

## CONCORDANCE OF ATTACHMENT REPRESENTATIONS IN MOTHER-/FATHER-CHILD DYADS AND BETWEEN SIBLINGS

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This study focuses on the concordance of attachment representations in two-parent, two-child families as an original contribution to the current attachment literature. It uses both categorical attachment patterns and continuous scores. Data was collected on 92 native French-speaking Belgian families. In order to disentangle conceptual and methodological interpretations, each hypothesis was tested in two complementary ways: first in a sample where the parent completed the *Cartes pour les Modèles Internes de Relation* (CaMir) and their young children (four- to seven-year-olds) the French version of the *Attachment Story Completion Task* (Fr-ASCT) and second, in a sample where both parents and their teenage to young-adult children (15- to 34-year-olds) completed the CaMir. Our results indicated very little if any concordance of attachment representations, either when using categorical scores or when using continuous scores. The implications of these results for both theoretical and research purposes are discussed.

### Introduction

Attachment transmission has often been studied. In a meta-analysis, van Ijzendoorn (1995) highlighted quite a strong relation between parents' attachment representations, as assessed by the *Adult Attachment Interview* (AAI) (Main & Goldwyn, 1985/1994), and children's attachment behaviours, as displayed in the *Strange Situation Procedure* (SSP) (Ainsworth, Blehar, Waters, & Wall, 1978). This strong relation was reinforced by the fact that there were no significant differences in the effect sizes reported in this meta-analysis between studies employing retrospective, concurrent and prospective designs (van Ijzendoorn, 1995, p. 392). However, to the best of our knowledge, no study has considered attachment transmission between parents and two of their children. Furthermore, the concordance of attachment patterns between siblings has rarely been examined. Some researchers have, however, looked at the similarities of attachment patterns in mono- and dizygotic twin pairs (e.g. O'Connor & Croft, 2001).

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The present study aimed to explore the concordance of attachment representations in two-parent, two-child families as an original contribution to the current attachment literature. Both categorical and continuous measurements were employed. The term “concordance” rather than transmission indicates that a concurrent design was used.

### ***Concordance between parents’ attachment representations and children’s attachment behaviour***

It is widely accepted that the parents own attachment representations of their personal childhood experiences shape their parenting of their own children, which, in turn, influence the development of the child’s attachment behaviours (e.g. George & Solomon, 2008; Roskam, Stievenart, Van de Moortele, & Meunier, 2011). In his meta-analysis of attachment transmission, van Ijzendoorn (1995) found that 75% of mothers with secure attachment representations (assessed with the AAI) had children with secure behaviour patterns (according to the SSP) (effect size:  $d = 1.06$ ). This conclusion is supported by several more recent studies (e.g. Béliveau & Moss, 2009; Hautamäki, Hautamäki, Neuvonen, & Maliniemi-Piispanen, 2010).

Most of these studies of attachment transmission from parents to their children have been based on parental data gathered with the AAI (Gloger-Tippelt, Gomille, Koenig, & Vetter, 2002; Hautamäki et al., 2010). A few recent studies (Béliveau & Moss, 2009; Bouchet, Blicharski, Duthu, & Bourdet-Loubère, 2011) used other instruments such as the *Adult Attachment Projective* (George & West, 2001) or the French version of the *Adult Attachment Questionnaire* (Bouthillier, Tremblay, Hamelin, Julien, & Scherzer, 1996). The previous conclusions about attachment transmission from parents’ representations to child behaviour were reinforced by the level of concordance found with these alternative assessment procedures.

### ***Concordance between parents’ attachment representations and children’s attachment representations***

While Bretherton, Ridgeway & Cassidy (1990) found significant correlations between attachment behaviour (assessed with the SSP) and attachment representations (assessed with the *Attachment Story Completion Task* (ASCT, Bretherton et al., 1990)), the transmission of attachment representations from parents (assessed with the AAI) to those of their children (assessed with the ASCT) has less often been studied. The ASCT is an assessment tool consisting of a series of story stems with themes designed to activate children’s attachment representations by means of play and narrative (Bretherton et al., 1990). The rare available studies seem to provide a pattern of results similar

to that for transmission between parents' attachment representations and children's attachment behaviour. Gloger-Tippelt, Gomille, Koenig, and Vetter (2002) found an intergenerational transmission of 78% between mothers' AAI classification and children's ASCT attachment representations. This percentage was very similar to that obtained by van Ijzendoorn (1995) for the link between parents' attachment representations (assessed with the AAI) and children's attachment behaviour (assessed with the SSP). Miljkovitch, Pierrehumbert, Karmaniola, and Halfon (2003) also observed significant correlations between mothers' and children's attachment representations, assessed with the AAI and the ASCT respectively. Using a coding system based on the continuous scores of the ASCT that was different to that of Gloger-Tippelt and colleagues (2002), they obtained similar results.

