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EVALUATING THE ATTACHMENT BOND IN INFANCY: A REVIEW OF EVALUATION TOOLS



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Abstract

Objectives: The present study aims to present a review of the measures used to evaluate the attachment in adoption research. Particularly, we will present a new measure to detect the development of the attachment bond in adopted children: as recent studies on this topic suggest (Palacios & Brodzinsky, 2010), we need tools allowing to evaluate both results of adoption and the process of relationship construction. Method: We reviewed the available measures evaluating attachment in the adoptive samples, with specific pros and cons. Furthermore, we focused on a different instrument, the Parent Attachment Diary (PAD: Stovall & Dozier, 1996). This measure can rely on parental reports and it allows to describe the early process of attachment development to adoptive parents. Conclusions: Within the available instruments measuring attachment, PAD seems to be a useful instrument for adoptive samples, integrating the existing and more validated instruments. Practical implications: PAD seems to be a useful tool in post-adoption intervention: on one hand it helps parents reflecting upon the behaviour of the child and on the other hand it can precociously highlight any attachment distress.

Keywords: early infancy, adoption, attachment evaluation, PAD.

Introduction

Palacios and Brodzinsky, two of the major experts in adoption, describe the evolution of research in this field and highlight three steps of this process (2010). The first studies were characterized by a comparative approach: they confronted the adopted children with the non-adopted ones living in their natural

families; then a second trend followed, focusing on the adoption as protective factor, highlighting the recovery following early adversities. According to what these authors say, nowadays research on adoptees mainly aims at accounting the complexity of the adjustment process (Palacios & Brodzinsky, 2010): most of the studies in the adoption

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field analysed the adjustment outcomes, whereas there is an urgent need to focus on the *process* of adjustment followed by the adopted children (Palacios & Brodzinsky, 2010).

The psychology of adoption has always stressed the recovering value of this practice, which not only help the physical development (Judge, 2003; Rutter & ERA-Study-Team, 1998), but also promotes a better socio-emotional adjustment. On the latter aspect, one of the key issues is the attachment toward adoptive parents: many studies have underlined the decrease of disorganized attachment and an increase of secure patterns once the child has been adopted, showing that the better relationship experienced in the adoptive family could help building more positive representations of attachment (Internal Working Models – IWM: (Hodges, Steele, Hillman, Henderson, & Kaniuk, 2005; Pace, Castellano, Messina, & Zavattini, 2009; Riva Crugnola, Sagliaschi, & Rancati, 2009; van den Dries, Juffer, van IJzendoorn, & Bakermans-Kranenburg, 2009).

Despite the interest of the academic field toward the attachment outcomes, we still don't have specific tests and instrument aimed at evaluating this construct in the adoptive families. Adoption clearly has some peculiarities: in the biological families, the first months and years of life constitute the experiences on which the representations of attachment toward primary caregivers are based; in adoption these primary shared moments are missing, and the child has not been reared continuously by the same caregiver. When the child meets his parents, he has already collected his own "relational-baggage", constituted by various experiences: the relationships built during pre-adoption period (that can be positive or traumatic) and their rupture due to separation (Dozier & Rutter, 2008). The older the child is, the more these experiences affect his IWM of relationships. This, in turn, impact on the attachment representations of the adoptive

parents: as in typical families, the way the child reacts to caregiver re-activates the parent representation of attachment (Bowlby, 1969).

In such a complex framework it becomes difficult to use instruments of evaluation based on the continuity of the attachment relationships, that do not consider the frequent experiences of deprivation and separation to which adoptive children are often exposed (Solomon & George, 2008). Moreover, adoptive children have frequently been institutionalized and have experienced neglect and/or abandonment, then it is important to reduce the stress linked to separations as much as possible (Dozier & Rutter, 2008; Farnfield, 2009). For these reasons, specific instrument for the attachment evaluation, ecologically valid, should be developed and used within the adoptive families (Solomon & George, 2008).

