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Toddlers' social coordination with an unfamiliar peer: Patternings of attachment, temperament, and coping during dyadic exchange

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Thèse acceptée le : .....

Abstract

During the first three years of life children make remarkable strides in attaining social coordination with peer partners. Higher levels of coordination demand constant adaptation between partners, requiring a departure from ritualized imitation as well as the introduction of thematically related variations in each child's responses across interactive turns. More than individual interactive skills and sociocognitive abilities, this coordination capacity may rest on dyadic processes rooted on the dyad's socioemotional characteristics. The purpose of this study was to identify the contribution of the patternings of attachment, temperament, and coping to the degree of social coordination attained by dyads of unfamiliar toddlers. We attempted to integrate the notions of attachment, temperament, and coping within the global construct of socioemotional regulation. We defined social coordination as a dyadic process of shared meaning and mutual accommodations between social partners, and proposed that the socioemotional regulation characteristics of the dyad predict the degree of social coordination they attain. Subjects were 46 same-sex, like-aged dyads of unfamiliar peers (mean age = 31.5 months). Social interaction, coping behaviors, and dyadic social coordination were coded from videotapes of 15-minute free-play sessions following maternal separation. Maternal reports of attachment behavior (Attachment Q-Set, Waters & Deane, 1985) and temperament traits (Toddler Temperament Scale, Fullard, McDevit, & Carey, 1978) were obtained. Children with different attachment and temperament *styles* did not differ in their coping behaviors. Conversely, children's coping *styles* were not predicted from their individual scores on

attachment and temperament. However, measures of the *distance* between members of the dyad in terms of attachment and temperament predicted *dyadic* coping styles. Using hierarchical cluster analyses, we identified multidimensional relations among the attachment, temperament and coping dimensions, which were best summarized in terms of three composite variables assumed to represent socioemotional regulation: *social orientation*, *anxious withdrawal*, and *outward regulation.* We proposed that socioemotional regulation at the dyadic level, that is to say, considering the socioemotional regulation characteristics of both partners simultaneously, would predict the level of social coordination attained by the dyad. Our results support our supposition that socioemotional regulation can be construed as a dyadic process. Three distinct groups of dyads were identified which differed consistently on their socioemotional regulation styles. The *adapted* pattern of socioemotional regulation, consisting of high levels of social orientation and low levels of anxious withdrawal and of outward regulation, was identified. Two other groups of dyads were found which differed significantly from the adapted group by their higher levels of anxious withdrawal and lower levels of social orientation. Dyads with an *adapted* socioemotional regulation style spent more time in social interaction and were involved in longer interactive episodes. They also obtained higher scores on shared meaning and dyadic accommodation. They were involved in significantly less uncoordinated or conflictual interactive episodes, and reached more often the higher levels of coordination where mutual accommodations around a common theme and the expression of enjoyment were present. Results are discussed in terms of their implication for our understanding of *individual* social adaptation.

Sommaire

Les trois premières années de l'enfance sont marquées par des progrès remarquables sur le plan de la coordination sociale entre pairs. Les recherches sur le développement des habiletés interactives des jeunes enfants montrent que dès l'âge de 16 mois, les enfants sont en mesure de maintenir une interaction, particulièrement avec des partenaires plus expérimentés, tels les adultes. Ce type d'interaction s'observe dans le cadre de jeux rituels familiers impliquant des rôles complémentaires. Vers la fin de la deuxième année, l'imitation des comportements non verbaux devient une stratégie pour coordonner l'action dans les contextes non ritualisés pouvant résulter en des jeux d'imitation ou de rôles complémentaires. Au milieu de la troisième année, on constate une augmentation de l'utilisation par l'enfant de réponses alternatives en réaction aux initiations d'un pair. Ces réponses alternatives, partiellement imitatives et toujours reliées au thème de l'interaction, sont constituées de variations du comportement du partenaire (Eckerman, Davis et Didow, 1989; Eckerman et Didow, 1989). Ainsi, les niveaux supérieurs de coordination requièrent une adaptation continuelle de la part des partenaires. Toutefois, la capacité de se coordonner socialement est conçue comme découlant des habiletés interactives de l'enfant, de sa compétence sociale ou de ses habiletés sociocognitives, sans tenir compte de la contribution de chacun des partenaires à la réussite de l'échange dyadique (Brownell, 1986; Eckerman, et al., 1989; Eckerman et Didow, 1989). Par ailleurs, les différences individuelles sur le plan des habiletés interactives et de la compétence sociale sont souvent attribuées à l'histoire relationnelle de l'enfant, son tempérament ou son utilisation de stratégies de régulation affective

(comportements de *coping).* En résumé, les chercheurs dans le domaine de la coordination sociale n'ont pas tenté de la relier aux caractéristiques socio-affectives de l'enfant, ni de tenir compte de la contribution de chacun des partenaires, et qui plus est, d'examiner la contribution de l'attachement, du tempérament ou du style de *coping* des deux partenaires.

Cette recherche a pour but de décrire comment les configurations *(patternings)* d'attachement, de tempérament et des comportements de *coping* contribuent à l'établissement de la coordination sociale entre deux partenaires non familiers, âgés de 30 mois, en contexte de jeu libre. Ces configurations représentent une intégration de l'attachement, du tempérament et des comportements de *coping* dans le construit unificateur de «régulation socio-affective». De plus, la coordination sociale est ici définie comme étant un processus dyadique de significations partagées et d'ajustements réciproques entre deux partenaires sociaux. En outre, cette étude vise à relier la régulation socio-affective à la coordination sociale observée, et ce, au niveau dyadique plutôt qu'individuel.

L'échantillon était constitué de 92 enfants (46 filles), âgés entre 29 et 33 mois *(M* = 31,5), dont la famille participait à un projet de recherche longitudinal. En vue d'une rencontre en laboratoire avec leur mère, des enfants non familiers étaient pairés en fonction de leur âge et de leur sexe. Les 46 dyades ainsi formées furent filmées au cours d'une période de jeu libre d'une durée de 15 minutes, à la suite d'une séparation d'avec

leur mère. Tant l'interaction sociale dyadique que le niveau de coordination sociale de chaque épisode interactif et les comportements de *coping* de chacun des enfants ont été décodés par des observateurs expérimentés. De plus, chaque mère a complété deux instruments, l'un mesurant la qualité de la relation d'attachement de son enfant (*Attachment Q-Set,* Waters et Deane, 1985) et l'autre, son tempérament (*Toddler Temperament Scale,* Fullard, McDevit et Carey, 1978).

Dans cette étude, l'attachement, le tempérament et les comportements de *coping* sont considérés comme des construits multidimensionnels, ce qui a permis d'identifier et de décrire les profils des enfants en rapport avec chacun de ces construits. Les analyses par regroupements hiérarchiques révèlent trois groupes d'enfants se différenciant significativement sur le plan de leur style d'attachement: les «confiants-indépendants», les «confiants-dépendants» et les «anxieux-dépendants» *(secure-independent, secure-dependent* et *insecure-dependent).* Les mesures du tempérament ont également permis d'identifier trois regroupements d'enfants qui diffèrent selon leur style de tempérament: les enfants faciles, difficiles et inhibés. Enfin, quatre regroupements d'enfants émergent à partir de leur style de *coping.* Ces regroupements se nomment «tendu-social», «tendu-inhibé», «détendu-distrait» et «tendu-distrait» *(tense-social, tense-inhibited, relaxed-distracted,* and *tense-distracted).*

Selon les recherches sur le développement socio-affectif, les enfants démontrant des styles d'attachement et de tempérament différents devraient manifester des

comportements de *coping* différents dans un contexte de nouveauté représentant un défi social à relever en l'absence de la mère. En conséquence, les mesures d'attachement et de tempérament devraient prédire les styles de *coping* des enfants. Les résultats infirment ces deux propositions.

Des relations multidimensionnelles étaient attendues entre les mesures d'attachement, de tempérament et de *coping*. En outre, ces relations devaient permettre de révéler le construit de régulation socio-affective. L'intégration des trois mesures dans un seul construit devait également permettre de décrire le niveau d'adaptation socio-affective de l'enfant. Les résultats confirment que cette démarche permet effectivement d'identifier des relations multidimensionnelles entre l'attachement, le tempérament et le *coping*. Tel qu'attendu, trois regroupements de variables permettent de décrire de manière pertinente la régulation socio-affective: l'orientation sociale, le retrait social et la régulation externe. Ainsi, trois regroupements d'enfants se distinguent en fonction de leur profil de régulation socio-affective. Ce sont les enfants «adaptés», «impulsifs» et «dépassés» *(adapted, undercontrolled, overwhelmed).*

Le profil de régulation socio-affective des deux enfants devait permettre de prédire le niveau de coordination sociale établi par la dyade. Les résultats confirment cette prédiction stipulant que la régulation socio-affective peut être conçue comme étant un processus dyadique. Les résultats mettent en lumière trois regroupements de dyades qui diffèrent significativement en fonction de leur style de régulation socio-affective. À

l'instar du profil «adapté» observé au plan individuel, le style «adapté» dyadique de régulation socio-affective présente un niveau élevé d'orientation sociale ainsi que des faibles niveaux de retrait anxieux et de régulation externe. Les deux autres regroupements de dyades se distinguent du style «adapté» par leur haut niveau de retrait anxieux et leur faible niveau d'orientation sociale. Bien que leurs styles de régulation socio-affective soient très semblables (faible sur l'orientation sociale et élevé sur le retrait anxieux), ces styles dyadiques ressemblent beaucoup à ceux retrouvés au plan individuel dans les regroupements d'enfants des profils «impulsifs» et «dépassés».

L'utilisation de la dyade, plutôt que de l'individu, comme unité d'analyse souligne l'importance du contexte social immédiat pour l'adaptation sociale et affective du jeune enfant. Les résultats de cette recherche suggèrent que les caractéristiques des deux partenaires, sur les plans de l'attachement, du tempérament et des comportements de *coping*, déterminent la nature et le degré de coordination sociale entre deux pairs non familiers. Les dyades «adaptées» ont passé plus de temps en interaction sociale et étaient engagées dans des épisodes interactifs de plus longue durée. Ces dyades obtiennent également des scores plus élevés tant sur la signification partagée dans le jeu que sur l'ajustement dyadique. En outre, les épisodes interactifs non coordonnés ou conflictuels sont significativement plus rares chez ces dyades. Enfin, les dyades «adaptées» atteignent plus souvent un degré élevé d'ajustement réciproque autour d'un thème ludique commun et expriment davantage de plaisir.

Ces résultats suggèrent de nombreuses implications pour les études ultérieures portant sur la coordination sociale (ou la compétence sociale dyadique). Les recherches antérieures sur la compétence sociale présentent ce construit comme étant une caractéristique individuelle. Dans ces études, les habiletés sociales, la cognition sociale, la régulation affective ainsi que l'histoire d'attachement sont toutes conçues comme des attributs intra-individuels qui déterminent la capacité de l'enfant à coordonner son interaction avec un partenaire et à participer au monde social des pairs. Actuellement, la notion de compétence sociale prend une importance capitale dans notre conception de l'adaptation sociale. Cette étude proposait un nouveau regard, dépassant l'orientation traditionnelle centrée sur l'individu, en explorant la contribution conjointe des partenaires au succès de l'échange social.

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Dedication

This work is dedicated to those who have been close to me throughout this process and whose friendship and support made this stage of my life a most rewarding one.

A mis padres, Alberto y Rita, quienes alimentaron mis sueños.

To Jean-Paul, who made it all possible.

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Introduction

Sociobiological approaches to development stress the importance of complex and stable group living as a driving force for major phylogenetic changes in individual modes of adaptation. The complexity of social interaction « demands continual coadjustments between social partners in order to regulate interpersonal communication and to assume optimal levels of cooperative interaction » (Strayer, Moss, & Blicharski, 1989, p. 21). One crucial feature of group living must be the ability to coordinate individual action with that of another, as is the case in cooperation. Aside from the long-standing debate on the evolutionary function of cooperation as a form of competition or as a truly altruistic behavior, it is obvious that individuals living in groups must learn to cooperate (see Charlesworth, 1996).

From a developmental perspective, cooperation may be essential on the long-term in raising offspring, competing with other groups, or in generating resources (LaFreniere, 1996). On the short term, cooperation may be useful in the establishment of games and the attainment of the intrinsic reward of positive social interaction. On both accounts, it is an important ability to be developed by children.

Social coordination appears as an obvious precursor to cooperation and collaboration. From early on, children need to coordinate their actions with those of others in order to establish « organized interactions ». These interactions will eventually lead to games, collaboration, construction of knowledge, and other complexities of the human social

enterprise, both within peer interaction (Ross, 1982; Verba, 1994) and within the mother-child interaction (Aitken & Trevarthen, 1997). Individuals must learn to regulate themselves as well as « read » in the social context the appropriate cues that will be the basis of their coordination with others. Such cues are both objective (behaviorally-based, such as what the other is « doing ») and emotional (what the other is « feeling »). Hence, social coordination requires the regulation/integration of affect, cognition and behavior, and its presence in early ontogenic stages appears important as the basis of continued social development. This has an important communicative value for adaptation. Social coordination, both as an individual « capacity » and as a dyadic enterprise, is a vital element of adaptation and survival. How children attain social coordination in dyadic exchanges and how the variables generally involved in social development are implicated in this process is the object of the present study.

We will begin with an overview of the development of coordinated interaction over the first three years of life. Then, we will turn to the concept of coordination as a dyadic enterprise and attempt to offer a definition of coordination from the standpoint of the dyad. Finally, we will relate the dyadic concept of coordination to the individual and contextual variables at play during dyadic exchange.

The Development of Social Coordination

By the age of three, children are pretty sophisticated social partners: they spend long periods in social play with peers, they are good conversationalists, they are clearly capable of sharing meaning with others and engaging in complex interactions and cooperation (Eckerman & Didow, 1996; Howes, 1985; Howes, Phillipsen, & Hamilton, 1993; Verba, 1994). They can take and negotiate roles, and can modify the scripts of their pretend play (Howes & Matheson, 1992). In short, they are capable of *social coordination*. This means that children go beyond maintaining joint attention with one another to mutually coordinating their actions in order to produce cooperation, games or conversations. Social coordination occurs when partners arrive at adjusting their behavior to maintain a thematic relation. They will act on similar material in similar ways, as in the case of imitations, or adopt complementary and reciprocal roles, as in a game of chase where the « chaser » becomes the « chased ».

The progression of toddlers' abilities to coordinate social interaction can be seen in studies of toddlers' peer play. Between 15 and 24 months of age, games (as defined by mutual involvement and the repeated enactment of related roles in a turn-taking pattern) increase in frequency, while brief sequences of interaction decline, and role-reversal and reciprocal roles develop (Finkelstein, Dent, Gallagher, & Ramey, 1977; Ross, 1982). Eckerman and Stein (1982) found a substantial increase, between 16 and 20 months of age, in the games toddlers played with an adult experimenter who responded

appropriately to their social bids. In addition, 24-month-olds used behavior complementary to that of the adult partner and acted in a meaningfully related manner on common play material more often than the younger toddlers (Eckerman & Stein, 1982). Likewise, the progression towards more reciprocal interaction was demonstrated in a study of young children's ability to adopt and maintain complementary behavioral roles. Brownell (1982 in Brownell, 1986) found that 18-month-olds did not coordinate their behavior with that or their partner in a simple cooperative problem-solving task. Instead, they either duplicated the peer's behavior or behaved independently of the peer. Moreover, even when paired with an older partner, they failed to complement their partner's behavior, except as instructed to do so by the older child. In contrast, 24-month-olds were able to adopt complementary roles quickly and flexibly and to exchange them easily. In sum, studies show that throughout the second year, toddlers are increasingly able to adopt and maintain flexible, complementary and reciprocal roles during peer interaction (Brownell, 1986).

In a very detailed series of observational studies, Eckerman and her collaborators (Eckerman, Davis, & Didow, 1989; Eckerman & Didow, 1989, 1996) tracked the development of the ways in which toddlers arrive at relating their own actions to those of the partner in order to create coordinated interactions. Eckerman and her team observed 14 dyads of unfamiliar peers longitudinally at ages 16, 20, 24, 28, and 32 months, in order to assess developmental changes in coordinated social interaction (Eckerman, 1993a, 1993b; Eckerman et al., 1989; Eckerman, & Didow, 1989). They

defined coordinated acts as « acts thematically related to the specifics of the peer's acts that allow the peer to continue his or her activity while expanding that activity to include both children » (Eckerman et al., 1989, p. 444). Coordinated acts can be imitative (such as when one child performs the same action as the peer) or complementary (performing a different action from the peer, which remains thematically related to the specifics of the peer's acts), and they contribute to create sustained organized interaction on a common topic. Several findings from Eckerman's research are important to mention here: the developmental progression of coordinated action, the role of imitation in the achievement of coordination, and the communicative value of imitation in preverbal interactions.

Eckerman's results showed a significant increase with age in coordinated actions. Although the total number of peer-directed acts did not vary significantly with age, the proportion of these acts that were classified as coordinated increased in a linear fashion. Furthermore, the developmental increase in coordinated acts was significantly accounted for by a linear increase in acts with an imitative relation to those of the peer, and in acts with both a complementary and an imitative relation to the acts of the peer (Eckerman et al., 1989). Congruent with other research, the role of imitation in attaining coordination (see Nadel, 1986; Nadel & Baudonniere, 1982) was clearly revealed by the results of Eckerman and her colleagues (1989). Imitation appeared as a behavioral strategy for establishing coordinated interactions as early as 16 months of age. Through the five age levels, imitative acts were involved in establishing games

(defined as interactive bouts of more than four consecutive turns) 80% of the time. Verbal utterances which facilitate coordinated action (e.g. regulate peer's activity and topically well-connected talk), appeared only after the members of the dyad had shown a marked increase in their readiness to imitate each other's non-verbal actions. Both occurred considerably more often during episodes where the toddlers were engaged in games constructed through nonverbal imitative means (Eckerman & Didow, 1996).

Eckerman and her colleagues (Eckerman et al., 1989; Eckerman & Didow,1989) proposed a developmental progression in coordinated interaction from the second to the third year of life. Prior to 16 months of age, children sustain interaction (mostly with more experienced partners such as adults) through complementary roles within ritualized familiar games. Towards the end of the second year, the imitation of nonverbal acts becomes the strategy for coordinated action in nonritualized contexts, with the resulting production of imitation games with both imitative and complementary roles. Towards the middle of the third year, there is an increase in the use of alternative overtures in response to a peer's initiations where imitation is interspersed with thematically related but different actions.

Thus, higher levels of coordination demand constant adaptation between partners requiring a departure from ritualized imitation as well as the introduction of thematically related variations in each child's responses across turns. Such findings are congruent with others indicating that young children are capable of sharing meaning

through their interaction, and that meaning sharing depends more on the coordination of the content of the interaction than on the dyad's ability to sustain such exchanges (e.g. Brenner & Mueller, 1982).

The difference between structure and content of an interaction is pertinent to the notion of social coordination. The content of an interaction refers to the specific behaviors produced by partners during an exchange and the relations between these socially directed behaviors, whereas interactional structure refers to the characteristics of an exchange such as its length, contingency, and complexity, which can be studied independently of content (Brownell, 1986). In an early study of toddler peer interaction, Brenner & Mueller (1982) attempted to demonstrate that toddlers' social interactions varied not only in terms of their structure, but most significantly, in terms of their meaning. The objective of their study was to show that very young social partners can initiate and sustain social exchanges around a common theme, and therefore share the *meaning* of the exchange. *Shared meaning* is a property of social interaction in which each participant acts in accord with a single underlying topic or theme (Brenner & Mueller, 1982). One important definitional aspect of Brenner & Mueller's taxonomy of shared meanings is the use of affect as a reference to the notion of a common theme. In their study, not only did partners have to match or complement each other's behavior or referents for their socially directed behaviors to be considered as shared meaning, but (with the exception of aggression and object struggle) positive affect appeared as a marker in several categories (e.g., run-chase, rough-and-tumble, peek-a-boo). The

notion of positive affect as a sign of the construction of a common theme suggests that the authors expected that pleasure should be a natural byproduct of these more coordinated social exchanges. Brenner & Mueller's (1982) results showed that shared meaning increased with age, social exchanges tended to be longer prior to the development of a common theme and, once a theme was developed, the presence of shared meaning prolonged the length of interactive episodes. Most importantly, their results demonstrate that social interaction can occur in the absence of shared meaning, that is, young partners can exchange a series of contingent socially directed behaviors without developing a common theme. Thus, although interactional structure is an important index of the nature of social interaction, it is only by turning to the existence of shared meaning episodes that we will be able to discern the actual process of social coordination.

Another important line of research is that of Brownell and her team on the development of collaboration among toddler peers (Brownell, 1986, 1988, 1990; Brownell & Carriger, 1990, 1991). Brownell & Carriger (1990, 1991) presented children with a problem-solving task which could only be resolved through mutual cooperation (one child had to depress a lever while the other retrieved a toy out of a plexiglass box). No 12-month-old dyad was able to resolve the problem cooperatively. Half of the 18-month-old dyads did so once, and most of the 24- and 30-month-old dyads solved it multiple times. The 24- and 30-month-old dyads engaged in proportionally more coordinated behavior than did the 18-month-olds, who in turn

engaged in more coordinated behavior than did the 12-month-olds. The pattern and latency of subsequent solutions, as well as the higher frequency of coordinated behavior among the older toddlers suggest purposeful, jointly regulated coordination of behavior among the 24- and 30-month-old partners (Brownell & Carriger, 1990). Obviously, the nature of the task proposed in Brownell & Carriger's (1990) study calls upon cognitive and sociocognitve skills beyond those implicated in social play. The level of planning, the understanding of interpersonal causal relations, and the precision of coordination required by the cooperative problem-solving task are higher than those required by a game of chase or mutual imitation. Nonetheless, coordinated social peer play requires both children to subordinate their individual behavior to a dyadic theme and to sequence their behavior temporally and spatially to maintain the theme (Brownell & Carriger, 1990). Thus, these results can be taken to illustrate how towards the second half of the third year young partners are capable of coordinating their behavior with each other. Brownell & Carriger's (1990) results also concur with those of Eckerman et al. (1989) concerning the more complex complementary behaviors found in the coordinated interaction of toddlers during the second half of the third year.

In another study of peer social behavior of 18- and 24-month-old toddlers, Brownell (1990) found that children in both age groups were capable of maintaining social interchange over several alternating turns. However, older toddlers exhibited more positive affect and their social behavior was more complex. In this study, children were observed in both same-age and mixed-age dyads. When paired with an older, more

affectively positive and more sociable partner, 18-month-olds were more interactive and sociable than with same-age peers. The older toddlers also adjusted their social behavior to the younger partners by producing longer initiations, and by using objects or physical contact as invitations to play. Differences in initiations were found within and between age groups. Children of both ages initiated interaction differently in mixed-age than in same-age dyads. Brownell interprets these results as a sign of true interactive effects. That is to say, that the adjustments made by a child to a partner depended both on the child's age and on the partner's age, and by extension on each partner's social characteristics (Brownell, 1990).

While taking her results to mean that toddlers are able to adjust their behavior to the social characteristics of different partners, Brownell's (1990) interpretation (of her results) leaned significantly on social skill and cognitive explanations of the children's capacities to understand and accommodate to each other's behavior. Furthermore, Brownell affirms that « it is cognitive developmental change that both facilitates the kinds of accommodations children can make to different partners and that constrains how sophisticated children can become with different partners » (Brownell, 1990, p. 846). Without denying the important contribution of socio-cognitive factors to children's mutual accommodations during social interaction, the intrinsic dyadic nature of social coordination also needs to be taken into consideration. During dyadic social exchange, particularly during interactions in which meaning is shared between partners, socioemotional factors may also play a role. Beyond the individual child's social skills

and cognitive capacity to understand the partner's intentions, there are also the affective elements that are shared by play partners, as is suggested by Brenner & Mueller's (1982) study where positive affect was a significant marker of shared-meaning interactions.

Results such as those of Eckerman (Eckerman et al., 1989; Eckerman & Didow, 1989, 1996), Brownell (Brownell, 1990; Brownell & Carriger, 1990, 1991), and Brenner & Mueller (1982), support the pertinence of studying social coordination as a specific aspect of social development. And as one which pertains to the essence of the encounter of two individual children, and which should be related to other aspects of social and socioemotional growth. Several lines of research converge to suggest the intrinsic dyadic nature of social coordination (Brenner & Mueller, 1982; Brownell, 1990; Brownell & Carriger, 1990, 1991; Eckeman et al., 1989; Ross & Lollis, 1989). Ross & Lollis (1989) applied to toddlers' peer relationships an analytic procedure derived from the social relations model (see Kenny & La Voie, 1984). They observed the development of peer relationships among previously unacquainted peers over a four-month period (18 free-play sessions of 40 minutes each per dyad) by pairing each child with two different partners. All interactive sequences (including games, contingent interaction, and conflict) that were contiguous and organized around a common theme were coded during the observations. The objective of their analytic approach was to determine the specific effect of relationships on young children's social behavior. They looked at what was characteristic of each dyad, which could not be explained by the

way each individual child behaved with a different partner, or by the behaviors each individual child received from a different partner. In this way, they were separating the effects of each child's social « style » as an agent or as recipient of social behavior, in order to identify the unique contribution of the relationship that developed within a dyad. Results showed that positive behavior within dyads could not be predicted from the behavior that both partners gave and received in other social contexts. Ross & Lollis (1989) concluded that relationships could be inferred form the relational reciprocity specific to each dyad. Such results are consistent with long-standing theoretical propositions (e.g. Hinde, 1979, 1987; Hinde & Stevenson-Hinde, 1986; Sroufe & Fleeson, 1986) about the nature of relationships as being both influenced by and influencing the characteristics of the partners who participate in them. In the context of social coordination within the dyad, these results suggest the need to define the nature of social coordination as a dyadic process rather than as an individual capacity, and to look at the characteristics of the dyad in our attempt to describe and explain the process of social coordination.

We propose a definition of social coordination at the dyadic level as *a process of joint definition of goals and mutual accommodations.* In coordinated interactions *both children implicitly or explicitly agree on what they are doing and on doing it together, and they accommodate to each other in order to achieve said goal.* Therefore, social coordination refers to a *communality of goals and means* as well as

to a shared pleasure or satisfaction, which is inherent to the interaction and is, as such, a goal in itself.

Most studies of social coordination have looked at individual socio-cognitive factors implicated in socially coordinated interaction. Others have looked at specific behavioral strategies, and yet others at the developmental progression of coordination and the acquisition of language (Brownell, 1986; Brownell & Carriger, 1990, 1991; Eckerman & Didow, 1996; Eckerman et al., 1989; Finkelstein et al., 1977). Accordingly, social coordination is seen as individual performance rather than as a dyadic enterprise of mutual social regulation. Two major facts can be noted following a review of the literature: first, no studies have construed coordination as dyadic regulation of the social exchange and, second, no studies have considered the socioemotional underpinnings of social coordination. Aside from the important descriptive value of these studies (we now know how coordinated action develops, that is to say, what steps it goes through), we do not know what are the characteristics of the partners which make them capable of such coordinated interaction. We know which interactive skills they use, but we do not know anything about the socioemotional characteristics of the individual children, or how these characteristics play out at the dyadic level to facilitate or hinder coordinated interaction. There is definite variability in these data, and « social skill » or « social competence » appear as very broad terms to explain this variability. In addition, the interaction of individual characteristics, that is to say the dyad itself, is lost in this normative approach. It can be said of the literature on coordinated interaction that it

does not seem to connect with research on other aspects of social development. No mention is made of implications of their findings for studies in social/personality development. Conversely, the social/personality research literature does not seem to consider the implications of the rich findings stemming from research on social coordination.

Research has shown that there are individual differences in the capacity to coordinate one's actions with those of another. However, we cannot understand social coordination if we do not take into consideration the context in which such coordination takes place. That is to say that both individual and situational variables play a role in the level of coordination attained by a dyad. As Hinde & Stevenson-Hinde (1986) have pointed out, the true nature of social interactions cannot be understood without considering the contribution of both partners. Such consideration includes both individual characteristics and the characteristics of the relational history of each participant. Rather than construing social coordination as deriving from a purely «cognitive or socio-cognitive» factor, we propose that social coordination comprises a very important socioemotional component inherent to its dyadic nature. In other words, social coordination depends on the dynamics of the socioemotional characteristics of both children involved. Although individual children make individual adaptations to each other's behavior, it is the dyad who attains and co-constructs the coordination of their shared interaction.

