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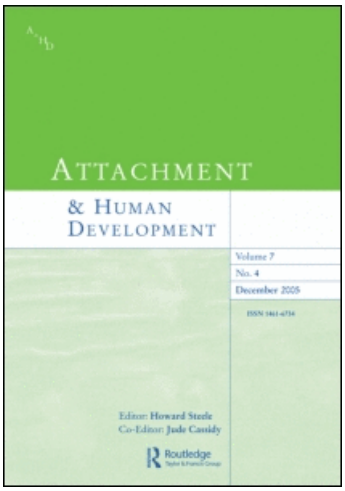

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The first 10,000 Adult Attachment Interviews: distributions of adult attachment representations in clinical and non-clinical groups

Marian J. Bakermans-Kranenburg [a]; Marinus H. van IJzendoorn [a]
[a] Centre for Child and Family Studies, Leiden University, The Netherlands

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The first 10,000 Adult Attachment Interviews: distributions of adult attachment representations in clinical and non-clinical groups

Marian J. Bakermans-Kranenburg and Marinus H. van IJzendoorn*

Centre for Child and Family Studies, Leiden University, The Netherlands

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More than 200 adult attachment representation studies, presenting more than 10,500 Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) classifications, have been conducted in the past 25 years. In a series of analyses on the distributions of the AAI classifications in various cultural and age groups, fathers, and high-risk and clinical samples, we used the distribution of the combined samples of North American non-clinical mothers (23% dismissing, 58% secure, 19% preoccupied attachment representations, and 18% additionally coded for unresolved loss or other trauma) to examine deviations from this normative pattern, through multinomial tests and analyses of correspondence. The analyses were restricted to AAI classifications coded according to the Main, Goldwyn, and Hesse (2003) system. We did not find gender differences in the use of dismissing versus preoccupied attachment strategies, and the AAI distributions were largely independent of language and country of origin. Clinical subjects showed more insecure and unresolved attachment representations than the norm groups. Disorders with an internalizing dimension (e.g., borderline personality disorders) were associated with more preoccupied and unresolved attachments, whereas disorders with an externalizing dimension (e.g., antisocial personality disorders) displayed more dismissing as well as preoccupied attachments. Depressive symptomatology was associated with insecurity but not with unresolved loss or trauma, whereas adults with abuse experiences or PTSD were mostly unresolved. In order to find more reliable associations with clinical symptoms and disorders, future AAI studies may make more fruitful use of continuous AAI scales in addition to the conventionally used categorical classifications.

Keywords: Adult attachment; AAI; gender; Internalizing problems; externalizing problems; depression; PTSD

Introduction

More than 10,000 respondents of various ages, gender, socio-economic status, ethnicity, country of residence, and clinical status have been administered the Adult Attachment Interview since its inception almost 25 years ago (AAI; George et al., 1985; Main & Goldwyn, 1984; Main, Kaplan, & Cassidy, 1985). The AAI measures the representation of attachment experiences in the mind of individuals who provide a verbal account of those experiences in less or more coherent ways (see Hesse, 2008, for a detailed description of the assessment). Numerous studies have documented the

*Corresponding author. Email: vanijzen@fsw.leidenuniv.nl

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power of the AAI to predict parenting and subsequent infant–parent attachment, and more generally to predict the quality of the individual's relationships with significant others (Cassidy & Shaver, 2008; Hesse, 2008; van IJzendoorn, 1995).

The AAI is a semi-structured interview that probes alternately for general descriptions of attachment relationships, specific supportive memories, and descriptions of current relationships with parents and other attachment figures. Participants are asked to retrieve attachment-related autobiographical memories from early childhood and to evaluate these memories from their current perspective (see Hesse, 2008; Main, Hesse, & Goldwyn, 2008). Coding of the AAI results in one of three main adult attachment classifications: Secure-Autonomous (F), Insecure-Dismissing (Ds), and Insecure-Preoccupied (E).

Adults with the F classification tend to value attachment relationships, to describe their attachment experiences (whether positive or negative) coherently, and to consider them important for their own personality. Adults with the Ds classification tend to minimize the importance of attachment for their own lives or to idealize their childhood experiences without being able to provide concrete illustrations. Adults with the E classification tend to maximize the impact of attachment. They are still very much involved and preoccupied with their past experiences and are unable to describe them coherently and reflectively. Anger or passivity characterizes the discourse style of these individuals. Adults with the Ds and E classifications are both considered insecure.

The additional classification unresolved (U) is used if the interview shows signs of unresolved experiences of trauma usually involving the loss of attachment figures. The U classification is superimposed on the three main classifications, and it received important empirical support, for example as a predictor of posttraumatic stress disorder (Harari, Bakermans-Kranenburg, & van IJzendoorn, in press; Nye et al., 2008). More recently, a fifth category, "cannot classify" (CC) has been identified (Hesse, 1996, 1999, 2008). Interviews are assigned to this category when globally contradictory discourse strategies appear within the AAI, for instance when the same parent is discussed in an idealizing as well as in an angrily preoccupied manner. Because only few studies examined the correlates of the somewhat rare CC classification, its validity as a separate category from the unresolved status still has to be more firmly established.

More than a decade ago, we published a meta-analysis of the limited number of AAI studies available at that time (van IJzendoorn & Bakermans-Kranenburg, 1996), and more recently we presented an update with a focus on clinical studies, but without addressing issues of age, gender, and socio-cultural background in normative, non-clinical samples, and without providing statistical details of our analyses (van IJzendoorn & Bakermans-Kranenburg, 2008). Following the approach of the previous reports, we analyze the currently available studies (published up to September 2008) on non-clinical and clinical groups in order to derive updated normative data and to uncover major trends in both set of studies.

The present study focuses on the following interrelated questions. First, in order to establish a base-line distribution of adult attachment classifications we examine how the AAI classifications are distributed in community samples, in particular in samples of non-clinical mothers for whom the AAI originally was developed. We expect the majority of non-clinical adults to be classified as secure-autonomous, with somewhat higher percentages of insecure-dismissing compared to insecure-preoccupied or unresolved classifications, parallel to the normative infant

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attachment distribution (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). We hypothesize that physically handicapped adults without psychiatric symptoms show similar attachment representations to norm groups, analogous to the attachment distribution of physically handicapped children in the Strange Situation Procedure (van IJzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992).

The second issue concerns differences in AAI distributions across gender. In most areas of developmental and psychological research, significant gender differences have been found (e.g., Maccoby, 1990). Some researchers have wondered whether (adult) attachment develops in a gender-specific way, with males leaning toward a dismissing perspective on attachment experiences, and females more often expressing preoccupation with those experiences (Brennan, Clark, & Shaver, 1998). Although very few gender differences for attachment have been found in infancy and early childhood, some scholars have speculated that beyond pre-school age gender will become a more important factor in attachment strategies (Del Giudice, 2009).

Related to the issue of gender is therefore the third question concerning the influence of age on attachment distributions. In particular, adolescent attachment representations have sometimes been found different from adult attachment. Adolescents have had less time to work through their childhood attachment experiences, and might still find themselves in a struggle for independence. They may therefore show fewer secure-autonomous representations, and may display more insecure-dismissing speech about the relationship with their parents than adults. Furthermore, because of their age, adolescents have had less chance of experiencing loss of attachment figures leading to potential lack of resolution in their dialogue about such experiences.

Fourth, the universality versus culture-specificity of attachment has been a hotly debated topic for several years (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; van IJzendoorn & Sagi, 2008). One of the issues is whether secure attachments are adaptive and even normative across contexts and cultures or whether they constitute a specific Western pattern. The AAI has now been applied in a variety of socio-economic contexts and cultures, and the question is whether distributions across these various applications are similar or systematically varying. Respondents from lower socio-economic backgrounds, from ethnic minorities, or from non-Western countries may not fit into the template of the normative attachment distribution derived from middle-class Caucasian-American samples. Although numerous studies on infants have documented the universality of the secure attachment pattern, in some cultures or contexts one of the insecure patterns might be the preferred modality.

Our last set of questions concerns the distribution of adult attachment classifications in clinical samples. We expect that adults with psychological disorders show attachment distributions deviating from the normative pattern, with the secure-autonomous classification being underrepresented, and depending on the kind of disorder one or more of the insecure attachments overrepresented. Dozier and colleagues (1999, 2008) suggested that preoccupied attachment representations would be expressed in disorders with an internalizing component or orientation such as depression or borderline personality disorder that might be associated with felt experience of distress and maximization of attachment needs. Dismissing representations might be associated with more externalizing indices of distress, displayed in

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eating disorders, conduct disorders, and hard-drug abuse, as they may go together with minimization of attachment needs (Dozier & Tyrell, 1997; Dozier, Chase Stovall, & Albus, 1999; Dozier et al., 2008;). Furthermore, unresolved attachments are suggested to be important in the emergence of disorders with a dissociative component such as posttraumatic stress disorders (Harari et al., in press; Hesse, 2008; Liotti, 2004; Sroufe, Egeland, Carlson, & Collins, 2005).

Method

Data collection

Pertinent studies were selected through Web of Science (WoS; Institute for Scientific Information) and PsycLIT (search terms for WoS and PsycLit: AAI, Adult Attachment Interview; WoS citations to Main & Goldwyn, 1984, 1991; George et al., 1985; van IJzendoorn & Bakermans-Kranenburg, 1996; and references in the selected studies to clinical AAI studies) and through systematic search of pertinent references to AAI studies in the *Handbook of attachment* (Cassidy & Shaver, 1999, 2008) and in the recent volume on *Clinical applications of the Adult Attachment Interview* (Steele & Steele, 2008b). We read through titles, Abstracts, and the Method sections of all papers emerging from the systematic search, and included all published empirical studies using the Adult Attachment Interview and its original coding system (Main & Goldwyn, 1991; Main, Goldwyn, & Hesse, 2003), leaving out only studies conducted on basis of the Q-sort processing of the interview material (Kobak, Cole, Ferenz-Gillies, & Fleming, 1993; Roisman, 2007; Zimmermann, Becker-Stoll, Grossmann, Grossmann, Scheuerer-Englisch, & Wartner, 2000), as well as studies conducted with (semi-)projective or paper-and-pencil measures (e.g., Bartholomew, 1994; Brennan et al., 1998; Crowell et al., 1999; Fortuna & Roisman, 2008). We do not mean to suggest that the latter studies would not be relevant or sound, but we limit the current analysis to those studies presenting the original and conventional three-way and/or four-way classifications of the Adult Attachment Interview across various groups. For this measure, extensive psychometric validation has been conducted, and the standardized coding of the interview material across research teams has been guaranteed through a system of regularly organized training workshops coordinated by Drs Main and Hesse (Main, Hesse, & Goldwyn, 2008), so that the comparability of the studies' findings is maximized.

