



Early maladaptive schemas and child and adult attachment: A 15-year longitudinal study

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Objectives. To examine the relation between early maladaptive schemas (EMS), as defined in schema therapy, and both child and adult attachment.

Design. A 15-year longitudinal design in which child attachment groups (secure, avoidant, ambivalent, and disorganized) were compared in early adulthood on their profile of scores across EMS domains. A similar strategy was used to examine EMS profiles as a function of adult attachment groups (secure, preoccupied, and fearful).

Methods. Sixty participants, recruited from Montreal day-care centres, were assessed at 6 (Time 1) and 21 years of age (Time 2). Time 1 attachment was assessed using a separation–reunion procedure and Time 2 attachment, using the *Experiences in Close Relationships* questionnaire. EMS were evaluated with the *Young Schema Questionnaire* (Time 2).

Results. There were more signs of EMS among young adults with either an insecure ambivalent child attachment, or an insecure preoccupied adult attachment style, compared to their secure peers. These differences were not specific to one domain of EMS; they were reported for various EMS.

Conclusions. The results suggest that specific elements of representational models are more likely to be related to the development of EMS: high anxiety over abandonment, negative self-view, and explicit manifestations of personal distress. Unmet childhood needs for secure attachment may lead to a large variety of EMS as defined in schema therapy.

Schema therapy and the importance of childhood experiences

Schema therapy (ST; Young, Klosko, & Weishaar, 2003) has gained considerable popularity among clinicians over the last decade, particularly when it comes to treating enduring, lifelong, mental illness, such as personality disorders (Giesen-Bloo *et al.*, 2006; Nadort *et al.*, 2009). ST was developed in an effort to improve treatment effectiveness with patients suffering from chronic characterological problems, and integrates elements of traditional cognitive-behaviour therapy and a broad range of therapeutic approaches

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(e.g., psychodynamic, Gestalt). One important aspect that distinguishes ST from traditional cognitive therapy is a greater emphasis on childhood experiences as the key to understanding and treating adult psychopathology. In ST, early maladaptive schemas (EMS) are thought to result from the interaction between genetics and temperament, and childhood environment, in particular the child's interactions with caregivers (Kellogg & Young, 2006; Young *et al.*, 2003). More precisely, ST postulates that EMS develop from the following unmet core emotional needs that are believed to be universal (Young *et al.*, 2003): (1) secure attachment to others; (2) autonomy, competence, and sense of identity; (3) freedom to express needs and emotions; (4) spontaneity and play; and (5) realistic limits and self-control.

Despite these specific hypotheses concerning the early development of EMS, it is interesting that questionnaires assessing their presence are most commonly administered to adults (Oei & Baranoff, 2007; Young *et al.*, 2003). In a similar vein, early life experiences hypothesized to explain the development of specific EMS (e.g., type of parenting received, reported abuse, and neglect) are typically assessed retrospectively in adolescence or adulthood. Hence, although ST clearly states the importance of the child's experiences and of the attachment to caregivers in the development of EMS, no longitudinal study has investigated the association between the parent-child relationship during childhood and the presence of EMS during late adolescence or early adulthood.

Attachment and cognitive schemas

Attachment theory is a well-defined conceptual and empirical framework for studying the parent-child relationship. Bowlby's (1969/1982) influential work on attachment established that, by the end of the first year of life, children show a specific pattern of attachment to one or several caregivers. Attachment is a specific affectional bond, which was defined by Ainsworth (1989) as a persistent and emotionally significant relationship with a person, the attachment figure, who is not perceived as interchangeable. The attachment relationship develops from past experiences with caregivers and is expressed through the activation of behavioural systems that allow the child to seek proximity with attachment figures in times of distress and to explore the environment once comforted. Felt security is associated with achieving equilibrium between these dependency and exploratory needs.

Underlying attachment behaviours are internal working models (IWMs), or internalized representations of the history of attachment-related experiences, which influence expectations and attitudes concerning the self and others (Bowlby, 1979; Bretherton & Munholland, 2008). Based on early experiences with caregivers, the securely attached child develops IWMs that are associated with a positive view of self and of others, the latter perceived as being responsive and available to provide help in times of distress. Conversely, from their early interactions with parents who are consistently unresponsive or whose responsiveness is unpredictable, the insecure child develops internal representations of the self as unworthy of love and of others as being insensitive, unsupportive, or even rejecting. IWMs are thought to shape experiences in a way that representations of self and others are maintained over long periods of time. However, findings regarding stability of attachment from infancy to late adolescence or early adulthood have been inconsistent, with moderate stability of the secure/insecure classifications in low-risk samples (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; $\kappa = .49$ and $.44$, respectively) and instability in high-risk samples (Lewis, Feiring, & Rosenthal, 2000; Weinfeld, Sroufe, & Egeland, 2000; $\kappa = .02$ and $.02$).

Changes in caregiving as well as higher frequency of attachment-related stressful life events (e.g., divorce, loss) are associated with lower stability rates.