The aim of the current study is to investigate the relation between parents' and children's attachment representations in order to add to the body of existing empirical results.

### ***Concordance in mother-child and father-child dyads***

Most existing studies have explored the transmission of secure/insecure attachment representations, mainly between mothers and their children. In his meta-analysis, van Ijzendoorn (1995, p. 392) showed that "maternal attachment tended to be related more strongly to children's attachment ( $d = 1.14$ ,  $r = .50$ ) than did paternal attachment ( $d = 0.80$ ,  $r = .37$ )". This could suggest that the fathers transmitted their attachment representations to their children to a lesser extent than mothers. In line with this observation, three studies using continuous scores revealed an absence of significant correlations between fathers' attachment scores, assessed with the AAI, and those of their children, assessed with the ASCT (Bernier & Miljkovitch, 2009; Miljkovitch, Pierrehumbert, Bretherton, & Halfon, 2004; Miljkovitch, Pierrehumbert, Karmaniola, & Halfon, 2003). According to Miljkovitch et al. (2004, p. 316), this difference in attachment transmission indicates that, on average, the mother, because of her sensitivity, has a stronger influence upon her child's emotional development (and consequently on the development of attachment relationships) than the father. Some researchers have shown that the father's sensitivity did not influence his child's attachment behaviour as much as his sensitive play with the child (e.g. Bretherton, 2010). However, some recent studies (Brown, Mangelsdorf, & Neff, 2012; Lucassen et al., 2011) rejected these results, suggesting that the paternal sensitivity also had an influence on his child's attachment behaviour.

In the absence of studies where concordance between the mother-child and father-child dyads within the same family has been studied, existing empirical results do not provide evidence for the similarity or independence

of attachment to each of the two parents. Such a question needs to be explored using samples covering at least the two parents and one of their children. In this study, we expected to observe less attachment concordance from the father to the child than from the mother to the child.

### ***Concordance of attachment between siblings***

The concordance of attachment between siblings has been studied less than attachment transmission from parent to child. In most of the existing research, only one child was chosen within each family and taken to be representative of the siblings. The assumption was that brothers and sisters growing up in the same family with the same parents would relate similarly to their parents. But very few studies have actually explored this relation. Van Ijzendoorn, Moran, Belsky, et al. (2000) found around 60% concordance for siblings' attachment behaviour, and other studies obtained similar results with dizygotic twins (e.g. O'Connor & Croft, 2001) and even with adults adopted in infancy or childhood (Caspers, Yucuis, Troutman, Arndt, & Langbehn, 2007). This result excludes the genetic effects present with monozygotic twins but absent from adopted siblings, suggesting the influence of environment on the development of attachment. However, since the concordance study was based on a 2 (Child 1, Child 2)  $\times$  2 (secure, insecure) classification, the 60% result was close to a random (50%) pattern. The same modest concordance between siblings' attachment behaviours was found in earlier studies (e.g. Teti & Ablard, 1989).

These results indicate that siblings can develop different attachment representations, which may also be independent of their parents' attachment representations. A differential susceptibility hypothesis, as suggested by Belsky (2005), can be used to explain how siblings are influenced differently by their family environment. To the best of our knowledge, no study has explored the concordance of siblings' attachment representations (as distinct from their attachment behaviours). Filling this gap constitutes another main aim of our research.

### ***Categorical and continuous approaches to attachment stability***

Existing studies focusing on attachment transmission have mainly adopted a categorical approach based on the traditional attachment patterns. In most cases, the avoidant, ambivalent and disorganised attachment patterns were grouped into an insecure category leading to a 2 (parent, child)  $\times$  2 (secure, insecure) analysis. The continuous scores that most of the attachment assessment procedures actually provide were rarely considered in favour of categorical scores. Categories are useful in qualitative analysis for a description of

various attachment behaviours or representations (Cassidy, 2003; Sroufe, 2003), and have been demonstrated to work relatively well because of their discriminative properties, and so they are difficult to replace (Sroufe, 2003). However, continuous scores encompass some attachment behaviours which do not fit into the traditional attachment patterns (e.g. cases lying on the border between two categories) (Cummings, 2003; Cummings, Greenberg, & Cicchetti, 1990; Sroufe, 2003). They allow variations among individuals classified into the same pattern to be taken into account, by illustrating the relative level of security/insecurity (Cummings, 2003).