The experience of social coordination, in turn, may alter children's social experiences. Partners can see themselves as more socially effective and can jointly generate new and context-specific ways of enjoying social intercourse. Thus, social coordination may facilitate ulterior social development, and heralds advances in children's understanding of themselves, others, and the process of interaction and communication.

As the literature appears to establish no connection between the development of social coordination and other areas of social development, we are left with the task of ascertaining which other concepts are directly related to social coordination. Obviously, as social coordination is intimately related to interactive skill, it should be an inherent component of social competence. It is through the literature on social competence that we can begin to trace the roots of social coordination to other aspects of socioemotional development.

Embracing the breath of the literature on social competence is beyond the scope of the present study. However, it is unequivocal to say that while a general trend towards increased mastery and interactional skill from toddlerhood to preschool is acknowledged in the literature, individual differences are also well documented (e.g. Howes et al., 1993; Schneider, 1993). Research on the variables accounting for such individual differences in interactive skills and social competence has consistently attempted to relate them to other important aspects of socioemotional development, and

the search for developmental continuity has pointed repeatedly to earlier forms of social adaptation, such as that found in primary social relationships (e.g. Sroufe & Fleeson, 1986).

Attachment and Social Interaction

A common approach in explaining individual differences in social interaction styles in early childhood conceptualizes parental influence as acting generally on the child's social development. Rather than as a 'lieu' of learning of specific skills, the quality of the infant's relationship with parents, broadly defined, is hypothesized to mediate individual differences in other relationships. Here, the supposition is not that different infants learn specific skills with the parent, but rather that sensitive, responsive parenting provides the infant with the psychological resources to meet new interactive challenges successfully, as well as providing the infant with a generally positive social orientation (Sroufe & Fleeson, 1986). Conversely, insensitive parenting leaves the infant poorly prepared to master the peer system. In fact, attachment theory (Bowlby, 1982; Bretherton, 1985; Main, Kaplan, & Cassidy, 1985) predicts a continuity of adaptation from the relationship to the primary caregiver to ulterior social relationships. Many theorists posit that it is through the attachment relationship with the mother that children acquire knowledge about interacting with others (e.g. Sroufe, 1983).

The question of how the initial socioemotional experience within the mother-child relationship prepares the child to interact with peers has been asked in the past (Easterbrooks and Lamb, 1979; Lieberman, 1977; Matas, Arend, & Sroufe, 1978; Jacobson & Wille, 1986). Longitudinal studies using Ainsworth's Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978) as a measure of attachment have consistently documented connections between the quality of the infant-parent attachment relationship and social interaction with peers (e.g. LaFrenière & Sroufe, 1985; Elicker, Englund, & Sroufe, 1992). Securely attached children have been seen to engage in more positive interactions with peers as toddlers and to be more likely recipients of positive behavior from an unfamiliar peer than children whose attachment relationship with their mother had been rated as insecure (Sroufe, 1983; LaFrenière & Sroufe, 1985). Main and her colleagues (Main, 1983; Main & Weston, 1981) also found significant associations between quality of attachment with parents and social responsiveness with others. Likewise, Pastor (1981) found that in a play session with a peer playmate at 22 months, securely attached toddlers exhibited higher overall sociability and more positive social orientation that did toddlers who had been classified as insecurely attached.

Evidence of the relation between attachment and ulterior social development is also found in preschool samples. Secure infants have been later rated by their preschool teachers as more competent with their peers, being more liked by them, and having fewer behavioral problems than children who had been classified earlier as insecurely

attached (Arend, Gove, & Sroufe, 1979; Sroufe, 1983). As well, securely attached children received consistently higher scores on measures of ego-resilience, emotional health and self-esteem, social competence, agency (confidence, assertiveness), and positive affect, and were lower on measures of dependency and negative affect (Erickson, Sroufe, & Egeland, 1985; LaFrenière & Sroufe, 1985; Sroufe, 1983). Overall, the majority of reports suggest a positive contribution from security of attachment in infancy to subsequent peer competence in the preschool period (Elicker et al., 1992; Schneider, 1993).

Other studies have attempted to ascertain the specific interactive skills of toddlers as a function of their attachment classification, predicting that secure toddlers will be more sociable and skilled than their insecure counterparts. Results have been conflicting and sometimes counterintuitive. Lieberman (1977) used a composite measure of attachment based on the Strange Situation and a home-visit observation of the mother-child interaction of three year-olds. No attachment classifications were used. The children were observed in a laboratory play session with an unfamiliar playmate who had been selected on the basis of high social competence scores as rated by the preschool teacher. The attachment status of the playmates was not known. The focal children's observed social competence was positively related to low anxiety during the home visit, which was assumed to represent a more secure attachment. Although the authors claim a relation between security of attachment and social competence with a (very competent!)

play partner, the nature of the attachment measure remains unclear and the contribution of the playmate's competence and own attachment style are unknown.

Another widely cited study is that of Easterbrooks & Lamb (1979). This study attempted to ascertain the influence of the infant-mother attachment pattern on the 18 month-old child's sociability and social competence. The Strange Situation classification was used, but only secure subgroups were considered. Results showed differences between subgroups, indicating that even within the group of securely attached children, the modes of response to the encounter with an unfamiliar peer are varied. As predicted, the B1-2 group (considered the more secure group) engaged in more extensive and more competent forms of social behavior with peers than other secure children.

In a longitudinal study attempting to trace the influence of attachment on the development of peer interaction, Jacobson and Wille (1986) paired secure and insecure children with an unfamiliar secure playmate. While there were no longitudinal changes in the frequency of initiations, significant changes were found in children's responses to a peer's initiations from two to three years of age. Attachment did not predict developmental changes in responsiveness or sociability to peers, but it did predict the responsiveness elicited by the child. Secure children elicited the greatest number of positive responses. The authors interpreted these results as related to the secure child's attractiveness as a social partner, rather than the child's own sociability or interest in

initiating social interaction. Because all playmates were secure children, it was suggested that this trend towards increased differential responsiveness was in fact proof of the secure children's ability to discriminate the characteristics of their playmates and to attune their behavior thereof.

Albeit not without controversy, the literature in infant-parent attachment has shown relations between the security of infants' relationships with their mothers and preschool peer competence (LaFreniere & Sroufe, 1985; Lieberman, 1977; Waters, Wippman, Sroufe, 1979). Securely attached infants become preschoolers who exhibit greater peer leadership, less caution and withdrawal, more reciprocity in interaction, less negative affect in peer play, and who are judged by their teachers to be more socially competent with peers. Taken together, these studies suggest that by some process, interactive styles differ between secure and insecure toddlers. They have been seen to have different qualitative characteristics and rates of social behavior. Many of the dyads observed engaged in prolonged and successful exchanges and secure children are thought to be responsible for such success.

However, some studies (e.g. Jacobson & Wille, 1986) did not find secure children to be more competent than insecure children, while others found significant differences within the securely attached group (e.g. Easterbrooks & Lamb, 1979). In those studies where differences were found between secure and insecure children, the measures of attachment were either global qualitative assessments or the attachment classifications

were unclear (e.g. Lieberman, 1977). In general, there was a lack of richness in the description of both attachment and social behaviors associated with these differences. Most importantly, the characteristics of the playmates in terms of attachment were seldom specified, and the implications of such characteristics of the partner were not explored.

Reviewing a number of the above-mentioned studies, Lamb & Nash (1989) concluded that the evidence in favor of attachment as the determinant variable in the development of competent peer interactions is not conclusive. And this, in spite of the strong associations found between attachment measures and peer competence across different studies (i.e. Elicker et. al., 1992). In their review, Lamb & Nash (1989) suggest that methodological heterogeneity, as well as individual-difference variables other than attachment, might be responsible for the variability found. More recently, a meta-analysis of 23 studies concerning the influence of attachment on the development of social competence across the preschool years (Rouillard & Schneider, 1995), confirms the existence of a significant but small relation between attachment and subsequent peer relationships ($\underline{Z}$=.30). Such a result is considered by statistical standards as « small but substantial » (Cohen, 1977, in Rouillard & Schneider, 1995), and it suggests an important and unique contribution of the attachment relationship to the child's ulterior social development.

In a recent study, Fagot (1997) contrasted how the attachment relationship and the parents' interactive style with their child contributed to toddlers' interactive style with peers within toddler play groups. Her results showed that resistant children received less positive reciprocity, and that both avoidant and resistant children's positive overtures were more likely to be met with negative peer reactions than were positive overtures of secure children. Although children in the three different classifications did not differ in their own positive and negative initiations, they did differ in the way peers responded to them. Fagot interprets this result as an indication of differences in children's interactive styles. She also suggests that the internal organization of the child's representation of positive reciprocal exchanges might have its roots in the attachment relationship and may mediate positive child-peer reciprocity (Fagot, 1997).

One important contribution of Fagot's (1997) study is the conceptualization of social interaction as a dyadic event. The measure of social interaction in that study was based on the positive or negative nature of the focal child's initiation *and* that of the partner's response. However, the measure was very broad as it did not take into account the specifics of the interaction. Considering the inherent complexity of peer group life, social interactive competence can hardly be resumed to positive or negative overtures and responses. Nonetheless, the results summarized above indicate that a generally positive or negative interactive style appears to have a different impact on different partners. Such results also suggest the importance of considering the characteristics of both partners implicated in a social exchange. Furthermore, the study was carried out in

peer play groups where the target child could interact with any of a number of peers. There may be an effect of the array of available partners to each child, as groups were not balanced for attachment classification. Moreover, only the focal child's attachment classifications were considered in the analyses which leaves us in the dark as to the true nature of the impact of attachment classification on the outcome of social interaction.

Overall, individual differences in the attachment relationship appear to be related to social behavior with peers. Research shows that it is not necessarily specific skills that are transferred from the parent-child to child-child relationships (e.g., Fagot, 1997), and that stylistic differences rather than « rates of behavior » appear to be involved. In her discussion, Fagot (1997) echoes the considerations of other authors who consistently point to individual differences such as interactive style and temperamental predispositions to explain the nature of the variability in social interaction outcomes above and beyond that explained by the attachment relationship.

Most of the research attempting to relate attachment to ulterior social development has relied on attachment classifications derived from Ainsworth's Strange Situation procedure. Attachment as measured in the Strange Situation refers primarily to child's reaction to a stressor (see Lamb's 1989 discussion of this issue) consisting on repeated separations and reunions from mother as well as the presence of a stranger. Some authors have argued that the Strange Situation is limited in the range of behaviors observed and by the use of categories as opposed to continuous measures of attachment

(see Seifer & Schiller, 1995; Strayer, Verissimo, Vaughn & Howes, 1995). In addition, the Strange Situation is less useful with older toddlers and preschoolers.

Waters and Deane (1985) proposed an assessment of attachment behavior, based on a Q-Sort procedure, as an alternative to the Strange Situation procedure. While the latter relies on the activation of the attachment system through the stress induced by the separation episodes and the child's reactions in the reunion episodes, the former calls for the naturalistic observation of the child's attachment behaviors in a variety of situations. The Attachment Q-Set (AQS) covers a broad range of secure base and exploratory behavior, as well as affective response and social referencing (Waters & Deane, 1985). Furthermore, the use of the AQS requires an observation time of four to six hours, as opposed to 20 minutes in the Strange Situation; which allows for a more extensive and accurate description of the child's attachment behaviors.

Recently, Strayer et al. (1995) have suggested a quantitative use of the AQS in order to derive homogeneous groups of children on the basis of observed secure base behavior. This approach combines the richness of qualitative description of the AQS with the accrued predictive validity of a quantitative method. The original version of the AQS proposed the existence of seven descriptive content scales embedded in the items of the Q-sort (Waters & Deane, 1985). Strayer et al. (1995) used an empirical approach to identify the items corresponding to each of the descriptive categories in the original AQS and, on the basis of these confirmed scales, used cluster analyses to

identify three homogeneous groups of children whose qualitative descriptions approximate the more traditional categories derived from behavior observed in the Strange Situation. While awaiting replication, such an application of the AQS offers interesting avenues to assess attachment in children in late toddlerhood. In addition, using such a measure would allow to discern multidimensional aspects of the construct of attachment.

The Contribution of Temperament

Popular as well as scientific knowledge lead us to believe that from the moment we bring our baby home she already has certain characteristics that make her unique and different from other babies. In the behavioral and medical sciences a body of works attempting to define and explain those initial individual differences can be summarized under the term of *temperament*. That is the extent of the consensus on the nature of initial individual differences. Overall, infants are viewed as coming with their own intrinsic tendencies for experiencing and expressing emotions, with varying activity levels and different sensitivities to the stimuli from their environment. Beyond those basic principles, researchers do not agree on the nature, structure, or measurement of temperament.

Four major approaches to temperament are recurrent in the literature and have generated the most research applications. Depending on the theoretical approach

adopted, temperament is viewed as inherited personality traits (Buss & Plomin, in Goldsmith et al., 1987), as individual differences in the propensity to experience emotions (Goldsmith, in Goldsmith et al., 1987; Goldsmith & Campos, 1982, 1986), as the stylistic component of behavior (Thomas & Chess, in Goldsmith et al., 1987), or as relatively stable, primarily biologically based individual differences in reactivity and self-regulation (Rothbart, in Goldsmith et al., 1987; Derryberry & Rothbart, 1984).

The best-known contemporary theory of temperament has been proposed by Thomas & Chess (1977; Chess & Thomas, 1989, 1991). According to these authors, temperament refers to an independent psychological attribute different from motivation, ability and personality, which acts as a dynamic mediator between the individual's psychological structure and the forces of the environment. Temperament refers to the stylistic component of behavior, that is, the *how* of behavior. Although Thomas and Chess consider temperament as constitutional in nature, they propose that the expression of temperament results from the ongoing interaction between the child's endogenous characteristics and the characteristics of the environment. Their theory suggests that temperament should always be rated in terms of the social context within which it occurs (Thomas & Chess, in Goldsmith et al., 1987). From in-depth interviews of parents about their infants' everyday behaviors, Thomas and Chess (Chess & Thomas, 1986; Thomas & Chess, 1977; Thomas, Chess, & Birch, 1968) developed nine categories of observable behavioral items representing nine temperament traits: activity level, rythmicity of biological functions, approach to or withdrawal from novel

stimuli or situations, adaptability to changes in routine, sensory threshold, predominant quality of mood, intensity of mood expression, ease of distractibility when upset, and persitence/attention span. On the basis of children's scores on each of the temperament traits, they defined three patterns which served to classify the majority of children in their sample. Easy infants were found to be adaptable, rythmic, approaching, generally positive in mood, and mild in intensity. Difficult infants were unadaptable, irregular, withdrawing, negative, and intense. Slow-to-warm-up infants were low in activity, withdrawing in new situations, slow to adapt, mild in intensity, and negative in mood.

The contribution of Thomas & Chess' approach to temperament resides in the fact that individual differences in behavioral styles are considered in conjunction with the dynamics of the social environment (e.g. Chess & Thomas, 1991). In fact, the notion of *goodness of fit* proposes that it is the interaction between the child's temperament and other characteristics, such as motivation and intellectual abilities, and the successive demands of the environment in terms of adaptation, which determine the negative or positive behavioral outcome. In other words, it is not difficult temperament per se which predisposes a child to develop behavioral difficulties, but rather the dialectic between the child's temperamental predisposition and the characteristics of her social environment. So that if a difficult child is met by a social environment which places upon her high demands of adaptation and self-regulation, the demands would surpass the child's adaptational capabilities (*poorness of fit*) and maladaptive behavior may ensue. This theoretical framework may prove useful in describing children's

temperamental profiles and designing interventions that consider both the characteristics of the particular child and of her social environment (Chess & Thomas, 1991).

Another major approach to temperament is that proposed by Buss & Plomin (1975, 1984; Buss, 1991). Buss & Plomin see temperament as a subclass of personality traits, « defined by: appearence during the first year of life, persistence later in life, and the contribution of heredity » (Buss, 1991 p. 43). For these authors, the three personality traits that meet these criteria are activity, emotionality, and sociability. Activity is defined as the expenditure of physical energy in terms of movement, and is described in terms of the tempo and vigor of motor activity, and by the individual's endurance and motivation to remain active. Emotionality is defined as distress that is accompanied by intense autonomic arousal, particularly in terms of fear and anger. Emotionality comprises the motor activity accompanying the emotion, as well as the expressive, physiological, and cognitive components of the negative emotional experience. The final personality trait considered by Buss & Plomin as a temperament is sociability, which is defined as a preference for being with others rather than being alone and is characterized by the individual's search for others' company in order to share activities, to obtain social attention, and to elicit social responsivity from others.

According to Buss and Plomin (Buss, 1991), each of these temperamental traits carries for the individual the potential to have an impact on her social environment, and to elicit responses from the environment which will be adaptational challenges for the

individual. However, although they recognize the impact that the environment may have on the developing individual, their approach is largely centered on biologically determined individual differences. Moreover, the individual is thought of as a *causal agent* who can chose her environment (both physical and social), set the tone for her interactions with others (through her level or intensity of activity, her emotional tone, and her level of sociability), and who can modify the environment by way of her actions.

The major contribution of this approach has been apparent in the field of behavioral genetics where studies have attempted to demonstrate the genetic determination of temperament characteristics and the heritability of temperamental traits. However, while data from adoption studies suggest that the three traits proposed by Buss & Plomin as the constituents of temperament are moderately heritable and stable over developmental periods (e.g. DeFries, Plomin, & Fuller, 1994), consitent evidence for stable, biologically based differences in infants' social behavior is still largely lacking (Lyons-Ruth & Zeanah, 1993; Sameroff, Seifer, & Elias, 1982). Plomin (Plomin & Saudino, 1994) proposes that the field of temperament will stand to gain in clarification from current studies applying the newest techniques in quantitative and molecular genetics in order to ascertain the true contribution of biology to temperament. However, work still remains to be done to better our understanding of how these genetic contributions translate into the complex transactions and influences taking place within the child's social environment.

The third and fourth major theoretical approaches to temperament (Goldsmith & Campos, 1986; Rothbart & Derryberry, 1981; Rothbart, 1989, 1991) are similar in many respects. Goldsmith and Campos define temperament as individual differences in experiencing and expressing the primary emotions and arousal (Goldsmith & Campos, 1986). Their definition provides that temperament is emotional in nature and that individual differences in temperament refer to behavioral tendencies rather than actual occurrences of emotional behavior, and that temperament is indexed by the expressive aspects of emotion. Furthermore, they propose that emotions regulate internal psychological processes as well as social and interpersonal behaviors, and have a unique and innate pattern of expression (Goldsmith, in Goldsmith et al., 1987). Goldsmith & Campos see temperament as the basis of personality in so far as traits such as «aggressiveness» would be expected to be affected by individual differences in the experience and expression of the primary emotion « anger » (see Goldsmith, in Goldsmith et al., 1987). Goldsmith & Campos distinguish their position from others by including motivational components in their definition of temperament and by their relaxation of the heritability requirement (as opposed to Buss & Plomin, for instance). They leave place in their conception for the impact of socialization experiences in the development of temperament, in so far as through her transactions with the social world the child consolidates and integrates the experience and expression of emotions.

The Rothbart & Derryberry (e.g., 1981) temperament theory incorporates the behavioral phenomena included in the Goldsmith & Campos theory, but they do not limit the domain of temperament to emotional experience and expression. The scope of this theory extends to physiological and cognitive mechanisms underlying reactivity and regulation more generally (see Vaughn & Bost, in press). Rothbart defines temperament as constitutionally based individual differences in reactivity and self-regulation, with constitutional referring to the individual's relatively enduring biological make-up, which is influenced over time by heredity, maturation, and experience (Rothbart, 1989). Reactivity refers to arousal in motor, affective, autonomic, and endocrine domains, whereas, self-regulation refers to processes that may modulate the local level of reactivity in response to endogenous and exogenous parameters. Again, a major difference between Rothbart's and Goldsmith's theories rests in the inclusion of cognitive individual differences. While the former considers these individual differences an integral part of self-regulation and effortful control (e.g. Derryberry & Rothbart, 1997), the latter excludes them from the domain of temperament as they do not pertain to the intrinsic experience and expression of emotions (see Goldsmith et al., 1987).

The overall lines of the theoretical approach proposed by Rothbart (see Derryberry & Rothbart, 1997; Rothbart & Ahadi, 1994) is compatible with conceptualizations of socioemotional regulation (e.g. Thompson, 1994) and socioemotional development (e.g. Sroufe, 1979, 1996). Its emphasis on self-regulation and effortful control as the child's

capacity to differentially attend to threatening stimuli or aspects of the situation, makes this theoretical approach consistent with contemporary conceptions of coping and adaptation (Lazarus, 1991). Furthermore, Rothbart's theory bears structural similarity to attachment theory insofar as the normative components undergo development according to species specific maturational timetables, and inasmuch as the consolidation of individual differences is not expected until the underlying components have been established (see Vaughn & Bost, in press). More specifically, Rothbart's formulations concerning the importance of the child's representations of events in the world for the development of self-regulation (see Derryberry & Rothbart, 1997) tie in nicely with the notion of internal working models proposed by attachment theory (e.g. Bretherton, 1987), and offer a way of integration between the relational and temperamental aspects of socioemotional development.

Socioemotional Development: The Roots of Socioemotional Regulation

In his consideration of the field of socioemotional development, Thompson (1994) states that « relationships are foundational to socioemotional functioning because they are based on co-constructed patterns of interaction, mutual expectations, joint goals, shared meanings, frequent contact, and other features that are likely to enhance their significance for each partner » (Thompson, 1994, p. 393). This conceptualization points directly to the notion of attachment and, particularly, to the role of internal working models in socioemotional development.

In the context of attachment theory, Bowlby (1973) proposed a mechanism to account for continuity across an individual's relationships. Attachment theory proposes that, in the establishment of social interaction, children will draw upon their past experience in the relationship with their mothers. This primary relationship is thought to serve as a blueprint for the development of later relationships. During the first year of life, children integrate a view of the attachment figure, and a view of themselves within the relationship with the attachment figure. By age three, children have developed a representation of the nature of their relationships with others. This is what is called an *internal working model of attachment*. Internal working models have been conceptualized as schemes or scripts that summarize children's past relationship experiences (Bretherton, 1985, 1991). Alternatively, working models may be thought of as internalized rules for relationships (Main et al., 1985). Sroufe & Fleeson (1986) suggest that children not only develop views of others, but come to internalize the nature of early attachment relationships so that they carry forward an understanding of how to relate to others based on earlier experiences in attachment relationships. Thus, internal working models are as much about the external world and the kinds of relationships that the child can have with the significant people around her, as they are about the child herself and the way in which she is capable of handling the demands of social interactions.

Originally, the very notion of socioemotional development (Sroufe, 1979) referred to the idea of the continuity of the attachment relationship and its impact on later socioemotional competence. Currently, as the field of socioemotional development has evolved and broadened, the processes involved in this notion of continuity have been refined. We will begin by considering attachment as the organizational construct of socioemotional regulation and then proceed to explore the possible implications for the dyadic regulation of coordinated social interaction.

As Seifer and Schiller (1995) have put it, the definition of *attachment* is not easy. «Attachment has been discussed in terms of (1) specific behaviors related to increasing infants' proximity and contact with a caregiver (attachment behavior), (2) specific behaviors that decrease proximity to the attachment figure but promote infants' interaction with the environment (exploration), (3) the theoretical organization and control of proximity and exploration (attachment system), (4) the organizational structure of behaviors observed in context from which a strategy for maintaining attachment relationships is inferred (attachment strategy), and (5) the inferred internal bonds that form between infants and their caregivers (attachment)» (Seifer & Schiller, 1995, pp.146-147). Although Ainsworth et al. (1978) clearly state that attachment refers to the affectional bond that infants form with their caregivers and that endure across time and situations, the terms attachment, attachment behavior, attachment strategy, and attachment system are sometimes used interchangeably (Seifer & Schiller, 1995).

However, according to Sroufe (1996), attachment does not imply simply an affective bond between parent and infant, but rather the context of regulation of infant emotion. For Sroufe, « attachment, in contrast to attachment behaviors, refers to the particular organization of behaviors with respect to a caregiver, and to the special role of this dyadic organization for emotional regulation. » (Sroufe, 1996, p. 175). According to this proposition, the first half-year of life is characterized by the regulation of the infant's emotions as orchestrated by the caregiver. The caregiver detects and interprets the infant's emotional signals of tension, pleasure, or distress and responds to them giving them a sense and a meaning. The caregiver's interventions serve to regulate and 'tune' the infant's emotional expressions. However, during the second half-year the infant intentionally directs communications to the caregiver and organizes her behavior in order to maintain proximity to the caregiver (Sroufe, 1996). Thus attachment must be seen not as a set of behaviors or as a trait of the infant, but as a special, emotional relationship between infant and caregiver which translates into forms of regulation of the socioemotional experience.

Much research conducted within the framework of ethological attachment theory is guided by the concept of security of attachment, which refers to the relative balance between the attachment (i.e. proximity seeking) and exploratory behavioral systems (Ainsworth et al., 1978; Seifer & Schiller, 1995; Sroufe & Waters, 1977). Internal working models are assumed to be the underlying process by which security of

attachment is experienced. In the Strange Situation (Ainsworth et al., 1978), the security of attachment is assessed by observing the extent to which an infant uses its attachment figure as a secure base from which to explore the environment, and the extent to which stress promotes a shift from the predominance of exploratory behaviors to the predominance of attachment behaviors. More specifically, security of attachment is thought to be a precursor of later positive social adaptation, both from the standpoint of the internalized affective notion of a secure working model, and from the supposed propensity to explore the social and physical worlds (Bretherton, 1985; Main, & Weston, 1981; Matas, Arend, & Sroufe, 1978; Waters & Sroufe, 1983; Waters, Wippman, & Sroufe, 1979).

Moreover, Sroufe (1996, p. 174) states that «it was Bowlby (e.g. 1982) who first defined attachment in terms of a dyadic behavioral system». As part of its evolutionary heritage as a social species, the human is viewed as having a set of preadapted behaviors that unfold with development. In the early months, these include looking, smiling, crying, and (especially in nonhuman primates) clinging. Later, behaviors such as following, proximity seeking, and signaling emerge. Such behaviors serve a function of survival for the young and they will be expressed in contexts in which the maintenance of proximity is required to insure the security of the individual. Attachment behaviors will be organized around one or « a small hierarchy » of adults, without the need for the adult to either teach or reinforce them. Under normal circumstances, one or more adults will be available to respond to the preadapted behaviors, and will nurture, soothe, and

interact with the infant. This interactive presence facilitates the organization of the infants behavior around the caregiver and, it is also proposed (Sroufe, 1979, 1983, 1996), the dyadic regulation of infant emotion within the attachment relationship.

The effective dyadic regulation of emotion in infancy (secure attachment) is predicted to have consequences for emerging expectations concerning emotional arousal and, at the behavioral level, consequences for the expression, modulation and flexible control of emotions by the child. Those infants participating in a smoothly functioning, well-regulated relationship have repeatedly experienced the availability of others to respond when they are emotionally aroused. They have also experienced that emotional arousal is rarely disorganizing, and that if such disorganization should occur, restabilization commonly is quickly achieved often through to the intervention of the attachment figure (Sroufe, 1996).

Based on such expectations, children with secure attachment histories should readily engage in situations having the potential for emotional arousal and should directly express emotions, since emotions themselves are not threatening and are expected to be treated by others as communications (Sroufe, 1996). Thus, children with histories of secure attachment would be predicted to exhibit a notable curiosity, zest for exploration, and affective expressiveness, especially in social situations. Likewise, when even strong affect is aroused, these children typically should remain organized, should

manifest efforts to modulate arousal, and should effectively turn to others if their own capacities fail (Sroufe, 1996).

According to Sroufe (1996), towards the end of toddlerhood and into the preschool period, particular issues are at play in terms of developmental tasks: moving away from mother (autonomy/individuation), peer relationships, and management of impulses are paramount. Security, acceptability, and instrumentality are key words in this period. Thus, the child needs to feel safe and protected, worth of attention and trust, and assured of his efficacy and mastery of emotionally arousing situations. Finally, social relationships are of particular relevance. For example, not only do relationships call on the child's capacity for regulation (engaging others, sustaining interaction in the face of high arousal, expressing affect, modulating affect, etc.), but they reveal expectations concerning the patterning of interaction derived form the history of dyadic regulation (Sroufe, 1996).

All of these capacities may be seen to converge in establishing relationships with peers, a central issue from toddlerhood to preschool. Adequate peer relationships involve not only an understanding of the rules of give-and-take, but the ability to be emotionally engaged and to find and share fun, the capacity to understand and respond to the feelings of others, and the capacity to regulate the tension that is inevitable in complex social interactions (Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984). In a sense, peer relationships complete the cycle, from dyadic

regulation to self-regulation and back to dyadic regulation again, though in a qualitatively different way since it is now among equals (Sroufe, 1996). Given how social interaction calls on all of the young child's capacities for emotional regulation, it is easy to see how assessments of peer functioning may represent one of the best overall indicators of individual adaptation during this period, predicting functioning throughout the childhood years and into adulthood.