EMS, as defined in ST, are similar to IWMs of insecurely attached individuals as defined by Bowlby (1969/1982). Both are mental, affect-laden structures that develop from dysfunctional early interactions with the primary caregiver, and serve as templates for the processing of experiences involving the self and others throughout the lifespan (Young *et al.*, 2003; Young & Lindemann, 1992). However, they are not the same. EMS may be the cognitive expression of affect based on a working model of interactions with others more broadly and heavily influenced by, but not limited to the specific affectional bonds to which attachment refers. In this sense, EMS may be specific components of IWMs that explain individual differences in attachment relationships and thus can be targeted for change in therapeutic settings (Platts, Tyson, & Mason, 2002). Empirical studies are needed to further our understanding of the similarities and distinctions between these two concepts. Accordingly, in addition to assessing longitudinal associations between child attachment and EMS, we will examine associations between adult romantic attachment and EMS.

Decades of research have provided support for the idea that distorted beliefs about self and others, such as those expressed in a depressive cognitive style, are related to one's perception of having received poor parenting, to reports of childhood maltreatment (Gibb, 2002; Ingram, Overbey, & Fortier, 2001), and to insecure attachment styles (Barrett & Holmes, 2001; Gamble & Roberts, 2005; Whishman & McGarvey, 1995). ST specifically postulates that unmet needs for secure attachment during childhood result in the most damaging EMS in adulthood, that is, schemas in the *disconnection and rejection* domain. All EMS in this domain (abandonment/instability, mistrust/abuse, emotional deprivation, and defectiveness/shame, social isolation) include expectations that one's needs for safety, nurturance, empathy, and acceptance will not be met (Young *et al.*, 2003). However, the latter studies did not measure attachment during childhood and relied on self-reported, retrospective, assessment of past experiences with caregivers. Retrospective adolescent or adult accounts of early attachment relationships are not synonymous with actual observational measurement of these relationships during childhood and their longitudinal impact on adult relational schema. Retrospective self-reports are subject to memory and cognitive biases of the participant.

To our knowledge, only three studies have directly examined the link between EMS and attachment but none measured attachment during childhood. Instead, they used adult self-reports of attachment relationships with parents (Blissett *et al.*, 2006) and romantic partners (Cecero, Nelson, & Gillie, 2004; Platts, Mason, & Tyson, 2005). Blissett *et al.* (2006) reported that parental attachment representations of undergraduate women were concurrently associated with six of 15 EMS. However, the questionnaire used to assess attachment in this study did not allow for a distinction between insecure and secure attachment patterns. Two studies (Cecero *et al.*, 2004; Platts *et al.*, 2005) used questionnaires that classify participants into four attachment categories (secure, insecure preoccupied, insecure dismissing, and insecure fearful), based on Bartholomew and Horowitz's (1991) model of adult romantic attachment relationships. In both studies, researchers reported that attachment groups could be distinguished on the basis of EMS scores on the Young Schema Questionnaire (YSQ; Young & Brown, 1990), and that 77% of participants from an out-patient clinic were correctly classified on the basis of their YSQ scores (Platts *et al.*, 2005). However, results of these studies did not indicate consistent associations between particular EMS and attachment classification

groups. For example, although fearful adults reported being emotionally inhibited in both studies, they were also characterized by social isolation and defectiveness/shame in one study (Platts *et al.*, 2005), but not the other (Cecero *et al.*, 2004) in which they rated themselves high on mistrust/abuse and vulnerability to harm and illness. The fact that these studies relied exclusively on self-reported measures of attachment may have introduced cognitive biases that may not be equally distributed in different populations, such as clinical (Platts *et al.*, 2005) and non-clinical (Blissett *et al.*, 2006; Cecero *et al.*, 2004). In addition, exclusive reliance on adult rather than childhood attachment measures does not allow testing of the idea that EMS are rooted in childhood experiences. Measurement of attachment during childhood is required to directly assess the hypothesis that EMS are related to *early* attachment to parents.

Study objectives and hypotheses

The main objective of the current study is to examine the longitudinal relation between observed child (5–7 years) attachment classifications, using a separation–reunion procedure, and young adults' EMS profiles. A secondary objective is to examine the association between EMS and a concurrent, self-reported measure of adult attachment. More specifically, the present study will investigate whether distinct profiles of scores on EMS characterize different attachment classification groups, in both childhood and adulthood. The use of a measure of child attachment will allow the direct testing of ST's postulate that insecure child attachment is related to the development of EMS. The additional inclusion of an adult attachment measure will enable comparison of our results with the bulk of the literature, which has used adult attachment measures, as well as investigation of the similarity between EMS profiles obtained in relation to corresponding attachment groups in childhood and early adulthood.

Because of the limited number of studies that have investigated the link between EMS and attachment, and owing to the various patterns of associations found between attachment groups and specific EMS, we hypothesized that participants who were insecurely attached as children, regardless of the subgroup to which they belonged (avoidant, ambivalent, or disorganized), would show overall higher scores on most EMS. In other words, we hypothesized that subjects in insecure attachment groups and those in the secure group would have parallel profiles on the YSQ, the former scoring higher than the latter. The same hypothesis was made with respect to adult attachment style. The main analyses were conducted based on schema domains (theoretically and empirically derived EMS groupings), thereby minimizing the number of statistical tests performed. Finally, owing to the fact that insecure attachment groups vary considerably in their emotion regulation strategies, and that studies rarely examine differences between classifications groups (avoidant, ambivalent, and disorganized), we conducted a four-way comparison rather than combining all insecure subgroups.