This selection approach resulted in a set of 36 samples with non-clinical mothers, 13 samples of fathers, 12 samples with non-clinical adolescents, 10 samples with (college) students, 32 at-risk groups (e.g., single low SES mothers, adolescent mothers, or Holocaust survivors), 76 clinical samples, and 27 other samples (e.g., grandmothers, adults without children, or professional caregivers) (see Table 1). The categorization of the studies into one of the (clinical or non-clinical) groupings was derived from the authors' sample descriptions in their Method section, and appeared to be unequivocal, although of course in many papers on clinical samples co-morbidity was acknowledged. Figure 1 presents the cumulative number of AAIs with normal and clinical respondents that were reported in the two decades that the measure has been used. In some cases, more than one sample was included in a study (e.g., Tyrell & Dozier, 1997; Tyrell et al., 1999); conversely, some papers concerned the same sample (e.g., Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless, 1994; Sagi et al., 1997).

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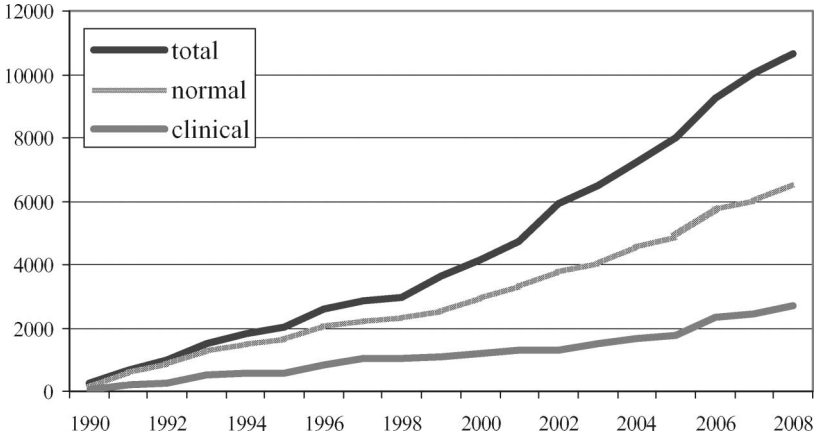

Figure 1. Cumulative number of Adult Attachment Interviews with normal and clinical respondents since 1990.

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The current (quantitative) review, therefore, covers data from more than 10,500 participants who completed the AAI. A large subset of studies reported not only on the three-way Ds, F, and E classifications but also on the four-way classifications involving the U category. Because of the relevance of this category for clinical and theoretical purposes, we analyzed our data for the three-way as well as the four-way distributions. Unfortunately, only part (fewer than one-fifth) of the studies reported on the CC category as a separate classification, producing only 0.3% CC classifications in non-clinical mothers and 4% CC in the combined clinical groups. It should be noted that the precise status of the CC category still has to be determined, and pertinent validation studies have not yet been conducted. Current convention is to collapse the U and CC categories because of potential commonalities in etiology and sequelae. We therefore combined (in those cases where separate categories were used) the U and CC classifications into one category in the four-way categorization.

Multinomial tests

In order to compare AAI distributions with the norm distribution of non-clinical North American mothers (for which the AAI originally was developed) we used the multinomial test. The frequency distributions of three-way and four-way attachment classifications in the various sets of samples were tested against the proportions of this norm distribution. Because the number of tests was rather large we used a critical alpha level of .001. If distributions significantly differed from the norm proportions, the standardized residuals indicating the difference between observed and expected frequencies in each cell were used to locate the overall difference in one or more attachment categories. Standardized residuals (*sr*) smaller than -3.26 or larger than 3.26 (converging with a *p*-value of .001) were considered to indicate robust deviations from the norm (for an example of this approach, see van IJzendoorn & Bakermans-Kranenburg, 1996). Because proportion tests did not require the number of individuals in the norm groups to be included in the degrees of freedom, total *N* was not inflated. Using the stringent critical boundaries for the

standardized residuals in the deviating cells we also tried to protect against inflated results. Nevertheless modest differences between distributions might be significant. Inspecting the differences in frequencies and percentages per attachment category provided an indication of the size of deviations from the norm. Formal effect size computations were not possible because the distributions involved more than two categories.

Categorical data-analysis

To illustrate the configuration of AAI classifications across various sets of participants, we used a specific approach based on correspondence analysis (van IJzendoorn & Bakermans-Kranenburg, 1996; van IJzendoorn & Kroonenberg, 1988; van IJzendoorn et al., 1992). This categorical data-analysis approach allows for simultaneously inspecting configurations of attachment classifications and types of groups, and to search for specific patterns of attachment in relation to particular types of respondents (ANACOR; Greenacre, 1985). Correspondence analysis uses singular value decomposition of the standardized residuals and a weighting of the singular vectors by the square root of the singular values multiplied by the inverse square root of the N participants in the normative sample. In the graphical representation of the results of a correspondence analysis, the origin represents the marginal distribution of both categories and samples in the normative group of non-clinical North American mothers. The standardized residuals for the Ds, F, and E distributions can be perfectly represented in two dimensions, and those for the Ds, F, E, and U distributions in three dimensions, but a two-dimensional solution is often an economical representation of the variation in the data.

The graphical representation of the various other (sets of) samples have been projected by using regression-type procedures with the sample coordinates as the criteria, and the category coordinates as regression weights for the frequencies of the categories in the samples. The graphical representation shows which samples have similar distributions over categories and which categories have similar distributions over samples, as well as which categories and which samples deviate strongly from the baseline distribution. The method was applied to the North American, non-clinical mother samples to create a baseline. The total of father samples, normal adolescent and student samples, of at-risk samples and samples from non-Caucasian ethnicity, and of clinical samples, have been projected into the graphical representation of the samples of non-clinical mothers by using regression-type procedures (Greenacre, 1985). Also, DSM clusters of clinical samples constituting syndromes have been projected into this graphical space, as well as the clustering of samples into more internalizing versus externalizing orientations.

The computations were performed using the ANACOR procedures of the Statistical Package for the Social Sciences (SPSS14) categories. It should be noted that the current study is not a meta-analysis in the conventional sense, because the raw material consisted of distributions instead of effect sizes. Therefore, conventional meta-analytic indices for homogeneity are not applicable to the current dataset. In fact, our study is a series of secondary analyses which should be considered the preferred analytic strategy when the raw data of a large set of studies is available (see van IJzendoorn, 1998, for a comparison between meta-analysis and secondary analysis).

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Results

Attachment representations in non-clinical North American mothers

In the combined sample of $N = 748$ non-clinical mothers, 23% were classified as Ds, 58% as F, and 19% as E. A majority of the non-clinical mothers (albeit a small majority) were classified as secure-autonomous. With the category U included, the combined sample of $n = 700$ non-clinical mothers showed the following distribution: 16% was classified as Ds, 56% as F, 9% as E, and 18% as U/CC. These figures were marginally different from the percentages published in our 1996 paper on the first wave of AAI studies. In the following analyses, the distribution of non-clinical North American mothers was used as the norm distribution.

Fathers

The forced AAI classification in the combined samples with fathers was: 28% Ds, 58% F, 15% E, and this distribution differed significantly from the norm distribution, $\chi^2(2, N = 439) = 10.05$, $p < .01$. The comparison of the forced AAI distributions showed a slight overrepresentation of dismissing fathers and a similar underrepresentation of preoccupied fathers, with equal numbers of secure fathers and mothers, but standardized residuals were not significant. The four-way distribution was 24% Ds, 50% F, 11% E, and 15% U/CC. This distribution differed from the norm, $\chi^2(3, N = 374) = 17.81$, $p < .01$, with significantly more dismissing classifications ($sr = 3.53$).

Adolescents and students

We expected that adolescent and student samples might show less autonomy, more dismissing representations, and fewer unresolved classifications. These contentions were partly borne out by our data. The non-clinical adolescent AAI classification distribution was 35% Ds, 52% F, and 13% E. The distribution differed significantly from the norm, $\chi^2(2, N = 617) = 59.46$, $p < .01$, with an overrepresentation of the dismissing category ($sr = 6.48$) and an underrepresentation of the preoccupied category ($sr = -3.72$) among the adolescents. The four-way distribution (34% Ds, 44% F, 11% E, and 11% U/CC) showed an overrepresentation of dismissing attachments ($sr = 9.74$), and at the same time fewer unresolved attachments ($sr = -3.78$) than expected, $\chi^2(3, N = 503) = 124.61$, $p < .01$. The somewhat older student samples showed a similar pattern of deviations from the norm. The forced three-way distribution was 33% Ds, 58% F, 9% E, $\chi^2(2, N = 391) = 39.79$, $p < .01$, with an overrepresentation of the dismissing category ($sr = 4.22$) and an underrepresentation of the preoccupied category ($sr = -4.69$) The four-way AAI distribution was 28% Ds, 48% F, 7% E, 17% U/CC, $\chi^2(3, N = 770) = 71.27$, $p < .01$, with only the dismissing category overrepresented ($sr = 7.63$).

Cultural and language differences?

European samples showed few deviations from the norm. The forced three-way distribution was 30% Ds, 56% F, 14% E, $\chi^2(2, N = 476) = 17.57$, $p < .01$. The standardized residuals of the cell frequencies were however not significant, indicating only small deviations for the separate classifications. The four-way AAI distribution

was 25% Ds, 52% F, 11% E, and 12% U/CC, $\chi^2(3, N = 370) = 27.19$, $p < .01$. European samples only displayed more dismissing attachments ($sr = 4.02$). Samples from countries outside Europe or North America (Japan, Israel) showed even smaller deviations from the norm. The forced three-way distribution was 19% Ds, 69% F, and 12% E, $\chi^2(2, N = 138) = 7.23$, $p = .03$. The four-way AAI distribution was 18% Ds, 66% F, 4% E, and 12% U/CC, $\chi^2(3, N = 214) = 15.17$, $p < .01$. Again, the standardized residuals of the cell frequencies were not significant; therefore, the deviations were considered too small to be robust. The AAI also yielded similar attachment classification distributions across various languages. The set of studies on non-English samples did not show significantly different distributions compared to the norm, and standardized residuals were rather small and non-significant (see Table 2).