If we consider the process of adaptation to the new family, the evaluation tools are even scarcer: nevertheless, this period offers a precious opportunity to deeper investigate the attachment building in a longitudinal and micro-genetic perspective (Lavelli, Pantoja, Hsu, Messinger, & Fogel, 2005; Siegler, 1995). Moreover, a better understanding of the attachment *process*, could improve clinical practice, helping in better training and preparing the prospective adoptive parents: specifically, it could be possible focus the intervention on protective factors parents should improve in order to develop a more stable and secure attachment. For example, children who experienced an abandon or a separation need to feel and understand that the new parents won't leave them again, in order to develop more confidence toward the new caregivers (Roberson, 2006).

In this perspective, our work will first discuss the existing attachment evaluation tools, analysing their possible use with adoptive families, particularly during the infancy and early childhood, and in the first adoptive



months. Afterwards, we will focus on a new instrument that allows describing the building of the attachment to the new family.

Attachment measures used in adoption research

Attachment evaluation in infancy requires the evaluation of interactive patterns of behaviour, therefore the most common measures are separation-reunion procedures, first of all the Strange Situation Procedure (SSP: (Ainsworth, Blehar, Waters, & Wall, 1978), and the observational tools as the Attachment Q-Sort (AQS: (Waters & Deane, 1985). Recently, Zeanah and colleagues proposed a tool based on parental interview, the Disturbance Attachment Interview (DAI: (Smyke, Dimitrescu, & Zeanah, 2002), specifically oriented toward pathological attachment development.

In order to evaluate security of attachment in adopted infants, van den Dries and colleagues (van den Dries et al., 2009) collected 39 different studies with a research literature. Most of them (21) used a separation-reunion procedure (particularly the SSP), while 13 studies evaluated attachment through observational procedure, i.e. the AQS (7 studies) or its shortened version (6 studies). The remaining studies used measures concerning older children or adolescents, or parental representations. Van den Dries et al. (2009) performed their meta-analysis on a subsample of 17 studies, methodologically adequate, and they didn't report any difference between the two tools, because the number of AQS study encompassed in their meta-analysis (2) was not sufficient to analyse this aspect. However, authors suggest that no differences between the effect sizes of the subsets were present, because the 85% confidence interval around the point estimate of both subsets did overlap (van den Dries et al., 2009).

Thus, we can conclude that the SSP and the AQS are the most common tools in attachment research, as well as in the specific field of adoption. Afterwards we will present

these instruments more in detail. Moreover, we will consider a tool designed to evaluate the disturbances of attachment, the DAI, because this aspect is theoretically relevant for adoption research.

Separation-reunion procedures

The SSP (Ainsworth et al., 1978) is the main instrument to evaluate the attachment relationships in infancy, and it consists of eight 3-minute episodes during which two separations from, and reunions with, the parent occur. Aim of this procedure is to capture the balance of attachment and exploratory behavior under conditions of moderate stress. On the basis of the behaviour shown by the child toward the parent, their relationship is categorized into one of three different groups (secure, anxious-avoidant and anxious-ambivalent), to whom authors added a fourth category, related to disorganized behavior (M. Main & Solomon, 1990).

The SSP is suitable for children between 12 and 20 months, then some studies used an adapted SSP, with coding systems such as the Cassidy–Marvin system (Cassidy, Marvin, & Attachment, 1989-1992), the Main–Cassidy Attachment Classification for Kindergarten-Age Children (M. Main & Cassidy, 1988), and the Crittenden's Preschool Assessment of Attachment (PAA: (Crittenden, 1992), to increase the range of age.

Although the separation-reunion procedures are the most utilised even in adoption studies, these procedures arise some problems.