Method

Participants

The study sample consisted of 60 participants (39 females), who took part in the fifth phase of a longitudinal study on developmental adaptation as a function of parent–child relationships (Moss, Rousseau, Parent, St-Laurent, & Saintonge, 1998). Participants and their families were initially recruited through French language day-care centres in diverse areas of metropolitan Montreal, when the children were aged between 3 and 5 years

($M = 4$ years, 1 month; $SD = 10$ months). At Time 2 of the original study (Time 1 of the current study), children, aged between 5 and 7 years of age ($M = 6$ years, 2 months; $SD = 12$ months), and their mothers participated in a filmed separation–reunion procedure to classify attachment patterns. Background data from that data collection for the current sample indicated that most (65%) of the 60 participants lived with their mother and father or stepfather, compared with 35% living in single-parent families. Most (76.7% of mothers, and 69.1% of fathers) participants' parents had completed post-secondary studies and average level of education was 14.7 ± 2.9 years for mothers and 13.8 ± 3.4 years for fathers. With respect to family income, 16.9% of families earned less than \$20,000 a year, and thus lived under the poverty threshold, whereas 35% of families had an annual income of \$50,000 or more. Comparison of data from participants in the current subsample ($n = 60$; those returning 15 years later) and those who dropped out of the study ($n = 65$) indicated no differences with respect to gender and only one difference with respect to background variables. Education level of the mother was higher among families who stayed in the study ($M = 14.8 \pm 2.9$) than among those who dropped out ($M = 13.2 \pm 2.9$; $t[125] = -3.0$, $p < .01$). In addition, there was a higher proportion of secure (58.3%) participants among those who stayed in the study, than among those who did not (33.1%) ($\chi^2[1, n = 125] = 8.75$, $p < .01$). Groups did not differ on any other background variables or gender.

Background data on the 60 participants who took part in the fifth phase of the study indicated an age range of 19 years, 8 months to 22 years, 8 months ($M = 21$ years, 2 months; $SD = 10$ months), with 100.0% of participants having at least completed high school and 41.7% having completed junior college.¹ Participants were 21 years and 2 months old on average at the adult data collection; most had not yet completed a university degree. Most (78.0%) of the young adults had an annual income under \$20,000. Finally, 80.7% of participants were single in early adulthood, with the remainder reporting being in a common law relationship (17.5%) or being separated (1.8%).

Procedure

Time 1

Participants and their mothers visited the laboratory for a 2-hour session, during which they participated in the separation and reunion task. During the separation, mothers completed the socio-demographic questionnaire. At the end of the session, participants received a \$10 compensation fee.

Time 2

Following an initial phone call informing the participants of this phase of the longitudinal study, young adults were invited to the university for two 1-hour laboratory sessions. During the first session, participants completed a socio-demographic and the *Experiences in Close Relationships* (ECR; Brennan, Clark, & Shaver, 1998) questionnaires. During the second session, participants completed the YSQ (Young, 1990). Both sessions were completed within 2 months of one another. Participants received \$20 for their participation.

¹In Quebec, universal government funding is available for 2 years following high school.

Measures

Separation–reunion procedure (Main & Cassidy, 1988; time 1)

Upon arrival at the laboratory, mothers and children participated in an interactive play period, which included a joint problem-solving task (20 min). This play was followed by a separation (approximately 45 min) in which the child completed problem-solving tasks with an experimenter. During this time, the mother completed questionnaires in another room. Just prior to the reunion, there was a free-play session, during which the experimenter was available to the child. Following the separation, mothers were told to rejoin the child but received no specific instructions concerning the reunion. After the 5-min reunion period, the mother and child remained in the room for a 10-min snack time. A second 30-min separation and 5-min reunion period (structured like the first) then took place. The child's attachment classification was given on the basis of behaviour observed during reunion periods. The validity of this procedure for classifying attachment behaviour in children between 5 and 7 years of age, with respect to socio-emotional and academic adaptation, has been extensively documented (Moss, Cyr, Bureau, Tarabulsky, & Dubois-Comtois, 2005; Moss & St-Laurent, 2001; Solomon, George, & De Jong, 1995). In addition, longitudinal studies have found significant associations between this measure and both infant and preschool separation–reunion behaviour, as well as with middle childhood narrative assessments of attachment (Bureau & Moss, 2010; Main & Cassidy, 1988; Moss *et al.*, 2005).