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Samples at risk

In this large set of studies the main characteristic of the participants was their low SES background, in some cases with additional risk factors such as adolescent parenthood. The forced attachment distributions in this at risk set was strongly deviating from the norm, with 42% Ds, 41% F, 17% E, $\chi^2(2, N = 1433) = 315.46$, $p < .01$. In particular, high-risk samples were more often dismissing ($sr = 15.51$), and less often secure ($sr = -8.33$). The four-way distribution was also significantly different from the norm distribution, with 32% Ds, 30% F, 7% E, and 32% U/CC, $\chi^2(3, N = 1368) = 505.28$, $p < .01$. In addition to the dismissing category ($sr = 13.93$), the unresolved category was also strongly overrepresented ($sr = 11.65$).

Clinical samples

As expected, the combined clinical groups showed an extremely deviating distribution of AAI classifications. In the combined clinical samples, 37% were classified as Ds, 27% as F, and 37% as E. Thus a large majority (73%) of the clinical adults were classified as insecure, $\chi^2(2, N = 1956) = 802.45$, $p < .01$. In particular, clinical samples were more often dismissing ($sr = 13.03$), and less often secure ($sr = -18.18$), but in contrast to samples at risk they also showed significantly more preoccupied attachments ($sr = 17.38$). With the unresolved category included, the combined sample of clinical individuals showed the following strongly deviating distribution: 23% Ds, 21% F, 13% E, and 43% U/CC, $\chi^2(3, N = 1854) = 1113.47$, $p < .01$. The unresolved category was strongly overrepresented in the combined clinical group ($sr = 25.12$), as were (to a lesser extent) the dismissing and preoccupied categories.

Disorders with an internalizing orientation, in particular borderline personality disorders, have been suggested to be associated with maximizing attachment signals. Indeed, the three-way distribution of 170 suicidal and borderline individuals showed a significant overrepresentation of preoccupied attachments ($sr = 10.45$) whereas dismissing attachments were not significantly overrepresented ($sr = 3.00$), $\chi^2(2, N = 170) = 180.87$, $p < .01$. The four-way distribution also showed an over representation of unresolved attachments ($sr = 12.66$), $\chi^2(3, N = 191) = 244.22$, $p < .01$. Externalizing problems, in particular antisocial or conduct disorders, would be associated with dismissing attachments, which indeed was confirmed ($sr = 10.40$), but at the same time also the preoccupied category was over

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Table 1. Adult Attachment Interview studies included in the secondary analyses.

Study	Sample	*N*	Gender	Age	Continent
Norm non-clinical mothers					
North America					
Adam, Gunnar, & Tanaka (2004)	mothers	100	female	parent	North America
Ainsworth & Eichberg (1991)	mothers	45	female	parent	North America
Benoit & Parker (1994)	mothers	85	female	parent	North America
Benoit, Zeanah, Boucher, & Minde (1992)	mothers	21	female	parent	North America
Biringen, Brown, Donaldsen, Green, Krcmarik, & Lovas (2000)	mothers	35	female	parent	North America
Bouthillier, Julien, Dubé, Bélanger, & Hamelin (2002)	mothers	40	female	parent	North America
Cohn, Silver, Cowan, Cowan, & Pearson (1992)	mothers	26	female	parent	North America
Crowell, Waters, Treboux, O'Connor, Colon-Downs, & Feider (1996)	mothers	53	female	parent	North America
Crowell & Feldman (1988)	mothers	22	female	parent	North America
Das Eiden, Teti, & Corns (1995)	mothers	45	female	parent	North America
DeKlyen (1992)	mothers	25	female	parent	North America
Dickstein, Seifer, St Andre, & Schiller (2001)	mothers	24	female	parent	North America
George & Solomon (1996)	mothers	32	female	parent	North America
Haft & Slade (1989)	mothers	14	female	parent	North America
Pederson, Gleason, Moran, & Bento (1998)	mothers	60	female	parent	North America
Posada (1993); Posada et al. (1995)	mothers	49	female	parent	North America
Shaver, Belsky, & Brennan (2000); Lichtenstein Phelps, Belsky, & Crnic (1998)	mothers	138	female	parent	North America
Ward, Ramsay, & Treasure (2000)	mothers	35	female	parent	North America
Ward, Lee, & Polan (2006)	mothers	30	female	parent	North America
Zeanah, Benoit, Barton, Regan, Hirshberg, & Lipsitt (1993)	mothers	57	female	parent	North America
Europe					
Arnott & Meins (2007)	mothers	28	female	parent	Europe
Bakermans-Kranenburg & van IJzendoorn (1993)	mothers	83	female	parent	Europe
Cassibba, van IJzendoorn, Bruno, & Coppola (2004)	mothers	30	female	parent	Europe

(*continued*)

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Fonagy, Steele, & Steele (1991)	mothers	100	female	pregnant	Europe
Gloger-Tippelt, Gomille, Koenig, & Vetter (2002)	mothers	28	female	parent	Europe
Hughes, Turton, Hopper, McGauley, & Fonagy (2001)	mothers	60	female	pregnant	Europe
Miljkovitch, Pierrehumbert, Bretherton, & Halfon (2004)	mothers	31	female	parent	Europe
Murray, Halligan, Adams, Patterson, & Goodyer (2006)	mothers	38	female	parent	Europe
Steele, Phibbs, & Woods (2004)	mothers	17	female	parent	Europe
van IJzendoorn, Kranenburg, Zwart-Woudstra, Van Busschbach, & Lambermon, (1991)	mothers	27	female	parent	Europe
Verschueren, Dossche, Marcoen, Mahieu, & Bakermans-Kranenburg (2006)	mothers	62	female	parent	Europe
Non-Western					
Behrens, Hesse, & Main (2007)	mothers, Japan	43	female	parent	Asia
Kazui, Endo, Tanaka, Sakagami, & Suganuma (2000)	mothers, Japan	50	female	parent	Asia
Koren-Karie (2001)	mothers, Israel	71	female	parent	Asia
Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless (1994)	mothers, Israel, kibbutz	45	female	parent	Asia
Sagi-Schwartz et al. (2003)	mothers, Israel, daughters of comparison group Holocaust survivors	50	female	parent	Asia
Adolescents					
Allen, Hauser, & Borman-Spurell (1996)	adolescents	75	mixed	adolescent	North America
Ammaniti, van IJzendoorn, Speranza, & Tambelli (2000)	adolescents	31	mixed	adolescent	Europe
Beijersbergen, Bakermans-Kranenburg, van IJzendoorn, & Juffer (2008)	adolescents, adopted	152	mixed	adolescent	Europe
Dykas, Woodhouse, Cassidy, & Waters (2006)	adolescents	44	mixed	adolescent	North America
Furman & Simon (2004)	adolescents	56	mixed	adolescent	North America
Furman, Simon, Schaffer, & Bouchey (2002)	adolescents	66	mixed	adolescent	North America
Hopf, Rieker, Sanden-Marcus, & Schmidt (1995)	adolescents, ultra-right-wing	25	males	adolescent	Europe
Ivarsson (2008)	adolescents	25	mixed	adolescent	Europe

(*continued*)

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Larose, Bernier, & Soucy (2005)	adolescents	102	mixed	adolescent	North America
Larose, Bernier, & Tarabulsy (2005)	adolescents	62	mixed	adolescent	North America
Scharf, Mayseless, & Kivenson-Baron (2004)	adolescents, comparison group	88	mixed	adolescent	Asia
Scharf (2001)	adolescents, comparison group	64	mixed	adolescent	Asia
Students					
Creasy (2002)	students, part of couples	145	male	student	North America
Creasy (2002)	students, part of couples	145	female	student	North America
Hesse & van IJzendoorn (1999)	students	70	male	student	North America
Hesse & van IJzendoorn (1999)	students	70	female	student	North America
Kobak & Sceery (1988)	students	53	mixed	student	North America
Mayseless & Scharf (2007)	students, military service	80	mixed	student	Asia
Rifkin (2005); Rifkin-Graboi (2008)	students	51	male	student	North America
Roisman, Fortuna, & Holland (2006); Roisman (personal communication, September 2008)	students	100	mixed	student	North America
Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless (1994)	students	59	mixed	student	Asia
Waters, Merrick, Treboux, Crowell, & Albersheim (2000)	students, follow-up from infancy	50	mixed	student	North America
Non-clinical fathers					
Arnott & Meins (2007)	fathers, part of couples	25	male	parent	Europe
Benoit (personal communication, 1992)	fathers	33	male	pregnant	North America
Bouthillier, Julien, Dubé, Bélanger, & Hamelin (2002)	fathers, part of couples	40	male	parent	North America
Cohn, Silver, Cowan, Cowan, & Pearson (1992)	fathers	27	male	parent	North America
Dickstein, Seifer, St Andre, & Schiller (2001)	fathers, part of couples	23	male	parent	North America
Harari, Bakermans-Kranenburg, & van IJzendoorn (in press)	veterans, comparison group	29	male	parent	Europe
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	fathers, comparison group	15	male	parent	North America
Main & Goldwyn (in press)	fathers	35	male	parent	North America
Miljkovitch, Pierrehumbert, Bretherton, & Halfon (2004)	fathers, part of couples	30	male	parent	Europe
Radojevic (1992)	fathers	62	male	parent	Australia

(*continued*)

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Steele, Steele, & Fonagy (1996)	fathers	100	male	pregnant	Europe
Steele, Hodges, Kaniuk, Steele, Hillman, & Asquith (2008)	adoptive fathers, part of couples	34	male	parent	Europe
van IJzendoorn, Kranenburg, Zwart-Woudstra, Van Busschbach, & Lambermon (1991)	fathers	29	male	parent	Europe
Risk samples					
Abrams, Rifkin, & Hesse (2006)	overrepresentation of insecure infants	32	mixed	parent	North America
Ammaniti et al. (2006)	psychosocial risk	26	female	pregnant	Europe
Babcock, Jacobson, Gottman, & Yerington (2000)	non-violent maritally distressed	13	male	parent	North America
Bartholomew & Shaver (1998)	bereaved women	30	female	parent	North America
Bailey, Moran, & Pederson (2007)	adolescent parents, 18 yrs	62	female	adolescent parent	North America
Beckwith, Cohen, & Hamilton (1999)	prematures, follow-up from infancy	86	mixed	adolescent	North America
Benoit, Zeanah, & Barton (1989)	low SES	25	female	parent	North America
Bus & van IJzendoorn (1992)	low SES	33	female	parent	Europe
Busch, Cowan, & Cowan (2008)	loss experience	80	female	parent	North America
Caspers, Cadoret, Langbehn, Yucuis, & Troutman (2005)	adoptees	77	mixed	adult	North America
Crittenden, Partridge, & Claussen (1991)	low SES, part of couples	20	female	parent	North America
Crittenden, Partridge, & Claussen (1991)	low SES, part of couples	20	male	parent	North America
DeOliveira, Moran, & Pederson (2005)	adolescent parents, 18 yrs	90	female	adolescent parent	North America
Finger (2006)	low SES, addicted and non-addicted	149	female	parent	North America
Finger (2006)	low SES, comparison group	87	female	parent	North America
Hamilton (2000)	follow-up from infancy, non-conventional families	30	mixed	adolescent	North America
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	non-violent maritally distressed	15	male	parent	North America
Hughes, Turton, Hopper, McGauley, & Fonagy (2001)	stillbirth	60	female	parent	Europe