First, in the adoption context we should be cautious in using separation-reunion procedures. Adopted children have often lived in orphanages, or at least they have experienced deprivations, separations, or even child abuse and maltreatment: for these reasons, it is recommended not to stress separations in order to evaluate attachment of adopted children, especially during the first year of placement (Chase Stovall & Dozier, 2000; Farnfield, 2009; Solomon &



George, 2008). Moreover, it is not clear if separation/reunion procedures are evaluating the caregiver-child relationship instead of the way the child is used to behave toward adults; this limit becomes even stronger if the evaluation is made at the beginning of the adoption process. Another critical issue concerns the disorganization of attachment: this lack of attachment strategies, more frequent in adopted sample (Hodges et al., 2005; Marcovitch et al., 1997; van den Dries et al., 2009), could assume with these children different meanings (in relation to previous separation experiences) or different forms, that these procedures should misunderstand or not identify (Solomon & George, 2008). Secondly, the laboratory procedure and its coding are very expensive, and it is difficult to use them in clinical practice. Finally, its application is not suitable to assess the building of a new child-caregiver bond. To assess a process, indeed, we must be able to repeat measurement in order to confront different results and to understand what is changing and how: the SSP shows low values of test-retest reliability, maybe due to the sensitization of the subjects to the procedure, and a 6-months interval between two administrations of the procedure is requested (Solomon & George, 2008).

The Attachment Q-sort

As previously said, a less invasive way of measuring attachment is the AQS (Waters & Deane, 1985) a Q-sort questionnaire composed of 90 items. The AQS is aimed at measuring the balance between proximity seeking and exploration that the child shows at home, when relating to the caregiver. The questionnaire can be fulfilled by an expert, who has observed several hours of interaction, or directly by the caregiver. The procedure requires ranking the items listed on different cards from “most descriptive of the child” to “least descriptive of the child”. The final score represent the level of security shown in the relationship observed, without any reference to different types of insecurity and/or disorganization.

If compared to the SSP, the AQS appears to be more economic and less intrusive, in addition to a larger age range of applicability (up to 5 years of age). Nevertheless, its weaknesses are related to its unproved stability over time and to the unsatisfactory convergent validity with the SSP (Solomon & George, 2008). Indeed, the correlation between ASQ and SSP scores is modest, especially after 18 months of age and if filled by the caregiver. As shown by the meta-analysis led by the University of Leiden (van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004), the correlation between SSP and AQS is sufficient if the test is filled by an expert ($r=.31, p<0.01$), whereas it decreases if the filler is the caregiver ($r=.14, p<0.5$). Thus, AQS scores are reliable just when reported by an expert conveniently trained to observe attachment relationships.

If applied in adoptive samples, mainly if applied more than once, the AQS could show the progress toward a higher level of security, although this result should imply a larger number of studies on the stability of AQS measures through different ages (Solomon & George, 2008). Moreover, when fulfilled by parents, the tool shows the problems linked to the parent-report questionnaires ((Molina & Bulgarelli, *in press*)); if fulfilled by expert is a more expensive procedure, mainly if the assessment of the process needs a large number of observations, repeated across time.

The Disturbance Attachment Interview

The *Disturbances of Attachment Interview* (DAI: (Smyke et al., 2002) has been developed in the clinical field for the diagnosis of the Reactive Attachment Disorders (RAD), as conceived by one of its author, Charles Zeanah (Boris & Zeanah, 1999). In their definition, the term “disorder of attachment” indicates a situation in which a young child has no preferred adult caregiver. Such children may be indiscriminately sociable and approach all adults, whether familiar or not; alternatively, they may be emotionally withdrawn and fail to seek comfort from anyone. Although there is not yet a complete agreement with this def-



initiation of the RAD, the merit of these authors is to have expanded the concept of attachment disorder beyond the definition most common in psycho-diagnostic manuals: they offered a wider approach to attachment disorders considering both the cases where children have had no opportunity to form an attachment, and those situations in which there is a distorted relationship and/or an existing attachment has been abruptly disrupted.