Although several researchers (Cummings, 2003; Cummings et al., 1990) have proposed a compromise by considering the use of attachment continuous scores as a complement to the pattern classification, most authors still use categorical scores to analyse attachment transmission. Typically, they find moderate to high coefficients (e.g. van Ijzendoorn, 1995). It is, however, possible that the continuous scores, by providing a more nuanced picture of children's and parents' attachment profiles, would reveal different aspects of transmission. For instance, attachment transmission from father to child has been observed using categorical scores (van Ijzendoorn, 1995), but a study using continuous scores found no significant relation (Bernier & Miljkovitch, 2009). Such results illustrate the importance of considering both categorical and continuous scores when studying attachment transmission, and illuminating this methodological aspect is another aim of the present study.

### **Current research**

The present study focuses on the concordance of attachment representations between both mothers and fathers and two of their children, as an original contribution to the current attachment literature. In order to disentangle conceptual and methodological interpretations, each hypothesis was tested in two complementary ways: first in a sample where the parents completed the *Cartes pour les Modèles Internes de Relation* (CaMir, Pierrehumbert et al., 1996) and the children the French version of the *Attachment Story Completion Task* (Fr-ASCT, Bretherton et al., 1990), coded with the *Cartes pour le Codage des Histoires à compléter* (CCH, Miljkovitch et al., 2003). The CCH consists of 65 items describing potential characteristics of the children's attachment narrative resulting from the ASCT (Pierrehumbert et al., 2009), focusing on either the content (e.g. "the child portrays the parents as available") or on the formal characteristics (e.g. "the child enacts emotions within the story") of the narrative. In a second sample, both parents and their offspring completed the CaMir.

Several aspects of the concordance between parents' and children's attachment representations were explored. Two of the three previous studies

of this topic demonstrated concordance (Gloger-Tippelt et al., 2002; Miljkovitch et al., 2003) and the other independence (Goldwyn, Stanley, Smith, & Green, 2000). We also explored concordance between sibling's attachment representations, something that no previous study has attempted. For both, the rate of concordance obtained with the categorical scores (chi-square tests) and with the continuous scores (two-tailed correlations) were explored because it was expecting that some differences could occur. Finally, the concordance of attachment was expected to be higher in mother-child dyads than in father-child dyads.

## Method

### *Samples and procedure*

This study was conducted on 92 native French-speaking Belgian families where both parents and two children completed attachment measures. The group was divided into two sub-groups: one with 45 pairs of young children completed the Fr-ASCT and another with 47 pairs of children completed the CaMir.

The sub-sample of young children comprised 50 boys (55.6%) and 40 girls (44.4%). The group of younger siblings (27 boys (60%) and 18 girls (40%)) was aged between four and six ( $M = 4.53$ ,  $SD = .62$ ) while the group of older siblings (23 boys (51%) and 22 girls, (49%)) was aged between five and seven ( $M = 6.11$ ,  $SD = .80$ ). One mother's and one father's questionnaire were missing for these siblings. All the children were being raised by both their parents. The parents were informed about the study and assured that the data would remain confidential. Informed consent was obtained from all the adult participants. At the family home, each parent was asked to complete the CaMir in a quiet, isolated room. During this time, each child completed the Fr-ASCT with one of the clinical research assistants in another quiet, isolated room. Two fifth-year students in a combined bachelor's and master's course in the Department of Psychology and Education at the Université catholique de Louvain (UCL), were trained for the ASCT task and involved in the data collection.

The other sub-group of children comprised 31 males (33%) and 63 females (67%). The group of younger siblings (13 boys (28%) and 34 girls (72%)) was aged between 15 and 25 ( $M = 18.42$ ,  $SD = 2.08$ ) while the group of older siblings (18 males (38%) and 29 females (62%)) was between 17 and 34 years old ( $M = 22.02$ ,  $SD = 3.53$ ). Data was collected in the college sections of randomly selected schools within the French-speaking part of Belgium. Two fifth-year master's students in the Department of Psychology and Education at UCL, who had been intensively trained in sampling and data col-

lection procedures, undertook the data collection. Six fathers' questionnaires were missing while all the mothers completed the questionnaire. No information was provided on whether the family members were living together. As in the other sub-group, all the participants were informed about the study and assured that the data would remain confidential. Informed consent was obtained from all the adults. All the participants completed the on-line version of the CaMir.

## Measures

**Attachment Story Completion Task.** The *Attachment Story Completion Task* (ASCT) was translated into French, (*les Histoires à compléter*, Fr-ASCT), and used to assess the children's attachment representations (Bretherton, 1990; Bretherton et al., 1990). The ASCT has been cross-validated in several studies using various coding systems, with children's responses to actual or previous separation/reunion episodes (e.g. Gloger-Tippelt et al., 2002), and with mothers' AAI scores (Gloger-Tippelt et al., 2002; Miljkovitch et al., 2004). These associations seemed to support the assumption that story completions reflect the children's working models of self with parents.