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Kolar, Vondra, Friday, & Valley (1993)	low SES	66	female	parent	North America
Lyons-Ruth, Yellin, Melnick, & Atwood (2005)	low SES, single parents	45	female	parent	North America
Madigan, Moran, Schuengel, Pederson, & Otten (2007)	adolescent parents, 19 yrs	64	female	adolescent parent	North America
Oyen, Landy, & Hillburn-Cobb (2000)	low SES, psychosocial risk	30	female	parent	North America
Pianta, Egeland, & Adam (1996)	low SES, psychosocial risk	44	female	parent	North America
Sagi-Schwartz et al. (2003)	grandmothers, Holocaust survivors	48	female	grandmothers	Asia
Sagi-Schwartz et al. (2003)	daughters of Holocaust survivors	48	female	parent	Asia
Scharf (2001)	adolescents, kibbutz, <6 years communal sleeping	34	mixed	adolescent	Asia
Scharf (2001)	adolescents, kibbutz, >6 years communal sleeping	32	mixed	adolescent	Asia
Schuengel, Bakermans-Kranenburg, & van IJzendoorn (1999)	loss experience	85	female	parent	Europe
Stovall-McClough & Cloitre (2006)	abused, no PTSD	30	female	adult	North America
Tarabulsy et al. (2005)	adolescent parents, $\leq$19 years	64	female	adolescent parent	North America
Ward & Carlson (1995)	adolescent parents, 17 years	88	female	adolescent parent	North America
Weinfield, Whaley, & Egeland (2004)	low SES, psychosocial risk	123	mixed	adolescent	North America
Clinical samples					
Depressed					
Ammaniti et al. (2006)	depression	22	female	pregnant	Europe
McMahon, Barnett, Kowalenko, & Tennant (2006)	postnatal depression	111	female	parent	Australia
Murray, Halligan, Adams, Patterson, & Goodyer (2006)	postnatal depression	49	female	parent	Europe
Patrick, Hobson, Castle, Howard, & Maughan (1994)	depression	12	female	parent	Europe
Rosenstein & Horowitz (1996)	depression	33	mixed	adolescent	North America
Tyrell & Dozier (1997)	depression	6	mixed	parent	North America
Tyrell & Dozier (1997)	bipolar depression	7	mixed	parent	North America
Tyrell & Dozier (1997)	schizo-affective disorder	8	mixed	parent	North America

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Zeijlmans-van Emmichoven, van IJzendoorn, De Ruiter, & Brosschot (2003)	anxiety disorder	28	mixed	parent	Europe
Internalizing					
Adam, Sheldon-Keller, & West (1996)	suicidal	32	male	adolescent	North America
Adam, Sheldon-Keller, & West (1996)	suicidal	37	female	adolescent	North America
Barone (2003)	borderline	40	mixed	adult non-parent	Europe
Diamond, Stovall-McClough, Clarkin, & Levy (2003)	borderline	10	mixed	adult non-parent	North America
Fonagy (1993)	borderline	28	mixed	adult	Europe
Levy et al. (2006)	borderline	60	mixed	parent	North America
Patrick, Hobson, Castle, Howard, & Maughan (1994)	borderline	12	female	adult	Europe
Violence against the world					
Constantino et al. (2006)	twins (one twin), conduct disorder	14	female	adolescent, adult	North America
Fonagy et al. (1997)	criminal offenders	22	mixed	adult	Europe
Frodi, Dernevik, Sepa, Philipson, & Brageslö (2001)	antisocial	14	male	adult	Europe
Lamott & Pfaefflin (2001)	criminal offenders	33	female	adult	Europe
Levinson & Fonagy (2002)	criminal offenders	22	mixed	adult	Europe
Marin-Avellan, McGauley, Campbell, & Fonagy (2005)	criminal offenders	30	mixed	adult	Europe
Rosenstein & Horowitz (1996)	conduct disorder	8	mixed	adolescent	North America
van IJzendoorn et al. (1997)	criminal offenders	40	male	adult	Europe
Zegers, Schuengel, van IJzendoorn, & Janssens (2006)	antisocial (residential)	81	mixed	adolescent	Europe
Violence in the family					
Adshead & Bluglass (2005)	Munchhausen proxy	68	female	parent	Europe
Babcock, Jacobson, Gottman, & Yerington (2000)	marital violence	23	male	parent	North America
Crittenden, Partridge, & Claussen (1991)	abusive mothers	34	female	parent	North America
Crittenden, Partridge, & Claussen (1991)	abusive fathers	33	male	parent	North America
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	marital violence	30	male	parent	North America

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Self-directed violence					
Candelori & Ciocca (1998) in Ward, Ramsay, & Treasure (2000)	anorexia nervosa	12	mixed	adolescent	Europe
Candelori & Ciocca (1998) in Ward, Ramsay, & Treasure (2000)	anorexia bingy	12	mixed	adolescent	Europe
Candelori & Ciocca (1998) in Ward, Ramsay, & Treasure (2000)	anorexia bulimia	12	mixed	adolescent	Europe
Ramacciotti, Sorbello, Pazzagli, Vismara, Mancone, & Pallanti (2000)	eating disorders	13	mixed	adult	Europe
Finger (2006)	heroine addicted	62	female	parent	North America
Simonelli & Vizziello (2002)	drug addicted	28	female	parent	Europe
Waller, Scheidt, & Hartmann (2004)	somatoform	35	mixed	parent	Europe
Abuse/PTSD					
Harari, Bakermans-Kranenburg, & van IJzendoorn (in press)	veterans, PTSD	31	male	parent	Europe
Nye et al. (2008)	veterans, PTSD	48	male	parent	North America
Riggs, Paulson, Tunnell, Sahl, Atkison, & Ross (2007)	inpatients	75	female	parent	North America
Stalker & Davies (1998)	sexually abused	40	female	adult	North America
Stovall-McClough, Cloitre, & McClough (2008)	abused	108	female	parent	North America
Stovall-McClough & Cloitre (2006)	PTSD	30	female	adult	North America
Taylor-Seehafer, Jacobvitz, & Steiker (2008)	homeless, abused	13	male	adolescent	North America
Taylor-Seehafer, Jacobvitz, & Steiker (2008)	homeless, abused	12	female	adolescent	North America
Ziegenhain, Derksen, & Dreisörner (2004)	abused	15	female	adolescent parent	Europe
Clinically mixed					
Adam, Sheldon-Keller, & West (1996)	clinically mixed	42	male	adolescent	North America
Adam, Sheldon-Keller, & West (1996)	clinically mixed	22	female	adolescent	North America
Allen, Hauser, & Borman-Spurrell (1996)	40% ODD/CD; 27% depression	62	mixed	adolescent	North America
Fonagy (1993)	clinically mixed	57	mixed	adolescent	Europe
Fonagy et al. (1996)	clinically mixed	82	mixed	parent	Europe

(*continued*)

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Levinson & Fonagy (2002)	psychiatrically disturbed	22	mixed	adult	Europe
Pianta, Egeland, & Adam (1996)	STEEP, >50% clinical (mixed)	110	female	parent	North America
Rosenstein & Horowitz (1996)	CD; depression	12	mixed	adolescent	North America
Schleiffer & Mueller (2003)	criminal (residential), clinically mixed	72	mixed	adolescent	Europe
Tyrell & Dozier (1997)	schizophrenia	29	mixed	parent	North America
Wallis & Steele (2001)	behavioral and emotional disturbance	39	mixed	adolescent	Europe
Wampler, Shi, Nelson, & Kimball (2003)	couple therapy	28	male	parent	North America
Wampler, Shi, Nelson, & Kimball (2003)	couple therapy	28	female	parent	North America
Physical					
Adenzato, Ardito, & Izard (2006)	blind	12	mixed	adult	Europe
Ardito, Adenzato, Dell'Osbel, Izard, & Veglia (2004)	blind	15	mixed	adult	Europe
McKinnon, Moran, & Pederson (2004)	deaf	50	mixed	adult	mixed
Van der Meer et al. (2006)	Huntington	32	mixed	parent	Europe
Parents of children with physical problems					
Benoit, Zeanah, & Barton (1989)	failure-to-thrive	23	female	parent	North America
Cassibba, van IJzendoorn, Bruno, & Coppola (2004)	asthmatic	30	female	parent	Europe
Coolbear & Benoit (1999)	failure-to-thrive	28	female	parent	North America
Coolbear & Benoit (1999)	physical symptoms	27	female	parent	North America
Teti, Killeen, Candelaria, Miller, Reiner Hess, & O'Connell (2008)	premature	62	female	parent	North America
Ward, Ramsay, & Treasure (2000)	failure-to-thrive	24	female	parent	North America
Ward, Lee, & Polan (2006)	failure-to-thrive	30	female	parent	North America
Parents of children with behavioral problems					
Benoit, Zeanah, Boucher, & Minde (1992)	sleep disorders	20	female	parent	North America
Crowell & Feldman (1988)	oppositional	31	female	parent	North America

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Crowell & Feldman (1991)	disruptive	49	female	parent	North America
DeKlyen (1992)	oppositional	25	female	parent	North America
Rosenstein & Horowitz (1996)	parents of clinical adolescents	27	female	parent	North America
Routh, Hill, Steele, Elliott, & Dewey (1995)	behavior problems	37	female	parent	Europe
Rest					
Ammaniti et al. (2006)	comparison group	28	female	pregnant	Europe
Barone (2003)	comparison group	40	mixed	adult	Europe
Benoit & Parker (1994)	grandmothers	81	female	grandparent	North America
Bernier & Dozier (2002); Dozier et al. (2001)	foster parents	64	female	foster parent	North America
Caspers, Yucuis, Troutman, Arndt, & Langbehn (2007)	adoptees	124	mixed	adult	North America
Caspers, Yucuis, Troutman, Arndt, & Langbehn (2007)	non-biological siblings of adoptees	123	mixed	adult	North America
Constantino & Olesh (1999)	day care providers	33	female	adult	North America
Cowan, Cohn, Cowan, & Pearson (1996)	couples: males and females	54	mixed	adult	North America
Crowell, Treboux, Gao et al. (2002)	males, part of couples	144	male	adult	North America
Crowell, Treboux, Gao et al. (2002)	females, part of couples	144	female	adult	North America
Curran, Hazan, Jacobvitz, & Feldman (2005)	males, part of couples	115	male	'pregnant'	North America
Curran, Hazan, Jacobvitz, & Feldman (2005)	females, part of couples	119	female	pregnant	North America
Fonagy et al. (1996)	comparison group	85	mixed	adult	Europe
Granqvist, Ivarsson, Broberg, & Hagekull (2007)	religious-spiritual	84	mixed	parent	Europe
Levinson & Fonagy (2002)	comparison group	22	male	adult	Europe
Paley, Cox, Burchinal, & Payne (1999)	males, part of couples	138	male	'pregnant'	North America
Paley, Cox, Burchinal, & Payne (1999)	females, part of couples	138	female	pregnant	North America
Raval et al. (2001)	prenatal	96	female	pregnant	North America
Sagi-Schwartz et al. (2003)	comparison group	50	female	grandparent	Asia
Seiffge-Krenke & Beyers (2005); Seiffge-Krenke & Becker-Stoll (2004)	young adults (21 years)	112	mixed	adult	Europe

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Table 1. (*Continued*).