The DAI is an interview composed of 12 questions addressed by the clinician to the caregiver, investigating disturbed and developmentally inappropriate infant's relationships features. We didn't find any validation study of this measure, whose diagnostic utility is well recognized: the DAI allow the identification of any early difficulty in the structuring of a new attachment bond.

The Parent Attachment Diary

As Solomon and George (2008) highlight, the evaluation of clinical and atypical children (who experienced deprivation of attachment figures, or major and frequent separations, as in adoption) needs a twofold procedure: a new look on standard tools, and the development of new procedures, ecologically valid for this specific population.

In this second perspective, the *Parent Attachment Diary* (PAD: (Dozier & Stovall, 1997) seems to be an innovative tool, designed to

offer a measure specifically oriented at analysing the *process* of attachment building in the new family. The PAD was designed specifically to evaluate the development of attachment in the American foster care families, which are for many aspects similar to the adoptive ones. Indeed, foster care and adoption are different forms of parenthood, and children who benefit from these practices often share a similar background, first of all the rupture of attachment bonds.

The PAD has been created in order to assess individual differences in infants' attachment behaviours during stressful situations, in a more ecological way. Through daily observation, it allows the evaluation of the attachment process and development, and it provides many information about any significant change occurring in the child attachment behaviour during time.

In the diary, parents are asked to recall three attachment relevant incidents that typically occur in any given day: times when the child is physically hurt, frightened, and separated from the parent. According to the authors, these situations are prototypical of the attachment system's activation in everyday life (Chase Stovall & Dozier, 2000). For each incident, parents write a short narrative describing the situation and then report the sequences of the child's behaviours on a check-list (for an example, see Figure 1).

Figure 1: Example of items and coding of PAD

Situation: response to separation from parent (*Think of a time today when you and your child were separated—preferably where your child became upset or distressed. -This can include leaving to go out, going to another room, dropping the child off, etc. This does not include putting the child to bed.-*)

- Avoidance:
 - continued doing what he/she was doing before (didn't notice me)
 - Secure:
 - Proximity seeking/contact maintenance:
 - * signalled to be picked up or held, reached for me
 - Ability to be soothed:
 - * if upset, was easily soothed and calmed by me
 - Resistance:
 - did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
-



For incidents regarding the child's being hurt or frightened, parents indicate the child's initial help-seeking behaviour (part A), and the child's response to the parent's behaviour (part B). For situations involving separations, parents report the child's reactions to the separation and then to the reunion.

The coding is based just on the behaviours displayed by the child, whereas the narrative, and so the parental actions and interventions, don't have to be coded, but they can be considered just to verify and better understand what happened. Child behaviours are assigned to one of the following categories: proximity seeking/contact maintenance, ability to be soothed, avoidance, and resistance.

Specifically, the first two categories concern secure attachment and they include behaviours as going toward the parent, recalling his/her attention, signalling to be picked up or held and the ability to be easily soothed and to calm down without showing resistance. Avoiding behaviours are coded when the child acts like if nothing was wrong, ignores the parent or go off by himself in times of need. The last category includes resistant behaviours, so when the child shows anger toward the parent (e.g. biting or pushing him/her away) and/or the incapacity of being comforted. Resistance is linked to the inability to be calmed by the caregiver, but if compared to avoidance, here the child shows the need of help, even if he is not able to accept the adult's aid or he cannot use it to calm down. On the opposite, avoidance always lacks on proximity seeking and contact maintenance.

The PAD is not aimed at measuring disorganized attachment behaviours directly. However, an early indication of attachment disorganization could be the low level of consistency with which infants rely on a particular behaviour strategy when distressed.

Daily scores of secure, avoidant and resistant behaviours are reported on a graph displaying their trend, which can be analysed in differ-

ent ways, from simple correlation with time (evaluating the change or stability over time) to sophisticated trend analysis (Taylor, 2000).