From an organizational perspective on attachment, as proposed by Sroufe (1996), it could be hypothesized that it is perhaps the mode of regulation that develops within the attachment relationship, rather than the specific skills that are learned within exchanges with the caregiver that would influence the child's capacity for social adaptation with a peer. Such a proposition would be supported by Fagot's (1997) recent results as discussed above.

Another notion pertinent to the development of socioemotional regulation is that of coping with a stressful situation, and in the case that concerns us, with the challenges of social interaction. Much of the studies reviewed above, attempting to establish the continuity from attachment to peer competence, have been conducted by bringing into a play session pairs of toddlers within a framework of unfamiliarity of partners--perhaps as a way to avoid the confound of an existing relationship. Such paradigm fails to consider other very important factors which may contribute greatly to the way in which children conduct themselves in the dyadic situation. One may think, for instance, of

individual differences in the reaction to the socially challenging nature of the situation. A parallel line of research has looked into the quality of young children's social exchanges with unfamiliar peers as opposed to familiar ones (e.g. Baudonnière, 1987; Doyle, Connolly, & Rivest, 1980). However, these studies have again failed to consider individual (i.e. temperament, ease of approach, emotional regulation) and contextual (i.e. coping with separation from mother) factors which may influence the children's exchanges, and they have not taken attachment history into consideration. Also, data are analyzed only on an individual level rather than on a dyadic level. On the one hand, the literature offers very rich observational studies looking into the interactive abilities characteristic of the very young child, without attention to the individual or contextual variables impinging upon the children's interactive abilities. On the other hand, investigators interested in understanding continuity/discontinuity issues in social behavior fail to render a clear picture of the interactive abilities in place.

In attempting to integrate the constructs presented so far, we may draw on the conceptualization of attachment as an organizational construct implicated in socioemotional regulation (e.g., Sroufe, 1979, 1996; Sroufe & Fleeson, 1986; Waters & Sroufe, 1983). We may also draw on the findings related to young children's coping and management of emotional arousal in stressful situations (e.g., Hornick-Parritz, 1996; Lazarus, 1991; Nachmias, Gunnar, Mangelsdorf, Hornik, & Buss, 1996). In doing so, we must consider formulations from the field of temperament, such as the importance of reactivity and self-regulation in children's emotional adaptation (e.g.

Derryberry & Rothbart, 1997). Implicit in this attempted integration is the notion of socioemotional regulation as a multidimensional construct which comprises both the child's temperamentally based emotional disposition and the child's experience and internalizations about emotional regulation stemming from the primary attachment relationship.

It could be suggested that temperamentally based characteristics could be a confounding variable when determining the child's ability to interact with a novel peer. One such characteristic is behavioral inhibition. Behavioral inhibition is defined as an increased latency or restriction in one's approach to new people, events and/or objects (Kagan & Snidman, 1991). Kagan and his colleagues have documented that a small proportion of children is unusually behaviorally inhibited. Their wariness and uncertainty in response to the unfamiliar characterizes their interactions with unfamiliar playmates as well as with unfamiliar objects and events. These children are lower in sociability with peers, as early as 21 months, and continuing into middle childhood (Garcia-Coll, Kagan, & Reznick, 1984; Kagan, 1984; Kagan, Reznick, & Gibbons, 1989; Kagan, Reznick, Snidman, & Gibbons, 1988). Kagan's research strategy of following a small, extreme group of children maximizes our ability to identify stability and continuity in this aspect of behavioral style. However, this strategy hinders our ability to generalize his results to children outside the extreme ranges of inhibition. Nonetheless, his results may also offer a lesson for our study of the average child. Namely, if inhibited children's responses to peers can be predicted by early

temperament characteristics, perhaps more subtle differences in children's peer play also grow out of individual differences in temperament within the average range. Indeed, Bronson & Pankey (1977 cited in Brownell & Brown, 1992) concluded that a within-child dispositional factor accounted for predictability from two-year-olds' differential reaction in a challenging non-social situation to their peer social orientation at 42 months of age. Vandell (1980) found that early in infancy, some infants were more sociable with mothers and peers than were other infants. Although it is possible that by six months mothers have already influenced their infants' sociability with other people, including infant playmates, a more parsimonious explanation would implicate infant temperament. Moreover, even if the quality of the parent-child relationship is formational in early peer relationships, it is also fundamentally affected by the child's dispositions (Belsky & Rovine, 1987; Lewis & Feiring, 1989a; 1989b). Despite these intriguing findings, the role of temperament in the development of individual differences in early peer play remains surprisingly unexplored in the literature.

Several concepts are pertinent to the discussion of ease of approach in a novel social situation. First, behavioral inhibition is thought to be related to temperamental predispositions, and should be reflected in the child's behavioral style. It should also be related to independent measures of temperamental characteristics such as approach/withdrawal, adaptability, and reactivity. Second, behaviorally inhibited children are often described as more «stress reactive» (Kagan & Snidman, 1991). This notion of stress reactivity may refer both to the physiological integration of the activity

of the neural and neuroendocrine systems, and to the subjective experience of the emotional state associated with stress arousal. Thus, the notion of coping may be central to the discussion of the ways in which the child handles her «constitutionally-predisposed» reactions to social novelty. In fact, the literature on stress reactivity (see Gunnar et al., 1989; Nachmias, et al., 1996; Hornick-Parritz, 1996; Stansbury & Gunnar, 1995) in infants and toddlers shows that the availability of coping resources and effective coping behavior play a major role in determining whether potentially threatening events generate stress reactions. How young children manage to regulate their stress reactions, and how this regulation becomes a mutual endeavor in dyadic interaction may be an important key in understanding the relative contribution of individual and of situational variables in the success of social exchanges. Individual differences in coping in social situations and the regulation of dyadic behavior may influence the quality of children's ongoing interactions.

In fact, Compas (1987) proposes that the study of effective coping in the very young child requires an understanding of the child's relation with her social environment, in order to adequately assess her coping skills and resources. Recently, Nachmias et al. (1996), have proposed that the attachment relationship may play a moderating role in the relation between behavioral inhibition and stress reactivity. Their results showed complex relations between attachment, coping behaviors and resources, and stress reactivity. Their model proposes that, in a secure attachment relationship the child has access to more efficient coping resources. Hence, it can be inferred, that the

presence of the mother for the infant, and a secure internal working model of attachment for the preschooler, would allow the child to negotiate in a more competent manner the integration of affect, cognition, and behavior in the presence of novel stimuli. On the basis of attachment theory and of the evidence gathered from the literature (e.g. Nachmias et al., 1996), one can hypothesize that during the transition from toddlerhood to the preschool period, the child's internal working model of attachment serves as an important coping resource when dealing with a socially challenging novel situation.

In their study of the role of inhibition in social interaction, Kochanska & Radke-Yarrow (1992) looked at how five-year-old children interact in an encounter with an unfamiliar peer. Predictions were made from toddler inhibition scores in both social and non-social situations. The authors looked at how well inhibition predicted interaction at the beginning *versus* the middle and the end of the interactive period. Social inhibition predicted better the shy/inhibited pattern of interaction. Children who as toddlers were inhibited to a new person, were highly shy and inhibited, displayed high negative affect, and remained in direct proximity to mother, during the first segment of the observation, but not during the second part of the observation period. Children who as toddlers were highly inhibited to the new environment also expressed a high level of negative affect during the initial encounter with the unfamiliar peer (Kochanska & Radke-Yarrow, 1992, p. 331). Correlations between toddlerhood inhibition and different types of play are quite revealing. Children who were uninhibited in the new environment as toddlers, during the third segment of the

observation were often involved in play with the peer, and rarely involved in solitary play. However, during the initial encounter they resorted to solitary play. Social inhibition in toddlerhood was not predictive of patterns of peer play. The effect of social inhibition on shyness and withdrawal with the peer was true only for the initial segment of the observation. The importance of these results is twofold. First, it establishes a complex relation between temperamentally based predispositions to explore the social environment and the actual social behavior of the child. Second and most interestingly, these results show that in spite of such temperamental predispositions, children arrived at establishing social exchanges rather than remaining in solitary play.

Questions may be asked about the kinds of coping behaviors that children with different temperamental qualities will deploy to deal with the challenging nature of a social exchange with an unfamiliar peer. Furthermore, we may question the role that previous experiences of emotional regulation, within the context of the attachment relationship with the mother, may play in the young child's management of emotional arousal within the social situation. Moreover, we may wonder how the dyadic nature of the situation may play a role in the joint regulation of the social exchange, both at an emotional and interactive levels, in order to produce coordinated and affectively satisfying social interaction.

In sum, if we consider the concepts of attachment, temperament, and coping behavior in our study of early social coordination between novel peer partners, it should be possible to obtain a clearer picture of the processes in play. Therefore, this study attempted to integrate the contributions of attachment, temperamental variables, and coping style to the young child's interactive skill with a novel peer. In this study, 30 months-old children were observed in dyads of same-sex, like-aged unfamiliar partners. The objective of the study was to understand the ways in which individual and dyadic characteristics contribute to the complexity and coordination of social exchanges, while taking into account each partner's attachment, temperament, and style of coping with novelty and separation. This study attempts to ascertain the patterning of individual and contextual variables in the success of dyadic interaction. The question posed is how do each child's attachment, temperamental and coping style interact in order to produce the adjustment and adaptation necessary for successful dyadic coordination.

Objectives of the Study

The general objective of the present study was to describe the nature of socioemotional adjustment in toddlerhood and its impact on children's ability to generate coordinated social interaction. The approach adopted in the formulation of research objectives and the data analysis resembled an ethological process of investigation. The associations among the variables were first identified and the utility of such associations in describing phenomena was then tested. We proceeded

in an iterative manner, exploring different avenues as we attempted to best describe the observed phenomena. In our investigation, we attempted to answer three main questions: What is the nature of socioemotional regulation in toddlerhood? Can socioemotional regulation be construed as a dyadic process? Is dyadic socioemotional regulation a factor in dyadic social coordination?

The first set of questions we asked referred to the nature of socioemotional adjustment in toddlerhood. Drawing from the existing literature, we endeavoured to describe socioemotional adjustment by way of the patternings of children's attachment, temperament, and coping behaviors. We defined attachment in terms of the dimensions of secure-base behavior as derived from maternal descriptions of the child's attachment behaviors; we defined temperament in terms of the associations among temperament traits; we defined coping in terms of behavioral observations of the management of emotional arousal.

The fundamental question of the nature of socioemotional adjustment was explored first from the standpoint of the individual, and then from the perspective of the dyad. In terms of the individual data, the following specific objectives were pursued:

1. Definition and refinement of the descriptive scales of the AQS along the lines of those proposed by Strayer et al. (1995). We expected to generate scales with

internal consistency, which would then be useful in exploring and describing toddlers' socioemotional adjustment.

2. Identify the patterning of relations among the AQS descriptive scales, which would yield higher-order clusters reflecting the underlying dimensions of attachment.

3. Taking from the existing literature on the variability of patterns of attachment, we expected to identify homogeneous groups of subjects on the basis of the attachment dimensions previously defined. We further expected that these groups would differ along the dimensions used to define them. Such attachment profiles (attachment styles) should be interpretable in terms of attachment theory.

4. Using the existing temperament scales, investigate the patterning of associations among the scales in order to identify higher-order dimensions of temperament. The dimensions thus derived should be interpretable in terms of existing approaches in temperament research.

5. Using the temperament dimensions identified, discern and describe homogeneous groups of subjects on the basis of their temperament styles. The resulting profiles should be interpretable in theory-relevant terms.

6. Little is known from the literature about very young children's coping behaviors and strategies in dyadic social interaction. We therefore sought to describe the coping behaviors of 30 month-olds in a socially challenging situation involving novelty and separation from mother.

7. Identify the associations among coping behaviors displayed by 30-month-olds in a socially challenging situation. The resulting groupings of behaviors should be interpretable in terms of coping strategies.

8. Identify and describe homogenous groups of subjects on the basis of the coping strategies they use. The identified groups should differ along the lines of the dimensions used to describe them.

9. The literature on coping suggests temperamental factors pertaining to emotionality and arousability may account for the child's use of certain coping strategies. There are also suggestions in the literature concerning the importance of the child's attachment history in the way the child will deal with emotional arousal, particularly in a socially challenging situation. We therefore attempted to determine the value of attachment and/or temperament in predicting coping style.

Having explored the multidimensional nature of attachment temperament and coping, it was our next objective to explore the construct of socioemotional regulation. More specifically, we pursued the following objectives:

10. Discern the patternings of association among the constructs of attachment, temperament and coping.

11. To identify and describe homogeneous groups of subjects which would differ along the lines of the dimensions of socioemotional regulation.

In regards to these objectives, we proposed that the resulting clusters of associated dimensions would be interpretable in terms of the larger construct of socioemotional regulation, as it is currently understood in the literature. We had no knowledge of a corresponding alternative measure of the construct of socioemotional regulation in the extant literature. In the absence of such a measure serving as a reference point for the convergent validity of our theoretical formulation, we regarded our integration of the constructs of attachment temperament and coping as an exploratory attempt at tapping a latent construct. However, we expected that the dimensions of socioemotional regulation would be associated to the level of social coordination attained by the dyad. Such an association could be considered an initial validation of the latent construct.

From the point of view of dyadic treatment of the data, we formulated the following objectives:

It was our contention that although indirectly, the literature also points to the dyadic nature of coping behaviors. Coping is regarded as adaptation strategies deployed in response to the challenges posed by a situation. In the particular case of social novelty, each partner becomes a part of the *context* within which such adaptation occurs. As such, the characteristics of *both* partners should contribute to the ways in which the *dyad as a unit* copes with the challenges of the situation. Therefore, we formulated the following objectives:

12. Explore coping behavior as a dyadic process. Coping will be considered as a dyadic phenomenon if we can consistently identify dyads that differ on their coping strategies on the basis of the coping behaviors of *both* partners.

13. Predict the coping style of dyads on the basis of the integration of the attachment and temperament characteristics of both partners.

The second set of questions we asked from a dyadic standpoint concerned the association between socioemotional regulation and social coordination. Specifically we pursued the following objectives:

14. Discern dyadic styles of socioemotional regulation. The dyads so identified should differ along the lines of the dimensions of socioemotional regulation used to describe them.

15. Describe the levels of social coordination displayed by dyads of unfamiliar toddlers in a socially challenging situation involving novelty and separation from mother.

16. Identify the level of social coordination displayed by dyads as a function of their style of socioemotional regulation.

Method

Study participants

Study participants were 92 normally developing children from French-speaking families (all Caucasians) recruited from the local birth lists in a small city in North-western Quebec. Participating families had agreed to take part in a longitudinal study of early social development across the preschool years. At the beginning of the study, all families signed consent forms stating the respect of confidentiality and the longitudinal nature of the project.

Due to missing values, socio-demographic data is available only for 80 families out of the 92 who participated in this study. Parents' age at birth of the participating child ranged from 19 to 38 years for mothers ($\underline{x}$ = 26.9; *sd* = 3.6), and from 21 to 46 years for fathers ($\underline{x}$ = 29.7; *sd* = 4.6). The socio-economic status (SES) ranged from lower- to upper- middle-class, and the modal SES was middle-class (family income $\underline{M}$ = 40000$ to 45000$). Most of the parents had graduated from high school. Among mothers, 41.4% had a high school education, 34.5% had attended College, and 12.6% had attended University. Among fathers, 29.6% had a high school education, 31% had attended college, and 16.9% had attended University.

Ninety-two children (46 girls) and their mothers from the larger longitudinal sample participated in the present study. At the time of this observation, children

ranged in age from 29 to 33 months (x = 31.5). None of the children included in this observation had regularly attended daycare centers. Each child was assigned to a play dyad on the basis of three criteria: sex, age, and unfamiliarity of the play peer. Thus, a total of 46 same-sex, like-aged dyads of unfamiliar peers were formed and invited for a play session. Only the 40 dyads for whom all data were available were included in the analyses involving observational data.

Procedures and Materials

Arrangements were made over the telephone for a visit to the laboratory at a time convenient to both mothers. The children and their mothers had visited the laboratory once six months prior to the play session. However, the material and the layout of the play room were different from the previous visit. The sessions were divided into three episodes. The first episode was an acquaintance period during which both mothers and their children were introduced and left free to interact or not for approximately 15 minutes in a play room equipped with age-appropriate toys. During the following episode, which lasted approximately 10 minutes, the children and their mothers shared a snack with the female experimenter. Children were then told by the experimenter that a surprise awaited them in the play room. Mothers were instructed to remain in the snack area from where they could observe the children through closed-circuit television. During the third episode, the children were conducted to the

play room by the female experimenter for a free play session. The present study is concerned with the children's behaviors and interactions during the free play session.

Free Play Session

While the children and mothers were having the snack, a research assistant rearranged the play room and substituted all the play materials for the experimental set of toys. The play room was a 15 x 20 ft carpeted room with a one-way observation mirror along the far wall. Partitions 36 in. high were placed to reduce the size of the room to 10 x 15 ft. in order to maintain children's interactions within the scope of the cameras and to prevent children's access to the windows. There were two cameras placed at either end of the room. The cameras moved to follow children's movements across the room. The cameras were guided from a control console in an adjacent room behind the one-way mirror. The play room was arranged following Nadel's (1986) procedure. All objects in the room were in duplicate: umbrellas, cowboy hats, sunglasses, baby dolls and blankets, teddy bears, balls, balloons, mobiles hanging from the ceiling, children's size tables and chairs. There was also one upside-down table in the middle of the room. The purpose of Nadel's protocol is to elicit imitative behavior, which is believed to be a transitional mode of communication during the third year of life. Although the study of imitation is only a tangential part of the present study, the protocol appears particularly useful, since it is

proposed to promote positive social interaction and to reduce conflict and competition for objects (Nadel & Baudonnière, 1982).

Both children entered the playroom followed by the female experimenter. Upon entrance to the room, the experimenter made statements such as « isn't this wonderful » or « look at all the toys ». The experimenter then sat at a corner, away from the toys, reading a magazine and did not participate in the children's activities. If a child asked the experimenter about his/her mother, the standard answer was « mummy is finishing her coffee, she'll be here in a few minutes, in the meantime you can play with all the toys ». After approximately seven minutes, the experimenter left the room telling the children that she needed to get something and she would be back shortly. The experimenter then went to the adjacent room on the other side of the one-way mirror, where she was available to intervene as needed. The children were left alone for approximately seven minutes. In the event that a child became distressed or manifested the desire to leave the room, the experimenter came in to attempt to comfort him/her, failing which, the mothers were called in.

Direct Measures: Observation Taxonomies

In order to describe the nature of the dyadic exchanges, as well as the degree of coordination each dyad attains during its interaction, two major observational taxonomies were used in the present study. Coding of *social interaction* and coding

of *social coordination* were carried out by two observers simultaneously trained on these taxonomies (the author and a graduate-student research assistant). Likewise, each child's *coping behaviors* were noted from observations by a third coder (a trained graduate student) and the author. All coders were blind to the children's attachment and temperamental characteristics.

Coding of Coping Behaviors

A review of the literature on young children's coping strategies suggested a list of coping behaviors which appeared applicable to the age group under study (e.g. Gunnar et al., 1989; Gunnar, 1994; Hornick-Parritz, 1996; Nachmias et al., 1996; Ryan-Wenger, 1992; Zeitlin, 1980). The behaviors identified were then validated by the author through observation of a randomly selected subsample of children. A total of 23 behavioral descriptions were retained and regrouped into 10 coping categories: avoidance, distraction, tension regulation, disregulation (crying), looking/monitoring, engage partner, control partner, endure the stressful situation, reference to mother, and reference to the experimenter (see Appendix A for details).

Each of the behaviors in this coding taxonomy was coded as present/absent every 10 seconds as a measure of each child's ability to modulate affect and arousal during a mildly challenging social situation. Thus, more than one behavior could be observed within a given 10-second interval. To avoid biases in coding, the tapes used

for validation purposes were excluded from those coded by the author and were coded by a trained research assistant. Percentage agreement between the two observers for the coping coding taxonomy was 84% (total agreements divided by the sum of agreements plus disagreements) with 11% omission rate, and Cohen's (1960) Kappa of .78.

Coding of Social Interaction

The structure of this coding system was derived from the work of Brownell (1990) and of Eckerman et al. (1975). The coding categories are those of Strayer (1980), and Noel, Leclerc, & Strayer (1990). The coding system is keyed to initiations and is designed to record on a second-by-second basis the sequences of each partner's initiations and responses as well as the discrete behaviors comprising each initiation or response. When an initiation occurred, the nature of the behavior emitted was noted at the appropriate second, and all socially oriented behaviors emitted thereafter by each child were noted until the end of the interaction bout (see Appendix B for details). The resulting codes provide information about both the *content* (i.e. affiliation, distal signaling, verbalization, physical contact, positive and/or negative affect) and the *structure* of interactions (i.e. interaction length, complexity of initiations and responses, number of turns for each partner). Cohen's (1960) Kappa for the social interaction taxonomy was .70. For the purpose of the present study,

only the length of interactive episodes and the total time spent in interactions were considered for analysis.

Coding of Social Coordination Between Peers

Following the detailed coding of each child's behavior, the final stage of the observation required the assessment of each interactive sequence in terms of the degree of coordination evidenced by the dyad. This evaluation was devised by the author and was based on the works of Eckerman et al. (1989) and Brownell (1990) and on extensive observation of the material by the author. Coding required a second pass on the observation material. Coders returned to the social behavior records and observed each previously identified sequence of social interaction in order to rate its level of coordination. Coordination was defined as a function of both partners' *joint definitions of goals* and the *accommodations the dyad makes* in order to achieve such goals. To be considered as coordinated, exchanges had to be positive in nature and had to promote the duration of the interaction bout. Based on this definition, each interactive sequence was rated on two dimensions. The first dimension, *shared meaning/joint definitions of goals*, included three levels: (a) partners are aware of each other's behavior, (b) acts are thematically related, and (c) the dyadic goal of the interaction is clear. The second dimension, *joint action/dyadic accommodation*, also included three levels: (a) partners mutually adjust their behavior to accommodate each other's actions, (b) partners' actions vary across turns and the dyad

accommodates to the new elements introduced, and (c) partners accommodate to each other's contributions and manifest predominantly positive affect (see Appendix C for details).

Each interactive episode was rated in terms of the quality of social coordination observed during the entire duration of the episode. Two dimensions were scored: *Shared meaning/joint definition of goals* and *joint action/dyadic accommodation.* For the *shared meaning/joint definition of goals* dimension, a score of 0 was assigned to interactive episodes where the dyad engaged in conflict which was not resolved during the interactive episode, or when the dyad engaged in non-coordinated interaction. A score of 1 was given to an interactive episode during which the partners demonstrated that they were merely aware of each other's activity but did not attempt to share the activity nor the goal of the activity. A score of 2 was assigned when the action of both partners was thematically related, like when the interaction occurred around a common object. Finally, a score of 3 was assigned to interactive episodes where the goal of the interaction was clear and it was shared by the dyad as a unit.

The *joint action/dyadic accommodation* scale was scored in terms of the mutual accommodations evidenced by the partners, which was usually manifested by their joint action around toys or games. A score of 0 was given to conflictual interactions and to those that failed to demonstrate that the children recognized each other's

activity and those where the children did not share a common theme. A score of 1 was given to interactive episodes where dyads minimally demonstrated timing and sequencing in relation to the each partner's behavior, like in simple imitations without elaboration of the theme. A score of 2 was assigned to interactive episodes where partners introduced new elements and accommodated to the variations introduced by each other. Finally, a score of 3 was assigned to interactive episodes where the mutual accommodations were accompanied by manifestations of positive affect and enjoyment. Thus, each interactive episode obtained a score ranging from 0 to 3 on each of the two dimensions observed.

Again, dyads observed by the author during the preparation of the rating scales were rated by a trained research assistant. Inter-rater agreement based on Cohen's Kappa was .74 for the *shared meaning / joint definitions of goals* dimension, and .71 for the dimension assessing the *accommodations the dyad makes*. Given the fact that this coding was based on a rating scale, each interactive episode received a code. A category of «no coordination observed» (score of 0) was included in the scales in order to avoid the problems of non-observance. This category was included in the calculation of Kappa.

Indirect Measures: Attachment Q-Set and Toddler Temperament Scale

As part of the ongoing longitudinal project on social development across the preschool years, mothers had completed the Attachment Q-Set (AQS; Waters & Deane, 1985) and the Toddler Temperament Scale (TTS; Fullard, McDevitt, & Carey, 1978) when the children were 24 months of age (x = 24.6 mo.; sd = 2.4 mo.).

Attachment Q-Set

The French version of the Attachment Q-Set (AQS; Waters & Deane, 1985) used in this study was developed at the Laboratoire d'Éthologie Humaine of the Université du Québec à Montréal. As reported elsewhere (see Vaughn, Strayer, Jacques, Trudel, & Seifer, 1991; Vaughn et al., 1992), the original English version was translated into French, then back-translated by fully bilingual speakers to evaluate differences in the wording of the items. For those items whose meaning varied across translations, the translation and back-translation process was repeated and persisting differences were conferenced (Vaughn et al., 1991). The AQS is a measure of secure base behavior across a variety of everyday situations. The AQS aims at assessing the degree to which each of the 100 descriptors is like or unlike the child's present behavior. This ipsative measure provides a current picture of the security of the child's attachment (Teti & McGourty, 1996; Vaughn & Waters, 1990). Appendix D contains the items of the AQS.

Mothers were instructed in the use of the AQS without being informed of the underlying constructs measured by the instrument. A trained research assistant read the items with the mother and clarified the meaning of unclear items. Mothers were instructed in the sorting procedure according to Waters & Deane's (1985) original distributions. Thus, mothers were asked to make two initial piles of 25 items representing those most characteristic and most uncharacteristic of their child's behavior, and to leave the remaining items in the middle pile, and then, to subdivide each of these piles in three for a total of nine. Then, working from the outer piles towards the center, each pile was adjusted so that the final sort conformed to a symmetrical, unimodal distribution with specific numbers of items in each of the nine piles (i.e., 5, 8, 12, 16, 18, 16, 12, 8, and 5). Following Waters & Deane's (1985) procedure, each item was scored according to its placement (piles 1-9), so that all items placed in pile one received a score of one, and all items placed in pile nine received a score of nine.

Validity and reliability of the AQS. In terms of validity, the AQS is considered an appropriate measure of attachment behavior (Manikowska, 1991; Vaughn & Waters, 1990). Inter-rater and parent-observer reliability scores with the AQS are satisfactory, ranging from .60 to .90 (Jacobson & Frye, 1991; Waters & Deane, 1985). The AQS has also shown good temporal stability. With mothers as respondents one week apart, the test re-test reliability was .88 (Waters & Deane, 1985). The construct validity of

the AQS using trained observers' sorts has been supported, with theoretically predictable relations found between AQS sorts and attachment classifications (Howes & Hamilton, 1992; Pederson, Moran, Bento, & Buckland, 1992 in Teti & McGourty, 1996; Vaughn & Waters, 1990). Vaughn & Waters (1990) have shown that security of attachment scores obtained with the AQS, are related to Strange Situation classifications, even when the scores for the sociability construct were controlled. Moreover, the association between sociability scores and Strange Situation classifications did not hold once the security scores were controlled. Further tests of the AQS's construct validity are shown by its relationship to other theoretically related constructs such as parenting quality and sensitivity (Pederson, Moran, Sitko, Campbell, Ghesquire, & Acton, 1990; Silverman, 1990 in Teti & McGourty, 1996), parenting stress (Nakagawa, Teti, & Lamb, 1992; Pederson et al., 1990), and experimentally induced social support (Jacobson & Frye, 1991). In addition, the AQS has been found to be useful for evaluating differences in attachment security and related constructs in a transcultural comparison of American and French Canadian children (Vaughn et al., 1991).

Using mothers as observers. In the last 10 years, many researchers have asked mothers to rate children's attachment by completing the AQS. Current literature reports conflicting findings obtained from mothers' AQS sorts. Several studies have found maternal-derived AQS data to relate in theoretically predictable ways to Strange Situation attachment classifications (Bosso, Corter, & Abramovitch, 1990,

and White & Feldstein, 1994, cited in Teti et al., 1996), parenting quality (Teti, Nakagawa, Das, & Wirth, 1991), parenting stress (Jarvis & Creasey, 1991; Teti et al., 1991), marital satisfaction, (Howes & Markman, 1989), and the quality of preschoolers' behavior toward their infant siblings (Bosso et al., 1990, in Teti et al., 1996; Teti & Ablard, 1989) and toward their friends (Park & Waters, 1989). However, others have reported less satisfactory results (e.g. Youngblade, Park, & Belsky, 1993).