Study	Sample	*N*	Gender	Age	Continent
Slade, Grienenberger, Bernbach, Levy, & Locker (2005)	prenatal	40	female	pregnant	North America
Steele, Hodges, Kaniuk, Steele, Hillman, & Asquith (2008)	adoptive mothers	40	female	adoptive parent	Europe
Torgerson, Grova, & Sommerstad (2007)	twins (one per twin)	41	mixed	parent	Europe
Van Londen, Juffer, & van IJzendoorn (2009)	adoptive mothers	55	female	adoptive parent	Europe
Waller, Scheidt, & Hartmann (2004)	comparison group	20	mixed	parent	Europe
Zegers, Schuengel, van IJzendoorn, & Janssens (2006)	mentors	33	mixed	adult	Europe
Zeijlmans-van Emmichoven, van IJzendoorn, De Ruiter, & Brosschot (2003)	comparison group	56	mixed	parent	Europe

Note: In case of more than one publication on overlapping (sub)samples we refer to the main publication.

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Table 2. Distributions (percentages, standardized residuals) of norm group of non-clinical North American mothers and various sets of samples, with multinomial tests for the comparison with the norm group.

	Three-way					Four-way					
	N	Ds (%)	F (%)	E (%)	χ^2	*N*	Ds (%)	F (%)	E (%)	U/CC (%)	χ^2
Mothers (norm)	748	23 (0.00)	58 (0.00)	19 (0.00)		700	16 (0.00)	56 (0.00)	9 (0.00)	18 (0.00)	
Fathers	439	28 (2.19)	58 (−0.04)	15 (−2.29)	10.05*	374	24 (3.53)	51 (−1.44)	11 (0.99)	15 (−1.54)	17.81*
Adolescents	617	35 (6.48)	52 (−1.90)	13 (−3.72)	59.46*	503	34 (9.74)	44 (−3.70)	11 (1.41)	11 (−3.78)	124.61*
Students	391	33 (4.22)	58 (0.08)	9 (−4.69)	39.79*	770	28 (7.63)	48 (−2.98)	7 (−2.04)	17 (−0.54)	71.27*
Culture											
Europe	476	30 (3.23)	56 (−0.49)	14 (−2.63)	17.57*	370	25 (4.02)	52 (−1.01)	11 (1.22)	12 (−2.93)	27.19*
Israel/Japan	138	19 (−0.93)	69 (1.67)	12 (−1.89)	7.23†	214	18 (0.66)	66 (1.91)	4 (−2.48)	12 (−2.21)	15.17*
Non-English	399	25 (1.14)	60 (0.63)	14 (−2.32)	7.08†	383	20 (1.79)	58 (0.62)	9 (−0.50)	13 (−2.44)	9.83†
Risk and clinical groups											
At risk	1433	42 (15.51)	41 (−8.33)	17 (−2.34)	315.46*	1368	32 (13.93)	30 (−12.87)	7 (−3.14)	32 (11.65)	505.28*
Clinical	1965	37 (13.03)	27 (−18.18)	37 (17.38)	802.45*	1854	23 (7.30)	21 (−20.18)	13 (4.70)	43 (25.12)	1113.47*
Depressed	254	36 (4.43)	30 (−5.88)	34 (5.37)	83.07*	205	26 (3.51)	31 (−4.85)	21 (5.41)	22 (1.30)	66.77*
Abuse/PTSD	271	20 (−0.80)	42 (−3.36)	37 (6.68)	56.56*	263	11 (−2.00)	14 (−9.18)	7 (−1.15)	68 (18.90)	446.84*
Physical handicap	59	20 (−0.37)	47 (−1.06)	32 (2.13)	6.25†	77	22 (1.23)	61 (0.58)	5 (−1.20)	12 (−1.32)	5.05*
Internalizing	170	34 (3.00)	12 (−7.92)	55 (10.45)	180.87*	191	20 (1.37)	8 (−8.81)	14 (2.13)	57 (12.66)	244.22*
Externalizing	431	46 (10.40)	14 (−11.95)	39 (9.45)	340.17*	382	28 (5.73)	15 (−10.81)	21 (7.19)	36 (8.40)	272.06*
Violence outside family	195	54 (9.33)	11 (−8.66)	35 (4.91)	186.09*	190	36 (6.60)	14 (−7.81)	14 (2.16)	36 (5.90)	144.00*
Violence within family	139	32 (2.42)	14 (−6.75)	53 (9.06)	133.49*	53	19 (0.44)	19 (−3.62)	25 (3.59)	38 (3.36)	37.49
Self-directed violence	97	51 (5.78)	21 (−4.83)	29 (2.12)	61.30	139	22 (1.51)	14 (−6.57)	28 (7.17)	36 (4.95)	121.39*
Parents of children with physical handicap	114	39 (3.79)	40 (−2.47)	20 (0.19)	20.52*	170	24 (2.48)	28 (−4.85)	11 (0.51)	37 (5.81)	63.72*
Parents of psychologically disturbed children	189	40 (5.09)	17 (−7.32)	42 (7.16)	130.71*	73	29 (2.61)	22 (−3.90)	19 (2.72)	30 (2.42)	35.28*

*$p < .01$.

represented ($sr = 9.45$), $\chi^2(2, N = 431) = 340.17$, $p < .01$. The four-way distribution demonstrated that externalizing problems also often were associated with unresolved loss or trauma ($sr = 8.40$), $\chi^2(3, N = 382) = 272.06$, $p < .01$.

A series of studies of various types of violence has been conducted, violence within the family (against partner or child), against the outside world (criminal offenders), or against ones own body (eating disorders, drug addiction). Comparing the attachment representation distributions of these three types of violence, we found that family violence was associated with more preoccupied, entangled representations, whereas violence against the outside world or against ones own body was also associated with dismissing attachments. For violence within the family, the distribution of forced classifications was 32% Ds, 14% F, 53% E, $\chi^2(2, N = 139) = 133.49$, $p < .01$, with a strong overrepresentation of the preoccupied category ($sr = 9.06$). With the unresolved category included the distribution was 19% Ds, 19% F, 25% E, and 38% U/CC, $\chi^2(3, N = 53) = 37.49$, $p < .01$, showing smaller overrepresentations of the preoccupied ($sr = 3.59$) and unresolved ($sr = 3.36$) categories.

Violence outside the family was associated with dismissing strategies, the forced classification was 54% Ds, 11% F, 35% E, $\chi^2(2, N = 195) = 186.09$, $p < .01$, with a strong overrepresentation of the dismissing category ($sr = 9.33$), and some overrepresentation of the preoccupied category ($sr = 4.91$). With the unresolved category included the distribution was 36% Ds, 14% F, 14% E, and 36% U/CC, $\chi^2(3, N = 190) = 144.00$, $p < .01$, with strong overrepresentations of both the dismissing ($sr = 6.60$) and the unresolved ($sr = 5.90$) categories. For self-directed violence the three-way distribution was 51% Ds, 21% F, 29% E, $\chi^2(2, N = 97) = 61.30$, $p < .01$, showing an overrepresentation of the dismissing category ($sr = 5.78$); with the unresolved category included the distribution was 22% Ds, 14% F, 28% E, and 36% U/CC, $\chi^2(3, N = 139) = 121.39$, $p < .01$, showing overrepresentations of the preoccupied ($sr = 7.17$) and unresolved ($sr = 4.95$) categories. It should be noted that the three-way and four-way distributions of samples with self-directed violence were based on samples that showed hardly any overlap (the majority of these studies presented only three-way or only four-way distributions). This may explain the instability of the results, showing an overrepresentation of the dismissing classification in the three-way distribution, and an overrepresentation of the preoccupied classification in the four-way distribution.

The set of studies on depressive samples of various kinds did not show significantly more unresolved loss or trauma compared to the norm group of non-clinical mothers ($sr = 1.30$), but dismissing ($sr = 3.51$) and preoccupied classifications ($sr = 5.41$) were overrepresented, $\chi^2(3, N = 205) = 66.77$, $p < .01$. A similar picture emerged for the three-way distribution, $\chi^2(2, N = 254) = 83.07$, $p < .01$. In contrast, individuals with abuse experiences and/or current PTSD appeared especially characterized by unresolved loss or trauma ($sr = 18.90$), $\chi^2(3, N = 263) = 446.84$, $p < .01$. Remarkably, dismissing and preoccupied classifications were not significantly overrepresented. In the forced distribution, the dismissing attachments were not overrepresented, but more preoccupied attachments were observed ($sr = 6.68$), $\chi^2(2, N = 271) = 56.56$, $p < .01$. Depression seemed to be associated with insecure attachment representations, whereas abuse and PTSD were strongly linked to the unresolved AAI category.