PAD both allows the analyse on an individual level and to compare subjects and their different trajectories. On a group level analysis, individual trajectory are then merged by hierarchical regression, to test different hypothesis on influent variables as age at placement or previous risk factors.

The PAD validation report an inter-rater agreement complete (100%) for avoiding behaviours, 0.88 for secure ones and 0.86 for resistance (as cited in (Chase Stovall & Dozier, 2000).

The validation study has been conducted on the diaries collected by 31 biological mothers and 11 foster-care mothers, with children aged between 8 and 20 months. Parents supplied 7 consecutive days of diary data and participated with their infants in the Strange Situation within 3 weeks (for the biological dyads) or 5 months (for the foster care dyads) (as cited in (Chase Stovall & Dozier, 2000).

SSP and PAD scores showed a good correlation, obtaining a significant concordance between parent and observer reports. Babies classified as avoidant in the SSP had significantly higher avoidance scores than secure and resistant children, and babies classified as resistant in the SSP had significantly higher resistance scores in the diary than secure and avoidant babies. Reciprocally, parents' ratings of secure behaviour in the diary have been found to correlate positively with ratings of proximity seeking and contact maintenance, and correlate negatively with avoidance in the Strange Situation (Chase Stovall & Dozier, 2000).

Further validation of the diary was conducted by comparing the overall means of secure, avoidant, and resistant behaviour as measured in the diary with continuous Strange Situation scores (see Table 1).



Table 1. Correlations between Parent Attachment Diary and Strange Situation scales (adapted from: Stovall-McClough and Dozier, 2004)

	Strange Situation scales			
	Proximity Seeking	Contact Maintenance	Avoidance	Resistance
Diary security	.590**	.377 a	-.410*	-.139
Diary avoidance	-.691**	-.604**	.509*	-.018
Diary resistance	.321 a	.302 a	-.270	.173

Note: Pearson correlation coefficients (N=20); a - Marginally significant at $p < .10$; * $p < .05$; ** $p < .01$.

Security in the diary was significantly correlated with Strange Situation proximity seeking scores, $r(19) = .59$ ($p < .01$), and contact maintenance scores, $r(19) = .38$ ($p < .10$). Secure behaviours were negatively correlated with Strange Situation avoidance scores, $r(19) = -.41$ ($p < .05$). Avoidance in the diary was negatively correlated with Strange Situation proximity seeking, $r(19) = -.69$ ($p < .001$), and contact maintenance, $r(19) = -.60$ ($p < .001$), but positively correlated at .51 with avoidance in the Strange Situation ($p < .05$). The correlation between resistance in the diary and resistant Strange Situation scores was not significant (Chase Stovall-McClough & Dozier, 2004).

The analyses run by Dozier and Chase-Stovall on the foster care data on an individual level showed significant changes over time though the comparison between the 3 attachment behaviours, and the emerging of a stable pattern of attachment (Chase Stovall & Dozier, 2000).

In a second study (Chase Stovall-McClough & Dozier, 2004), the authors compared 38 dyads through Hierarchical Linear Models procedures (Bryk & Raudenbush, 1992), using the diaries collected during about 60 days. The aim was to examine the longitudinal data, estimating the trend of attachment relation-

ship during time, and also taking into account some intervenient variables. Few of these variables assessed were found to be associated with changes in attachment behaviours over the first 2 months of placement. Neither age at placement nor foster parent attachment predicted change over time, whereas risk factors suggesting child maltreatment may have subtle negative effects on the developing attachment.

The same statistical procedure was used by Pugliese and colleagues (Pugliese, Cohen, Farnia, & Lojkasek, 2010), who evaluated the building of the attachment bond in a sample of 32 children adopted from China. They used an adaptation of the Parent Attachment Diary, an interview examining every two weeks the mothers' observations of their children's attachment behaviours over the first six months following adoption. During this lapse of time with their families, adopted children entered an attachment-making phase, and showed an increase in secure behaviours, and a decrease of avoidant ones, in response to pain, fear and separation (Pugliese et al., 2010).