In a recent study, Teti & McGourty (1996) reviewed the extant literature on mother-derived AQS data. The authors note an important trend in the literature in support of the use of mothers as respondents. They suggest three reasons to consider mothers as trustworthy sources of AQS information: 1) they are limited in the number of items that can be placed in each category, 2) they are kept unaware of the construct measured (i.e., security), and 3) mothers have greater access to their children's behavior across a wider variety of contexts. Teti & McGourty's (1996) results confirm that when mothers are trained in the use of the AQS they are reliable informers about their child's secure base behavior. Furthermore, when observers can affirm that they are confident to have witnessed a representative sample of child behavior in the home, the correspondence between observers' and mothers' sorts increases. Thus, it appears from these results that « trained observers' views of the children become more and more like the mothers' as the representativeness of observers' observations improves » (Teti & McGourty, 1996, p. 601-602).

Consequently, the use of mothers as respondents appears to be an appropriate and ecologically sound assessment of secure base behavior using the AQS.

Content scales within the AQS. At the inception of the Attachment Q-Set, Waters & Deane (1985), proposed the existence of eight content scales within the original 100-item Q-Set. These scales, which are constituted by items sharing common themes, refer to different aspects of attachment behaviors. The names of the scales are attachment/exploration balance, differential responsiveness to the caregiver, positive affect, social involvement, independence, social perceptiveness, endurance, and object use. However, it wasn't until 10 years later that these content scales were actually used as a way to describe children's differences in terms of behaviors pertinent to the concept of attachment. In 1995, Strayer, Verissimo, Vaughn, and Howes derived the content scales from the Q-Set items by grouping the items that shared a common theme and summing across those items to derive a score for that theme. Using this approach, Strayer et al. (1995) identified seven content scales corresponding to seven of the original scales proposed by Waters & Deane (1985). The scales reported by Strayer et al. (1995) had acceptable internal consistency and demonstrated their usefulness in describing and differentiating children's functioning in terms of attachment behavior.

The Toddler Temperament Scale (TTS)

At the time the children were approximately 24 months-old, mothers completed the French version of the Toddler Temperament Scale (TTS; Fullard, McDevitt, & Carey, 1978). The TTS is a questionnaire comprising 97 items, which are evaluated along a six-point Likert scale (ranging from «almost never» to «almost always»). The item content refers to the child's functioning in different contexts of everyday life. This questionnaire yields nine scale scores resulting from the average of scores obtained to the 11 items composing each scale. For most of the items, a high score corresponds to the negative pole of the dimension evaluated. Thus, some items are reverse-scored in order to facilitate interpretation.

The obtained scales correspond to the temperamental dimensions described by Thomas & Chess (1977), namely: activity level, rythmicity of biological functions, approach/withdrawal, adaptability, intensity of mood expression, quality of mood, persistence/attention span, distractibility, and sensory threshold. Therefore, a high score on the *activity level* dimension suggests that the child presents a high level of motor activity; a high score on the scale of *rythmicity of biological functions* represents a lack of regularity in sleep and feeding; a high score on the dimension of *approach/withdrawal* reveals a lack of propensity to approach new stimuli; a high score on the *adaptability* dimension suggests a lack of ease in the adaptation to new situations; a high score on the dimension assessing *intensity of mood expression*

supposes that the child's emotional reactions are intense; a high score on the dimension of *quality of mood* indicates that the child's predominant mood is negative; a high score on the dimension evaluating *persistence/attention span* suggests that the child manifests a lack of perseverance in his activities; a high score on *distractibility* indicates that external stimuli can easily modify the child's behavior; and finally, a high score on *sensory threshold* reveals a low reactivity threshold to stimuli.

The French translation used in the present study was produced by the Laboratoire d'Éthologie Humaine of the Université du Québec à Montréal. The initial translation was performed by two researchers thoroughly acquainted with the concept of temperament. In a second step, two developmentalists who are also fully bilingual reviewed the initial translation (Trudel, Strayer, Jacques, & Moss, 1991). Appendix E contains the items of the TTS.

Validity and reliability of the TTS. Among temperament report measures, the TTS appears as one of the most frequently used (Hubert, Wachs, Peters-Martin, & Gandour, 1982; Slabach, Morrow, & Wachs, 1991). Concerning its validity, Matheny (1984, 1986) showed that parental report of temperament using the TTS when the child was 12, 18, and 24 months-old corresponds to temperament evaluations in the laboratory performed by trained observers. According to Slabach et al. (1991), the TTS possesses an excellent convergent validity. In addition, reliability measures have been shown to be satisfactory, both in terms of its internal consistency (mean $r = .70$)

and in terms of test-retest reliability (one month interval) for the nine scales (mean r= .81) (Slabach et al., 1991).

Results

Analyses

The data analysis was divided into two major sections. In the first section, individual data were explored in order to describe the multivariate relations among the variables studied in this sample. In the second section, data were treated from the standpoint of the dyad rather than the individuals, in order to describe the patternings of attachment, temperament and coping at a dyadic level, and ultimately their relations to social coordination between the members of a dyad.

Section I: Individual data

The analysis of individual data proceeded in several steps. First, the characteristics of the sample in terms of each measure were explored. Second, the relations among the three measures (attachment, temperament, and coping) were tested. Third, the three variables were integrated into a multidimensional construct of socioemotional regulation. Finally, the sample was described in terms of the patternings of attachment, temperament, and coping, which together were construed as socioemotional regulation.

Attachment

This section addressed the first three objectives of the study: 1- the definition and refinement of the descriptive scales of the AQS; 2- the identification of the patterning of relations among the AQS descriptive scales; 3- the identification of homogeneous groups of subjects with distinct attachment styles.

The first step in this section of the analyses was to derive the seven descriptive scales of attachment behavior from the AQS according to the analytic procedure described by Strayer et al (1995). Following these analyses, we verified the consistency of the scales for the present sample, and proceeded to the description of the sample in terms of the seven scales. Gender differences on the seven descriptive scales were also tested.

The second step was to explore the associations among the seven descriptive scales. Pearson correlations were followed by hierarchical cluster analysis in order to describe the multidimensional relations among the descriptive scales, and to reduce data while maintaining meaningful constructs.

The final step was to describe the styles of attachment behavior found within the sample. On the basis of the associations of variables revealed by the cluster analysis described above, summary scores for each dimension were generated. Using these

summary scores, subjects were then allocated into groups through the use of hierarchical cluster analysis. In order to describe group profiles on the attachment dimensions under study, analyses of variance were used. The groups of subjects generated by the cluster analysis were compared on their scores to the attachment summary variables.

Temperament

This section of the analyses dealt with objectives four and five: to investigate the patterning of associations among the temperamnet scales, and to identify groups of subjects on the basis of their temperament styles.

A similar analytic procedure to that used with the attachment data was followed in the treatment of temperament individual data. First, the consistency of the scales measuring the nine temperament traits was verified, and the sample was described in terms of overall means and standard deviations. Gender differences on the nine temperament scales were also tested.

As was the case for the attachment data, the associations among the nine temperament scales were explored using correlational analysis. Further, the multidimensional associations among the variables were revealed using hierarchical

cluster analysis. The derived constructs were used to generate summary scores by averaging the scores on the contributing scales for each dimension of temperament.

Finally, the sample was divided into groups by allocating cases with the use of hierarchical cluster analysis in which we entered the subjects summary scores to the dimensions of temperament. The derived groupings of subjects were then compared using analysis of variance on the temperament dimensions.

Coping Behaviors

This section of the analysis plan dealt with objectives six through eight: to describe the coping behaviors of 30-month-olds in a socially challenging situation; to identify the associations among coping behaviors; to identity and describe homogeneous groups of subjects who differed in terms of the coping strategies they used.

The observed coping behaviors were summarized in terms of the proportion of ten-second intervals in which each behavior was observed. The sample's overall means and standard deviations for each of the ten coping behaviors are presented.

The second step in the analysis of coping behaviors was to explore the associations among the observed behaviors. Again, correlational analyses were followed by a hierarchical cluster analysis of the behaviors observed, and the revealed associations

of behaviors were used to generate summary scores of coping strategies by averaging the proportions of behaviors contributing to each of the dimensions revealed by the cluster analysis.

Finally, the sample was described in terms of coping styles by submitting the subjects' scores on each of the coping strategies to a hierarchical cluster analysis. This analysis produced groups of subjects that were then compared through analysis of variance on their scores to each of the coping strategies.

Relations among Attachment, Temperament, and Coping

The purpose of this section was to carry out objective number nine: to test the value of attachment and temperament variables in predicting children's coping styles. In this study, attachment and temperament were considered as antecedent variables which were assumed to be related to the ways in which the child would manage her emotional reactions to the challenging social situation of separation from the mother and to the novelty of the situation and of the partner. Consistent with this assumption, we explored the relations among the attachment and temperament characteristics of the child and the coping behaviors displayed by the child during the observation session using Pearson correlations.

In addition, two alternative approaches were also used. First we explored the extent to which children with different temperamental and attachment styles might differ on their use of coping strategies. To do this, we compared the attachment style groups and the temperament style groups on their scores to the coping strategies using analyses of variance.

On a second line of inquiry, we investigated the predictive value of attachment and temperament scales in determining the coping styles evidenced by children in this sample. To do this, we used discriminant analysis to predict the allocation of cases to each of the coping style groups. Three separate discriminant analyses were performed involving first, individual scores on each of the seven attachment descriptive scales; then the individual scores on each of the nine temperament scales, and finally, the third discriminant analysis used the individual scores on both the attachment and temperament scales as predictors of coping styles.

Patternings of Attachment, Temperament and Coping: Integration of the (latent) Construct of Socioemotional Regulation

A major assumption of this study was that the patternings of attachment, temperament, and coping would be useful to describe the latent construct of socioemotional regulation. Therefore this section of the data analysis tackled objectives number ten and eleven: to discern the patternings of association among the

constructs of attachment, temperament and coping; and to identify socioemotional regulation styles. We assumed that the multidimensional association among these three constructs would be useful in describing the modes of adaptation of children in this sample, and eventually, in determining the level of social coordination between members of a dyad.

At the level of the analysis of individual data, we standardized the attachment, temperament, and coping summary scores representing the dimensions on each of the constructs and we submitted this standardized summary scores to a hierarchical cluster analysis. The dimensions thus identified were considered to represent the multidimensional integration of the three constructs into the construct of socioemotional regulation.

Each of the above-mentioned dimensions was then used to generate summary scores by averaging the standardized scores of the contributing scales. Therefore, for each subject, we now had at our disposal a summary score representing each of the identified dimensions of socioemotional regulation. On the basis of these summary scores, we explored the patterns of association of cases within the sample in order to identify the existing styles of socioemotional regulation. To do this, we performed a hierarchical cluster analysis of the cases and compared the resulting groups on their scores on each of the dimensions of socioemotional regulation.

Section II: Dyadic Data

In this section we looked at the data from the standpoint of the dyad rather than the individual. In this endeavor, we were confronted with several analytic problems: First, social coordination is an intrinsically dyadic construct. It is the dyad as a unit rather than the individuals who attains a certain level of social coordination. However, attachment and temperament are individual variables, which nonetheless are assumed to interact during the social exchange to generate a mode of adaptation that is specific to the dyad. Coping behaviors and coping styles are also treated in the literature as individual variables. Nevertheless, in a dyadic context, they are inextricably dependent upon the behavior of both partners.

To deal with these issues, we devised an analytic treatment of the dyadic data in which the data of both children were treated simultaneously as to generate «cases» composed of the data of both members of a dyad.

Dyadic Coping Strategies

This section tackled objective number 12, which porposed to explore coping behavior as dyadic process. As the attachment and temperament data were collected prior to the observation session, and were considered as intrinsically individual data, no analysis of dyadic style were performed on these data. In order to describe dyadic

coping styles, we began dyadic analyses by entering the individual coping scores of both members of each dyad simultaneously, as if they constituted a single case, into a hierarchical cluster analysis. The groupings of dyads generated by this analysis were compared using analyses of variance in order to describe the dyadic coping styles.

Dyadic Coping Styles: Predicting from Attachment and Temperament

After identifying the dyadic coping styles, we attempted to predict the allocation of cases to the styles by using the attachment and temperament scores of both members of each dyad as predictors. This analytic step corresponded to objective number 13. To perform these analyses it was necessary to generate a *dyadic* measure of temperament and attachment. Simply adding across members of a dyad did not appear as logical course of action. Therefore, we attempted to generate a dyadic score that would take into consideration the relative distance between the partners in terms of attachment and temperament. Thus, the score of one member of a dyad was subtracted from the score of the other member of the dyad and divided by the sum of the scores of both members of the dyad. The absolute value of this computation for each attachment descriptive scale, and for each of the temperament scales for each dyad was used for analysis. This algorithm allowed for the assessment of the relative *distance* between the members of a dyad on attachment behavior and temperament attributes, while controlling for the level at which the scores of both members of the

dyad were situated on the respective scales. We named this scores *dyadic adjusted distance* for temperament and attachment respectively.

A first discriminant analysis was performed entering the dyadic adjusted distance scores for the attachment scales as predictors of dyadic coping styles. A second discriminant analysis was performed entering the dyadic adjusted distance scores for the temperament scales as predictors of dyadic coping styles. Finally, a third discriminant analyses explored the joint predictive value of dyadic adjusted distance scores for both attachment and temperament scales.

Socioemotional Regulation at the Dyadic Level

As stated in objective number 14, our dyadic approach to data analysis required the identification and description of dyadic styles of socioemotional regulation. In order to describe dyadic styles of socioemotional regulation, scores on the socioemotional regulation composite scales for both members of a dyad were entered simultaneously as a single case into a hierarchical cluster analysis grouping dyads into clusters in terms of the socioemotional regulation style of both partners.

An alternative approach to dyadic socioemotional regulation was also employed. The individual socioemotional regulation style of each member of a dyad was identified, and dyads were categorized on the basis of the possible combinations of

individual socioemotional regulation styles. Through analyses of variance, the groups of dyads thus constituted were compared on the combined scores of both members of the dyad. Two different approaches were tested: 1) comparing the groups of dyads on the dyadic average on each of the socioemotional regulation dimensions; and 2) comparing the groups of dyads on the dyadic adjusted scores on the socioemotional regulation scales.

Social Coordination

Our following objective (number 15) was to describe the levels of social coordination observed. Social coordination was initially analyzed at a descriptive level by looking at the time spent in social interaction, the duration of interactive episodes, and the proportion of interactive episodes rated at each level of social coordination in the sample of dyads. Following this step, our final objective (number 16) concerned the relations between socioemotional regulation and social coordination. Only a dyadic approach could account here for the dyadic nature of social coordination. Thus, two analytic strategies were employed. First, the relation between the dyadic socioemotional regulation scores and observed social interaction was tested. Second, groups of dyads identified on the basis of their socioemotional regulation style, were compared across the different levels of social coordination.

Findings

Section I: Individual differences in attachment, temperament and coping

The Construct of Attachment: Descriptive Scales

The Attachment Q-Set (AQS, Waters & Deane, 1985) allows for the evaluation of the maternal perception of the child's attachment behaviors. Mothers distribute a set of 100 items, describing attachment-related behaviors, along nine categories ranging from «extremely uncharacteristic of the child» (corresponding to a score of 1) to «extremely characteristic of the child» (corresponding to a score of 9), with a predetermined number of items allocated to each category. Thus, each item assigned to a category receives the corresponding score.

Two different kinds of information can be derived from the AQS. First, in the traditional treatment of the AQS, the distribution of scores obtained by each child can be compared to the distribution of scores attributed by a group of « experts » in attachment theory to the description of the « ideally secure » child, and to the distribution of scores attributed to the « most dependent » child. In this way, the individual child obtains a « security » and a « dependency » score, which reflect the degree of correlation between the child's distribution of items and the distribution of

items set by the experts. These correlations are referred to in the literature as criterion scores for security and dependency.

The second source of information corresponds to the method proposed by Strayer et al. (1995) where the placement scores obtained for the items composing each of the descriptive scales are averaged to produce a scale score corresponding to a description of the child's behavior in the particular construct evaluated by the scale.

In the present study, both the criterion scores and the descriptive scale scores were examined. Particular attention was paid to the descriptive scales in order to characterize children's profiles across the different domains of attachment behavior.

The descriptive scales were derived by identifying specific items corresponding to the concepts originally suggested by Waters & Deane (1985), as well as those items identified by Strayer et al. (1995). Through successive analyses of internal consistency, items that reduced the observed reliability were progressively removed to arrive at a final set of items, which optimized the coherence of each content scale. Items thus identified were summed and averaged to obtain a scale score. Across the seven descriptive scales we retained 76% of the items form the original 100-item Q-Set, while Strayer et al. (1995) retained only 56% of the original items (see Appendix F for the list of items composing each scale). Table 1 presents the reliability scores (Guttman's Lambda 2) and number of items for each content scale as well as means

and standard deviations for the total sample. The obtained reliability scores were moderate but acceptable, ranging form .63 to .71. It should be noted that in the present study the respondents were the mothers as opposed to previously reported studies (i.e., Strayer et al., 1995) where the Q-Set was completed by trained observers familiar with the concept of attachment. Under these circumstances, we consider the internal consistency of our scales as reliable.

Examination of table 1 shows that overall, mothers described their children's attachment behaviors as corresponding moderately to the descriptors in the scales evaluating differential responsiveness, positive affect, and sociability. Average scores fell between the category « somewhat characteristic of the child » and the category « characteristic of the child » (scores on these scales varied from one to nine). Scores on the scales evaluating independence, social perceptiveness, vitality, and proximity/exploration balance were viewed by mothers, on average, as not applicable to their child. Thus, mothers in the present sample characterized their children relatively more as expressing predominantly positive affect, being sociable, and responding appropriately to their social communications, and relatively less as independent, socially perceptive, seeking proximity, and being energetic. The magnitude of mean values obtained for the present sample is comparable to results obtained in another published study dealing with unselected populations (Strayer et al., 1995).

Table 1

Means, Standard Deviations, and Reliability Scores

for the Seven AQS Descriptive Scales and the Two Criterion Scores

Scales [a]	Number of items	Mean	Standard Deviation	Guttman's Lambda 2
Proximity/exploration balance	10	5.71	.74	.63
Differential responsiveness to the caregiver	8	6.45	.88	.65
Positive affect	10	6.64	.84	.67
Sociability	13	6.28	.71	.68
Independence	10	5.49	.88	.67
Social perceptiveness	10	5.59	.87	.71
Vitality	13	5.71	.67	.64

Criterion scores [b]	Mean	Standard deviation
Security	.47	.16
Dependency	-.08	.21

[a] Mean values are averaged values for the items included in the scale.

[b] Mean values reflect the congruence (i.e., correlation) between the vector of item scores for subjects and the criterion vector for a given construct.

Table 1 also presents the means and standard deviations for criterion scores. The mean value of security was .47 representing the degree of correspondence between the sample's distribution of scores on the 100-item Q-Set and the distribution of scores assigned by the experts to the « ideally secure child ». The magnitude of the security score indicates that, on average, children in this sample can be characterized and moderately secure. Likewise, the mean value for the dependency criterion score for the present sample indicates a low level of dependency when the children in the sample are compared to the « most dependent » child as described by the experts. Again, the results for the present sample were comparable to those obtained in previously published studies (i.e. Strayer et al., 1995).

Concerning individual differences on the basis of gender for the descriptive scales and the criterion scores, only social perceptiveness differentiated boys and girls (t (1,91) = 3.69, $p < .001$), with girls attaining a higher score on this scale. Table 2 presents the means, standard deviations, and t-values for the seven descriptive scales and the two criterion scores for boys and girls.

In order to better understand the degree of association among the seven descriptive scales, a correlation matrix is presented in Table 3. Inspection of the correlation coefficients revealed strong and significant correlations between most of the scales, with the exception of social perceptiveness, which correlated significantly only with

Table 2

Gender Differences on the Attachment Descriptive Scales

Scales	Girls ($n = 45$)		Boys ($n = 46$)		
	Mean	Standard Deviation	Mean	Standard Deviation	t
Proximity/exploration balance	5.83	.82	5.59	.65	1.57
Differential responsiveness to the caregiver	6.46	.87	6.44	.89	0.13
Positive affect	6.64	.82	6.64	.86	0.03
Sociability	6.37	.64	6.20	.77	1.17
Independence	5.59	.89	5.40	.88	1.04
Social perceptiveness	5.91	.77	5.29	.86	3.69**
Vitality	5.72	.72	5.70	.64	0.10
Criterion scores					
Security	.50	.15	.45	.16	1.52
Dependency	-.08	.22	-.07	.20	-0.35

**$p < .001$

independence and vitality. Proximity and differential responsiveness were positively correlated only with each other, and were both negatively related to positive affect, independence, and vitality. Vitality correlated positively with all other scales. Positive affect was strongly and positively correlated with vitality, independence, and sociability. Finally, sociability was also positively correlated with independence.

Overall, the direction of the correlations was interpretable and the associations found were expectable from a theoretical standpoint.

Table 3

Correlation matrix for the attachment descriptive scales

Scales	Prox./ Expl.	Diff. Resp.	Pos. Aff.	Sociab.	Indp.	Soc. Perc.	Vital.
Proximity/ Exploration balance	_	.51**	-.30**	-.12	-.34**	.14	-.30**
Differential Responsiveness to the caregiver		_	-.23*	-.18	-.38**	.12	-.22*
Positive affect			_	.43**	.49**	.20	.61**
Sociability				_	.24*	.04	.27*
Independence					_	.20*	.50**
Social perceptiveness						_	.34**

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

The pattern of correlations among the descriptive scales suggested the existence of an underlying structure of association among some specific constructs. In order to explore these associations while conserving the unique contributions of specific descriptive scales and in the interest of data reduction, hierarchical cluster analysis on the basis of the correlation matrix were carried out using the complete linkage method. The cluster analysis results for the attachment descriptive scales are

presented as a dendrogram plot in Figure 1. A four-cluster solution was readily identified from this figure. The closest linkage was between the scales evaluating positive affect and vitality, followed by the independence scale. This first cluster was joined at a considerable distance by the scale assessing sociability, indicating that the scale score for sociability should be treated as a singular dimension. The third cluster was formed by the scales assessing proximity and differential responsiveness, which joined each other rather quickly; while the distance between this third cluster and the social perceptiveness scale appeared to warrant, as was the case with sociability, that this scale be treated separately.

Based on the previous cluster analysis, the descriptive scales constituting each cluster were summed and averaged to produce four composite scale scores, which will serve as descriptive criteria to classify and compare children's attachment behavior profiles. Based on the nature of the contributing variables to each of the composite scales, we assigned the following labels: The first composite, grouping positive affect, vitality, and independence was labeled *self-competence*. The second component was represented by *sociability*. The third cluster grouping proximity and differential responsiveness was named *reliance on mother*. The fourth component corresponded to the descriptive scale of *social perceptiveness*

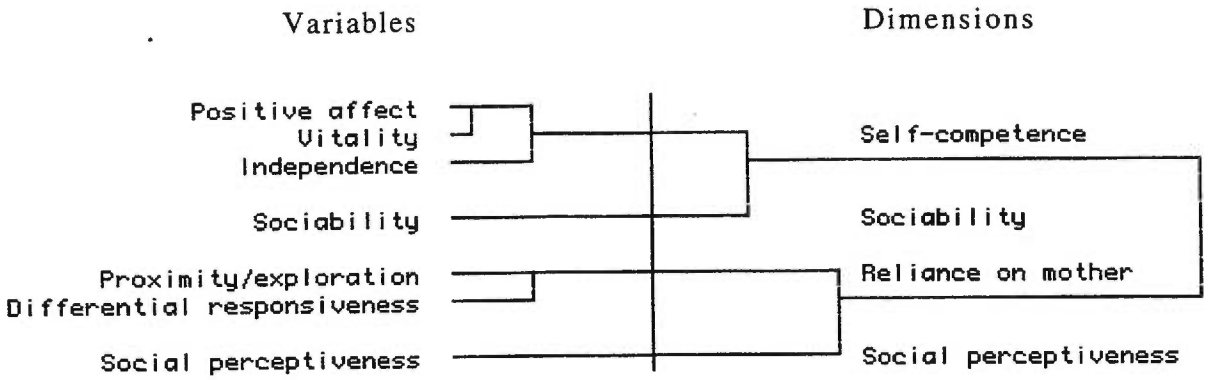

Figure 1. Cluster analysis on attachment variables using correlation measures and complete linkage method (n=91)

Attachment Styles: Clustering of Subjects on the Descriptive Scales and Description of Group Profiles

In order to describe the profiles of children who share similar characteristics on the four descriptive criteria identified above, we used cluster analysis to group subjects on the basis of their scores to the four composite scales. Clusters were formed using Ward's method with squared Euclidean distances as measures of dissimilarity.

Using this algorithm, cases which were most similar to each other were grouped within the same cluster, while the most dissimilar cases were included in opposite clusters. In this way, the homogeneity of the groups was maximized. Following the rule that each cluster should include at least 15% of the sample, three distinct and homogeneous clusters of subjects were identified on the basis of the distances between their scores on the four attachment composite scores. Figure 2 presents the resulting dendrogram of allocation of cases to the three clusters. Cluster I grouped 27.3% of the sample. We find 22.7% of the sample in Cluster II, and 32.7% of the total sample in Cluster III.

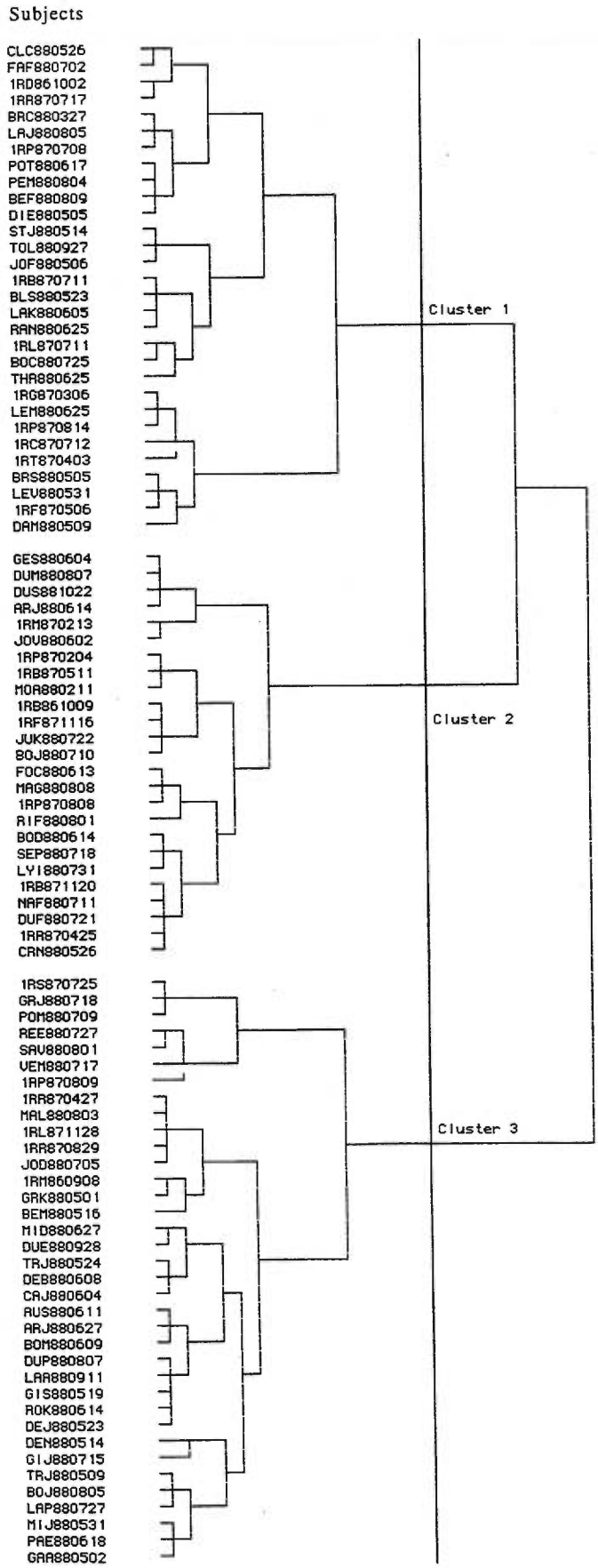

Figure 2. Cluster analysis on attachment dimensions scores using Euclidian distances and Ward's method (n=91)

One-way analyses of variance comparing the three clusters of subjects on each of the attachment composite scales and on the security and dependency criterion scores showed significant differences on all variables. Table 4 presents the means, standard deviations and *F*-values for the three groups of children on the four composite scales and the criterion scores. Post-hoc analyses (Tukey's HSD) revealed that Cluster I and Cluster II children obtained similar scores on competency and sociability and were higher than Cluster III children on these two measures. However, they differed from each other on reliance on mother and on social perceptiveness, with Cluster II scoring higher on both of these measures. Cluster III had the lowest scores on the competence and sociability measures, was comparable to Cluster II on reliance on mother, and was comparable to Cluster I on social perceptiveness.