The administration of the task was video-recorded. The procedure included five story stems: (a) the child figure causes an accidental mishap (spills juice at the dinner table), (b) is hurt (falls off a rock in a park), (c) is afraid (of a monster in the bedroom), and experiences (d) a separation from and (e) reunion with parents (the parents leave for a trip while the grandmother looks after the children) in addition to the first story stem (birthday party) that serves as a warm-up procedure to introduce the child to what is expected.

**Coding of the ASCT.** The narratives were coded by the clinical research assistants using the French version of the Q-set procedure, *Cartes pour le Codage des Histoires à compléter* (CCH), which was developed by Pierrehumbert and co-authored by Bretherton (CCH: Miljkovitch et al., 2003) and used the AAI coding procedure as a model. English, Spanish and Italian versions of this scale also exist (Pierrehumbert et al., 2009), and the Q-sort procedure covers both the content and the intrinsic qualities of the narrative production. After viewing the video recording of the whole set of six stories, the coder scored 65 items describing potential characteristics of the narrative (Pierrehumbert et al., 2009), focusing on either the content (e.g., "the child portrays the parents as available") or on the formal characteristics (e.g., "the child enacts emotions within the story") of the narrative. Constructs used for the definition of the items were principally: attribution of subjectivity to the

figures, symbolic distance, narrative coherence and story resolution. The items were presented on cards. The first step in the CCH coding procedure was to sort the cards into seven piles (free distribution) from the most to the least characteristic of the child's narrative. The second step consisted of a forced distribution, keeping only a specific number of cards in each pile. Each item received a score (range 1-7). Four Q-correlations were then computed with the scores of the forced distribution by comparing the children's individual Q-set description with the criterion sort provided by experts for a prototypical child using Main and Cassidy's four patterns (secure, avoidant, ambivalent and disorganised) (Miljkovitch et al., 2003). In the current study, only the Q-set security score was used in order to allow the analysis of the transmission of security attachment between parents and children. Secure children had developed a secure base with their principal caregivers, a core concept in attachment theory, defined as the caregiver's ability to provide a source of security to the child leading him or her to feel safe to explore the environment (Cassidy, 1999). They integrated it into their attachment behaviour, so that they were able to behave adequately in the presence of a stranger (e.g. a clinician), as required when completing the SSP. On the other hand, insecure children had not had such a positive experience. Consequently, they lacked this secure base, leading them to feel ill at ease, anxious or inhibited in the presence of a stranger. Such a capacity was considered to be built on a significant number of earlier secure-base experiences and reflected in the context of the Fr-ASCT test.

These Q-scores also allowed the children to be categorised according to the four traditional attachment patterns. For the present study, only the secure/insecure categorisation was used. Preliminary studies have applied Fisher's  $r$  to  $z$  transformations of each score. Symons, Clark, Isaksen, & Marshall (1998, p. 787) commented that "this is appropriate when a dependent variable is a correlation statistic, and in addition, this provides correction to the negative skew of the Q-sort distribution that is typically found". We followed the same procedure so that all the Q-correlations scores were standardised, allowing for comparisons. First, the distribution of the secure standardised Q-correlation scores in a sample of normally-developing children was analysed. A cut-off point was chosen according to which the majority (66%) of them were categorised as secure, in accordance with the frequency reported in the literature (van Ijzendoorn & Sagi-Schwartz, 2008) and according to age since positive changes in Q-set security scores were observed with age (Stievenart, Roskam, Meunier, & Van de Moortele, submitted). Then each child was categorised as secure or insecure according to the cut-off point. Some 22 older siblings (48.9%) and 34 younger siblings (75.6%) were categorised as secure.



To maximise the coding validity, 20% of the video-recorded ASCTs were coded separately by two independent coders. The agreement between the two coders was computed using intraclass correlations. These coefficients have the advantage of taking into account differences in scoring means attributable to the coders (Howell, 1998, pp. 550-553). The reliability for the secure Q-score based on the coders' overall Q-sort was .80. This value was considered as satisfactory, although higher intraclass correlations between coders using the ASCT have previously been reported (.94 for Q-set security score) (Miljkovitch et al., 2004; Miljkovitch, Pierrehumbert, & Halfon, 2007). However, our value was closely similar to that recently reported in a Spanish sample of 30 randomly selected cases, with a total of 10 judges (Pierrehumbert et al., 2009), which yielded an intraclass coefficients for the secure Q-score of .81.

