responsive childhood relationships or have come to terms with lack thereof (*earned security*). They are self-reliant, open, objective and non-defensive. They find it relatively easy to become emotionally close to others and feel comfortable in these relationships, though they do not despair when they are on their own.

(3) **Preoccupied**
Respondents' memories of childhood relationships are incoherent and biased. They are unable to move beyond childhood traumas and have unresolved anger towards their parents. They display exaggerated attachment behaviour and are highly emotional but ambivalent in their close relationships. They long for unconditional intimacy but feel that others are reluctant to get as close as they would like, so they push them away to see if they will return and confirm their love. They feel uncomfortable when they are not in a close relationship.

(4) **Unresolved-disorganised**
Respondents struggle to talk about potentially traumatic events. Their discourse is marked by striking lapses in their reasoning, suggesting dissociated memories or abnormal processing of traumatic experiences. They want emotionally close relationships but find it difficult to trust others completely, afraid they will get hurt if they allow themselves to become too close.

The AAI focuses on a person's youth and on the relationship with his or her parents. However, for adults the term "attachment" can also refer to their other close relationships. Recently, public interest in the implications of attachment for romantic relationships has surged, spawning a variety of self-help books.

As described in the AAI classification, a person's attachment style influences his or her expectations and behaviour in partner relationships. The AAI is a rather laborious diagnostic tool; consequently, a number of brief questionnaires have been developed to quickly evaluate an adult's attachment to their partner. One of the best-known and most widely used tools is the Relationship Questionnaire (RQ; Bartholomew et al., 1991), which consists

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of 4 descriptions of attachment styles. The respondent is asked to rate how much he or he recognises him- or herself in these descriptions.

Bartholomew et al.'s model is based on the idea that attachment styles reflect the way people think about their partners (are they emotionally accessible and responsive?) and themselves (are they the kind of individuals to whom others want to seek closeness, whom others want to help?). This model can be visualised as such:
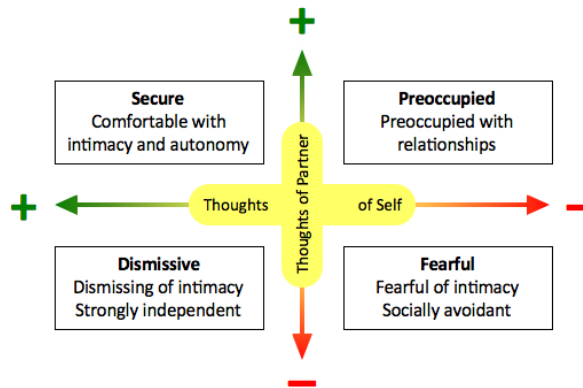

Figure 28. Visual representation of Relationship Questionnaire scales and attachment types.

A second important tool is the Experiences in Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000). Here, respondents are asked to rate how much they agree with 36 statements. Together, these statements can be scored on 2 scales: anxiety (how anxious is the respondent in his or her relationships?) and avoidance (how avoidant is he or she in his or her relationships?).
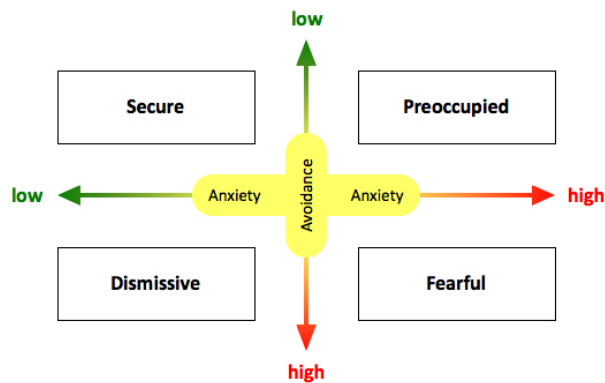

Figure 29. Visual representation of Experiences in Close Relationships – Revised questionnaire scales and attachment types.

Both the RQ and ECR-R are well-established research tools, with proven validity (Ravitz et al., 2010). As self-report measures, they have the disadvantage of probing only conscious attitudes towards relationships; therefore, they cannot detect "defence mechanisms" that may distort the respondent's answers (in contrast to the AAI).