Criterion scores also differentiated the three groups. Cluster II had the highest security scores and intermediate dependency scores, we named this group the *secure-dependent* group. Cluster I had intermediate security scores and had the lowest dependency scores, we named this group the *secure-independent* group. Cluster III had the highest dependency scores and the lowest security scores, we named this group the *insecure-dependent* group.

Table 4

Means, standard deviations, and group differences

on the four attachment composite scales

Composite scales	Subject Clusters			
	I (n = 30) *Secure-independent*	II (n = 25) *Secure-dependent*	III (n = 36) *Insecure-dependent*	F
Competence	6.32[a] (.37)	6.32[a] (.37)	5.34[b] (.57)	49.04***
Sociability	6.56[a] (.64)	6.48[a] (.58)	5.92[b] (.72)	9.29**
Reliance on mother	5.29[a] (.42)	6.47[b] (.38)	6.47[b] (.50)	71.53***
Social perceptiveness	5.34[a] (.86)	6.40[b] (.58)	5.23[a] (.69)	22.08***
Criterion scores				
Security	.47[a] (.12)	.61[b] (.09)	.37[c] (.15)	27.24***
Dependency	-.25[a] (.17)	-.09[b] (.12)	.08[c] (.17)	36.62***

Note: standard deviations are given in parenthesis.

[a b c] Group means with different superscripts are significantly different.

*p< .05; **p< .01; ***p< .001

In sum, compared to the other two groups, children in Cluster I were competent and sociable, tended not to rely on mother and were intermediate in the capacity to perceive and adapt to mother's social and emotional cues; they were moderately secure and scored low on dependency. In contrast, children in Cluster II, were just as competent and sociable, but also scored high on reliance on mother and social perceptiveness, had the highest security scores and intermediate, albeit low, dependency scores. Children in Cluster III were low on sociability and competence, and high on reliance on mother. This configuration of scores appears to be associated with insecurity and dependency.

The Construct of Temperament

The Toddler Temperament Scale (Fullard, McDevitt, & Carey, 1978) generates nine scale-scores assessing the temperamental traits activity, regularity, approach/withdrawal, adaptability, intensity, mood, persistence, distractibility, and threshold. We evaluated the reliability of these scales in our sample. Table 5 presents the reliability scores (Guttman's Lambda 2) and number of items for each temperament scale as well as means and standard deviations for the total sample. Overall, obtained reliability scores were quite acceptable, ranging from .62 for regularity to .87 for approach/withdrawal.

Table 5

Means, standard deviations, and reliability scores

for the nine temperament scales

Scales	Number of items	Means	Standard deviations	Guttman's Lambda 2
Activity	10	3.79	.68	.65
Regularity	10	2.88	.69	.62
Approach/ Withdrawal	13	2.94	.83	.87
Adaptability	8	3.29	.80	.67
Intensity	10	4.17	.64	.70
Mood	10	3.18	.72	.68
Persistence	10	3.33	.70	.73
Distractibility	10	4.31	.65	.73
Threshold	9	3.97	.84	.65

Scores on the temperament scales ranged between 1 (almost never) and 6 (almost always). In terms of means, children in this sample appeared to be characterized by their mothers as being usually distractible and intense with means of 4.31 and 4.17 respectively. Mothers also qualified children in this sample as usually not irregular, or moody, nor withdrawn (means of 2.88, 3.18, and 2.94 respectively). Children were also characterized as moderately active and reactive to stimuli (means of 3.79 and 3.97 respectively), and to a lesser degree lacking in persistence. Finally, mothers portrayed the children in this sample as moderately adaptable to a new environment or

situation (mean = 3.29). The highest levels of variability were found in threshold, adaptability and approach/withdrawal, while the other scales presented considerably less dispersion in their scores.

We also explored the existence of gender differences on the temperament measure. Table 6 presents the means and standard deviations for girls and boys in the sample. Only one gender difference was found. Girls obtained a lower score than boys on the threshold scale, indicating that boys tended to be slightly more reactive than girls ($t(1,86) = 2.29$ $p< .05$). In terms of standard deviations, table 6 shows that overall there was greater variability in boys' temperament scores than there was in girls' scores.

The interrelations among the temperament scales were explored using Pearson correlation analysis and a correlation matrix was generated. In order to correctly interpret the correlation matrix it is important to remember that a high score corresponds to the negative pole of the scale. For instance, a high score on adaptability corresponds to low levels of adaptability, a high score on threshold denotes high levels of reactivity, and a high score on distractibility corresponds to high levels of distraction.

Table 6

Gender differences on the temperament scales

Scales	Girls ($n = 44$) Means	Girls ($n = 44$) Standard Deviation	Boys ($n = 44$) Means	Boys ($n = 44$) Standard Deviation	t
Activity	3.74	.68	3.85	.68	-0.76
Regularity	2.87	.66	2.89	.73	-0.17
Approach/ Withdrawal	3.02	.80	2.87	.86	0.81
Adaptability	3.21	.63	3.37	.95	-0.93
Intensity	4.25	.64	4.08	.63	1.25
Mood	3.26	.65	3.10	.77	1.03
Persistence	3.29	.65	3.36	.76	-0.48
Distractibility	4.28	.60	4.34	.70	-.045
Threshold	4.17	.80	3.77	.84	2.29*

*$p < .05$

Table 7 presents the correlation matrix and significance levels of correlations among temperament scales. The highest correlations were found between the scales evaluating intensity and activity, and between adaptability and the scales evaluating persistence and mood. Children who were described as active were also intense in their way of reacting in their transactions with the environment. Active children were also less adaptable, which in this particular scale refers to tolerance, the capacity to

Table 7

Correlation coefficients and significance levels for the nine temperament scales

Scales	Act.	Reg.	App.	Adap.	Int.	Moo.	Pers.	Dist.	Thr.
Activity	_	-.02	-.11	.25*	.44**	.06	.07	-.11	.05
Regularity		_	-.03	.01	.12	.16	-.03	-.21	-.28**
Approach/ Withdrawal			_	.06	.06	.27*	.10	.22*	.15
Adaptability				_	.20	.39**	.40**	.08	.08
Intensity					_	.21*	.09	.17	.21*
Mood						_	.26*	.20	.06
Persistence							_	.00	.01
Distractibility								_	.31**
Response Threshold									_

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

wait one's turn, and the capacity to control behavior. Children who scored high on the mood and persistence scales (i.e. predominantly negative mood and low levels of persistence when confronted with difficulty) were also less adaptable. In addition, children who experienced predominantly negative moods tended to be more intense, less persistent, and to avoid both social and situational novelty. Withdrawal from novelty was also related to distractibility. Finally, reactivity to changes in the environment and to the quality and intensity of stimuli was related to intensity of

reactions and degree of distractibility, and was negatively related to regularity of biological functions.

As was the case for the attachment scales, the patterns of association among the nine temperament scales were further explored through a hierarchical cluster analysis. However, unlike the correlation algorithm used with the Q-sort data, we chose to use the Ward method with Euclidean distances as measures of differences between the clusters. This choice was motivated by the fact that intraindividual variations can be calculated in terms of distance on these scales, whereas on the Q-sort data, given the constraint of forced choices, the distance between scores does not represent the true variability. Figure 3 presents the dendrogram resulting from this analysis. Two clusters of variables were identified. As seen in Figure 3, activity and intensity joined each other quickly in the analysis and were later joined by distractibility and threshold to form the first cluster of temperament scales. The second group of variables included adaptability, persistence and mood, which were later joined by regularity and approach/withdrawal.

The first group of variables appeared to refer to the child's reactivity and sensitivity to the environment since it included variables assessing response threshold and distractibility by environmental stimuli. Also, this first cluster, by its inclusion of activity and reactivity, appeared to tap the child's style of transaction with the environment. We therefore named this first group of variables *reactivity style*.

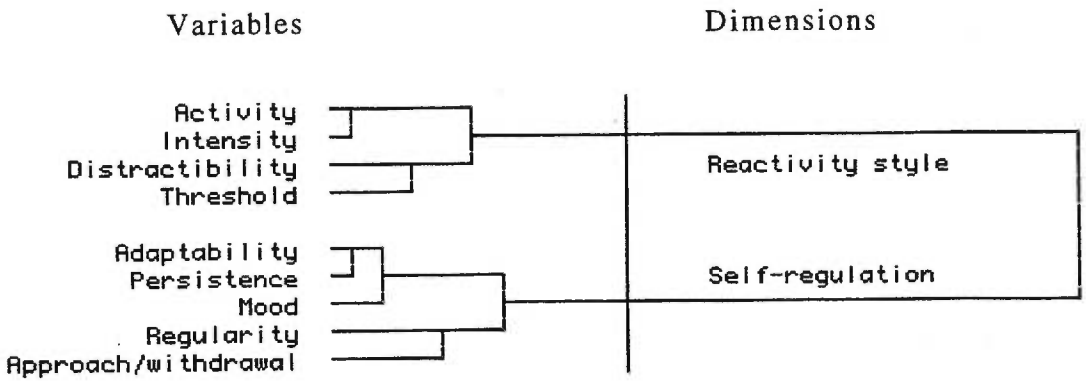

Figure 3. Cluster analysis on temperament variables using Euclidian distances and Ward's method (n=86)

The second cluster seemed to tap aspects of inhibition, since it included both the child's tendency to withdraw from novel people and environments, and the child's mode of adaptation in terms of tolerance, self-restrain and capacity to wait. In addition, this cluster included measures of the child's tendency to persist in a difficult task, the predominant quality of her emotional experience, and regularity of biological functions. Thus, this cluster appeared to draw upon the association of variables related to the child's *self-regulation*. On the basis of these patterns of associations, composite scores for the two groups of temperament variables were created by summing across and averaging the scores to the scales composing each cluster.

Temperament Styles: Clustering of Subjects on the Composite Scores and Description of Group Profiles

Children were grouped on the basis of their profiles of scores to the two composite temperament scales using hierarchical cluster analysis (Ward's method with Euclidean distances as a measure of distance between clusters). The resulting dendrogram is presented in figure 4. As can be seen from figure 4, the sample can be divided into three groups of subjects on the basis of children's temperament profiles on the composite temperament scales. Cluster I grouped 45.88% of the sample, Cluster II included 24.71% of the sample, while 30.59% of the children in the sample were found in Cluster III.

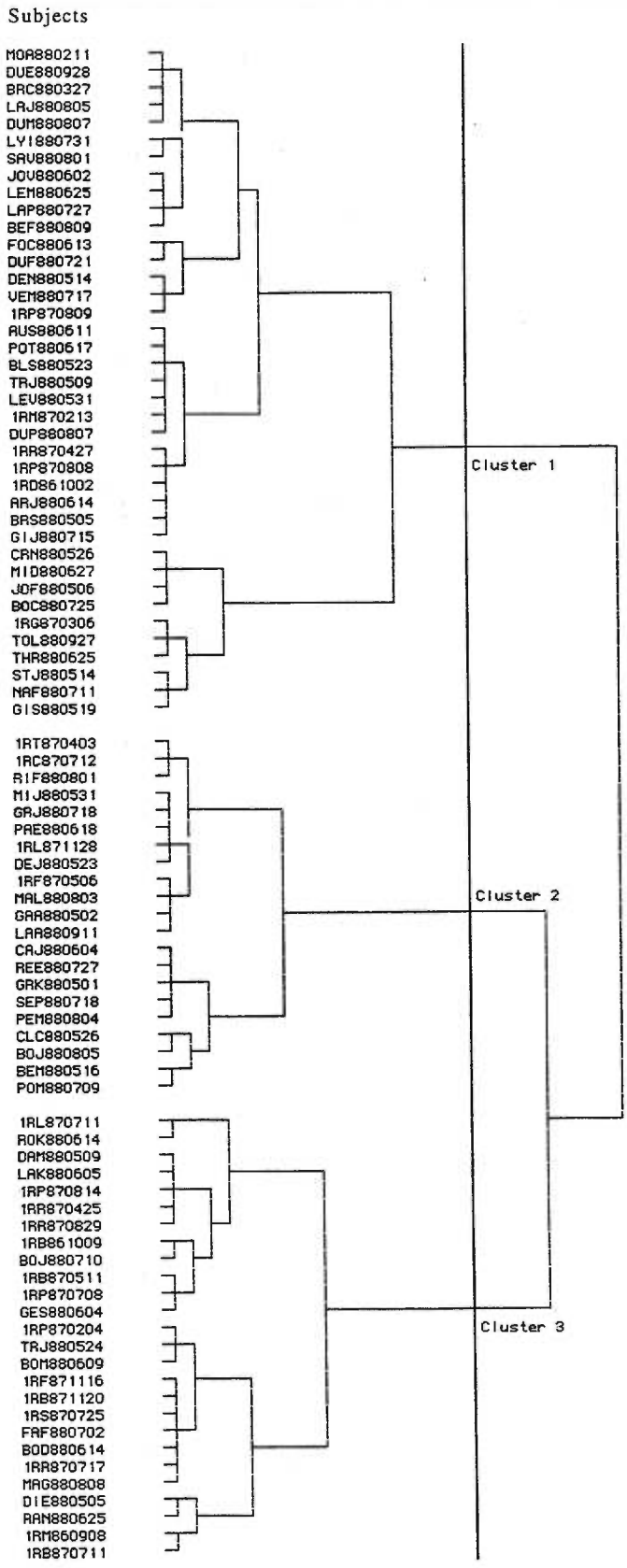

Figure 4. Cluster analysis on temperament dimensions scores using Euclidian distances and Ward's method (n=86)

Analysis of variance with Tukey's HSD post-hoc comparisons was used to identify the contribution of the two temperament composite scores to the makeup of subject groupings. Results of this analysis (including group means, standard deviations, and *F*-values) are presented in table 8.

Only children in Cluster I differed significantly on reactivity style, scoring lower on this composite score, while children in Clusters II and III obtained higher but comparable scores. Self-regulation was a better predictor of differences between the three groups. Cluster II children obtained the highest scores, while children in Cluster III obtained the lowest scores on this composite scale, and Cluster I children obtained intermediate scores. If we consider the group profiles, children in Cluster I were most characterized by their smooth reactive style and rather effective regulation of their behavior, we therefore named this group the *easy* group. Cluster II children were higher than children in Cluster I on reactivity (also higher than those on Cluster III, although not significantly) and obtained the highest scores on self-regulation. Therefore, these children tended to be intense in their reactions and lack in patience, tolerance and self-restraint. We named Cluster II children the *difficult* group. Cluster III children were just as reactive as children in Cluster II, but they regulated their behavior much better. Thus, we named this group *restrained.*

Table 8

Means, standard deviations, and group differences

on the two temperament composite scales

Temperament composite scores	Subject Clusters			
	I *Easy* (n = 39)	II *Difficult* (n = 21)	III *Restrained* (n = 26)	*F*
Reactivity style	3.71[a] (.27)	4.43[b] (.17)	4.31[b] (.38)	56.09***
Self-regulation	3.17[a] (.34)	3.51[b] (.29)	2.73[c] (.30)	36. 04***

Note: standard deviations are given in parenthesis.

[a b c] Group means with different superscripts are significantly different.

***p< .001

Coping Behaviors

Each of the 10 categories of coping behaviors observed during the play session were summed across the session and divided by the number of valid observational intervals (10 seconds) where the behavior was observed. Table 9 presents the means, standard deviations and range values for the 10 coping behaviors in terms of the percentage of valid observational intervals where the behavior was observed. There were marked differences in children's use of the various behaviors available to them in order to deal with the novelty of the situation and the stress of separation from

Table 9

Means, standard deviations and ranges of values

for the 10 coping behaviors

Coping behaviors	Means [a]	Standard deviation	Range
Avoidance	4.23	6.86	48.70
Distraction	35.93	16.17	77.96
Tension release	15.39	10.80	61.44
Reference to mother	6.00	8.21	35.56
Looking/monitoring	15.39	10.89	2.48
Reference to experimenter	.48	1.63	10.61
Cry	.27	.94	6.48
Social interaction with partner	17.80	13.15	50.49
Control partner	4.20	4.13	19.71
Endure the stressful situation	2.35	2.72	13.97

[a] in terms of percentage of 10 sec. observation intervals where the behavior was observed

mother. Distraction was observed in nearly 36% of the observation intervals, with interaction with the partner observed nearly half as often and followed in frequency by looking/monitoring and tension release. On the other hand, cry and reference to the experimenter were the least observed coping behaviors (present on average in less than 1% of observation intervals). However, in looking at the magnitudes of the standard deviations, these results should be taken with caution. As with most observational data, there is great variability in these results, and this variability attests to the importance of stylistic considerations. Certain elements of our observation taxonomy appeared to be absent from some children's repertoire, whereas other children appeared to favor those specific behaviors as their most readily available coping strategies.

We explored the possibility of gender differences in coping behaviors using *t*-tests. Table 10 presents the means, standard deviations, and *t*-values comparing girls and boys on the 10 coping behaviors. Only reference to mother reached significance with boys referring to mother more often than did girls. Overall, we can see that there is more variability among boys than among girls on their use of coping behaviors.

Table 10

Gender differences on coping behaviors

Coping behaviors	Girls (n = 45)		Boys (n = 46)		T
	Means	Standard deviations	Means	Standard deviations	
Avoidance	2.86	4.78	5.57	8.25	-1.91
Distraction	34.43	12.90	37.40	18.86	-0.88
Tension regulation	13.62	9.69	17.11	11.64	-1.55
Reference to mother	3.97	4.99	7.98	10.12	-2.39*
Looking/monitoring	14.21	9.01	16.54	12.45	-1.02
Reference to experimenter	.53	1.90	.43	1.34	0.29
Cry	.14	.60	.39	1.17	-1.27
Social interaction with partner	19.45	12.90	16.18	13.35	1.19
Control partner	4.70	4.12	3.72	4.13	1.13
Endure	2.27	2.27	2.43	3.12	-0.29

*p< .05

From Coping Behaviors to Coping Strategies

In order to better understand the degree of association among the 10 coping behaviors, table 11 presents the intercorrelations among the 10 coping behaviors. The strongest associations were found between reference to mother and avoidance, and

between tension regulation and looking/monitoring partner. Children who tended to refer to mother, also tended to avoid the partner and to attempt to leave the room. Regulating tension through self-stimulation, unoccupied restless behavior or agitated repetitive behaviors was related to observing the partner from a distance and to referring to mother and, to a lesser degree, to the experimenter. Tension regulation was also related to keeping the focus of attention away from the partner by distracting oneself with activities and objects in the physical environment. Thus, tension regulation appears to be related to maintaining a distance from the partner, to distraction with objects and toys, and to relying on the adults for regulation or comfort. In fact, interacting with the partner was negatively related to referring to mother and to looking/monitoring, which suggests that children who dealt with the situation by interacting with their partner, did not tend to call or seek mother, and did not observe the partner from a distance. Despite its very low frequency crying, when it did occur, was related to referring to mother and to the experimenter, and it was negatively related to interacting with the partner. However, because of its low frequency, cry was not considered in further analyses. The last two significant correlations are found among coping behaviors with a social component. As could be expected, social interaction with the partner was related to attempts at controlling the partner, which in turn was related to submitting to the partner's requests and to enduring passively the stressful nature of the situation.

Table 11

Correlation matrix for the 10 coping behaviors

Coping Behaviors	Avo	Dist	Tens	Mom	Look	Expr	Cry	Partnr	Contrl	Endr
Avoidance	_	.13	.15	.47**	-.16	.22*	.04	-.10	-.03	-.01
Distraction	_	_	-.25*	-.15	.07	-.10	-.07	-.02	.06	.00
Tension regulation	_	_	_	.38**	.47**	.23*	.14	-.21	-.00	.04
Reference to mother	_	_	_	_	.11	.12	.33**	-.25*	.00	.03
Looking/ Monitoring	_	_	_	_	_	-.06	.04	-.24*	-.09	.08
Reference to experimenter	_	_	_	_	_	_	.27*	-.10	-.15	-.12
Cry	_	_	_	_	_	_	_	-.22*	.01	-.14
Social interaction with partner	_	_	_	_	_	_	_	_	.22*	.08
Control partner	_	_	_	_	_	_	_	_	_	.31**
Endure the stressful situation	_	_	_	_	_	_	_	_	_	_

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

In order to better understand the structure of associations among coping behaviors, hierarchical cluster analysis on the basis of the correlation matrix were carried out

using the Complete Linkage method. Figure 5 presents the dendrogram resulting from this analysis. From figure 5 we see that the first cluster resulted from the association of the behaviors tension and looking/ monitoring. The next group of associations was among avoidance, reference to the experimenter, and reference to mother. Later in the analysis, control partner, endure, and social interaction with partner were also associated forming the third cluster. Finally, distraction appeared as a separate variable, given its very distant association with the previous cluster.

This analysis, which explores the associations among coping behaviors, reveals four different coping strategies deployed by children in this sample to face the challenging nature of the situation. In Cluster I the association between tension and look appeared to refer to an anxious and apprehensive stance which contributed to maintain a distance between partners, we therefore named this cluster *apprehension/distance*. In Cluster II, we found behaviors which allowed the child to turn away from the source of stress while seeking refuge in the adult figure; we termed this association of variables (this coping strategy) *fleeing/reassurance*. In Cluster III, the variables grouped made reference to the child's ability to deal with the social nature of the situation by engaging the partner or responding to her initiations, by attempting to control her, or by submitting to her requests; we labeled this cluster *social/interactive*. Finally, distraction appeared as a separate strategy which did not seem particularly more likely to occur in association with any other coping behavior; we chose to name this variable *attention management*.

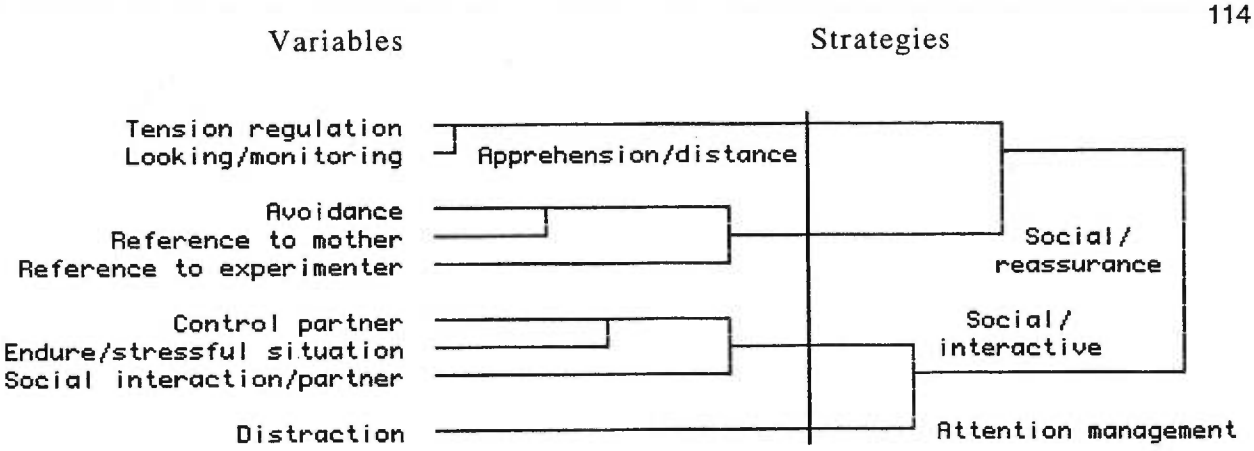

Figure 5. Cluster analysis on coping behavior using correlation measures and complete linkage method (n=91)

Coping Styles: Clustering of Subjects on Their Coping Strategies and Description of Group Profiles

On the basis of the previous cluster analysis in which the associations among coping behaviors were identified, the component behaviors in each cluster were summed and averaged to create for each child a score corresponding to each of the coping strategies. Hierarchical cluster analyses were used to classify children in terms of their profiles on the four coping strategies. Figure 6 presents the dendrogram resulting from a cluster analysis using the Ward method, with squared Euclidean distances as measures of dissimilarity between clusters. Four distinct groups of children were identified regrouping respectively 22 children (24.8% of the sample), 17 children (18.68% of the sample), 21 children (23.07% of the sample), and 31 children (34.06% of the sample).

Analysis of variance comparing the four groups on the coping strategy scores revealed significant differences among the groups. Means, standard deviations, and *F*-values are shown in table 12, and the results of post-hoc comparisons (Tukey's HSD) are indicated. Attention management was the variable that contributed the most to differentiating the four groups. Apprehension/distance, and to a lesser degree social/interactive strategies, also differentiated significantly the groups. The four groups of children did not differ in their use of the coping strategy fleeing/reassurance. Cluster II children had a higher tendency to remain at a distance

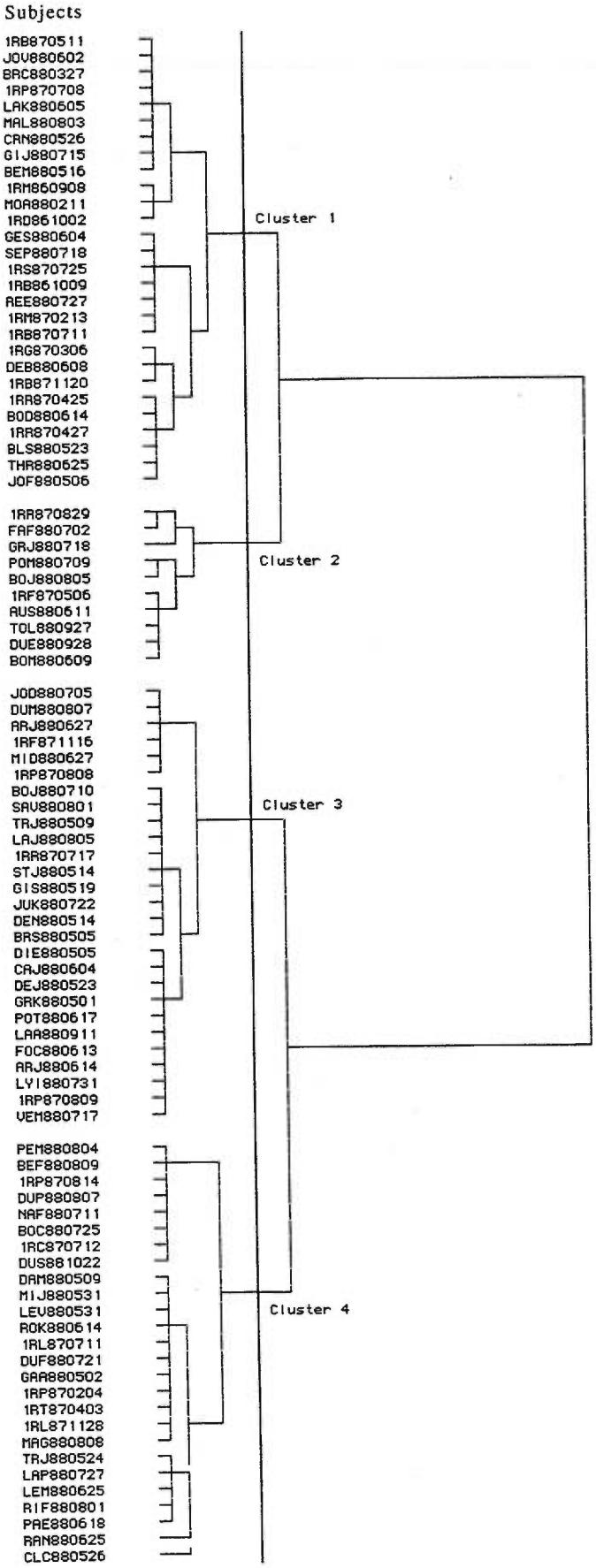

Figure 6. Cluster analysis on coping strategies using Euclidian distances and Ward's method (n=91)

and to observe their partner, and also tended to regulate their tension through unoccupied restless behavior. They also were the least prone to use attention management by exploring the environment and engaging in solitary play, and although the results did not reach significance, they had the lowest rate of social/interactive coping strategies and the highest rates of fleeing/reassurance. On the basis of this description, we named this group the *tense-inhibited* group. Children in Cluster III used distraction significantly more often than did children in the other three groups, and they exhibited the lowest proportions of apprehension/distance and fleeing/reassurance. We named Cluster III the *relaxed-distracted* group. Children in Cluster I used apprehension/distance significantly less than did children in Clusters II but more than children in Cluster III, and their mean was comparable to that of children in Cluster IV. Cluster I children also used attention management less often than Cluster III and Cluster IV children, and had a significantly higher mean on this strategy than children in Cluster II. The most salient characteristic of this group was that they relied on social interactive strategies significantly more than children in the other three groups did. In fact when looking at their overall profile, one gets a sense that children in Cluster I had a more varied and flexible repertoire of coping strategies. Their repertoire included distraction through solitary play with toys and exploration of the environment, as well as social interaction and this, in spite of being moderately tense. We named Cluster I children the *tense-social* group. Finally, Cluster IV

Table 12

Means, standard deviations (SD), and group differences

on coping strategies

	Subject Clusters				
	I (n = 28)	II (n = 10)	III (n = 27)	IV (n = 31)	
Coping Strategies	*Tense-social*	*Tense-Inhibited*	*Relaxed-distracted*	*Tense-distracted*	F-value
Apprehension/distance	21.69[a] (9.99)	49.68[b] (12.36)	15.02[c] (5.71)	22.84[a] (10.01)	34.68***
Fleeing/reassurance	5.27 (6.34)	8.66 (9.39)	3.12 (3.70)	6.33 (6.42)	2.39
Social/interactive	15.89[a] (7.63)	7.97[b] (5.22)	10.91[b] (4.79)	9.87[b] (7.88)	5.36**
Attention management	36.31[a] (7.37)	23.14[b] (14.13)	76.05[c] (7.39)	58.83[d] (4.98)	174.64***

Note: [a b c d] group means with different superscripts are significantly different.