**The CaMir.** The *Cartes pour les Modèles internes de relation* (Pierrehumbert et al., 1996) was employed to assess the attachment representations of mothers and fathers of children in the first sub-group, and of all the young adults and their parents in the second sub-group. The CaMir was a self-reporting Q-set assessment procedure, composed of 72 items, chosen to represent four separate domains: the present (questions about current family), the past (questions about early experiences with their own parents), the current state of mind (questions about the value of parental actions, focusing on elaboration rather than memories), and generalisations (generalised representations of parenting). The CaMir was initially developed in French, and this was the version used in the present study. Other versions were available in English (Miljkovitch, Pierrehumbert, Karmaniola, Bader, & Halfon, 2005), in Chilean-Spanish (Garrido, Santelices, Pierrehumbert, & Armijo, 2009) and in Italian (Molina, Critelli, & Pierrehumbert, 2007).

The CaMir was intended to measure adults' attachment strategies in a general way. The primary attachment strategy, referring to security, was defined as "seeking proximity to and support from an attachment figure either by requesting actual support from a real, physically present relationship partner, or by calling upon mental images, prototypes, schemas, or specific memories of interactions with real or imagined (e.g., spiritual) attachment figures" (Mikulincer & Shaver, 2008, p. 527). Two secondary attachment strategies could be distinguished. The hyperactivation strategy leads to "persisting tendencies to be especially vigilant to threats; exceptionally expressive of fears, needs, and doubts; and continually worried about attachment figure's availability and responsiveness. All of these predispose a person to excessively dependent behaviour, intense and frequent proximity seeking and contact maintenance, and clinginess" (Mikulincer & Shaver, 2008, p. 540). This was related to the Anxiety dimension of the model of adults' attachments proposed by Bartholomew and Horowitz (1991). On the other hand, the deacti-

vation strategy referred to “attempting to block or inhibit emotional states associated with threat-related thoughts (e.g., fear, sadness, shame), because these thoughts could activate unwanted attachment-related needs, memories, and behaviours” (Mikulincer & Shaver, 2008, p. 539). This was related to the Avoidance dimension of the model.

The CaMir had several advantages over other instruments (Miljkovitch et al., 2005). First, the assessment of attachment was not confined to past experience with the adult’s own parents, but also covers present experience with current attachment figures. This led to a general view of attachment experiences. Second, some generalised expectations of attachment were approached. Third, the CaMir was applicable at any age from adolescence to late adulthood, allowing children to complete the same instrument as their parents. Fourth, Q-methodology was ideally suited to making continuous assessments of attachment strategies. As suggested by Miljkovitch et al. (2005, p. 609), “measuring the proximity of participants’ scores at all of the items to the prototypes allows a finer assessment than that obtained with self-reports based on a few or single items”.

Furthermore, the Q-sort procedure limited the impact of social desirability on the results in two ways. First, the individual being described provided his or her own frame of reference. No normative judgments as to the amount of a given characteristic relative to some reference group were required. Instead the items were arranged in order of their degree of importance in characterising the person. This dimension of “importance” was likely to be a highly personal one. Second, any given item was evaluated in the context of all the other items. An item may be selected as highly important although it does not occur with unusual frequency, intensity, or duration in the person. Thus, the Q-sort allowed for the quantitative expression of feelings.

The 72 items were sorted by each participant into a forced five-category distribution according to the applicability of each item to his or her particular experience. This distribution led to a secure Q-score that was obtained by correlating the individual’s Q-sort description with the criterion sort provided by experts for a prototypically autonomous-secure adult. This score was then transformed into a standardised score (t score), allowing comparisons.

Cut-off points were used to create categorical variables. The distribution of the standardised scores for autonomy was first analysed in a larger sample ( $n = 381$ ). It is widely accepted and observed that around 60% of adolescents and adults in a non-clinical group demonstrate a secure attachment strategy, whatever the instrument (van Ijzendoorn & Bakermans-Kranenburg, 1996). So the cut-off point was chosen so that 60% of adults were categorised as autonomous/secure. Among the parents, 50 fathers (57%) and 48 mothers (53%) were classified as secure, while the corresponding figures for the young adults were 28 younger siblings (60%) and 26 older siblings (55%).

The CaMir was initially validated with 202 adults (Pierrehumbert et al., 1996). Convergent validity ( $r = .68$ ) was evident between the scores of a subsample ( $N = 22$ ) obtained with the CaMir and the AAI, and coded with the Kobak Q-set procedure (Kobak, Cole, Ferenz-Gillies, & Fleming, 1993). Several further studies using the CaMir (e.g. Miljkovitch et al., 2005; Roskam et al., 2011) have demonstrated both the conceptual validity and the discriminant properties of the scale. Recently, another validation study using a large number of adult completions of the CaMir confirmed that it is a valid French instrument for assessing adult's attachment representations (Stievenart, Roskam, & Pierrehumbert, submitted). The two attachment continuous scores of Anxiety (Cronbach's  $\alpha = .90$ ) and Avoidance (Cronbach's  $\alpha = .76$ ) underlied the CaMir and could be reliably assessed using it, as suggested by Griffin and Bartholomew (1994) and in the initial validation (Pierrehumbert et al., 1996). These Anxiety and Avoidance scores were used in the present study since low scores on these two scales referred to attachment security and thus could be related to the child's Q-set security score.