Separation–reunion behaviour was coded according to the Main and Cassidy (1988) classification system. The secure (B) pattern is manifested when the child responds to the mother's return in a confident, relaxed, and open manner. The child seems relaxed throughout the reunion and shows some pleasure in being with the parent. The insecure avoidant (A) pattern is characterized by the child's neutral coolness towards the parent and minimization of physical or verbal contact. In the insecure ambivalent-dependent (C) attachment pattern, the child shows exaggerated intimacy with dependency on the attachment figure through cute or babyish behaviour along with subtle signs of anger. The insecure controlling (Dcont) classification is characterized by role reversal of a caregiving or punitive type or their combination. Others (about one third of normal samples) classified as insecure other (IO; also called disorganized) seem unable to use the caregiver as a secure base for exploration, but do not clearly show the A or C patterns. Since both the Dcont and IO categories have been shown to reflect disorganization at the level of representation and have been shown to be continuous with preschool disorganization (Moss, Bureau, Béliveau, Zdebik, & Lépine, 2009; Solomon *et al.*, 1995), they are typically combined for data analyses. Videotaped reunions were coded by two coders who were unaware of participant scores on any other study measures. Coders were trained by expert coders and achieved reliability with these experts on a separate sample of tapes. All discrepancies were resolved by a reviewing of the tapes until a consensus was reached. Overall agreement for the major classifications, calculated on 30% of sample cases, was 88% ($k = .81$). Agreement for each of the four major classifications (A, B, C, and D: combining Dcont and IO) ranged from 83 to 92%, indicating no significant coding discrepancies as a function of attachment classification.

ECR; time 2

This self-report questionnaire (Brennan *et al.*, 1998) consists of 36 items that evaluate adult romantic attachment along two dimensions: avoidance of intimacy and anxiety over abandonment as manifested in the specific context of romantic relationships. Participants

respond to each item using a 7-point Likert scale (*1 = strongly disagree; 7 = strongly agree*). Items in the avoidance dimension assess to what extent one is comfortable with proximity with the partner, with sharing intimate thoughts and feelings with him/her, and with depending on and trusting the romantic partner. Items in the anxiety dimension examine aspects such as worries about being abandoned by the partner, worries or anger when the partner does not care enough, and desires to merge with the romantic partner. In this study, the anxiety and avoidance subscales demonstrated excellent internal consistency (.90 and .90, respectively). In line with Bartholomew's four-category model of attachment (Bartholomew & Horowitz, 1991), a high score on the anxiety scale identifies the preoccupied category, a high score on the avoidance scale identifies the dismissing category, high scores on both scales identify the fearful category, and low scores on both scales identify the secure category.

YSQ-long form 3 (YSQ-L3; time 2)

Originally, the YSQ-LF was created within the conceptual framework of schema therapy, based on clinical work with treatment-resistant patients, and contained 205 items depicting 16 EMS (Young, 1990). This questionnaire has shown predictive validity with regard to psychiatric diagnoses and depressive symptomatology (for a review, see Oei & Baranoff, 2007). The original ST model was modified and now defines 18 EMS (Young *et al.*, 2003). Thus, items were added to the original questionnaire. The YSQ-L3 is a 232-item questionnaire that assesses 18 early maladaptive cognitive schemas, grouped into five domains (see Table 1). The domains are theoretical constructs proposed by Young (1994) that were closely replicated in a large sample (Lee, Taylor, & Dunn, 1999), and used in a previous study investigating EMS in relation to young women's attachment representations (Blissett *et al.*, 2006). Items are rated on a 6-point Likert scale (*1 = completely untrue of me, to 6 = describes me perfectly*), with higher scores indicating greater presence of the EMS for the respondent. The YSQ assesses a variety of maladaptive schemas (see Table 1) and, contrary to the ECR, is not limited to nor specifically targets relationships with romantic partners.

Results

Attachment distributions

Child attachment distribution was as follows ($n = 60$): 58.3% (11 boys and 24 girls) secure, 18.3% (three boys, eight girls) insecure avoidant, 10.0% (four boys, two girls) insecure ambivalent, and 13.3% (three boys, five girls) disorganized (five controlling, three IO). Adult attachment distribution across attachment categories was as follows: 51.7% (13 men and 18 women) secure, 31.7% (16 men and three women) preoccupied, 11.7% (five men and two women) fearful, and 5.0% (no man and three women) dismissing. Because of the small number of young adults in the latter group, they were excluded from subsequent analyses assessing adult attachment. Among secure young adults, 58.6% (17/29) had also been classified as secure in childhood, whereas 5.6% (1/18) of preoccupied adults were ambivalent as children, and 0.0% (0/7) of fearful adults had been classified as disorganized in childhood. There was no significant correspondence between adult and child attachment, using either three-group (41% stability; $k = .06$, *ns*) or two-group (secure/insecure; 48% stability; $k = .03$, *ns*) classification. Neither child nor adult three-group attachment distributions differed as a function of gender (respectively, $\chi^2[3, n = 60] = 3.15$ and $\chi^2[2, n = 57] = 3.76$, *ns*).