In several studies, the parents of physically handicapped children or children with behavioral problems were interviewed with the AAI. Our hypothesis was that

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parents of physically impaired children (with asthma, failure-to-thrive, or premature birth) would show distributions similar to the norm, whereas parents of psychologically disturbed children (sleep or conduct disorders) would show a deviating pattern. However, in the combined samples of parents of physically handicapped children the distribution was 39% Ds, 40% F, and 20% E, and this distribution deviated from the norm, $\chi^2(2, N = 114) = 20.52$, $p < .01$, with an overrepresentation of dismissing classifications ($sr = 3.79$). The four-way distribution did also differ from the norm, 24% were classified as Ds, 28% as F, 11% as E, and 37% as U/CC, $\chi^2(3, N = 170) = 63.72$, $p < .01$. Secure classifications were underrepresented ($sr = -4.85$), and unresolved classifications were overrepresented ($sr = 5.81$) among parents of physically handicapped children. For parents of psychologically disturbed children the distribution was 40% Ds, 17% F, and 42% E. This distribution deviated from the norm, $\chi^2(2, N = 189) = 130.71$, $p < .01$, with overrepresentations of both dismissing ($sr = 5.09$) and preoccupied ($sr = 7.16$) classifications. The four-way distribution differed from the norm as well, 29% were classified as Ds, 22% as F, 19% as E, and 30% as U/CC, $\chi^2(3, N = 73) = 35.28$, $p < .01$. Secure classifications were underrepresented ($sr = -3.90$) among parents of children with behavioral problems.

Subjects with physical handicaps (blindness, deafness) have been included only rarely in studies with the AAI. The small set of studies was expected to show attachment distributions not significantly deviating from the norm. The distribution in the combined samples of physically handicapped adults was 20% Ds, 47% F, and 32% E. This distribution only tended to deviate from the norm, $\chi^2(2, N = 59) = 6.25$, $p < .05$, and cell frequencies did not show significant standardized residuals. The four-way distribution did not differ from the norm either, 22% were classified as Ds, 61% as F, 5% as E, and 12% as U/CC, $\chi^2(3, N = 77) = 5.05$, n.s. Only psychological problems appeared associated with deviations from the norm distribution, not physical handicaps, even if they were severe and with hampering consequences for social interactions, like blindness or deafness.

Overall AAI classifications distribution

The overall three-way AAI distribution across non-clinical and clinical samples was 34% Ds, 46% F, and 20% E ($N = 7781$). The four-way distribution was 25% Ds, 40% F, 10% E, and 25% U ($N = 7676$). The combination of all non-clinical and not at-risk groups (irrespective of gender, country, age, and parenthood) showed a three-way distribution of 29% Ds, 56% F, and 14% E ($N = 4392$). The four-way distribution was 24% Ds, 50% F, 9% E, and 16% U ($N = 4454$). The three-way AAI distribution across clinical and at-risk samples was 39% Ds, 33% F, and 28% E ($N = 3389$). The four-way distribution for this group was 27% Ds, 25% F, 10% E, and 38% U ($N = 3222$).

Graphical display of AAI distributions

In Figures 2 and 3, the various groups have been projected into the plot of AAI distributions of the samples of non-clinical North American mothers. The center of the plot at the intersection of the Ds, F, E vectors represents the norm distribution. The formula for calculating the *x*-coordinate for each group from the frequencies of the Ds (nDs), the F (nF), and the E (nE) classifications

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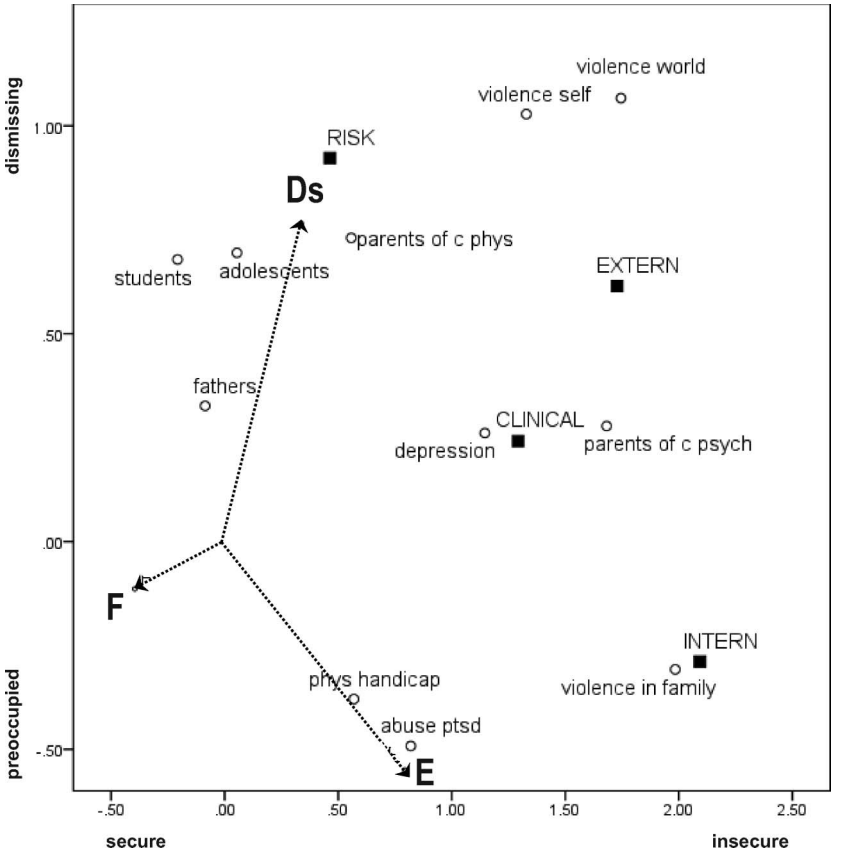

Figure 2. Correspondence analysis solution for the three-way Adult Attachment Interview classifications.
Note: The center of the plot at the intersection of the Ds, F, and E vectors represents the norm distribution of non-clinical North American mothers. Distributions closer to the center are more similar to the norm. The X axis shows an overrepresentation of insecure classifications on the right, and secure classifications on the left. The Y axis shows an overrepresentation of dismissing classifications in the upper part of the figure and an overrepresentation of preoccupied classifications to the bottom.

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was $x = (.337 * \text{nDs} - .396 * \text{nF} + .793 * \text{nE})/(.239 * \text{N})$, where $\text{N} = (\text{nDs} + \text{nF} + \text{nE})$. The formula for calculating the Y coordinate was $y = (.766 * \text{nDs} - .114 * \text{nF} - .550 * \text{nE})/(.199 * \text{N})$. The first dimension (X axis) of Figure 2 shows an overrepresentation of insecure classifications on the right, and secure classifications on the left. The second dimension (Y axis) shows an overrepresentation of dismissing classifications in the upper part of the figure and an overrepresentation of preoccupied classifications to the bottom. Thus, in Figure 2, the two dimensions neatly differentiated both insecure categories from the secure category and from each other. All clinical groups were located at the right side of the graph, away from the F vector, indicating an overrepresentation of insecure (Ds and E) attachment representations. The center of gravity of the clinical participants was located quite some distance away from the center of the plot, showing an overrepresentation of Ds as well as E participants.

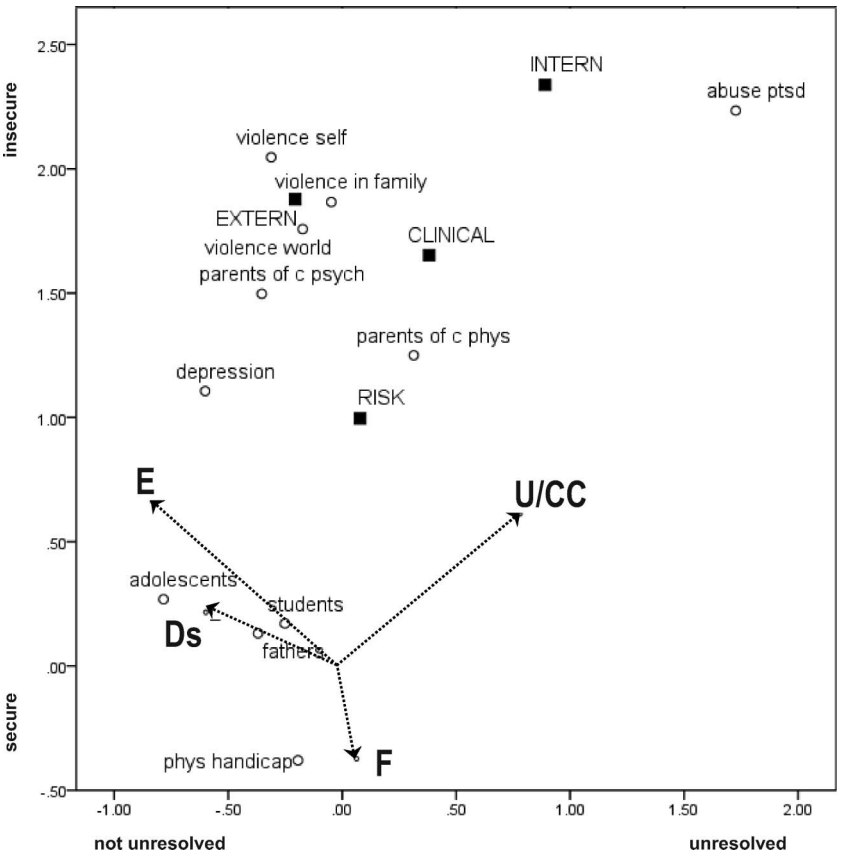

Figure 3. Correspondence analysis solution for the four-way Adult Attachment Interview classifications.
Note: The center of the plot at the intersection of the Ds, F, E, and U/CC vectors represents the norm distribution of non-clinical North American mothers. Distributions closer to the center are more similar to the norm. The X axis shows an overrepresentation of unresolved category classifications on the right and not-unresolved classifications on the left. The Y axis shows an overrepresentation of all insecure classifications in the upper part of the figure and an overrepresentation of secure classifications to the bottom.

For the four-way classifications, the formula for calculating the *x*-coordinate for each group was $x = (-.598 * nDs + .063 * nF - .833 * nE + .799 * nU/CC)/(.236 * N)$, where $N = (nDs + nF + nE + nU/CC)$. The formula for calculating the Y coordinate in Figure 3 was $y = (.216 * nDs + .373 * nF - .663 * nE - .612 * nU/CC)/(.195 * N)$. The first dimension (X axis) in Figure 3 sets the unresolved category at the right side of the graphical display apart from the insecure-dismissing and insecure-preoccupied categories, and the second dimension (Y axis) shows the contrast between the secure classification (to the bottom) and all three insecure classifications (to the top). The third dimension was considered too weak to be included in the graphical display. In Figure 3, all clinical groups except groups suffering from a physical handicap were located at the upper part of the graph, indicating an overrepresentation of insecure classifications. Some clinical clusters (e.g., internalizing problems, abuse/PTSD) deviate to the right upper part of the

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graph, which means that they showed an overrepresentation of participants classified as unresolved, whereas others (e.g., depression) load more heavily on the dismissing and preoccupied vectors, without an overrepresentation of unresolved classifications. In contrast, the centers of gravity for the combined non-clinical adolescents, students, fathers, and physically handicapped groups were located quite near the origin, showing their similarity to the norm distribution of non-clinical mothers.