The Italian version of the PAD

Currently we are using the PAD in an Italian research project aimed at evaluating the creation of the attachment bond in a sample of internationally adopted children and taking into



account other constructs such as parents' attachment representations, parental stress and child temperament. In this study we will test the applicability of the Italian version of the PAD to an adoptive sample, and we will confront different method of data-analysis, in a micro-genetic design. Aim of a micro-genetic study, indeed, is the analysis of the possible underlying processes through a high density of observations.

The Italian translation of the PAD was revised by an English native speaker colleague. In order to test the comprehensibility of all the items, the same person used the PAD for a few weeks with his toddler child. Finally, the conclusive version of the instrument was discussed with Mary Dozier (personal communication, February 15, 2010).

Inter-rate agreement between Mary Dozier's team and the Italian authors was calculated on 8 American diaries, obtaining a concordance of 98% on the coding of single items.

Our sample is recruited through the ARAI - Regione Piemonte, an Italian accredited body for international adoption. The researcher presented the PAD to the couple, before the departure to the country of origin of the child, explaining how to fulfil it and giving them an example of pre-compiled diary. Parents are asked to fulfil the diary daily for 3 months, from the moment in which the child arrives home. This larger lapse of time, if compared to previous studies, has been chosen on the basis of the original authors' considerations about the correct length of the PAD completion (Chase Stovall-McClough & Dozier, 2004).

Preliminary results confirm the usefulness of the PAD to describe the process of the attachment development toward the new family, and to differentiate the individual profiles.

Conclusions

Nowadays, the literature regarding the attachment among adoptees is vast, offering

numerous and different tools to evaluate this construct. As we have underlined, the separation-reunion procedures and the AQS are the most popular among them, but new tools seems necessary to better evaluate the adoptive children specificities, and to analyze the process of attachment development. Indeed, the use of separation-reunion procedures with adopted children is critical and not suitable for a process evaluation. On the contrary, AQS fulfilled by experts would be more appropriate to test the attachment development, but its stability has not been tested enough.

The building of the attachment relationship during the first months after adoption constitutes a privileged context of observation, both from a theoretical and clinical point of view. Indeed, after the placement we can learn a lot about how the process of attachment develops, and this in turn leads not only to a better knowledge on attachment, but it also gives important tips regarding how to support adoptive parents (Fava Vizziello, Boccanegra, Simonelli, Calvo, & Petenà, 1999; Roberson, 2006).

The PAD seems an useful tool to deeper analyse this process. Indeed it allows a micro-genetic analysis of the attachment building, as well as an accurate description of the developmental trend.

From a theoretical point of view, the use of different tools for the evaluation of a single construct is an outstanding issues: it allows to test the validity and the reliability of the measures, as well as the strength of the construct itself.

On the basis of our application of the PAD on some Italian adoptive families (see Molina & Casonato, *submitted*), it seems also to be an useful tool in post-adoption intervention: on one hand it helps parents reflecting upon the behaviour of the child, and on the other hand it underlines precociously any attachment distress.



Certainly, the PAD requires a strong collaboration and commitment of the parents: by the end of the day, when they are often exhausted, they still have to complete the diary. On the other hand, this task requires a reflexive effort that helps the parent to focus on the child behaviors and to reflect upon changes occurring over time. The PAD, indeed, not only offers a great amount of data that can be statistically analyzed to identify changes in attachment behaviors, but also permit the parent to recognize, in their narratives, variations over time. Adoptive parents who used the PAD seem to be more sensitive toward attachment behaviors. For example, they recognize that a frightened child asking for adult's intervention is not weaker than a baby who doesn't show his need for help, on the contrary he considers the caregiver a reliable source of comfort.

Moreover, the capacity of the PAD of underlying insecure behaviors and the lack of an attachment strategy makes it an useful instrument for an early detection of any attachment distress.

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