Table 1. Early maladaptive schemas (EMS) measured by the Young Schema Questionnaire (YSQ) long form

Schema domains	Brief definition ^a	Sample items	EMS	Number of items
Disconnection and rejection	The expectation that one's need for security, empathy, and acceptance will not be met in a predictable manner.	No one I desire would want to stay close to me if he/she knew the real me.	Abandonment/instability	17
		I am quite suspicious about other people's motives.	Mistrust/abuse Emotional deprivation Defectiveness/shame Social isolation/alienation	17 9 15 10
Impaired autonomy and performance	Expectations about self and the environment that interfere with one's perceived ability to function independently and succeed.	I cannot seem to escape the feeling that something bad is about to happen.	Dependence/incompetence	15
		I need other people to help me get by.	Vulnerability to harm and illness Enmeshment/undeveloped self Failure	12 11 9
Impaired limits	Deficiency in internal limits, responsibility to others, or long-term goal orientation.	I am special and should not have to accept many of the restrictions placed on other people.	Entitlement/grandiosity Insufficient self-control/self-discipline	11 15

(Continued)

Table 1. (Continued)

Schema domains	Brief definition ^a	Sample items	EMS	Number of items
Other-directedness	Excessive focus on other's desires and feelings, at the expense of one's needs in order to gain love and approval. Often involves suppression of one's own anger and inclinations.	<i>I cannot seem to discipline myself to complete routine or boring tasks.</i> <i>I am a good person because I think of others more than of myself.</i> <i>I let other people have their way, because I fear the consequences.</i>	Subjugation Self-sacrifice Approval-seeking/recognition-seeking	10 17 14
Overvigilance and inhibition	Excessive emphasis on suppressing one's feelings and impulses or on meeting rigid internalized rules and expectations of performance.	<i>I worry about losing control of my actions.</i> <i>I must look my best most of the time.</i>	Negativity/pessimism Emotional inhibition Unrelenting standards/hypercriticalness Punitiveness	11 9 16 14

^aAdapted from Young, Klosko, and Weishaar (2003).

Table 2. Mean (standard errors) YSQ scores (averaged across the five domains) as a function of child and adult attachment classifications

Child attachment classification				
Avoidant (<i>n</i> = 11)	Secure (<i>n</i> = 33)	Ambivalent (<i>n</i> = 6)	Fearful (<i>n</i> = 8)	Significant pairwise comparison ^a
2.15 (.16)	2.10 (.09)	2.78 (.22)	2.31 (.18)	Ambivalent > secure*
Adult attachment classification ^b				
Secure (<i>n</i> = 30)	Preoccupied (<i>n</i> = 18)	Fearful (<i>n</i> = 7)	Significant pairwise comparison ^a	
2.02 (.08)	2.44 (.11)	2.09 (.17)	Preoccupied > secure**	

^aBonferroni post-hoc test; ^bBecause of small subsample size (*n* = 3), the dismissing group was excluded from the analyses.

p* < .05; *p* < .01.

Preliminary analyses

There were two outliers on YSQ subscales with respect to child attachment and three outliers with respect to adult attachment, using a criterion of 3.3 standard deviations below/above the group mean. These cases were excluded from analyses assessing either child or adult attachment. Preliminary analyses were undertaken to identify socio-demographic indicators that could be related to EMS in adulthood. Socio-demographic indicators were participant's gender, paternal and maternal education (number of years; Time 1), yearly family income (less than or at least \$40,000; Time 1), type of family (single parent or biparental; Time 1), participant's marital status (single or in a relationship; Time 2), and yearly income (less than or at least \$10,000; Time 2). Only gender was significantly related to YSQ subscales. Young women showed more vulnerability to harm and illness ($M = 2.29 \pm .88$) than did young men ($M = 1.71 \pm .48$; $t[2,56] = 2.74$, $p < .01$). Therefore, gender was included as a covariate in the main analyses.

Child attachment and mean scores on YSQ domains

A general linear model (GLM) univariate repeated measures analysis was conducted to examine whether the mean scores on the YSQ five domains (DV) differed as a function of child attachment classification (A, B, C, D), controlling for gender (covariate). Results revealed a main effect of YSQ domain ($F[4, 212] = 3.91$, $p < .01$, $\eta^2 = .07$) and of child attachment classification ($F[3, 53] = 2.83$, $p < .05$, $\eta^2 = .14$). Post-hoc pairwise comparisons were conducted using the Bonferroni test to examine differences between child attachment groups on the overall mean YSQ score (across domains). After adjusting for gender, young adults who were classified in the ambivalent group as children had higher overall YSQ scores (Adj. $M = 2.77$; $SE = .22$), compared to those who were secure (Adj. $M = 2.10$; $SE = .09$; $p < .05$) (see Table 2). However, there were no significant domain \times attachment or domain \times gender interaction effects ($F[12, 212] = .68$ and $F[4, 212] = .35$, *ns*), suggesting parallel profiles between ambivalent and other groups (see Figure 1).