Discussion and conclusions

More than 200 adult attachment representation studies, including more than 10,500 Adult Attachment Interview (AAI) classifications, have been conducted in the past 25 years, and the number of clinical and non-clinical AAI studies is still growing (see Figure 1). This has required a tremendous effort considering that conducting each interview takes about 75 minutes, verbatim transcription requires about 10 hours, and classifying the interviews takes at least another 4 hours. This amounts to over 160,000 hours or 100 full-time work-years of investment in this unique interview that goes beyond what respondents tell and examines the way in which they talk about their past attachment experiences. It is time to take stock.

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Major findings in non-clinical studies

The distribution of AAI classifications in samples of non-clinical mothers, that is, in community samples not selected with the purpose of including clinical participants, served as our norm distribution. It was for this group of parents with infants or young children the AAI originally was developed, in an effort to predict the infants' attachment to their parent. The majority of these mothers are classified as securely attached (58%), with 23% of the mothers being classified as insecure-dismissing, and almost one-fifth or 19% as insecure-preoccupied. In addition, some 18% of the non-clinical mothers display unresolved attachment representations. The majority of these unresolved cases (10%) come from the preoccupied group, only a few (2%) are derived from the secure group. Some scientists have wondered about the relatively high percentage of insecurity, in particular of unresolved loss or other trauma in normal populations (see Rutter, 2008, on 15% disorganized infants in normal populations). We suggest that non-clinical populations might be less "healthy" than one would expect. From a different perspective, a study on self-proclaimed healthy volunteers found a considerable number of psychiatrically distressed cases in "normal" samples (Halbreich et al., 1989; see also Dozier & Lee, 1995, and Pianta, Egeland, & Adam, 1996, who found that dismissing subjects under-report their psychiatric problems). In this respect, it is important to note that the non-clinical samples are community samples that were not screened for the absence of clinical symptoms, and that the AAI classification of unresolved loss does not necessarily mean clinical disorder or distress, although it enhances the risk of becoming disturbed (see next section).

Gender differences in the development of attachment have been assumed to be absent. Virtually no gender differences have been found in studies on infant attachment, which is a remarkable finding in itself. Recently, however, Del Giudice (2009) argued that from an evolutionary model of gender-specific reproductive strategies, males would show more avoidant attachments and females more ambivalence in the developmental period after early childhood. Attachment research

in infancy and early childhood did not show gender differences but Del Giudice (2009) suggests that the picture changes "dramatically" from middle childhood onward. In our commentary to his postulate (Bakermans-Kranenburg & van IJzendoorn, 2009), we showed that numerous studies on attachment representations in adulthood using the Adult Attachment Interview, the gold standard for assessing attachment representations (Hesse, 2008), have not come up with any replicable gender differences in the ratio of dismissing versus preoccupied attachments. In the current paper we present the most recent data on AAI classification distribution in males, and indeed we do not find any gender difference in the forced distribution, the decisive distribution for Del Giudice's approach. Only in the four-way distribution did fathers show an elevated percentage of dismissing classifications (24% for fathers, 16% for mothers), but no significant difference was found for preoccupation. Because of the large number of AAIs showing the absence of gender differences and the strong power to find a difference if any would be present, we are inclined to take these null-findings seriously. We have to conclude that Del Giudice's (2009) model is a moot case.

Adolescent attachment distributions in non-clinical groups are different from the normative adult distributions, with more dismissing attachments (35%) and less preoccupation (13%) in the forced three-way distribution. Because many (high-school) students live with their parents or (as a college student) just left their home, they have had less time to work through their childhood attachment experiences, and they may somewhat struggle for independence and as a result show more insecure-dismissing attachments than adults. In addition, because of their young age they may have experienced fewer losses of attachment figures and they may therefore be less often unresolved. Indeed, the percentage of unresolved representations in adolescents (11%) is lower than the corresponding percentage (18%) in adults. For students who mostly moved out of their family homes, a similar picture emerges. The AAI seems to be applicable at a rather young age (down to 14 years of age, see Ammaniti, van IJzendoorn, Speranza, & Tambelli, 2000) without much adaptations, and recently a mildly modified variant of the AAI for even younger participants (8–12 years) was validated by Fonagy and his team (Shmueli-Goetz, Target, Fonagy, & Datta, 2008). This is a promising development in bridging the age gap between the attachment measures validated for infants and young children, and the AAI.

The universality of attachment theory has been debated hotly in recent years, in particular concerning attachment in infancy and childhood. Attachment theory would be biased toward Western, industrialized societies and the more individualized and distant ways of relating in those societies, in contrast to more collective cultures where interdependence between individuals and groups would be strived for (Rothbaum et al., 2000). In addition, the AAI is heavily based on the use of language, and certain grammatical idiosyncrasies around loss or other trauma (indicating confusion about the deceased person being really dead) has been suggested to be occurring more often in cultures where death plays a different role than in Western cultures. Japan may be a good case in point, but AAI studies in this culture did not show high rates of insecure or unresolved attachments (Behrens, Hesse, & Main, 2007; Kazui, Endo, Tanaka, Sakagami, & Suganuma, 2000). Some adaptations are needed to apply the AAI to non-English languages and specific idiomatic differences might even call for careful application in various English-speaking countries (UK versus Australia versus the USA). But the few studies conducted in non-European countries like Japan and Israel (in Hebrew), or in

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non-English languages such as Dutch, Swedish, German, and Italian, do not result in strongly deviating attachment representation patterns. The only apparent difference was that European studies seem to find slightly more dismissing attachments (but only in the four-way distribution). Although the content of the AAI may be dependent on culture, and its form strongly intertwined with the specific language used in the interview, the AAI and its coding system appear remarkably robust across countries and cultures. The AAI shares this feature with another gold standard for attachment assessment, namely the Strange Situation Procedure (van IJzendoorn & Sagi, 2008). The Strange Situation, however, is mostly a nonverbal, behavioral assessment procedure whereas the AAI completely relies on often subtle verbal behaviors that may be expressed totally different in various languages. Nevertheless, the AAI has proved to be valid in various languages with only minor adaptations in the coding system. Coherence of discourse might be a universal characteristic of any communication based on human language, which is exactly what Grice (1975) suggested in his philosophical treatise on the cooperative principle and conversational maxims. Of course additional cross-cultural AAI studies are needed in a more diverse set of countries and cultures (e.g., India, China, African continent), before we can solidly conclude that the AAI is a culture- and language-''free'' assessment.

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Major findings in clinical studies

It was hypothesized that individuals with clinical problems would show more insecure attachment representations. In particular we examined whether psychological disorders with a focus on the subject himself or herself (''internalizing'' perspective) would show more preoccupation with past attachment experiences and maximization of the expression of their attachment needs. In contrast, individuals with psychological disorders leading to an outward focus (''externalizing'' perspective) would go together with a more dismissing stance to their own attachment experiences and a minimization of their attachment needs (Dozier et al., 1999, 2008). Our hypothesis was partly supported. The internalizing disorders (in particular borderline personality disorder) indeed showed a strong over-representation of preoccupied attachments, and of the unresolved category, whereas the rate of dismissing attachments was similar to the norm.

In contrast, the externalizing subjects (in particular suffering from antisocial personality disorders) showed more dismissing attachments but at the same time also more preoccupied and unresolved classifications. We suggest that the excessive co-morbidity in several samples of criminals with antisocial personality disorders (e.g., Levinson & Fonagy, 2002; Marin-Avellan, McGauley, Campbell, & Fonagy, 2005; van IJzendoorn et al., 1997) may be responsible for this complicated picture of dismissing *and* preoccupied strategies related to antisocial disorders. It should be noted that subjects who were violent against outsiders or against their own body (anorexia, addiction) showed a predominance of dismissing attachments, and thus seemed to fit the externalizing profile best. Subjects who committed violence within the family (against partner or children) seemed more preoccupied and thus fitted into the internalizing profile somewhat better. Entangled and angry representations and relationships might create the ''hot'' aggression implied in home violence.

In all clinical studies the unresolved category appears to be overrepresented compared to the norm group. The only exception to this rule can be found in

samples with depressed subjects. In depressed individuals dismissing as well as preoccupied representations are often present. In this respect Dozier et al.'s (1999, 2008) contention that mood disorders would show a complicated combination of dismissing and preoccupied strategies seems to be confirmed. Some mood disorders may indeed be more externalizing as they imply moving the attention away from the person (bipolar depression) whereas other kinds of mood disorders would lead to more exclusive attention on the person's inner world (as in unipolar depression). What is unique, though, for depressive subjects is the relative absence of unresolved loss or trauma. This is in stark contrast to persons suffering from abuse and/or posttraumatic stress, as they were virtually always classified as unresolved (e.g., Harari et al., in press). In fact, several studies now indicate that unresolved loss or trauma as assessed with the AAI is an almost perfect marker for dissociative disorders like PTSD, which sheds light on the etiology and mechanisms of these disorders as (partly) attachment disorders. The origins of depression should be looked for in other directions and attachment research may help focus on child rearing and interpersonal issues behind different types of depression, in addition to genetic causes (Sroufe et al., 2005).

In one of our previous meta-analyses we showed that children's physical impairments did not present skewed Strange Situation attachment classification distributions (van IJzendoorn et al., 1992). We therefore expected that parents of physically ill children would not be different from non-clinical mothers in the norm groups. However, both parents of physically and psychologically disturbed children showed deviating attachment patterns. The difference between the groups of parents of physically versus psychologically disturbed children seems to be the relative overrepresentation of the unresolved category in the former parents, and the underrepresentation of the secure classification in the latter group.

We suggest that parents of physically handicapped children may still suffer from unresolved mourning about the loss of their ideal child, and still show signs of unresolved responses to the diagnosis of their children's illnesses (Pianta, Marvin, Britner, & Borowitz, 1996). Parents of psychologically disturbed children may have transmitted their own insecure attachments to their offspring, making them more vulnerable to the development of psychological or behavioral problems. It should however be noted that the kind of physical illnesses subsumed under this heading (failure-to-thrive, asthma) may not exclude some socio-emotional component in the emergence or development of the symptoms (Benoit, Zeanah, & Barton, 1989; Cassibba, van IJzendoorn, Bruno, & Coppola, 2004), making the difference between psychological and physical problems smaller.