## Results

### *Preliminary analysis*

The normal distribution of the continuous scores was examined using Kolmogorov-Smirnov tests for mothers', fathers' and children's scores. All were significant ( $z$  varying between .08 and .12, all  $p < .05$ ), indicating that none of the distributions were normal. Consequently, a non-parametric approach is better suited to the data. Due to similar design as in Bernier and Miljkovitch (2009, p. 40), subsequent analysis were run using Spearman's rho ( $\rho$ ) correlation coefficient, which has the advantage (compared with other non-parametric measures of association such as Kendall's tau) of being computed on the same scale as Pearson's coefficient, commonly used with parametric data. This allows us to interpret the magnitude of Spearman correlations in the same way as the Pearson coefficient, while allowing for the fact that the scores are not normally distributed.

### *Parents (CaMir) and their young children (Fr-ASCT)*

Among the young children, only 52% of the younger siblings ( $n = 23$ ) and 50% of the older siblings ( $n = 22$ ) had the same attachment representations as their mother. This result was not significant for either group (younger siblings:  $\chi^2(1) = 3.10, p > .10$ ; older siblings:  $\chi^2(1) = .00, p > .10$ ). The concordance between fathers and their young children was also non-significant (younger siblings:  $\chi^2(1) = .00, p > .10$ ; older siblings:  $\chi^2(1) = 1.47, p > .10$ ).

Only 52% of the younger siblings ( $n = 23$ ) and 59% of the older ones ( $n = 26$ ) had the same attachment representations as their fathers.

Using continuous scores for parents' Anxiety and Avoidance and children's Q-set security score, no significant two-tailed correlation was revealed (see Table 1(a)).

**Table 1**

*Two-tailed correlations between the attachment scores of mothers, fathers and their children*

**Parents and their young children**

Measures with Fr-ASCT	1	2	3	4	5	6
1. Mothers' Avoidance	–	.52**	.05	.35**	.16	-.13
2. Mothers' Anxiety		–	.06	.18	.27(*)	-.06
3. Fathers' Avoidance			–	.49**	.04	-.12
4. Fathers' Anxiety				–	.20	-.09
5. Younger siblings' Q-set security score					–	.13
6. Older siblings' Q-set security score						–

(\*)  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$

**Parents and their older children**

Measures with CaMir	1	2	3	4	5	6	7	8
1. Mothers' Avoidance	–	.52**	.05	.34**	-.02	.32*	.06	.18
2. Mothers' Anxiety		–	.08	.20(*)	.29*	-.13	.25(*)	.24
3. Fathers' Avoidance			–	.49**	.10	-.06	-.16	-.07
4. Fathers' Anxiety				–	.21	-.16	.02	-.02
5. Younger siblings' Avoidance					–	.31*	-.05	-.01
6. Younger siblings' Anxiety						–	-.16	-.14
7. Older siblings' Avoidance							–	.64**
8. Older siblings' Anxiety								–

(\*)  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$

In sum, our results showed that secure/insecure attachment patterns (using categorical scores) were not generally concordant between the parent and his or her children when these attachment representations were assessed using the Fr-ASCT for the children and the CaMir for the parents.

The rate of concordance between the two siblings was also investigated. We found a concordance of 60% ( $n = 27$ ), which reached the lowest level of marginal effect ( $\chi^2(1) = 2.72, p < .10$ ). This level of concordance was similar to those obtained by van Ijzendoorn et al. (2000). However, no significant correlations were observed using the continuous scores ( $\rho = .24, p > .10, n = 45$ ). Thus, slightly different results were obtained with the categorical and

continuous scores: there were no significant correlations using the continuous scores, but the categorical ones revealed a certain similarity between the siblings' attachment patterns. This difference will be discussed further below.

### *Parents and their older children (CaMir)*

Among the teenage and young adult children, 60% of younger siblings ( $n = 28$ ) and 60% of the older siblings ( $n = 28$ ) showed the same attachment representations as their mothers. However these results were not significant (younger siblings:  $\chi^2(1) = 1.32, p > .10$ ; older siblings:  $\chi^2(1) = 1.50, p > .10$ ). Similarly, the concordance of attachment representations between fathers and their older children was not significant (younger siblings:  $\chi^2(1) = 1.04, p > .10$ ; older siblings:  $\chi^2(1) = .02, p > .10$ ). Only 59% of younger siblings ( $n = 26$ ) and 52% of older ones ( $n = 22$ ) had the same attachment representations as their fathers.