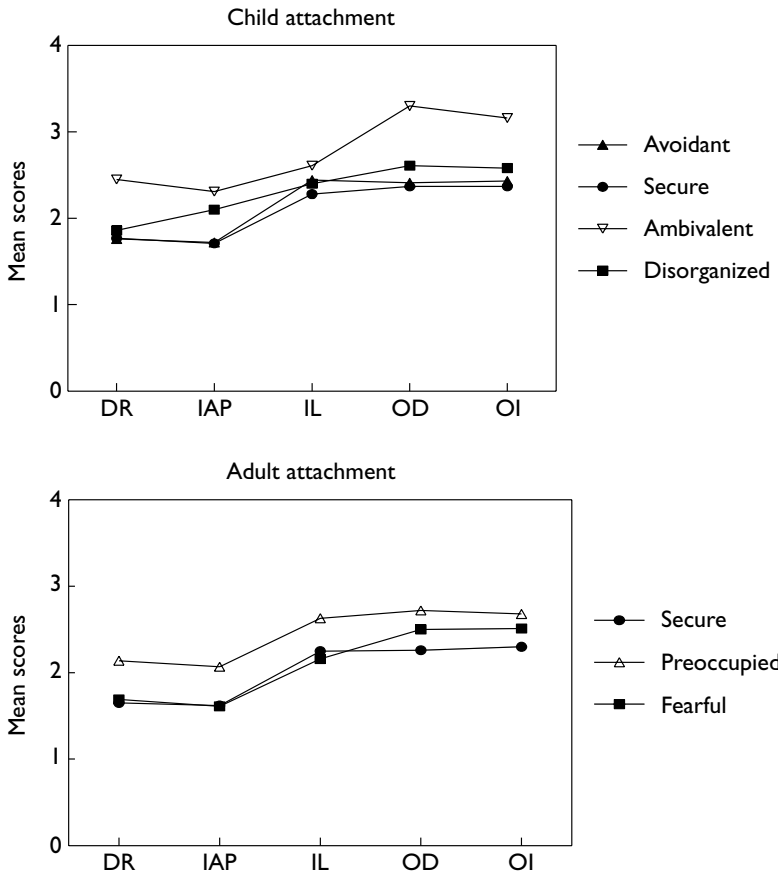


Figure 1. Mean scores on the five YSQ domains as a function of child and adult attachment classifications. DR = disconnection and rejection, IAP = impaired autonomy and performance, IL = impaired limits, OD = other-directedness, OI = overvigilance and inhibition; A = avoidant, B = secure, C = ambivalent, D = disorganized.

Adult attachment and mean scores on YSQ domains

The GLM repeated measures analysis revealed a main effect of adult attachment classification ($F[2, 51] = 4.95, p < .05, \eta^2 = .16$). Post-hoc pairwise Bonferroni tests showed that, after adjusting for gender, young adults in the preoccupied group had higher overall YSQ scores (Adj. $M = 2.44; SE = .11$), compared to those classified secure (Adj. $M = 2.02; SE = .08; p < .01$) (see Table 2). Again, there was no significant domain \times attachment interaction effect ($F[8, 204] = .68, ns$), suggesting parallel profiles of the secure and preoccupied adult attachment groups on the global YSQ scale score (see Figure 1).

Post-hoc examination of specific EMS

Univariate analyses of covariance were conducted to examine the differences between (1) the secure and insecure ambivalent child attachment groups, and (2) the secure and preoccupied adult attachment groups on each of the 18 specific EMS, controlling for gender. Child attachment groups (secure vs. insecure ambivalent) differed on 11 of

Table 3. Mean scores (standard deviations) on EMS as a function of child and adult attachment, controlling for gender

	Child attachment			Adult attachment		
	Secure (<i>n</i> = 33)	Ambivalent (<i>n</i> = 6)	<i>F</i> value	Secure (<i>n</i> = 30)	Preoccupied (<i>n</i> = 18)	<i>F</i> value
Early maladaptive Schema ^a						
Emotional deprivation	1.60 (.49)	2.19 (1.02)	5.57*	1.64 (.66)	1.80 (.63)	.37
Abandonment/instability	2.03 (.66)	2.62 (1.19)	5.33*	1.77 (.42)	2.57 (.82)	18.36**
Mistrust/abuse	1.87 (.64)	2.77 (1.26)	13.42**	1.78 (.65)	2.29 (.77)	5.66*
Social isolation/alienation	1.87 (.71)	2.07 (1.20)	.44	1.71 (.50)	2.21 (.79)	6.70*
Defectiveness/shame	1.55 (.44)	2.22 (1.58)	6.36*	1.39 (.24)	1.83 (.69)	9.36*
Failure	1.52 (.50)	2.19 (1.47)	8.76**	1.33 (.33)	1.88 (.83)	9.46**
Dependence/incompetence	1.58 (.52)	1.93 (.67)	3.01	1.45 (.37)	2.12 (.88)	12.53**
Vulnerability to harm or illness	2.07 (.69)	2.39 (1.35)	3.03	1.90 (.50)	2.44 (.92)	4.94*
Enmeshment/undeveloped self	1.70 (.58)	2.33 (1.24)	6.08*	1.77 (.60)	1.85 (.77)	.04
Subjugation	1.77 (.53)	2.75 (1.57)	11.40**	1.67 (.50)	2.17 (.59)	10.38**
Self-sacrifice	2.90 (.72)	3.68 (1.34)	6.33*	2.78 (.70)	3.23 (.90)	2.69
Emotional inhibition	1.88 (.63)	3.24 (1.15)	16.53**	1.98 (.87)	2.30 (1.00)	2.00
Unrelenting standards/ hypercriticalness	2.87 (.86)	3.39 (.44)	3.17	2.74 (.85)	3.01 (.80)	1.45
Insufficient self-control/ self-discipline	2.25 (.63)	2.64 (1.04)	2.94	2.09 (.57)	2.70 (.83)	7.12*
Entitlement/grandiosity	2.32 (.57)	2.42 (.47)	.92	2.40 (.75)	2.55 (.58)	.29
Approval-seeking/ recognition-seeking	2.46 (.66)	3.23 (1.08)	8.96**	2.29 (.63)	2.74 (.88)	3.84
Negativity/pessimism	2.22 (.84)	2.72 (1.48)	1.79	2.06 (.80)	2.69 (.92)	6.21*
Punitiveness	2.52 (.68)	3.17 (1.25)	5.79*	2.40 (.70)	2.72 (.70)	2.02

^aPossible scores ranging from 1 to 6. Higher scores indicate more problems.