***p< .001; **p< .01

children had the second highest mean in attention management, and along with children in Cluster I had a moderate mean in apprehension/distance. We named children in Cluster IV the *tense-distracted* group.

Coping Behaviors and Coping Styles: Relations to Attachment and Temperament

A major thrust of this study is the assumption that attachment and temperament are important factors in how a child will manage a challenging social situation where novelty and separation are involved. Thus, our first line of inquiry into the relations between attachment, temperament, and coping was to look at the associations between the attachment scales and the temperament scales, and the coping behaviors using Pearson's correlations. Rather than basing our analyses on the summary scores, we chose to explore the associations between the original scales. We had no knowledge of any previous attempt in the literature at exploring the associations between these three constructs using the scales available in the present study. It was therefore our choice to return to the original scales in order to appreciate the extend of the common variability among the measures at hand.

Results appeared counter-intuitive. Only one significant association was found between attachment and coping. Scores on the independence scale were related to social interaction with the partner during the experimental session (r = .27, p< .05). No other linear relations were found between the attachment and coping measures. Two significant associations were found between the temperament scales and the use of coping behaviors. Temperamental intensity was related to looking/monitoring the partner during the experimental session (r = .22, p< .05). Also, temperamental persistence was related to distraction with the physical environment during the

stressful event ($r = .22$, $p < .05$). No other linear associations were found between the temperament and coping measures.

Although theory would predict otherwise, following these results, we are left with the impression that attachment and temperament share little variance with the child's coping behaviors in a socially challenging situation. However, the weakness of linear relations between the variables on a one-to-one basis does not account for the potential multidimensional associations between the theoretical constructs and the behavioral expression.

Two alternative approaches were then tested. First, we explored the extent to which children with different temperamental and attachment styles might differ on their use of coping strategies. On a second line of inquiry, we investigated the predictive value of attachment and temperament variables in determining the coping styles evidenced by children in this sample.

We first tested to which extend children in the three attachment groups identified above (secure-independent, secure-dependent, and insecure-dependent) differed on their use of coping strategies to deal with separation and social novelty. Oneway analyses of variance (Tukey's HSD as posthoc) were performed comparing the three groups of children on their use of coping behaviors. Results showed no significant differences between the groups in terms of their use of coping strategies.

We then compared the three groups of children identified in terms of their temperament styles (easy, difficult, and restrained children) to see if they differed in their use of coping strategies. Again, oneway analyses of variance were used to test for group differences. Results of these analyses are reported in table 13. As can be seen from this table, easy and difficult children differed on apprehension/distance, but restrained children did not, with difficult children using this strategy the most. Easy and difficult children also differed on their use of social interaction, with the easy children interacting more with their partners. Easy and restrained children differed significantly only on their use of attention management, which easy children used significantly more. Difficult children did not differ significantly from the other two groups on this variable.

Finally, we explored the question of whether the child's coping style, rather than specific coping strategies, reflects the contributions of her relational history and temperamental traits. We did this by performing a series of discriminant analyses to determine whether attachment variables, temperament variables, or a combination of both were useful in differentiating the four groups of children we had previously

Table 13

Means, standard deviations, and group differences

on the two temperament composite scales

Coping strategies	Subject Clusters			F
	I *Easy* ($n = 39$)	II *Difficult* ($n = 21$)	III *Restrained* ($n = 26$)	
Apprehension/distance	20.69^{a} (14.11)	29.51^{b} (14.96)	23.70^{ab} (9.65)	3.06*
Fleeing/reassurance	3.90 (4.92)	5.80 (6.78)	6.80 (7.17)	1.86
Social/interactive	13.25^{a} (7.51)	8.46^{b} (6.12)	12.02^{ab} (7.46)	3.07*
Attention management	57.41^{a} (19.09)	51.46^{ab} (19.56)	45.23^{b} (20.19)	3.06*

Note: standard deviations are given in parenthesis.

$^{a\,b\,c}$ Group means with different superscripts are significantly different.

*$p < .05$

identified in terms of their coping styles (relaxed-distracted, tense-inhibited, tense-distracted, and tense-social children).

The first discriminant analysis looked at the prediction of coping styles from the attachment scales. The first stage of the discriminant analysis for the attachment scales revealed that the interaction of two of the seven attachment scales explains a

portion of the variance observed in the sample's allocation to the coping styles. Only the scales assessing independence (*Wilk's Lambda* = .90 $p < .05$) and endurance (*Wilk's Lambda* = .86 $p < .05$) proved significant. Although the value of Wilk's Lambda was quite high, the first discriminant function reached significance at the $p < .05$ level (*Wilk's Lambda* = .86; $X^2 = 12.99$; $df = 6$) while the second discriminant function was not significant. When using the discriminant functions derived form the attachment scales, only 38.46% of cases were correctly classified into the corresponding coping style groups, that is only 13.46% higher than chance alone (which was 25%).

The second discriminant analysis examined the predictive value of the scores on the temperament scales for the classification of subjects into the four coping style groups. Results showed that none of the nine temperament scales interact in a significant way to explain the variance responsible for the allocation of cases into the four coping style groups. After three steps, the discriminant analysis ceased computation having retained three variables, which were not significant. Likewise, the discriminant functions generated by this analysis were not significant.

The two previous discriminant analyses showed that attachment and temperament were unreliable predictors of children's coping styles. The third discriminant analysis looked at the prediction of coping styles from the combined attachment and temperament scales. Three attachment variables (independence, social

perceptiveness, and vitality) and two temperament variables contributed to the discriminant function. Of the five variables which entered into the analysis, four were significant at the $p < .05$ level (independence, *Wilk's Lambda* = .83; social perceptiveness, *Wilk's Lambda* = .79; vitality, *Wilk's Lambda* = .76; and intensity, *Wilk's Lambda* = .73) and one approached significance (response threshold, *Wilk's Lambda* = .91, $p = .06$).

Three discriminant functions were derived from this analysis, of which only the first one attained significance (*Wilk's Lambda* = .73; $X^2 = 25.52$; $df = 15$, $p < .05$). Independence and response threshold primarily defined the first discriminant function, with intensity and endurance presenting negative coefficients on this function. The second discriminant function was primarily defined by vitality, although response threshold, independence and social perceptiveness also contributed to this function, followed by intensity. Social perceptiveness presented a high negative coefficient in the third function, and the next highest contribution was that of intensity, followed by endurance and response threshold. The discriminant functions generated by this analysis were also unreliable in predicting children's coping styles. Attachment and temperament combined allowed for the correct classification of only 39.53% of the cases.

Socioemotional regulation

A major aim of this study was to attempt the integration of the constructs of attachment, temperament, and coping as components of socioemotional regulation. A hierarchical cluster analysis based on the correlation matrix using the complete linkage method was used to explore the multidimensional associations between the three constructs. Standardized scores were used in this analysis. Figure 7 presents the resulting dendrogram where three distinct clusters were identified. Cluster I assembles three attachment composite scales and one coping strategy. As we can see in Figure 7, self-competence and sociability join each other very early in the analysis and are joined later by the social/interactive coping strategy, and by social perceptiveness. Cluster II results from the association between the coping strategies apprehension/distance and fleeing reassurance. Cluster III joins first the composite scores referring to reliance on mother and self-regulation, followed by temperament variable reactivity, and later joined by the attention management coping strategy.

The cluster analysis reported above reveals pertinent and interpretable multidimensional associations among the three constructs under study. Cluster I grouping self-competence, sociability, social/interactive coping strategies, and social perceptiveness, is obviously a reference to the social aspects of socioemotional regulation and we named it *social orientation*. Cluster II refers to the child's tendency to regulate emotion by keeping a distance from the social partner, avoiding

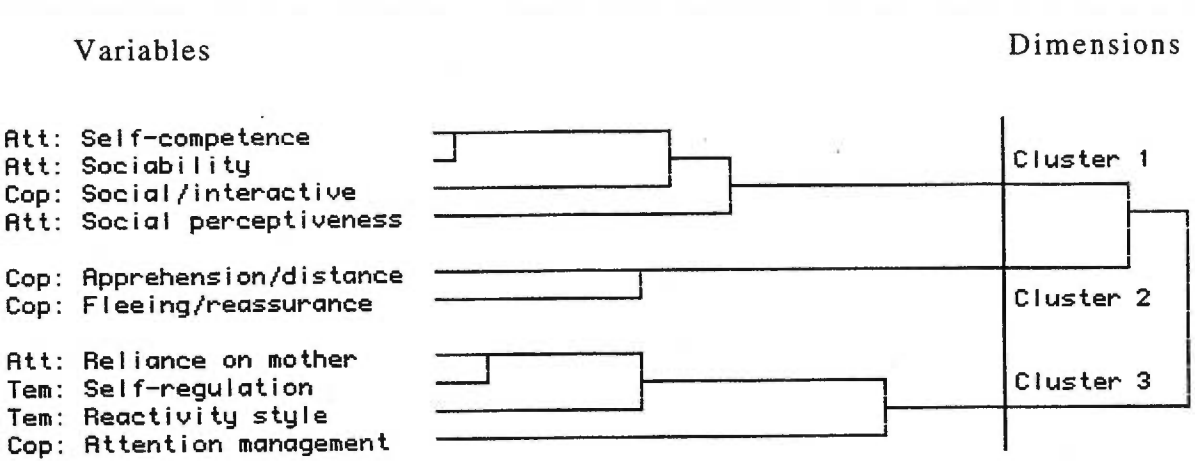

Figure 7. Cluster analysis on socioemotional regulation using correlation measures and complete linkage method (n=86)

(Att=Attachment; Tem=Temperament; Cop=Coping)

the challenging situation, and seeking reassurance from the adult figures. We named this cluster of variables *anxious withdrawal*. Finally, Cluster III refers to the child's tendency to maintain proximity to the mother and to prefer the mother figure when distressed, to the child's level of reactivity and her inability to regulate her behavior, and to the child's use of distraction in order to regulate her emotional reaction. These variables appeared to refer to the child's tendency to seek external sources of regulation rather than on her own internal resources; we therefore named this component *outward regulation*.

Socioemotional regulation styles: Clustering subjects on socioemotional regulation scores and description of group profiles

Scores for all subjects on the three components (social orientation, anxious withdrawal, and outward regulation) identified above were generated by averaging the standardized scores on each of the scales contributing to each component. In order to identify the profiles of children who share similar characteristics on the three components identified above; we used cluster analysis to group subjects on the basis of their scores on the three socioemotional regulation components. Clusters of subjects were formed using Ward's method with squared Euclidean distances as measures of dissimilarity. Due to missing values on the temperament scales, five subjects were dropped from this analysis, the following results report on a total of 86 children. Figure 8 presents the resulting dendrogram, where three distinct groups of

children are identified. Cluster I is comprised of 34 children (39.53% of the valid sample), Clusters II and III grouped 26 children each (30.23% of the valid sample).

Having identified the profiles of children on the socioemotional regulation scales we compared the three groups of children on the three socioemotional regulation scales in order to ascertain their characteristics. Table 14 presents the means, standard deviations, and *F*-values on the socioemotional regulation components for each of the three clusters of children grouped on their socioemotional regulation profiles.

Children in Cluster I were characterized by high levels of social orientation and low levels of anxious withdrawal. They also scored low on the outward regulation composite scale, which suggests that they were capable of distancing themselves from mother in order to explore the environment. They controlled well their impulses and were not particularly reactive, and they could resort to distracting themselves with the play material when confronted with a challenging social situation. They appeared to be the most *adapted* group in this sample in terms of their socioemotional regulation style.

In contrast, children in Clusters II and III were similarly low on *social orientation* (with Cluster II children scoring lower), but differed significantly on *anxious withdrawal* and *outward regulation*. Children in Cluster II were lowest on social

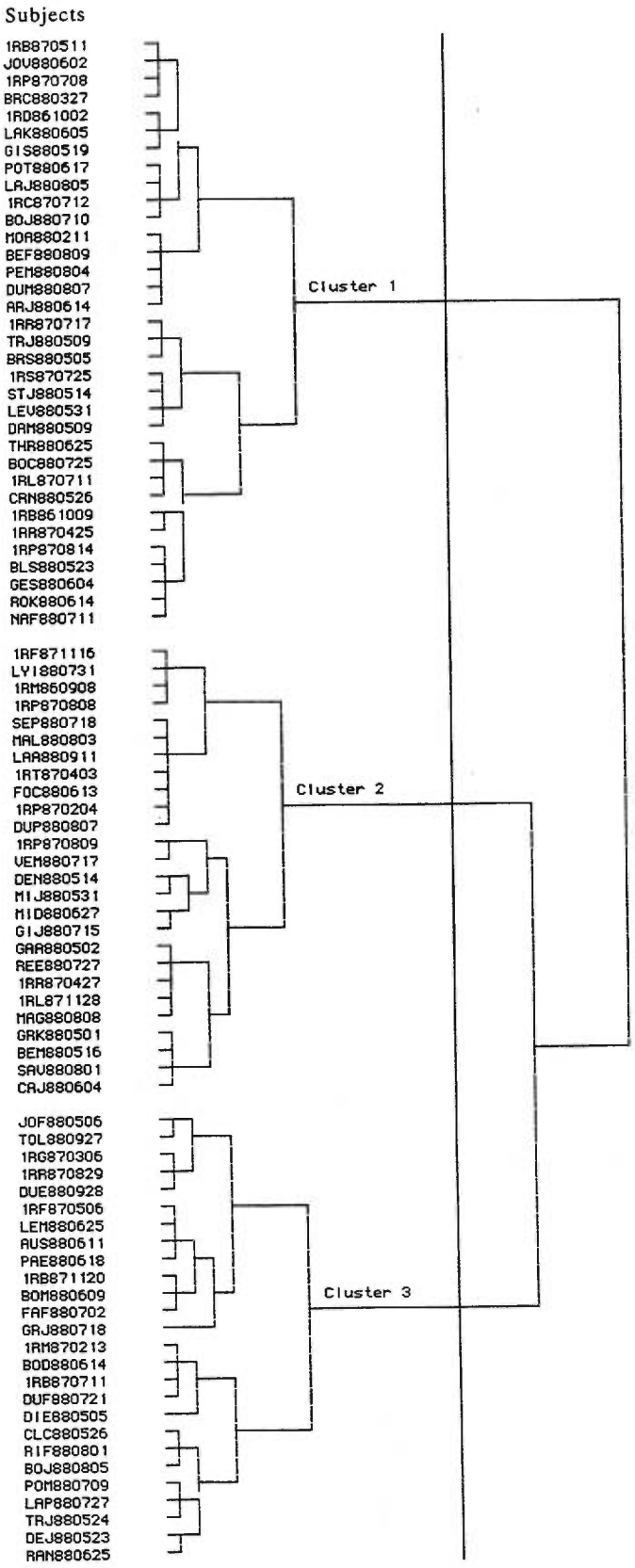

Figure 8. Cluster analysis on socioemotional regulation dimensions scores using Euclidian distances and Ward's method (n=86)

orientation, intermediate on anxious withdrawal, and highest on outward regulation. Thus, these children lacked in self-competence and sociability, and did not tend to use interaction with the partner as a way of dealing with the stressful situation. In fact, although they were not particularly anxious or withdrawn, they tended to regulate their emotional reaction by focussing their attention on the toys rather than the partner, and they were perceived by their mothers as requiring her proximity and reassurance in order to explore the environment. Children in this group tended to be intense in their emotional reactions and to have difficulty managing their behavior to adapt to the demands of the social environment. We see this group as *undercontrolled.*

Finally, children in Cluster III scored low on social orientation, and intermediate on outward regulation, but obtained the highest scores on anxious withdrawal. They were tense and maintained a distance from the partner during the observation period, attempting to leave the room and frequently inquiring about their mothers. These children were also more reactive and less adaptable and persistent than were children in the adapted group. However, unlike the adapted and the undercontrolled children, they did not handle their anxiety through effective attention management (playing with toys) but rather focussed on avoiding the stressful situation by fleeing or calling out for their mothers. We named this group *overwhelmed.*

Table 14

Means, standard deviations (SD), and group differences

on the socioemotional regulation components

Socioemotional regulation style	Subject Clusters I ($n = 34$) *Adapted*	II ($n = 26$) *Undercontrolled*	III ($n = 26$) *Overwhelmed*	F
Social orientation	.49[a] (.41)	-.46[b] (.56)	-.17[b] (.41)	33.83***
Anxious withdrawal	-.47[a] (.39)	-.33[a] (.32)	.96[b] (.54)	95.46***
Outward regulation	-.34[a] (.42)	.51[b] (.40)	-.06[a] (.56)	24.91***

Note: All scores are standardized (z-scores)

[a b] group means with different superscripts are significantly different.

***$p < .001$

Section II: Analysis of dyadic data

Is One Plus One the Same as Two?

Based on the discriminant analyses, results from the previous section do not demonstrate a strong predictability from individual characteristics such as attachment and temperament styles to the coping strategies displayed by children when confronted with a challenging social situation involving novelty and separation. We would not appear to be justified in expecting to find a relation between the child's temperamental predispositions for emotionality, her attachment history, and the way in which she deals with stress in a social situation. These results are important because the main purpose of this study is to explore the associations between children's attachment, temperament, and coping styles, and the level of coordination attained by the dyad within a challenging social situation.

However, focusing on the individual as the unit of analysis only answers part of the question about which variables allow partners to arrive at modulating their emotional reaction and generating together a social environment conducive to coordinated exchanges. In order to investigate this question, we have to look beyond the individual and to the level of the dyad. In this section we will look at the associations among the variables at the *dyadic* rather than at the individual level in order to capture the dyadic contribution to the co-construction of a social dyadic

exchange, and eventually explore the patternings of attachment, temperament, and coping in the dyadic generation of coordinated exchanges.

The ways in which dyadic data should be explored are not usually treated in the literature, particularly when referring to constructs such as attachment, temperament and coping which are usually thought of « individual » variables. In order to account for the dyadic structure of the data, we devised an analytic plan in which the data of both children were treated together as to generate « cases » composed of the data of both members of a dyad. Thus, *n*'s reported in the analyses in this section will refer to dyads rather than individuals.

The configuration of the analyses in this section will follow a similar path as the one used in the section on individual results. Obviously, there is no reason to assume that a relation should be found between the partners' attachment and temperament styles, since the allocation into the dyads was based only on sex and age. Therefore, no analyses were performed to identify dyadic styles of attachment and temperament. The first part of this section will describe dyadic coping styles based on the individual styles of coping of both members of a dyad treated simultaneously. The second level of analysis will attempt to predict the allocation of dyads into the different groups of dyadic coping styles from the dyadic scores on attachment and temperament. Finally, we will look at the concept of socioemotional regulation at the dyadic level.

Dyadic Coping Strategies

In order to identify dyadic strategies of coping we clustered dyads on the individual coping profiles of both members of each dyad treated simultaneously. For both members of each dyad, the scores on apprehension distance (tension regulation, looking/monitoring), fleeing reassurance (avoidance, reference to mother, reference to experimenter), social interactive (control partner, endure stressful situation, social interaction with partner), and attention management (distraction) coping strategies were entered into a hierarchical cluster analysis. Euclidean distances with Ward's method were used as measures of dissimilarities between dyads.

The resulting dendrogram revealing three main groups of dyads is presented in Figure 9. Cluster I groups 22 dyads (48.88% of the valid sample), Cluster II with 8 dyads (17.77% of the valid sample), and Cluster III with 15 dyads (33.33% of the valid sample).

In order to characterize the three groups of dyads in terms of dyadic coping strategies, the scores on each of the coping strategies were averaged across both members of each dyad and submitted to analyses of variance comparing across clusters on these variables. Table 15 presents the means, standard deviations and *F*-values comparing groups of dyads on the dyadic average for each coping strategy.

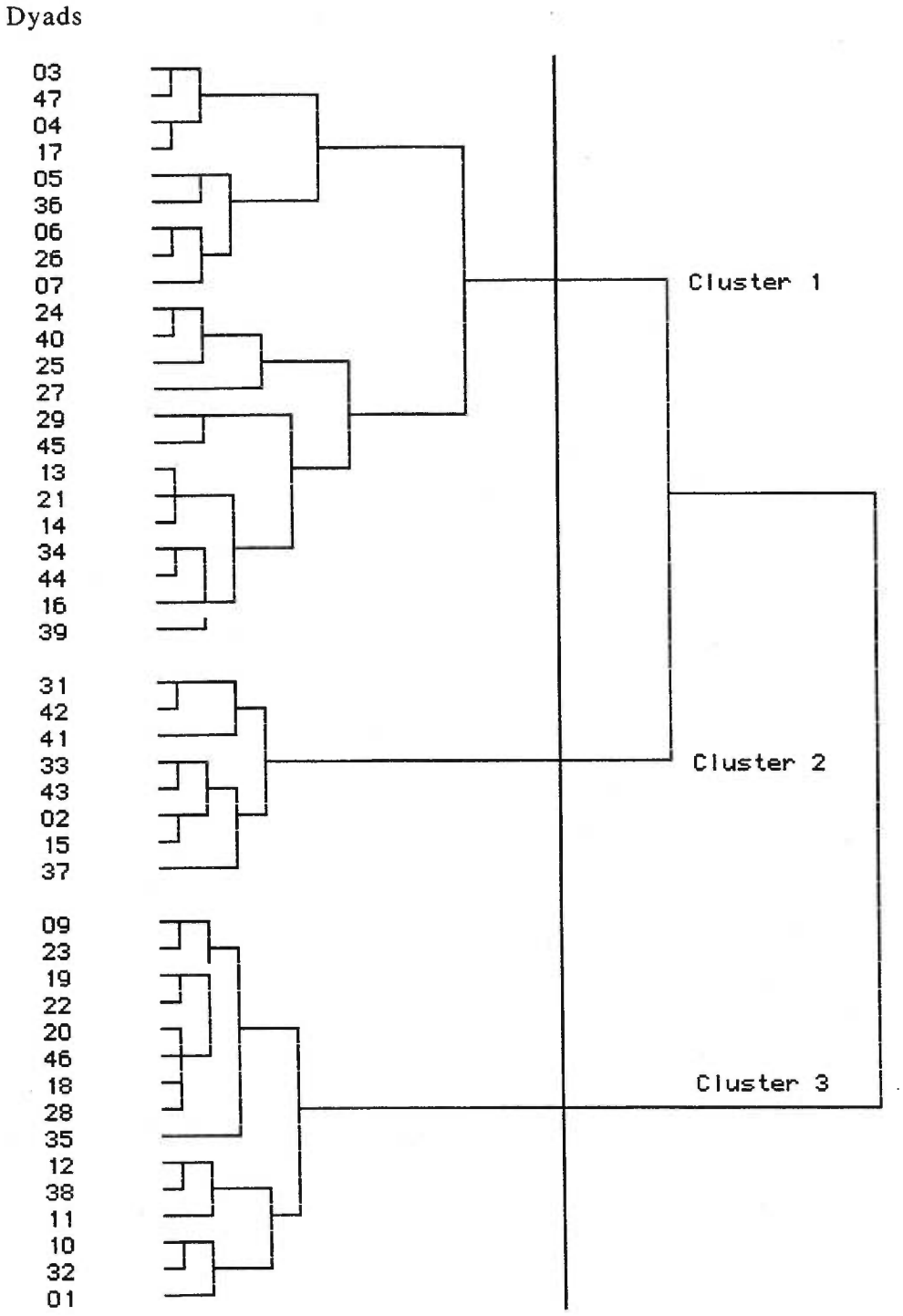

Figure 9. Cluster analysis on dyadic coping strategies using Euclidian distances and Ward's method (n=45)

Table 15

Comparisons across groups of dyads

on the dyadic average of coping strategies

Dyadic coping strategies	Cluster of Dyads I (n = 22)	II (n = 8)	III (n = 15)	F
Apprehension/distance	23.58[a] (7.45)	32.44[b] (7.03)	17.12[c] (6.00)	12.91***
Fleeing/reassurance	6.12 (5.30)	5.66 (4.70)	3.46 (3.76)	1.47
Social/interactive	12.70 (8.35)	7.19 (4.86)	13.20 (5.24)	2.27
Attention management	42.43[a] (12.57)	50.03[a] (9.54)	70.43[b] (7.04)	31.99***

Note: [a bc] group means with different superscripts are significantly different.

***p< .001

Results showed that children in Cluster I were intermediate in their use of apprehension/distance compared to the other two groups (higher than Cluster III children but lower than Cluster II children). They also differed from children in Cluster III in that they used significantly less attention management as a coping strategy. Children in Cluster II were the highest in their use of apprehension distance, and along with children in Cluster I, were lower than Cluster III children in their use of attention management. Children in Cluster III used most often attention management as a coping strategy, and in contrast to the other two groups, used

apprehension distance the least often. Fleeing/reassurance and social/interactive strategies did not differentiate among the groups.

In sum, the dyads in this sample were characterized by the balance in their use of apprehension/distance and attention management as coping strategies. Dyads in Cluster III managed the challenging social situation through distraction, by playing separately with the toys available in the room. They did not express marked signs of tension and did not appear weary of each other. In fact, although the results did not reach significance, these dyads also used social interaction with the partner and did not actively avoid each other. In contrast, dyads in Cluster II, kept a distance from each other, monitoring each other's activity across the room. They showed signs of tension (e.g. self-stimulation, aimlessly moving about the room), and turned to object use as an alternative to social interaction. Finally, dyads in Cluster I were an intermediate group. They were more tense and distant than dyads in Cluster III, but less than those in Cluster II, and they used significantly less attention management than Cluster III dyads. Furthermore, although they interacted socially just as much as dyads in Cluster III, members of these dyads tended to avoid each other more.

Dyadic Coping Styles: Predicting from Attachment and Temperament

In order to test the contribution of the dyad's attachment and temperament to their dyadic coping style, we performed a series of discriminant analyses predicting dyadic

placement into the three clusters of coping styles. In other words, we attempted to explore to which extent information about the attachment and temperament status of a dyad as a unit would be useful in discriminating to which coping cluster the dyad belongs. In addition, discriminant analyses allow to generate a discriminant function which explores the optimal interaction between the variables (in this case the scales evaluating each construct) in order to predict case allocation.

We proceeded with the discriminant analysis in three steps. First, we tested the predictability of allocation of cases (i.e. dyads) to the three coping clusters from the attachment scales. In a second discriminant analysis, we tested the predictive value of the temperament scales. Finally, in a third discriminant analysis we tested the contribution of both constructs to the composition of the coping clusters.

To perform these analyses the score of one member of a dyad was subtracted from the score of the other member of the dyad and divided by the sum of the scores of both members of the dyad. The absolute value of this computation for each attachment descriptive scale, and for each of the temperament scales for each dyad was used for analysis. This algorithm allowed to assess the relative *distance* between the dyads on attachment behavior and temperament attributes, while controlling for the level at which the scores of both members of the dyad were situated on the respective scales. We named this scores *dyadic adjusted distance* for temperament and attachment respectively.