These results obtained with the continuous scores (see Table 1(b)), revealed two significant correlations between the attachment representations of parents and their young adult children. The younger sibling's Avoidance scores were significantly positively correlated with the mother's Avoidance ( $\rho = .32, p < .01, n = 46$ ) and Anxiety ( $\rho = .29, p < .10, n = 46$ ) scores, like the oldest sibling's Avoidance scores tended to significantly positively correlate with the mother's Anxiety scores ( $\rho = .25, p < .10, n = 46$ ). These results suggest that some concordance of attachment patterns does occur between the mother and the younger of their teenage or young adult children.

Like the results obtained with the categorical scores, the results with the continuous scores suggested that most attachment representations differed between the parent and his or her children. However, concordance did sometimes occur with the younger sibling. This will be discussed further below.

Both the siblings completed the CaMir, but only 47% ( $n = 22$ ) of the pairs showed the same attachment representations, a non-significant percentage ( $\chi^2(1) = .43, p > .10$ ). Using continuous scores, no significant correlations between the pairs were observed (Avoidance:  $\rho = -.16, p > .10, n = 46$ ; Anxiety:  $\rho = -.14, p > .10, n = 46$ ). This absence of significant correlations was in line with the results obtained with the categorical scores: there were no significant correlations between the younger and older siblings' on either the attachment patterns or the Anxiety and Avoidance scores.

## **Discussion**

The studies reviewed at the beginning of this article led us to explore the concordance of secure/insecure attachment representations between mothers and fathers and two of their children as well as the concordance of attachment

representations between siblings. Different instruments were used for young children (Fr-ASCT, coded with the CCH) and for the older children and parents (CaMir). The concordance between parents and their children was studied using both categorical and continuous scores. As a general conclusion, our results showed very little concordance of attachment representations between parents and children.

These results contradict previous empirical research focusing on the concordance between the parent's attachment representations, assessed with the AAI, and the child's attachment behaviour, assessed with the SSP, that found moderate to high coefficients (e.g. Béliveau & Moss, 2009; van Ijzendoorn, 1995). They also contradict previous findings about the concordance between parents' and children's attachment representations, also using the ASCT, whether with another coding system (Gloger-Tippelt et al., 2002) or with the same coding system as used in the present study (Miljkovitch et al., 2003). Our results highlighted that the concordance of attachment representations between parent and child is less clear than the concordance of parents' attachment representations and children's attachment behaviour. The core question of our discussion is therefore: why are attachment representations transmitted better from the parent to the child's attachment behaviour than to the child's attachment representations? Both methodological and conceptual explanations for this situation can be suggested.

The absence of significant concordance could be due to the assessment procedure that was used in the current study. The validity of the CCH coding system, used to code the Fr-ASCT, and the CaMir could be questioned. Although these two attachment instruments have demonstrated substantial validity and reliability and some significant discriminative properties in other studies (e.g. Miljkovitch et al., 2003; Pierrehumbert et al., 1996; Stievenart, Meunier, Van de Moortele, & Roskam, 2012), they are not so robust as the SSP and the AAI. Our results should therefore be viewed with caution.

Besides different methodological explanations for the low level of empirical evidence of attachment concordance between the parent's and the child's attachment representations, a conceptual explanation could refer to the debate about the uniqueness of the internal working model (IWM) (e.g. Bretherton, 1990). Children may develop a specific IWM for each attachment relationship (separately for the mother and the father), but neither the Fr-ASCT nor the CaMir can distinguish them since they assume that there is a single IWM for parental relationships. Some versions of the ASCT do distinguish the IWMs developed by the children for the father and the mother. It would be interesting to use these versions to explore the concordance of attachment representations. Higher attachment concordance may occur when the child's responses to the ASCT focusing on the mother are compared to the mother's responses to the CaMir, for instance. In this case, the rate of concordance

would be expected to be similar to that obtained with the SSP that assess attachment behaviours towards the mother or the father.

As well as exploring the concordance of attachment representations between mothers and fathers and two of their children, we also studied the hypothesis that there would be a different rate of concordance with categorical than with continuous scores. Since no significant concordance with categorical scores, and only minimal concordance with continuous scores, was found, the hypothesis was not supported.