* $p < .05$; ** $p < .01$.

18 EMS, and adult attachment groups (secure vs. preoccupied) differed on 10 of 18 EMS assessed with the YSQ, ambivalent and preoccupied groups always scoring higher than secure groups (see Table 3).

Discussion

The present study is the first to prospectively examine the relation between attachment measured during childhood and EMS measured in adulthood. We hypothesized that young adults previously classified in insecure child attachment groups would report higher scores on EMS scales than those classified as secure. This hypothesis was partially confirmed. Young adults classified as insecure ambivalent in childhood, compared to those classified as secure, had a YSQ profile characterized by higher EMS scores on multiple schema domains. However, the insecure avoidant and insecure disorganized child attachment groups did not differ from the secure group with respect to adult EMS. Both these insecure groups were highly similar to the secure child attachment group with respect to EMS, making it unlikely that the failure to find differences is merely due to low statistical power in this study. This challenges the idea that it is insecurity, in general, that predicts maladaptive schema.

Ambivalent child attachment and adult EMS

Ambivalent child attachment is characterized by maximization of both negative affective expression and dependency on caregivers (Main & Cassidy, 1988). These behavioural strategies are manifestations of a hyperactivation of the attachment system and function to promote emotional proximity with a caregiver who is inconsistently responsive to the child's needs. This amplification of distress may lead to relational and social difficulties with family members, peers, and teachers (Moss, Cyr, & Dubois-Comtois 2004; Moss *et al.*, 2006; Sroufe, 2005), and be generalized to later attachment relationships, as demonstrated here. Studies that have investigated the association between child attachment and behaviour problems during childhood have reported that ambivalent, compared to secure children, have more externalizing (Cohn, 1990; Fagot & Pears, 1996; Moss *et al.*, 2004; Moss *et al.*, 2006) and, to a lesser extent, internalizing problems (Finnegan, Hodges, & Perry, 1996), according to various informants (e.g., teacher, mother). Ambivalent children, compared to their secure peers, have also been found to hold more negative views of self and have lower self-esteem, based on both interview and observational tasks (Cassidy, 1988; Easterbrooks & Abeles, 2000). In summary, there is empirical evidence in support of the idea that ambivalent attachment is a risk factor for development of behaviour problems and feelings of not being worthy of others' attention and affection (Cassidy, 1988). The fact that ambivalent children, compared to their secure counterparts, showed more signs of EMS measured 15 years later suggests continued reliance on hyperactivating strategies to get others' attention, through the course of development.

Preoccupied adult attachment and concurrent EMS

The hypothesis that individuals classified in the insecure adult attachment groups would have higher EMS scores than those in the adult secure group was also partially confirmed. In fact, only young adults in the insecure preoccupied group differed from those in the secure group, showing higher EMS scores, with no specific associations with particular schema domains or EMS. Although preoccupied adult attachment has been shown to correspond to infant ambivalent/resistant attachment in some longitudinal studies (Hamilton, 2000; Waters *et al.*, 2000), this was the case only when adult attachment was assessed with an interview tapping into the individual's unconscious state of mind. The questionnaire (ECRs; Brennan *et al.*, 1998) used in the present study is not usually thought to be related to infant or child separation-reunion procedures, as it assesses attachment explicitly in the context of romantic relationships rather than implicitly and in relation to caregivers. This might explain why there was no correspondence between ambivalent child attachment and adult preoccupied attachment in the present study. Only one of 18 preoccupied adults had been classified as ambivalent during childhood. Therefore, concurrent and proximal, rather than developmental explanations probably account for the association between EMS and preoccupied adult attachment.

In the present study, preoccupied adults scored higher than secure adults on 10 of 18 EMS. Conceptualizations of adult romantic attachment postulate that preoccupied adults hold a negative view of self and positive view of others (Bartholomew & Horowitz, 1991). Based on the specific instrument used in this study, preoccupied adults can also be defined as showing low avoidance in relationships and high anxiety over abandonment (Brennan *et al.*, 1998). These representations of self and others are most compatible with EMS such as abandonment/instability, defectiveness/shame, failure, and dependence/incompetence, all of which were higher among preoccupied as compared

with secure adults. However, other EMS were also linked to preoccupied attachment in the present study: mistrust/abuse, social isolation/alienation, vulnerability to harm and illness, subjugation, insufficient self-control/self-discipline, and negativity/pessimism.