Predictions from attachment. The first discriminant analysis tested the predictability of allocation of cases into the three different coping clusters on the basis of the adjusted distance between the dyad's attachment scores. Table 16 presents the first stage of the discriminant analysis for the attachment scales. The analysis revealed that the interaction of two of the seven attachment scales explains in a satisfactory manner the observed variance in the total sample of dyads. The scales assessing differential responsiveness and proximity are significant. However, the scale assessing independence is close to significance at the level of $\alpha = .06$.

Table 16

Identification of the main predictive variables from the attachment scales

Step	Action Entered	Variables In	Wilk's Lambda	Significance α
1	Differential responsiveness	1	.86	.05
2	Proximity	2	.79	.05
3	Independence	3	.74	.06

In table 17 we present the canonical discriminant functions derived from the present analysis. Only two discriminant functions were possible for this analysis, given that the total number of groups analyzed was three. From the results presented in table 17 we can see that only the first discriminant function was significant. This functions explains 85.09% of the total variance, and its canonical correlation is considerably high. However, the level of significance of the *chi-square* is only

marginal (X^2 = 12.06, df = 6, α = .06). The second discriminant function generated did not reach significance.

Table 17

Canonical discriminant functions for the dyadic adjusted distance between members of dyads on the attachment scales

Function	Eigen value	Percent of Variance	Canonical correlation	After Function	Wilk's Lambda	Chi-Square	DF	α
				0	.75	12.06	6	.06
1	0.28	85.09	.47	1	.95	1.96	3	.38
2	0.05	14.91	.22					

The third step in the discriminant analysis of the attachment scales is to determine the contribution of each variable to the discriminant functions. Table 18 presents the standardized canonical discriminant function coefficients. As can be seen from this table, the strongest contributions to the first discriminant function stem from the dyadic adjusted distance scores on proximity and differential responsiveness. Dyadic adjusted distance scores on independence also contributed to the first discriminant function, but their highest loading corresponds to the second discriminant function.

Finally, we tested the predictive power of the discriminant function by assessing the number of cases in the sample which the function correctly classifies into their respective groups. Overall, the discriminant function classified correctly only 48.89%

Table 18

Standardized canonical discriminant function coefficients

for the dyadic adjusted distance scores on the attachment scales

Variables	Function 1	Function 2
Differential responsiveness	.72	-.65
Proximity	.55	.29
Independence	.39	.69

of the cases in this sample. Table 19 presents the classification results. Except for Cluster II dyads (correct placement = 75%), correct dyad classification with the discriminant functions generated by this analysis was moderately better than chance (prior probability for each group = .33).

Table 19

Classification of dyads' coping styles on the basis of the

attachment discriminant functions

	Predicted Group Membership		
Coping Style Group Membership	I	II	III
I (n = 22)	**10 (45.5%)**	5 (22.7%)	7 (31.8%)
II (n = 8)	0 (0%)	**6 (75%)**	2 (25%)
III (n = 15)	3 (20%)	6 (40%)	**6 (40%)**

Predictions from temperament. The second discriminant analysis tested the predictability of allocation of cases into the three different coping clusters on the basis of the adjusted distance between the dyad's temperament scores. Table 20 presents the first stage of the discriminant analysis for the temperament scales. The analysis revealed that the interaction of four of the nine temperament scales explains in a satisfactory manner the observed variance in the total sample of dyads. The scales assessing threshold, mood, intensity, and adaptability are all significant.

Table 20

Identification of the main predictive variables

from the temperament scales

Step	Action Entered	Variables In	Wilk's Lambda	Significance α
1	Threshold	1	.77	.01
2	Mood	2	.66	.01
3	Intensity	3	.58	.01
4	Adaptability	4	.52	.01

In table 21 we present the canonical discriminant functions derived from the present analysis. Only two discriminant functions were possible for this analysis, given that the total number of groups analyzed was three. From the results presented in table 21 we can see that only the first discriminant function was significant. This functions explains 96.11% of the total variance, and its canonical correlation is

considerably high. The second discriminant function generated did not reach significance.

Table 21

Canonical discriminant functions for the dyadic adjusted distance between members of dyads on the temperament scales

Function	Eigen value	Percent of Variance	Canonical correlation	After Function	Wilk's Lambda	Chi-Square	*Df*	α
				0	.52	22.68	8	.01
1	0.86	96.11	.68	1	.97	1.19	3	.76
2	0.04	3.89	.18					

The third step in the discriminant analysis of the temperament scales is to determine the contribution of each variable to the discriminant functions. Table 22 presents the standardized canonical discriminant function coefficients. As can be seen from this table, the strongest contributions to the first discriminant function stem from the dyadic adjusted distance scores on mood and threshold, followed by intensity. Dyadic adjusted distance scores on adaptability also contributed to the first discriminant function, but their highest loading corresponds to the second discriminant function.

Table 22

Standardized canonical discriminant function coefficients for the dyadic adjusted distance scores on the temperament scales

Variables	Function 1	Function 2
Adaptability	.50	.88
Intensity	.54	.32
Mood	-.83	-.05
Threshold	.78	-.03

The final step in this discriminant analysis is to test the predictive power of the discriminant function by assessing the number of cases in the sample which the function correctly classifies into their respective groups. Overall, the discriminant function classified correctly 69.23% of the cases in this sample (due to missing values, 6 dyads were excluded from the analysis). Table 23 presents the classification results. Classification of dyads in Clusters I and III was most accurate (84.2% and 69.2% respectively), while only 28.6% of the dyads in Cluster II were correctly classified.

Table 23

Classification of dyads' coping styles on the basis of the temperament discriminant function

Coping style Group Membership	Predicted group membership I	II	III
I (n = 19)	**16 (84.2%)**	1 (5.3%)	10 (10.5%)
II (n = 7)	3 (42.9%)	**2 (28.6%)**	2 (28.6%)
III (n = 13)	0 (0.0%)	4 (30.8%)	**9 (69.2%)**

Joint predictions from attachment and temperament. The third discriminant analysis tested the predictability of allocation of cases into the three different coping clusters on the basis of the adjusted distance between the dyad's temperament and attachment scores. Table 24 presents the first stage of the discriminant analysis for the combined constructs of attachment and temperament. The analysis revealed that the interaction of four of the seven attachment scales and four of the nine temperament scales explain in a satisfactory manner the observed variance in coping styles in the total sample of dyads. By order of importance, the scales assessing threshold, independence, mood, adaptability, proximity, intensity, differential responsiveness, and positive affect are significant.

Table 24

Identification of the main predictive variables

from the attachment and temperament scales

Step	Action Entered	Variables In	Wilk's Lambda	Significance α
1	Response threshold (temperament)	1	.76	.01
2	Independence (attachment)	2	.64	.01
3	Mood (temperament)	3	.57	.01
4	Adaptability (temperament)	4	.51	.01
5	Proximity (attachment)	5	.46	01
6	Intensity (temperament)	6	.41	.01
7	Differential responsiveness (attachment)	7	.36	.01
8	Positive affect (attachment)	8	.34	.01

In table 25 we present the canonical discriminant functions derived from the present analysis. From the results presented in table 25 we can observe that only the first discriminant function was significant. This function explains 84.75% of the total variance, and its canonical correlation is high. The second discriminant function generated did not reach significance.

Table 25

Canonical discriminant functions for the dyadic adjusted distance between members of dyads on the attachment scales

Function	Eigen value	Percent of Variance	Canonical correlation	After Function	Wilk's Lambda	Chi-Square	*df*	α
				0	.34	35.38	16	.01
1	1.38	84.75	.76	1	.80	1.96	7	.41
2	0.25	15.25	.45					

The third step in the discriminant analysis of the joint contribution of the temperament and attachment scales is to determine the contribution of each variable to the discriminant functions. Table 26 presents the standardized canonical discriminant function coefficients. As can be seen from this table, the strongest contributions to the first discriminant function stemmed from the dyadic adjusted distance scores on mood, threshold, proximity, and intensity. The dyadic adjusted distance score on the adaptability scale appeared to contribute almost equally to both discriminant functions, while differential responsiveness, positive affect, and independence contributed most strongly to the second discriminant function.

Table 26

Standardized canonical discriminant function coefficients for the dyadic adjusted distance scores on the temperament and attachment scales

Variables	Function 1	Function 2
Adaptability	.67	-.70
Intensity	.51	-.33
Mood	-.76	.06
Threshold	.69	.39
Proximity	-.54	.23
Differential responsiveness	-.25	.75
Positive affect	-.04	.72
Independence	-.24	-.75

Finally, we tested the predictive power of the discriminant function by assessing the number of cases in the sample which the function correctly classifies into their respective groups. Overall, the discriminant function classified correctly 82.05% of the cases in this sample. Table 27 presents the classification results. Perusal of table 27 shows that classifications within the three coping styles were well above chance (chance level = 33%), particularly for dyads in Clusters I and II, while there were more misses in the classification of dyads in Cluster III.

Table 27

Classification of dyads' coping styles on the basis of the joint temperament and attachment discriminant functions

Coping Style Group Membership	Predicted Group Membership		
	I	II	III
I (n = 19)	**18 (94.7%)**	1 (5.3%)	0 (0%)
II (n = 7)	1 (14.3%)	**5 (71.4%)**	1 (14.3%)
III (n = 13)	0 (0%)	4 (30.8%)	**9 (69.2%)**

Overall, results from this series of analysis lead to four main conclusions: First, the adjusted distance between scores of both members of a dyad on attachment and temperament allows to predict the placement of the dyad in the dyadic coping style clusters. Second, we stand to gain in predictive power when we consider simultaneously the contributions of the distance between the dyads on both attachment and temperament. Third, attachment, temperament, and coping are related constructs, but this relation is most relevant when we consider the dyad as a unit as opposed to considering each individual child. Comparisons with the lack of predictability from individual scores are marked. Fourth, the dyad appears to be a unique social context. Analyzing events that take place in a dyadic context should take into consideration the contribution of both children.

Socioemotional Regulation at the Dyadic Level

In order to identify the dyadic styles of socioemotional regulation, scores on the socioemotional regulation composite scale from both members of a dyad were treated simultaneously as a case and entered into a hierarchical cluster analysis using Ward's method, with square Euclidean distances as measures of dissimilarity. The resulting dendrogram is featured in Figure 10. Three clusters of dyads were identified with 18, 9, and 13 dyads respectively.

One-way analyses of variance were used to describe the dyads composing each cluster in terms of their socioemotional regulation style. Scores for both members of a dyad on each of the socioemotional regulation composite scales were averaged in order to account for the dyad's contribution to their placement in the clusters. Table 28 presents group means, standard deviations, *F*-values, and significance of these comparisons.

Perusal of Table 28 reveals that dyads in Cluster I had the highest scores on *social orientation* and were the lowest on *anxious withdrawal*. They also scored lowest on *outward regulation* (although not significantly different from dyads in Cluster II).

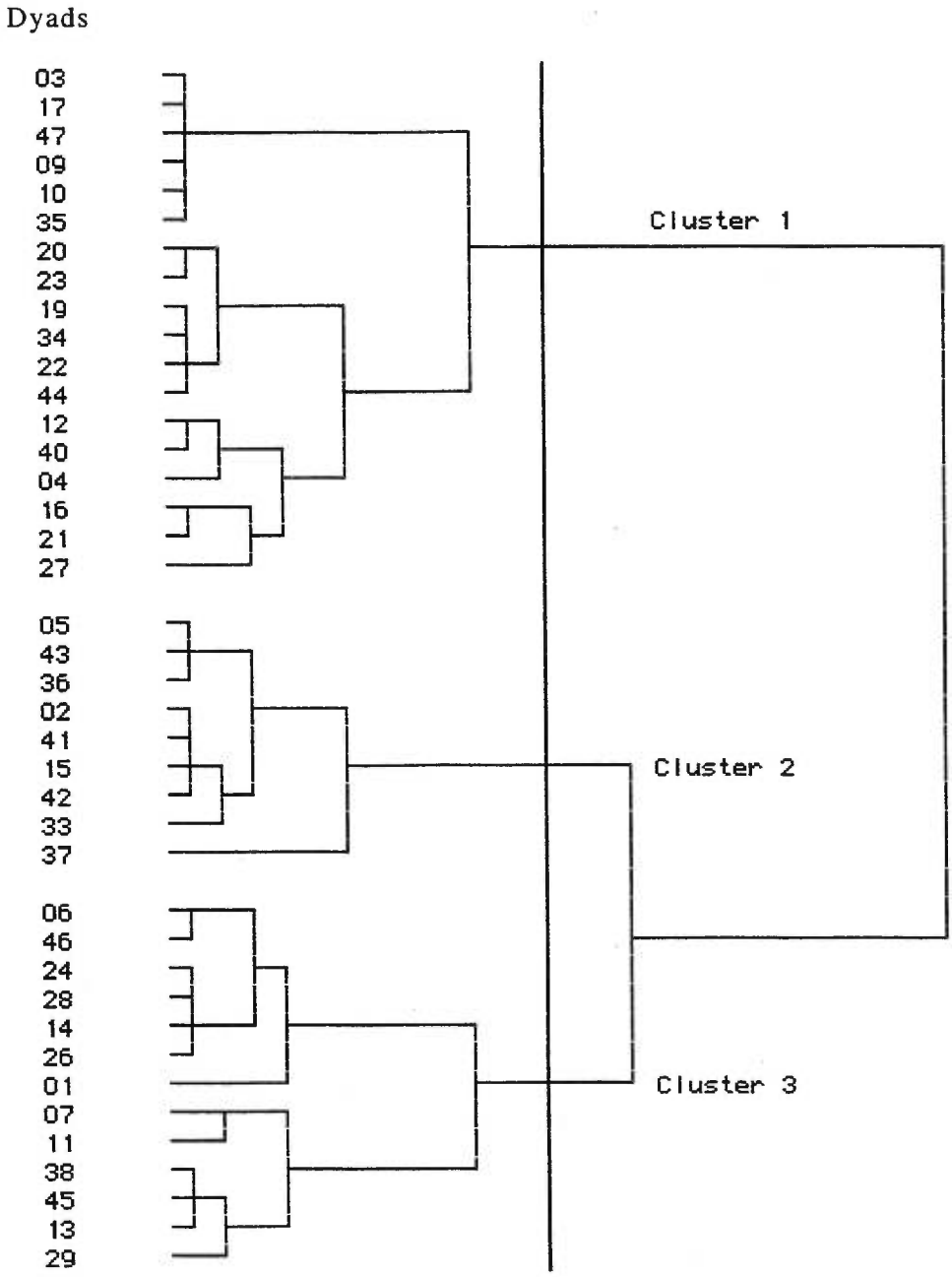

Figure 10. Cluster analysis on dyadic socioemotional regulation dimensions scores using Square Euclidian distances and Ward's method (n=40)

Table 28

Comparisons across groups of dyads on the dyadic average of socioemotional regulation scores

Socioemotional regulation	Clusters of Dyads I (n = 18)	II (n = 9)	III (n = 13)	F
Social orientation	.35[a] (.50)	-.14[b] (.43)	-.35[b] (.43)	9.24***
Anxious withdrawal	-.34[a] (.40)	.53[b] (.37)	.18[b] (.57)	12.18***
Outward regulation	-.23[a] (.40)	-.03[a] (.37)	.38[b] (.37)	9.57***

Note: All scores are standardized (z-scores)

[a b] group means with different superscripts are significantly different

***p< .001

Dyads in Clusters II and III differed significantly only on the *outward regulation* scale, where Cluster III dyads obtained the highest scores. Both groups of dyads scored lower than dyads in Cluster I on the *social orientation* and the *anxious withdrawal* scales. However, while dyads in Cluster II scored higher than did dyads in Cluster III on *anxious withdrawal*, Cluster III children obtained lower scores on *social orientation*.

The description of dyadic socioemotional regulation styles resembles that of the individual socioemotional regulation styles identified before. Dyads in Cluster I corresponded to the description of the *adapted* children. High levels of social orientation and low levels of anxious withdrawal characterized these children. They also scored low on the outward regulation composite scale, indicating that they were capable of distancing themselves from mother in order to explore the environment. They controlled well their impulses and were not particularly reactive, and they could resort to distracting themselves with the play material when confronted with a challenging social situation.

In contrast, dyads in Clusters II and III were similarly low on *social orientation* (with Cluster III dyads scoring lower) and similarly high on *anxious withdrawal* (with Cluster II dyads scoring higher), but differed significantly on outward regulation. Thus, dyads in Cluster II could be said to control their impulses and regulate their emotional reactions as well as the adapted dyads, while being more anxious and withdrawn and less oriented towards social interaction. While dyads in Cluster III were significantly less capable of regulating their emotionality and tended to engage even less in social activity.

The approach presented above to explore the dyadic style of socioemotional regulation is a multidimensional one. By treating the data from both members of a dyad as belonging to a single case, we retained the contribution of the dyadic

variability in exploring the natural associations between cases (i.e. dyads) on the basis of the similarities between them.

A different approach could be used wherein groups could be formed on the basis of the individual classification of each member of a dyad in relation to the total sample. Therefore, we identified the socioemotional regulation style of each member of a dyad from the hierarchical cluster analysis performed on the individual data (c.f. figure 8). We then grouped dyads on the basis of the membership status of each member in one or the other of the individual socioemotional regulation clusters (i.e. adapted, undercontrolled, or overwhelmed). The six possible combinations and the corresponding number of dyads are presented in Table 29. In total 40 dyads were identified on the basis of the socioemotional regulation style of both partners. Based on the descriptions of socioemotional regulation styles presented in the analysis of individual data, we decided to contrast the dyads in which both members belonged to the *adapted* group with those dyads where both members belonged to an *unadapted* group (either undercontrolled or overwhelmed), and with those dyads where one member was *adapted* and the other member *unadapted*. By grouping dyads in this manner, we obtained three groups with *n*'s of 12 dyads in the adapted-adapted group, eight dyads in the adapted-unadapted group, and 20 dyads in the unadapted-unadapted group.

Table 29

Contingency table presenting the distribution of the dyads according to the socioemotional regulation style of both members of the dyad

	Adapted	Undercontrolled	Overwhelmed
Adapted	12	5	3
Undercontrolled		5	11
Overwhelmed			4

Descriptions of dyadic socioemotional regulation

Having identified the groups of dyads, we turned to the question of what characterized these groups in terms of socioemotional regulation. Therefore, we compared the three groups on the combined socioemotional regulation scores of both members of the dyad. Two different approaches appeared interesting at this point. First, we looked at the average scores of the dyad as an index of their total combined scores. Second, we computed the dyadic adjusted scores for each dyad on each of the dimensions of socioemotional regulation (the absolute value of the distance between scores divided by the sum of the scores for each dyad). Using these two approaches, we were able to take into consideration the impact of both total scores for each dyad on each dimension as well as the impact of the difference between the members of each dyad relative to the dyad's total score.

Table 30 presents the comparisons across the three groups of dyads on the basis of the dyadic averaged scores on each of the socioemotional regulation dimensions (oneway analysis of variance with Tukey's HSD as post-hoc). Results showed that the three groups differed significantly across variables. Dyads in the adapted-adapted group scored higher in social orientation, and had the lowest scores on anxious withdrawal and outward regulation. Dyads in the adapted-unadapted group differed from the first group only on social orientation. While dyads in the unadapted-unadapted group obtained the lowest scores on social orientation, and were also higher than the adapted dyads on anxious withdrawal and outward regulation. The adapted-unadapted group appeared to be intermediate on these variables.

No significant differences were found between the three groups of dyads when the adjusted differential scores were used as the basis of comparison.

Having described the patternings of attachment, temperament and coping in terms of socioemotional regulation at the dyadic level, we are now in a position to explore the relation between this dyadic construct and the dyads' level of social coordination. In the following section, we describe the levels of social coordination attained by the dyads in this study, and we establish the relation between dyadic socioemotional regulation and the levels of coordination attained.

Table 30

Comparisons across groups of dyads on the averaged dyadic scores for socioemotional regulation

Dimensions of socioemotional regulation	Groups of dyads			F
	Adapted-adapted ($n = 12$)	Adapted-unadapted ($n = 8$)	Unadapted-unadapted ($n = 20$)	
Social orientation	.53[a] (.45)	.05[b] (.29)	-.31[b] (.45)	14.55***
Anxious withdrawal	-.49[a] (.32)	-.03[ab] (.48)	.35[b] (.50)	12.98***
Outward regulation	-.33[a] (.40)	-.05[ab] (.43)	.24[b] (.38)	8.05**

Note: standard deviations are given in parenthesis

[a b] group means with different superscripts are significantly different

***$p < .001$ **$p < .01$

Social Coordination

On average dyads spent 25.87% of the observation time in social interaction (SD = 17.13; minimum = 0.81; maximum = 65.21). We calculated the average duration of interactive episodes by dividing for each dyad the total time spent in social interaction by the number of interactive episodes in which the dyad engaged. The average duration of interactive episodes was 10.62 seconds (SD = 4.78; minimum = 2.67;

maximum = 23.43). There were no significant gender differences in the number of interactive episodes ($F(1,40) = 1.56$ $p = .22$) or on the duration of the interactive episodes ($F(1,40) = 1.25$ $p = .27$).

Each interactive episode was rated in terms of the quality of social coordination observed during the entire duration of the episode. Two dimensions were scored: *Shared meaning/joint definition of goals* and *joint action/dyadic accommodation.* For *shared meaning/joint definition of goals* dimension, scores ranged from 0 (no coordinated interaction) to 3 (clear interactive goal shared by both partners). For the *joint action/dyadic accommodation* dimension, scores ranged from 0 (conflict, lack of a common theme) to 3 (mutual accommodations accompanied by positive affect). Thus, each interactive episode obtained a score ranging from 0 to 3 on each of the two dimensions observed.

Overall, for the shared meaning dimension, 37.9% of the total number of interactive episodes observed obtained a score of 0. A score of 1 was assigned to 29.9% of the interactive episodes. A score of 2 was given to 16.3% of the episodes, and a score of 3 was assigned to 15.9% of the observed interactive episodes.

For the dyadic accommodation dimension, 78.5% of the interactive episodes received a score of 0. A score of 1 was assigned to 13.4% of the episodes. A score of

2 was given to 5.7% of the interactive episodes observed, and only 2.4% of the interactive episodes observed obtained a score of 3.

Non-parametric correlational analyses were used to determine if there was a relation between the dyad's socioemotional regulation scores and the time they spent in social interaction on as well as the duration of interactive episodes. In order to establish these correlations, the scores of both members of a dyad were summed across each of the socioemotional regulation composite scales. Table 31 presents the results of these analyses.

Table 31

Correlations between dyadic socioemotional regulation scores, time spent in social interaction, and duration of interactive episodes

Dyadic socioemotional regulation	Average proportion of time spent in social interaction	Average duration of episodes
Social orientation	.58**	.53**
Anxious withdrawal	-.62**	-.79**
Outward regulation	-.40*	-.33*

** $p < .01$ * $p < .05$ $n = 36$ dyads

Results reported in table 31 show that dyads that had higher scores on the social orientation scale tended to spend more time in social interaction and to sustain social

interaction for longer periods of time. As expected, anxious withdrawal and outward regulation were negatively correlated with the duration of social exchanges.

Thus, dyadic socioemotional regulation appeared to be related to the extent to which children engaged in social interaction. The following series of analyses attempted to determine whether socioemotional regulation was related to the quality of social interaction in terms of the level of coordination attained by the dyads. In order to answer this question, we first examined the degree of correlation between the dyadic socioemotional regulation scores and the coordination scores obtained by the dyads on each of the dimensions of social coordination. Table 32 presents the Pearson's correlations between dyadic socioemotional regulation and the proportions of 0-1-2-3 scores obtained for each of the coordination dimensions.

As can be seen from table 32 dyads who scored high on social orientation tended to have higher scores on the shared meaning/joint definition of goals dimension in terms of social coordination. In other words, these dyads interacted on a common theme more often and were capable of defining jointly a goal for their activity. In contrast, high scores on anxious withdrawal were negatively correlated with the joint definition of goals during social exchange. However, high scores on anxious

Table 32

Correlations between the dyadic socioemotional regulation scales and the level of coordination attained on the shared meaning/joint definition of goals dimension

Dyadic socioemotional regulation	Proportion of scores at each level of coordination on the shared meaning/joint definition of goals dimension			
	Score = 0	Score = 1	Score = 2	Score = 3
Social orientation	-.24	-.25	.38*	.36*
Anxious withdrawal	.15	.38*	-.13	-.57**
Outward regulation	-.13	.20	-.10	-.23

**$p < .01$ *$p < .05$ $n = 36$ dyads

withdrawal were related to simple low-level coordination, where partners acknowledged each other's activity but did not engage in a common theme. Finally, outward regulation was not related to the quality of social interaction in the present sample. Summing across all four levels of coordination on the shared meaning/joint definition of goals dimension we obtained a global shared meaning score. Correlations between the dyadic socioemotional regulation scores and this global score were $r = .49$ ($p < .01$) for social orientation, and $r = -.51$ ($p < .01$) for anxious withdrawal. As expected from previous results, outward regulation did not correlate with the global coordination score.

Table 33

Correlations between the dyadic socioemotional regulation scales and the level of coordination attained on the joint action/mutual accommodation dimension

Dyadic socioemotional regulation	Proportion of scores at each level of coordination on the joint action/mutual accommodation dimension			
	score = 0	Score = 1	score = 2	Score = 3
Social orientation	-.52**	.48**	.31*	.32*
Anxious withdrawal	.64**	-.43**	-.60**	-.59**
Outward regulation	.25	-.16	-.29*	-.09

**$p < .01$ *$p < .05$ $n = 40$ dyads

Perusal of table 33 indicates that high levels of social orientation were negatively correlated with the lack of social coordination and positively correlated with mutuality and accommodation within the dyads. As expected, anxious withdrawal was positively correlated to the absence of social coordination and negatively correlated to the higher levels of mutual accommodation, indicating that dyads who were high on anxious withdrawal were not capable of adjusting their behavior to produce coordinated pleasant interaction. Outward regulation was positively, although not significantly, correlated with lack dyadic accommodation, and negatively correlated with higher levels of mutual accommodations. Summing across all four levels of coordination on this dimension we obtained a global mutual accommodation score. Correlations between the dyadic socioemotional regulation scores and this global score were $r = .45$ ($p < .01$) for social orientation, and $r = -.57$ ($p < .01$) for

anxious withdrawal. As expected from previous results, outward regulation did not correlate with the global coordination score.

Knowing that dyadic socioemotional regulation scores were related to social coordination, we then turned to the question of whether different types of dyads in terms of socioemotional regulation attained different levels of social coordination. Therefore, we compared the adapted-adapted, adapted-unadapted, and unadapted-unadapted groups on the levels of social coordination attained within these dyads.

The first analysis compared the three groups of dyads on the amount and global quality of their social interaction. Table 34 presents the results of this comparison. The adapted-adapted dyads spent significantly more time in social interaction than the other two groups of dyads. They also engaged in longer interactive bouts, than did the unadapted-unadapted dyads, but did not differ significantly from the adapted-unadapted dyads. In terms of the global shared meaning and accommodation scores, only the adapted-adapted dyads differed from the other two groups.

Table 34

Comparisons between groups of dyads

on the duration of social interaction and global coordination scores

Social interaction	Groups of dyads			F
	Adapted-adapted	Adapted-unadapted	Unadapted-unadapted	
Time spent in social interaction	42.97[a] (16.96)	25.13[b] (5.70)	15.72[b] (11.11)	16.25***
Duration of interactive episodes	15.09[a] (5.37)	11.06[ab] (2.12)	7.65[b] (2.91)	13.97***
Global shared meaning score	.43[a] (.17)	.20[b] (.09)	.18[b] (.15)	10.47***
Global dyadic accommodation score	.16[a] (.07)	.07[b] (.04)	.05[b] (.07)	9.57***

*** $p < .001$

We then compared the groups of dyads on the proportions of coordination scores at each of the three levels for the shared meaning and dyadic accommodation dimensions of social coordination. Table 35 presents the results of those comparisons. As can be seen from this table, the adapted-adapted group participated less often in non-coordinated interactions and were seen more often sharing a goal and accommodating mutually their behavior in order to attain that goal and prolong the interaction. It is noteworthy that, although post-hoc comparisons did not reach significance, dyads in this group also attained more often the highest level of social

Table 35

Comparisons across groups of dyads on the level of coordination attained for each of the social coordination dimensions

Levels of coordination (by dimension)	Groups of dyads			F
	Adapted-adapted	Adapted-unadapted	Unadapted-unadapted	
Shared meaning				
Score = 0	.29[a] (.12)	.53[b] (.19)	.41[ab] (.19)	3.72*
Score = 1	.24 (.10)	.20 (.17)	.38 (.21)	3.28
Score = 2	.19 (.08)	.14 (.09)	.13 (.12)	1.31
Score = 3	.28[a] (.15)	.13[ab] (.13)	.09[b] (.11)	8.90***
Dyadic accommodation				
Score = 0	.66[a] (.10)	.78[ab] (.10)	.87[b] (.13)	10.85***
Score = 1	.19[a] (.06)	.13[ab] (.05)	.10[b] (.09)	4.67*
Score = 2	.09[a] (.06)	.09[ab] (.11)	.02[b] (.04)	5.23*
Score = 3	.06 (.08)	.00 (.00)	.01 (.04)	3.67

*$p < .05$; *** $p < .001$; $n = 36$ dyads

coordination, accommodating mutually during the interaction and expressing positive affect and enjoyment in the social exchange.