However, unlike the AAI, they "measure" attachment on the same pair of attachment dimensions (i.e. their subscales that correlate very strongly):

- *Attachment anxiety* refers to the fear of separation, abandonment and insufficient love, the preoccupation with the availability and responsiveness of one's partner, the hyperactivation of attachment behaviour.
- *Attachment avoidance* refers to the devaluation of the importance of close relationships, the avoidance of intimacy and dependence, the need for self-reliance and relative inactivation of attachment behaviour.

By defining cut-off points, categories (like the AAI's autonomous, avoidant, preoccupied and unresolved) can be derived from these scales. Attachment measures that use a categorical model of attachment have the disadvantage of dismissing differences between people in the same category as unimportant.

The ECR-R is somewhat more elaborate but yields slightly more reliable results, while the RQ is short and simple (Sibley, Fischer, & Liu, 2005).

IX.5. **Addendum 5: Children's Global Assessment Scale**

A patient's CGAS score should be based on his or her worst level of emotional or behavioural functioning in the past 3 months (Shaffer et al., n.d.), regardless of treatments or prognosis. Scores can range from 1 (the very worst) to 100 (the very best). Functional physical impairments should not be counted unless they are clearly related to emotional functioning. A patient's CGAS score should represent his or her functioning in four major areas: at home with his or her family, at school, with friends and during leisure time.

100-91 DOING VERY WELL
Superior functioning in all areas (at home, at school and with peers), involved in a range of activities and has many interests (e.g. has hobbies, participates in extracurricular activities or belongs to an organised group such as scouts, etc.). Likeable, confident, everyday worries never get out of hand. Doing well in school. No symptoms.

90-81 DOING WELL
Good functioning in all areas. Secure in family, school and with peers. There may be transient difficulties and "everyday" worries that occasionally get out of hand (e.g. mild anxiety associated with an important exam, occasional "blow-ups" with siblings, parents or peers).

80-71 DOING ALL RIGHT – minor impairment
No more than slight impairment in functioning at home, at school or with peers. Some disturbance of behaviour or emotional distress may be present in response to life stresses (e.g. parental separations, deaths, birth of a sibling) but these are brief and interference with functioning is transient. Such children are only minimally disturbing to others and are not considered deviant by those who know them.

70-61 SOME PROBLEMS – in one area only
Some difficulty in a single area, but generally functioning pretty well, (e.g. sporadic or isolated antisocial acts [such as occasionally playing hooky or petty theft], consistent minor difficulties with school work, mood changes of brief duration, fears and anxieties which do not lead to gross avoidance behaviour; self-doubts). Has some meaningful interpersonal relationships. Most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern.

60-51 SOME NOTICEABLE PROBLEMS – in more than one area
Variable functioning with sporadic difficulties or symptoms in several but not all social areas. Disturbance would be apparent to those who encounter the child in a dysfunctional setting or time but not to those who see the child in other settings.

50-41 OBVIOUS PROBLEMS – moderate impairment in most areas or severe in one area
Moderate degree of interference in functioning in most social areas or severe impairment in functioning in one area, such as might result from suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, frequent episodes of aggressive or other antisocial behaviour, with some preservation of meaningful social relationships.

40-31   SERIOUS PROBLEMS – major impairment in several areas and unable to function in one area
Major impairment in functioning in several areas and unable to function in one of these areas, i.e., disturbed at home, at school, with peers, or in the society at large, e.g. persistent aggression without clear instigation; markedly withdrawn and isolated behaviour due to either mood or thought disturbance, suicidal attempts with clear lethal intent. Such children are likely to require special schooling and/or hospitalisation or withdrawal from school (but this is not a sufficient criterion for inclusion in this category).

30-21   SEVERE PROBLEMS – unable to function in almost all situations
Unable to function in almost all areas, e.g. stays at home, in ward or in bed all day without taking part in social activities OR severe impairment in reality testing OR serious impairment in communication (e.g. sometimes incoherent or inappropriate).

20-11   VERY SEVERELY IMPAIRED – considerable supervision is required for safety
Needs considerable supervision to prevent hurting others or self, e.g. frequently violent, repeated suicide attempts OR to maintain personal hygiene OR gross impairment in all forms of communication, e.g. severe abnormalities in verbal and gestural communication, marked social aloofness, stupor, etc.

10-1   EXTREMELY IMPAIRED – constant supervision is required for safety
Needs constant supervision (24-hour care) due to severely aggressive or self-destructive behaviour or gross impairment in reality testing, communication, cognition, affect or personal hygiene.