The higher profile on the overall YSQ scale for preoccupied adults, as opposed to other adult attachment groups, might be the manifestation of a high level of psychological distress resulting from the gap between the individual's view of self (negative) and that of others (positive). In accordance with this idea, past studies have found that preoccupied adults show higher psychological distress (e.g., loneliness, depressive, and general symptomatology; Kemp and Niemeyer, 1999; Pielage, Luteijn, & Arrindell, 2005), than do secure or dismissing adults. In Kemp and Neimeyer's (1999) study of undergraduate students, individuals in the preoccupied group had the highest distress scores on a global severity index and were the only insecure group to have significantly higher self-rated distress than the secure group. Moreover, in the latter study, fearful adults did not differ from secure adults, thereby supporting our present findings.

Other forms of insecure attachment and EMS

Contrary to expectations, participants who were classified as avoidant in childhood did not have higher EMS scores than securely attached children. In line with this finding, studies have found avoidant children to be the least likely of all attachment groups to admit self-imperfections (Cassidy, 1988), while having the highest scores on self-reports of worthiness (Easterbrooks & Abeles, 2000). These findings lend support to the idea that avoidant children fail to acknowledge, feel, and hence report distress because of a defensive idealization of self, which would be reflected in low distress scores on self-assessments, but not on reports by other informants. With regard to ST, avoidant children, who have grown up using deactivating strategies in times of distress to avoid rejection from their caregiver, might show high schema avoidance in adulthood (low awareness and thinking about EMS), block feelings related to EMS, avoid situations, and life areas that make them feel vulnerable, and thus have overall low scores on the YSQ (Young *et al.*, 2003). In line with this idea, the low proportion (5.0%) of young adults with a dismissing attachment style in this study might be explained by the fact that dismissing individuals, who minimize the importance of socio-emotional factors in the lifecourse, may be less likely to maintain their participation in a study exploring socio-emotional development. In addition, the self-report measure used in early adulthood in this study may underestimate the proportion of dismissing attachment in comparison with measures, such as the Adult Attachment Interview, which do not involve overt admission of distress (Dozier & Lee, 1995).

Unexpectedly, young adults who were disorganized as children did not score higher on EMS, compared to those who were secure. This was unexpected considering the well-known association between disorganized child attachment and various negative developmental outcomes (Lyons-Ruth & Jacobvitz, 2008). It is important to note however, which a proportion of disorganized children adopt a controlling-caregiving pattern of interactions with the parent (Main & Cassidy, 1988), placing them in a position of strength and competence that may involve the suppression of negative affects in order to regulate the parent (Moss *et al.*, 2004). Therefore, we may speculate that, with regard to EMS, disorganized children who become controlling caregiving do not differ from secure children, whereas the other disorganized subgroups (controlling-punitive, insecure-other) would. Sample size in the present study did not allow for such a comparison. Future research is clearly warranted in order to better understand

the relation among EMS and fearful adult attachment among clinical and non-clinical samples.

Conclusions and limitations

This is the first study to prospectively examine the relation between childhood attachment and EMS assessed in adulthood. Moreover, this is the first study to use an observational measurement of child attachment, as opposed to retrospective self-reports, in examining associations with EMS. Our findings indicate that ambivalent children scored higher than secure children on overall EMS scores later in life. This suggests that outcomes for ambivalent children with respect to EMS are of a general nature, that is, related to a wide range of cognitive biases with relation to self, rather than to specific domains. For example, it is possible that ambivalent attachment acts as a general vulnerability factor for developing multiple EMS. Although there was no longitudinal correspondence between child ambivalent and adult preoccupied attachment, given the instrument used to assess adult attachment in this study, both groups have conceptually similar attachment profiles.

Hence, the fact that EMS were higher among these groups at both time points increases the reliability of our finding that specific elements of internal models are more likely to be related to the development and presence of EMS: high anxiety over abandonment, negative self-view, and explicit manifestations of personal distress. If replicated, the specificity of the association between EMS and preoccupied attachment might guide clinicians in the diagnosis of patients, and the YSQ might also help establish treatment plans with patients presenting a preoccupied adult attachment style.

Several limitations of the present study must be acknowledged. Attrition over 15 years contributed to small cell sizes thus reducing the power of analyses. Selective attrition (i.e., higher rate of security among participants who stayed in the study than among those who dropped out) may also have introduced a bias in the composition of the final sample, thereby limiting the generalization of the present findings. However, YSQ scores in the present study were similar to those reported in non-clinical samples or normal control groups (most average EMS scores around two of six; Blissett *et al.*, 2006; Reeves & Taylor, 2007; Turner, Rose, & Cooper, 2005). Finally, the fact that the adult and child attachment measures used in this study probably tap different aspects of attachment (i.e., behaviours with respect to caregivers in childhood versus conscious attachment thoughts and affects with respect to romantic partner in adulthood) might have contributed to measurement error and did not allow us to examine EMS scores in relation to attachment stability. For instance, it is possible that individuals who remain insecure throughout their development from childhood to adulthood would have the highest EMS scores. Further studies including a developmental assessment of adult attachment such as the *Adult Attachment Interview*, which is conceptually and empirically linked to behavioural assessments of child attachment, are needed. In addition, further research would need to examine possible factors (e.g., life events, quality of peer relationships) that may moderate the association between child attachment and adult maladaptive schemas.

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