If any type of problem would be associated with a deviating adult attachment distribution, the discriminant validity of the AAI could be questioned. One important class of clinical cases, namely individuals with physical handicaps, appeared to present the exception to the rule. Subjects with physical handicaps (blindness, deafness) have been included only rarely in studies with the AAI, but the small set of studies did show attachment distributions similar to the norm. Only psychological or psychiatric problems appear associated with deviations from the norm distribution, not physical handicaps, even if severe, like blindness or deafness. The finding of a normative attachment distribution in physically handicapped adults converges with the outcome of an earlier meta-analysis on physically handicapped children who also showed a normative distribution of Strange Situation attachment classification in early childhood (van IJzendoorn et al., 1992).

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Differentiated categories or continuous scales?

It is somewhat problematic that we find only few systematic associations between a specific type of attachment representation and a specific type of disorder or clinical syndrome. Most clinical subjects show elevated rates of unresolved loss or trauma, which makes this attachment category crucial for understanding clinical problems and their treatment (see Steele & Steele, 2008b), but at the same time the unresolved classification may be less than optimally discriminating between clinical phenotypes. Several solutions have been proposed. The first set of solutions pertains to the further differentiation of the AAI classifications for use in clinical groups. It seems reasonable to argue that a coding system developed for normal, non-clinical subjects should be adapted to fit the more complex dynamics of a disturbed person. Crittenden (1997) developed an alternative system for coding the AAI with clinical subjects, the Coding Manual for the Dynamic-Maturational Approach to Adult Attachment. She differentiates almost 20 different types of attachment representations, such as Menacing-Paranoid C7-8, Punitive-Seductive C5-6, Aggressive-Helpless C3-4, Threatening-Disarming C1-2, Isolated-Promiscuous A5-6 (Crittenden, 1997, p. 50). Although individual cases might perfectly fit into such a differentiated system, without solid validation studies on larger clinical samples grounding these various types of attachment into empirical reality the categories in the system remain genuine confetti of new labels in search for meaning.

A more modest revision of the AAI coding system is proposed by Lyons-Ruth and her team (Melnick, Finger, Hans, Patrick, & Lyons-Ruth, 2008; see also Finger, 2006). The Hostile-Helpless category is derived from representational distortions throughout the AAI, and is not restricted to loss or trauma accounts. It is suggested that the most severe disturbances of interpersonal functioning involve more global, pervasive, and enduring representational distortions concerning the roles of self and other within relationships. Finger's (2006) findings on substance abusing mothers confirmed the power of maternal hostile/helpless states of mind to predict infant attachment disorganization over and above the AAI unresolved classification. Clearly, more validation research is needed to establish the independent and incremental validity of this new category, in various disturbed groups, to examine the scope as well as the limits of the hostile/hopeless classification.

It should be noted that the hostile/helpless label (like its corollary ''aggressive-helpless'' in the Crittenden system) is rather value-laden, in contrast to the conventional nomenclature in the AAI coding system, for example the Cannot Classify (CC) label. The CC category initiated by Hesse (1999, 2008) was meant to cover interviews with a global collapse of coherence across the entire discourse. Contrasting strategies for maximizing and minimizing the expression of attachment within the context of one and the same interview is a hallmark of CC. In normal, non-clinical samples very low percentages of AAIs appear to be judged CC, but in clinical samples this category might be particularly significant, as has been reported for criminal offenders (van IJzendoorn et al., 1997), victims of sexual abuse (Stalker & Davies, 1998), and suicidal adolescents (Adam, Sheldon-Keller, & West, 1996). Nevertheless, we did not find a sufficient number of AAI studies with reliably coded CC, including sufficient numbers of CC, to be able to validate its role in the development and diagnosis of psychiatric disorders. It is of critical importance to keep reporting on the separate CC category in future clinical attachment studies in

order to create a firm data-base for conclusions about its role as different from the U category.

As an alternative to more differentiated categories, one might argue for continuous measures derived from the AAI or its coding system. The most widely used measure is "reflective functioning," a concept and assessment tool coined by Peter Fonagy, Mary Target, Howard Steele, and Miriam Steele more than 10 years ago (Fonagy, Target, Steele, & Steele, 1998; Fonagy, Steele, Steele, Higgitt, & Target, 1994). For a description of the development of this scale and its concept, see Steele and Steele, 2008a. Reflective functioning has been shown to be fruitful in understanding therapeutic success and failure, and is suggested to substantially add to the validity of the original coding system. Fonagy et al. (1996) indeed showed a significant improvement in reflective functioning for those patients who were re-interviewed a year after the initial AAI, although changes of AAI classifications were not found.

In the current coding system for the AAI (Hesse, 2008; Main, Goldwyn, & Hesse, 2003), several continuous rating scales for assessing dimensions of attachment representations have been developed. The most important scale is "Coherence of transcript," but scales for "Idealization of speaker's primary attachment figure," "Involved/involving anger," "Meta-cognitive monitoring," and "Unresolved loss or other trauma" can also be useful to describe an individual's representational world. In addition, in randomized controlled clinical trials where the AAI is administered on more than one occasion as an index of change, the dimensional scales might be most useful to detect improvements that are not yet visible at the level of the overall mental representation of attachment.

The AAI scales, however, are conspicuously absent in most clinical attachment studies, whereas in some cases their complex configuration might better reflect the clinical disorders than a single AAI category. Roisman, Fraley, and Belsky (2007) were the first to empirically examine the latent structure of individual differences reflected in the continuous scales of 504 AAIs in normative samples. Using Meehl's taxometric approach they revealed that the variation underlying secure versus dismissing states of mind was more consistent with a dimensional than a categorical model, whereas taxometric analyses of preoccupied and unresolved status were indeterminate. Without deciding on the basis of this pioneering empirical approach whether attachment representations are likely to be categorical or continuous, researchers might keep open the possibility that from different (pragmatic or epistemological) perspectives attachment representations can be captured both by categories and dimensions, and that both tools should be used when complex clinical phenomena are to be described and explained most accurately. Dimensional scales have the capacity to create a multidimensional space in which many more subjects can be adequately positioned compared to a four-way categorical system that might act like a Procrustean bed.

Of course, more work is required to establish the reliability and validity of the AAI rating scales, and psychometric analyses of the scale-structure within the AAI is a necessary step toward predictive validation (Roisman, Holland, Fortuna, Fraley, Clausell, & Clarke, 2007). A promising discriminant analysis approach reported by Crowell, Treboux, Gao, Fyffe, Pan, and Waters (2002), documented the crucial role of the coherence scale in determining the secure versus insecure AAI classifications. In addition, the scale for Unresolved loss or trauma is indispensable to differentiate individuals struggling with loss or trauma issues from those who are able to talk

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coherently about their traumatic experiences. We suggest that this pair of continuous AAI scales (coherence and unresolved loss or trauma) should be used routinely in analyzing and presenting data on group differences in future correlational or experimental AAI studies. Using the Q-sort approach, Beijersbergen, Bakermans-Kranenburg, and van IJzendoorn (2006) developed the Coherence Q-Sort (CQS) that distinguishes the four conversational maxims implied in the concept of coherence. Because the various dimensions of coherence might be related to different mental states, interactive behaviors or disorders, additional rating scales may be developed for each of the four maxims so that the different aspects of (in)coherence can be assessed and examined.

Limitations

The current analyses are limited in several ways. Our study is not an epidemiologically valid survey and our normative data of non-clinical and clinical groups are based on sometimes quite modest numbers of rather small studies. Our interpretations concerning the associations between type of attachment insecurity and type of clinical problems are speculative in two ways. First, we need more data (i.e. clinical samples) to establish these associations more firmly, and second, in order to detect clear-cut patterns of attachment representations in clinical groups, clinical diagnoses should be uniform and valid, and co-morbidity should ideally be absent. Of course, it is unrealistic to expect both of these requirements being implemented in the foreseeable future.

A second limitation arises from the inherent methodological and practical considerations guiding the primary adult attachment studies. It is difficult to study attachment-related issues in respondents without knowledge of their backgrounds. For example, complete blindness about the psychiatric problems is almost impossible when the patient's life history is part of the Adult Attachment Interview. Most normative and clinical samples are convenience samples, and random selection from well-defined populations has almost never been conducted. The weaknesses of primary studies translate into limitations of secondary analyses, although aggregation of data may contribute to more valid and robust patterns than primary studies can provide.

In sum, the majority of our norm group of mothers is classified as securely attached (58%), with less than a quarter being classified as insecure-dismissing, and almost one-fifth as insecure-preoccupied. In addition, some 18% of the non-clinical mothers display unresolved attachment representations. We did not find gender differences in the use of dismissing versus preoccupied attachment strategies, as fathers showed distributions similar to the norm group. Furthermore, the AAI distributions are independent of language, at least in the samples studied thus far (with respondents using languages such as Japanese, Hebrew, Dutch, Italian, French, and Swedish). Also, cultures did not show large differences, as the Japanese and Israeli samples were rather similar to the norm group, and the European set of samples only displaying somewhat more dismissing attachment representations, but similar rates of secure attachments. The current set of AAI studies does not falsify the idea of the universality of attachment theory.

Clinical subjects show a strong overrepresentation of insecure and unresolved attachment representations. Disorders with an internalizing dimension (e.g., borderline personality disorders) seem to be associated with more preoccupied and

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unresolved attachments, whereas disorders with an externalizing dimension (e.g., antisocial personality disorders) display more dismissing attachments as well as preoccupied attachments, with fewer signs of unresolved loss or trauma. Depressive symptomatology is associated with insecurity but not with unresolved loss or trauma, whereas adults with abuse experiences or PTSD are mostly unresolved.

We suggest two directions for future research. First, AAI studies might emphasize the continuous AAI scales and their multidimensional space to cover the complexity of clinical subjects' symptomatology more adequately than the three-way or four-way classifications. Second, in most clinical groups patients with secure-autonomous attachment representations are present, even in the most disturbed groups of psychiatrically disturbed criminal offenders in maximum security hospitals (Levinson & Fonagy, 2002; van IJzendoorn et al., 1997). The next 10,000 Adult Attachment Interviews may provide ample opportunities to conduct case studies and to pool data across studies in order to throw more light on the counterintuitive resilience of patients with secure-autonomous attachment representations, and on leads for (therapeutic) change.

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