The hypothesis of a higher rate of concordance in mother-child than in father-child dyads was also not confirmed. Transmission from the mother to her child has often been found in previous studies (e.g. van Ijzendoorn, 1995). In the present research, the children's attachment representations seemed to be independent of those of their mother. Previous research has also found that it was not easy to detect attachment transmission between fathers and their children, especially when using continuous scores (e.g. Bernier & Miljkovitch, 2009; Miljkovitch et al., 2003). We found two exceptions to this generalisation, in that mothers' Avoidance and Anxiety were linked to Avoidance in the younger and only mothers' Anxiety to Avoidance in the oldest of their two teenage or young adult offspring when continuous scores were used.

Although both mother-child and father-child dyads were used in the present study, our results did not provide evidence for either the similarity or the independence of children's attachments to the two parents. As explained above, to fully understand the differences of transmission between mothers and fathers and their children, including a certain independence of attachment to the two parents, it would be useful to explore children's representations of each of their parents separately. Although previous findings (mostly focused on the concordance between the parent's attachment representations and the child's attachment behaviours) have supported a rather deterministic view, our results suggest that attachment representations are not necessarily transmitted within the family. Previous results have suggested that children's attachment behaviour is determined by parental attachment representations, especially those held by the mother. The transmission of a secure pattern of attachments has been seen as a protective factor for the child's development, while the transmission of insecurity is considered to be a risk factor for developmental disorders (e.g. Green & Goldwyn, 2002). Our results, showing a lack of concordance of attachment representations in mother-child and father-child dyads and between siblings question this deterministic explanation. The rate of concordance between the attachment representations of siblings was low, in accord with the results for children's attachment behaviour (e.g. O'Connor & Croft, 2001; van Ijzendoorn et al., 2000). This suggests that, as suggested by the life-span developmental perspective (e.g. Weinert & Weinert, 1999), each individual is able to develop his or her own attachment rep-

representations depending on personal characteristics and differential susceptibility to the environment. That is particularly relevant in clinical purposes and could be considered as a principal aim in some context of family disturbances. In the context of insecurity, family psychotherapists are encouraged to help the children to build secure attachment representations. Further studies are, however, needed to confirm the hypothesis that the attachment representations of parents and children and between siblings are independent.

While innovative, the results of the present study have several limitations and still need to be extended in several ways. Firstly, only the transmission of the secure/insecure attachment was studied here. However, it would be extremely interesting to explore the transmission of the disorganised-unresolved pattern of attachments. Many researchers have concluded that disorganisation in children's attachment patterns is a major risk factor for developmental disorders, even more so than insecurity (avoidant or ambivalent) (e.g. Carlson, 1998; Green & Goldwyn, 2002). Data from the Fr-ASCT can be used to assess disorganised attachment patterns (and the Q-set disorganisation score) of children but the CaMir was not designed to rate adults with unresolved attachment patterns characterised by "lapses in the monitoring of reasoning or discourse during discussions of potential traumatic experiences" (Hesse, Cassidy, & Shaver, 1999). Both the conceptual and the empirical relevance of such attachment representations have been demonstrated (van Ijzendoorn & Bakermans-Kranenburg, 1996). The problem of assessing them also exists for other self-report instruments. Perhaps it makes no conceptual sense to use a self-report measure to assess the unresolved profile. Further analyses could usefully be conducted to explore the concordance of parents' unresolved attachment patterns to the child's disorganised patterns.

Second, it would be interesting to control for children's language abilities in the context of the Fr-ASCT. Although previous researchers (e.g. Miljkovitch et al., 2007) have suggested that language skills do not play any role in story completion (because the use of material allows the child to depict his or her representations without speaking), in our experience it was difficult to carry out the CCH coding procedure when the child did not speak or only spoke a little. This difficulty can result in false estimates of the attachment patterns, potentially interfering with the results. Thus, language abilities should be controlled in order to neutralise the potential effect of these abilities on the scoring of children's attachment in the Fr-ASCT.

Finally, moderating and mediating effects on the concordance of attachment representations should be considered in order to explain why they sometimes occur and sometimes do not. As a moderator, the role played by IQ could for instance be explored. Recent studies have shown that IQ, especially reasoning IQ, has an impact on the development of attachment representations (e.g. Stievenart, Roskam, Meunier, & Van de Moortele, 2011). It could



be that children with higher cognitive abilities are more independent of their parents' attachment representations. They might be better able to stand back and think about their attachment figures. They might also use other attachment relationships (with grandparents, uncles, aunt, peers etc.) to create their attachment representations. Children with lower cognitive abilities may be more dependent on their parents' attachment representations because of their inability to elaborate alternatives. The mediating role played by parental child-rearing behaviour should also be explored. Recent research has shown that paternal, but not maternal, child-rearing behaviour mediated the relationship between secure parental representations and secure child attachments (Roskam et al., 2011). The role of mediators and moderators could combine to help us understand the process of attachment transmission, and thus a certain kind of independence in attachment representations within parent-child dyads and between siblings.

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