Discussion

The main objective of this study was to assess the role of the patternings of attachment, temperament and coping in the level of social coordination attained by dyads of unfamiliar toddlers in a free play situation. In order to attain this goal we integrated these three constructs into a larger (latent) construct of socioemotional regulation. The findings indicate that attachment, temperament and coping behaviors share multidimensional relations and that, when these relations are accounted for in both members of a dyad, they are useful in explaining the level of social coordination the dyad attains.

This study also demonstrates the usefulness of applying a multidimensional approach to the study of attachment, temperament and coping. We were able to discern and describe homogeneous groups of subjects on the basis of the dimensions of each of these constructs. Such applications of the measures at hand hold promise in terms of their use as descriptive tools in normal populations.

Further, our study contributes significantly to our understanding of dyadic processes in social interaction. The results concerning the prediction of coping from attachment and temperament are an example of the importance of considering simultaneously the contribution of both members of the dyad in order to predict dyadic phenomena. In fact, the very conception of coping as a purely individual

process is questioned by our results. No predictions of coping style were possible when considering only the attachment and temperament characteristics of the individual as predictors of the individual's coping behavior. However, predictive power was significantly improved when the distance between partners in terms of attachment and temperament was used to foretell the coping style of the dyad. The results of the present study make a case for the conceptualization of social partners as inextricable components of the context of social interaction. The dyad is here conceptualized as the preferred unit of analyses, as both partners contribute to mutual adaptations and co-regulation of social exchanges. In a way, the current notion of social competence as an individual characteristic, capacity or trait is called into question, and our results suggest that social competence should be reconceptualized within the context of the dyad, as both participants contribute to the success of dyadic interaction.

Attachment

Our first three objectives pertained to the examination of the utility of the AQS in assessing the dimensions of attachment behavior and in determining children's attachment profiles. In this regard, our findings show that the descriptive scales of the AQS are useful in describing children's secure base behavior. The findings support and at least partially replicate those of Strayer et al. (1995) concerning the variability in children's secure base behavior. By analyzing through multidimensional approaches the patterns of associations among the descriptive scales of the AQS, we identified four major dimensions of attachment behavior which are both interpretable and consistent with attachment theory. The first dimension, *self-competence*, refers to the child's inner strength in terms of secure-base behavior. The self-competence dimension groups the scales positive affect, vitality, and independence. This dimension taps on the child's positive affective disposition and competent expression of emotion, her capacity to tolerate separation from mother and to accept mother's signs of attention and affection to others, her persistence in social exchanges, and her positive disposition to accept transitions. The second dimension, *sociability*, refers to the child's acceptance of, and interest in, social interaction. The third dimension of attachment, *reliance on mother*, taps into the child's proximity-seeking behaviors and preference for the mother as a source of soothing and reassurance. The fourth

dimension of attachment, *social perceptiveness*, assesses the child's sensitivity to mother's emotional signals, the child's empathy, and efforts to adapt to mother's requests. Overall, these four dimensions describe theory-relevant aspects of the child-mother attachment system.

One of the objectives of the present study was to explore the existence of consistent and describable styles of attachment behavior on the basis of the multidimensional relations among the descriptive scales of the AQS. Our results show that indeed there is consistent variability in this sample in terms of attachment styles. We have described three different attachment styles, which are in many ways comparable to those described in the literature using a similar analytic approach. Our results confirm and expand those of Strayer et al. (1995). As was the case in that study, we found three distinct groups of children characterized by the balance between security and dependency criterion scores and the scores to the scales proximity/exploration balance and differential responsiveness, which in our study are represented by the dimension reliance on mother. In addition, we also found that social perceptiveness (that is, the child's tendency to be attuned to mother's emotional reactions and to take mother's motives into account) was an important determinant in the differences between the groups (which was not the case in Strayer's study). Social perceptiveness appears as an interesting variable in this context because at this age children are beginning to experiment with goal-corrected partnerships. The notion of goal-corrected partnership in attachment theory entails the child's ability to

anticipate and take into consideration mother's intentions and feelings in checking proximity, negotiating how to maintain it or restore it following exploration and in the event of threat or distress.

The most secure children in our sample, the secure-dependent children, also had intermediate (low) scores on the dependency criterion scores. Congruent with the image of the secure child who is capable of engaging her social environment and displaying both energy and positive affect, they scored high on self-competence and on sociability. However, these children also scored as high as the most insecure children did on reliance on mother and they had the highest scores on social perceptiveness. The second group of secure children, the secure-independent children, had intermediate (high) scores on security and the lowest scores on dependency. Consistent with the image of the secure child, they scored high on both self-competence and sociability. However, they differed form the first group of secures children on their low scores on reliance on mother and social perceptiveness. Finally, the most insecure children in this sample, the insecure-dependent children, were also the most dependent in terms of criterion scores. They scored low on self-competence and sociability.

The interesting pattern concerns the balance between a high score on reliance on mother and a low score on social perceptiveness. We find in this pattern of results a similarity, already suggested by Strayer et al. (1995), with the categories derived from

the Strange Situation classification. In our sample, the secure-independent children resemble the avoidant group in the Ainsworth et al. (1978) classification. Secure-dependent children resemble the secure group and insecure-dependent children resemble the resistant group.

According to Waters & Deane's (1985) criterion scoring, many of the items contributing strongly to the dependency score are items included in the scales composing reliance on mother. In spite of this fact, the comparison across groups reveals that reliance on mother is not a sign of dependency in and out of itself. Rather, it is the balance between this tendency and the tendency to be sociable and competent. The more secure children are so by maintaining a close physical and affective link with the mother. They are not only high on reliance on mother but they are also quite high on social perceptiveness. In contrast the middle-range security group is the lowest on dependency and differs from the highest security group by being low on reliance on mother and low on social perceptiveness. These children don't only explore and enjoy their contact with the physical and social environment, but they can do this while away from mother and they don't seem connected to mother's emotional reactions. These children appear more detached or indifferent.

The insecure-dependent children's high scores on dependency and reliance on mother, are accompanied by very low scores on social perceptiveness. These children seem to cling to their mothers irrespective of whether it is appropriate or welcome by

mother's affective reaction. They appear more centered on their need for security than they are on the relationship itself. There seems to be little attunement between mother and child. Children in this group are probably socially immature, as is suggested by their low scores on self-competence and sociability.

The strategy used in this study to identify the multidimensional nature of the AQS has proved to be of great value. We now know that attachment behaviors in the child's everyday life, as reported by the mother, are best described when we take into consideration not only the summary criterion scores, but also the patterns of associations among the descriptive scales of the AQS. Thus, our study makes a direct contribution to the use of alternative strategies in the study and description of the mother-child relationship in terms of attachment behaviors, beyond the classification obtained through the more traditional strange situation or the use of a single criterion score for security. In considering the child's attachment style, researchers would gain greater understanding of the nature of the mother-child relationship by considering the child's behavior in terms of her degree of reliance on mother and of social perceptiveness, for instance.

We have derived here a more « nuanced » approach to the description of toddlers' attachment behaviors. Had we proceeded in the tradition of most research using the AQS, we would have been limited to the use of criterion scores on security and dependency and would have missed out on the rich illustrative value contributed by

the descriptive scales. By using this approach we can better qualify the nature of the child's « security » and « dependency ». Our results show that there is more to security than the capacity to explore the environment and return to mother in search of reassurance. In fact, our results suggest that in qualifying the nature of the child's security, one must also look at the degree with which the child is sensitive to mother's emotional states and the receptiveness that mother shows to the child's bids. Maternal sensitivity has been championed as a determining factor in the child's secure attachment style. Based on our results, we may say that the child's sensitivity and attunement to the mother is also an important factor in the degree of security of the child. This is important in light of our results showing that the two groups of secure children in this sample also differed on dependency scores. Our use of the dimensions of attachment, based on the multidimensional relations among the descriptive scales, revealed that there are important qualitative differences between these two groups of children in terms of their use of mother as a secure base and of their sensitivity to mother's reactions. Both groups of children had a positive and sociable disposition, both were capable of tolerating distance from mother's attention and of exploring the environment. However, the secure-dependent children were consistently more prone to maintain proximity to mother, to prefer mother's soothing when distressed, and to be more sensitive to mother's wishes.

The present use of the AQS, if validated in a replication of these findings, would be useful to intervenors in the field of early childhood, because it provides an

affordable, stress-free, and ecologically valid measure of the child's attachment style. By using the descriptive scales in conjunction with the criterion scores, intervenors could gain a clearer picture of the nature of the mother-child relationship with clear indications as to the areas of the relationship (as indexed by the child's attachment behaviors) which require more attention. Focusing the intervenors' attention on specific and observable constellations of behaviors should allow for the design of interventions centered on the mother-child dyad. Such interventions would target the aspects of the relationship that most denote the child's difficulties in terms of attachment, while considering at the same time the overall level of security of the child. Imagine a mother-child dyad where the child is secure in terms of criterion scores and scores highly on the scales assessing reliance on mother and social perceptiveness. Such a dyad would be a candidate for a intervention were the work would be centered on fostering the child's independence, while providing the mother with varied, sensitive, and appropriate means of making the child aware of her emotional states and her interactive preferences. Also, in such a case it would be of interest to observe the mother-child interaction to determine in which ways, verbal and non-verbal, the mother attempts to elicit her child's sensitivity, empathy, and compliance.

It was our purpose to explore the multidimensional relations among the component scales of the instruments at hand. With this goal in mind, we applied the same analytic approach as had been used with the AQS data to the temperament data derived from the TTS. Admittedly, such an approach is unusual in the literature on temperament. However, we saw this as an opportunity to overcome methodological barriers existing between the two domains of research. Moreover, by adopting an exploratory multidimensional approach to the temperament data, we were able to distance ourselves from ongoing quarrels about the nature of temperament (see Goldsmith et al., 1987 for a discussion on the nature of temperament; Slabach et al., 1991 on measurement issues). By taking such an approach, we allowed the data to « speak to us » as to the underlying associations among the nine temperament traits.

Our fourth objective pertained to the exploration of the patterning of associations among the temperament scales. In this regard, the results of our analysis of the temperament data revealed interesting associations among the temperament scales. Through the use of cluster analysis we identified two major dimensions in terms of temperament. The first dimension, included the scales assessing activity, intensity, distractibility, and threshold and was named *reactivity style*. The second dimension, comprised the scales assessing adaptability, persistence, mood, regularity, and approach/withdrawal and was named *self-regulation*.

Our results indicate that the nine temperament traits described by Thomas & Chess (1977) and assessed through the TTS, share multidimensional relations which create a rapprochement between two different theoretical approaches of temperament. In fact, the two dimensions derived from our analysis fit well the overall conception of temperament described by Rothbart (1991) as pertaining to both reactivity and self-regulation. Although the level of elaboration contributed by Rothbart's (1991; Derryberry & Rothbart, 1997; Rothbart, Derryberry, & Posner, 1994) theory of temperament is unparalleled in our approach, our results suggest some caution in the dismissal of the use of a nine-trait approach in the conception of temperament (e.g. Rothbart & Mauro, 1990). Instead, by looking at the associations among the nine scales proposed by Thomas & Chess (1977), we obtained an interpretable and meaningful way of describing toddler's temperament characteristics.

In keeping with our fifth objective, the use of the two dimensions of temperament allowed us to identify three distinct groups of children with different temperamental characteristics: *easy*, *difficult*, and *restrained*. Easy and difficult children differed significantly on reactivity style and self-regulation, and the restrained children differed from easy and difficult children on self-regulation. Our difficult children resemble those described by Thomas & Chess in terms of their tendency towards higher reactivity (higher intensity, lower response threshold) and withdrawal, lower adaptability and more negative mood. The contribution of our results resides in the fact that we were able to describe these three groups of children using the traditional

nine-trait conception of temperament while at the same time discerning the contribution of the two central constructs described by Rothbart (1991; Derryberry & Rothbart, 1997). Although the resolution of the fundamental discrepancies between the two theoretical approaches is beyond the scope of this study, our results suggest the importance of considering both reactivity and self-regulation as multidimensional constructs within temperamental theory.

Coping

The literature on young children's coping behaviors is sparse and coping is often used interchangeably with emotional regulation. Our taxonomy of coping behaviors is consistent with those used in other studies of children's coping behaviors (or emotional regulation) where the objective of the experimental situation was to elicit negative emotional arousal.

One of our objectives was to describe the coping behaviors of young chidlren in a socially challenging situation and to identify and describe groups of subjects on the basis of their coping strategies. Our results show that children use a variety of strategies to manage their emotional arousal during a mildly stressful situation involving separation from mother and social novelty. The fact that the frequency of certain behaviors in our taxonomy was very low, and that variability was high may have to do with the nature of our experimental situation. In fact, our goal was to

provide the children with a context conducive to sustained social interaction in order to observe the levels of social coordination attained by the dyads. Our study did not intend to put the children in a stressful situation that would arouse intense negative emotionality and therefore preclude positive and pleasant social interaction. However, it is well known that toddlers react to separation and social novelty with some level of emotional arousal. It was thus our intention to account for the contribution of children's coping styles to their successful engagement in positive dyadic exchanges. With this in mind, we looked at the multidimensional associations among coping behaviors and identified four distinct dimensions or coping strategies which are consistent with findings in the literature concerning children of this age (Garner, 1995; Hornick-Parritz, 1996; Mangelsdorf, Shapiro, & Marzolf, 1995; Nachmias et al., 1996).

Consistent with Rothbart's (1991; Derryberry & Rothbart, 1997) position and with recent reports by Grolnick, Bridges, & Connel (1996), attention management and apprehension/distance were the coping strategies that better differentiated children in our sample. Children who were highly anxious during the situation (the *tense-inhibited* group), as evidenced by their release of tension through unfocussed motor activity, self-soothing, and distant monitoring of the partner, were also least prone to manage their anxiety by focusing their attention on the available material and involving themselves with toys. The use of attention management as a regulatory strategy is recognized in the literature as an effective means of reducing negative

arousal (Grolnick et al., 1996; Mangelsdorf et al., 1995). An interesting result is the fact that the least anxious children in our sample (the *relaxed-distracted* group) used significantly more attention management than did the other three groups. Furthermore, among the two groups with intermediate, moderate levels of anxiety, the *tense-distracted* group was significantly more oriented towards solitary, object-related activity (attention management). The other moderately tense group (the *tense-social* group) was significantly more involved socially with the partner, while at the same time using attention management (solitary play with toys) as a coping strategy. Therefore, the balance between attention management and apprehension seems to also be related to the capacity to engage and respond socially to the partner.

Patternings of Attachment, Temperament, and Coping: The Underlying (latent) Construct of Socioemotional Regulation

Socioemotional regulation is assumed to contribute greatly to children's competent and adapted social behavior (Compas, 1987; Garner, 1995; Kopp, 1989; Sroufe, 1996; Thompson & Calkins, 1996). Recent studies have attempted to relate the management of emotional reactions during social exchanges (e.g. Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998) to the quality or success of social interaction. However, in spite of such attempts, there appears to be a void in the literature concerning the integration of several of the factors widely assumed to impinge on the success of social interaction (factors such as the child's relational history,

temperament, and coping skills) as components of socioemotional regulation. This may stem from the fact that there does not seem to be an integrative definition of socioemotional regulation in the literature, and consequently, no real measures of the construct which encompass its different elements.

In the early 1990's Ross Thompson defined socioemotional regulation as « the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals » (Thompson, 1994, p. 379). Such a broad definition, by Thompson's own admission, runs the risk of being over-inclusive, as researchers could tend to explore any and every aspect of the intrinsic or extrinsic life of the child, in order to describe and explain children's socioemotional behavior and development. However, this definition has the merit of allowing for a flexible and comprehensive conception of socioemotional regulation.

Instead of limiting the study of early socioemotional regulation to only one of the recurrent themes found in the literature, such as temperamental emotionality (e.g. Grolnick et al., 1996; Mangelsdorf et al., 1995) or the impact of primary social relationships (e.g. Sroufe, 1996), in our study, we have attempted to elucidate the contributing factors to socioemotional regulation by considering the multidimensional relations among variables that are consistent with the main themes found in most reviews of socioemotional regulation (Thompson, 1991; 1994). In objective number

10, we proposed that socioemotional regulation could best be studied by considering the patternings of attachment (secure-base behavior, the child's relational history), temperament (constitutionally-based tendencies to reactivity and self-regulation), and coping (the observable behaviors and strategies that children deploy in order [presumably] to handle their emotional arousal).

With regards to the stated objective, our results support our supposition that multidimensional relations among the variables of attachment, temperament, and coping underlie the notion of socioemotional regulation, which ultimately contributes to children's social coordination in a dyadic context. The patternings of relations among the dimensions of the three measured variables are indeed interpretable from the standpoint of socioemotional regulation. Three distinct dimensions of socioemotional regulation were identified. The first dimension, *social orientation* included three dimensions of attachment (self-competence, sociability, and social perceptiveness) and one dimension of coping (social/interactive). This dimension refers clearly to the *social* aspects of socioemotional regulation. Children who scored highly on this dimension were described as having predominantly positive affect, accepting separation from mother, expressing emotion appropriately, persisting at difficult tasks, and as being active, socially outgoing, and energetic. They were also described as socially sensitive, obedient, and capable of empathy. During the observation session, these children were seen to engage in social interaction with their

partner, and their social exchanges were varied in nature, including positive as well as agonistic interactions.

The second dimension of socioemotional regulation, *anxious withdrawal* included two components of coping (apprehension/distance and fleeing/reassurance). This dimension taps into aspects of the *emotional* management of socioemotional regulation. Children who scored highly on this dimension were seen to regulate their emotional arousal through means that precluded, or at least made difficult, to engage in effective and pleasant social interaction. They tended to manage their tension through self-stimulation, unoccupied restless behavior and aimlessly wandering about the room. They avoided the situation and their partner by attempting to leave the room, they monitored their partner from a distance, and sought frequent contact or reassurance from the experimenter. These children also tended to call out for their mothers and to inquire often about her return.

The third dimension of socioemotional regulation, *outward regulation*, appeared to tap the *regulatory* aspects of socioemotional regulation, from temperamental, attentional, and socio-affective sources. It is interesting to note that the two dimensions of temperament (reactivity style and self-regulation) were joined together in this component of socioemotional regulation, indicating that the balance between these two elements is essential to the child's socioemotional regulatory style. An intense reactive style as indicated by high activity levels, high intensity of reactions,

high distractibility and low response thresholds, was combined with lower levels of adaptability, persistence, and approach, and with more negative moods and irregularity. The fact that these elements were found to group with the attachment dimension of reliance on mother suggests that children who scored high on this dimension tended to be overwhelmed by their emotional arousal, and were more likely to seek comfort and reassurance in their mother's presence. Also of interest is the fact that attention management in the form of distraction with toys is also present in this dimension. Children who were very reactive, dysregulated, and were described by their mothers as seeking constantly their proximity and their support, also tended to regulate their emotional arousal through solitary play and involvement with toys. The combination of this profile suggests that that these children who were less able to regulate their own emotional reaction, sought external sources of regulation through involvement with the physical environment and through reliance on mother. What is also interesting is that these children were not necessarily those who expressed their emotional arousal through intense and dysregulated physical activity. Rather, they attempted to structure their activity through solitary play at the expense of social interaction with the partner.

The patterning of associations among the components of socioemotional regulation revealed in our data appears both theoretically meaningful and heuristic in nature. It allowed for the identification of distinct groups of children who differed clearly on

their socioemotional regulation styles. Thus, we considered objective number 11 to be accomplished.

The associations among the dimensions of attachment, temperament, and coping developed in this study are the result of an iterative and progressive process of exploration of the multidimensional relations among the constructs describing each of these variables. Only through such a multidimensional and multilevel approach were we able to describe the richness of children's socioemotional regulation and its relations to dyadic social coordination. The advantage of such an analytic approach is that we first refined and deepened our understanding of the instruments at hand, exploring the multidimensional relations of the underlying constructs in order to relate these multidimensional views of the three main variables into a richer conception of socioemotional regulation.

Understanding of the multidimensional relations among the constructs of attachment, temperament and coping opened the door for analysis at the dyadic level. It was difficult to attempt to relate individual-differences variables to a dyadic concept such as social coordination. By considering these variables as the basic ingredients of a larger construct such as socioemotional regulation, which in itself can be conceptualized as a dyadic construct, we were able to relate both children's characteristics to the quality of their dyadic social exchanges.

Socioemotional Regulation: Putting the « Social » Component Back into « Emotional Regulation »

Thompson proposed that emotional regulation is not only a self-regulatory process, but that the regulation of emotion is also an extrinsic process where others may intervene to regulate the child's displays of emotions as well as the child's emotional experience (Thompson, 1994). In Thompson's view, this process of extrinsic regulation of the socioemotional experience is present in the parent-child relationship where parents influence either directly or indirectly (through verbal and non-verbal means) the child's socioemotional regulation. A similar view of socioemotional regulation as a process which may imply the contribution of social partners is found in the work of Sroufe (1984; 1996; Sroufe & Fleeson, 1986). Again, in this perspective the co-regulation of emotions is assumed to take place during infancy within the caregiver-child system, with the progressive development of self-regulation assumed to take place between infancy and toddlerhood. Although the influence of attachment as an organizational construct is central to Sroufe's theory, there is also place in his conception for the influence of temperamental factors in the development of socioemotional regulation. In fact, implicit in Sroufe's (e.g. 1996) conception is the idea that the dyadic nature of early socioemotional regulation may replicate itself in later social relationships. However, socioemotional regulation beyond infancy is seen as an individual capacity, and one that is paramount to the successful adaptation of the child into the social world.

In our study, we took this proposition one step further and posited that the process of socioemotional regulation in a dyadic context between peers is a dyadic process (objective number 14). We further proposed that to discover how the process of socioemotional regulation impinges upon the dyad's level of social coordination the process of regulation of the emotional experience had to be considered in the dyadic context (objective number 16). Thus, we assumed that it is only when the contribution of the components of socioemotional regulation contributed by *both* partners is taken into consideration that we can access its true influence on the dyad's success at coordinating its social interaction. As we found no observational studies concerning the multidimensional dyadic nature of socioemotional regulation, we approached the dyadic data on socioemotional regulation in two different ways and obtained significant and interpretable results.

Our results support our supposition that socioemotional regulation can be construed as a dyadic process. Three distinct groups of dyads were identified which differed consistently on their socioemotional regulation styles. The *adapted* pattern of socioemotional regulation, consisting of high levels of social orientation and low levels of anxious withdrawal and of outward regulation, was replicated at the dyadic level. Two other groups of dyads were found which differed significantly from the adapted group by their higher levels of anxious withdrawal and lower levels of social orientation. Although the patterns of socioemotional regulation between these two

latter groups were very similar (low social orientation, high anxious withdrawal), the patterns of their results resemble considerably those found at the individual level of analysis for the *undercontrolled* and *overwhelmed* groups.

Having established the dyadic styles of socioemotional regulation, we were in a position to test how these different patternings of attachment, temperament, and coping translated into different levels of social coordination (objective number 16).

We defined social coordination as a dyadic process of shared meaning and mutual accommodations between social partners. It is noteworthy that, in spite of the fact that dyads were composed of unfamiliar partners subjected to a mildly stressful situation of separation from mother and social novelty, children spent up to 65% of their time in social interaction, and 32% of the observed interactive episodes revolved around a common theme for both partners. Furthermore, of the interactive episodes which involved a common theme, 42% were episodes where both partners showed some level of mutual accommodation, and 25% were episodes where both partners made successive accommodations and elaborated on the common theme. Thus, our data show that toddlers are capable of sharing meaning and accommodating mutually in order to create interactions that are coordinated and mutually satisfying.

Consistent with our objective, our results also support the supposition that different styles of dyadic socioemotional regulation are characterized by varying

levels of social coordination. Dyads with an *adapted* socioemotional regulation style spent more time in social interaction and were involved in longer interactive episodes. They also obtained higher scores on shared meaning and dyadic accommodation. They were involved in significantly less uncoordinated or conflictual interactive episodes, and reached more often the higher levels of coordination where mutual accommodations around a common theme and the expression of enjoyment were present.

Predictions from Attachment and Temperament to Coping: A Corollary to the Dyadic Nature of Socioemotional Regulation

If in fact individual relational history (as represented by the construct of attachment) and individual temperamental characteristics influence the ways in which individual children adapt to a socially challenging situation, then it should follow that different stylistic patterns of attachment and temperament should be related to different coping strategies. Likewise, one may posit that different stylistic patterns of coping should be predicted from the child's attachment and temperament. Failure to demonstrate this could be interpreted as a sign of the dyadic nature of coping with a socially challenging situation. In other words, how an individual child copes with a socially challenging situation in the company of a peer, may not be entirely the result of that child's intraindividual characteristics and behavioral repertoire. Rather, it is possible to imagine that how each child copes with the situation and in our case,

which specific behavioral strategies that child deploys in order to manage her emotional experience, is in part the result of the child's characteristics *and* the characteristics of her social partner. At the behavioral level, this kind of dependence between data is quite understandable. One may easily imagine that even the most sociable and outgoing child may be curtailed in her efforts to initiate social interactions with a partner who is highly emotionally aroused and who wanders aimlessly around the room. However, the process may be more complex than simply one child responding to another child's emotional reactions. In fact, it is possible that both children may be jointly defining a mode of adaptation to the socially challenging situation which depends on more than just the observable behavior, and which is the resultant of all the variables entered into the equation, including the intraindividual characteristics of *both* children. If this were the case, we would be describing a process of adaptation, which would be the expression of the dyad as a unit rather than the simple summation of the characteristics of both partners. We would be indeed entering the realm of the co-construction or co-regulation of socioemotional experience. A rather uncharted territory, and a very complex facet of socioemotional life.

The proposition derived from the literature that individual attachment and/or temperament should predict individual coping (emotional regulation) was not confirmed. As attachment and temperament are seen in the literature as probable antecedent variables of children's coping behaviors, we predicted that different

groups of children defined in terms of their attachment styles would show different coping strategies. However, this did not hold true. There were no significant differences between the *secure-independent*, the *secure-dependent*, and the *insecure-dependent* children in terms of the coping strategies they used during the observation session.

At an individual level, temperament has been related to emotional management strategies in the literature. Relations have been found between children's reactive style and their modulation and expression of affect in a stressful situation (e.g. Grolnick et al., 1996; Hornick-Parritz, 1996; Mangelsdorf et al. 1995). Another temperamental factor, which has been related to emotional regulation is the differential allocation of attention, or what Rothbart (Derryberry & Rothbart, 1997) has called effortful control. However, reports of the relation between toddlers' emotional regulation strategies and their temperament characteristics have typically been derived from experimental paradigms, where the nature of the situation and the sources of stress did not include a peer as a social partner (e.g. Grolnick et al., 1996; Hornick-Parritz, 1996; Mangelsdorf, et al. 1995).

Consistent with the literature on individual differences in coping and emotional regulation, we tested the supposition that different temperamental styles would deploy different coping strategies. This was partially confirmed as easy and difficult children differed significantly on their use of apprehension/distance and social interaction as

coping strategies, and the restrained children differed significantly from easy children on their use of attention management. Easy children were higher on social/interactive and lower on apprehension/distance than the difficult children. Whereas restrained children used less attention management than the easy children, but did not differ from the other two groups on the other variables, and tended to score on the intermediate range.

At an individual level, we investigated the prediction of children's coping styles from their individual scores on the attachment and temperament scales. Results from the discriminant analyses indicate that, at the individual level, no reliable predictions can be made as to the child's coping style from her attachment or temperament, nor from the combination of the two. These results are perplexing and unexpected from a theoretical standpoint. The notions of continuity in individual development from one developmental domain to another, so far supported by the literature, would have allowed us to expect an above-chance level of predictability from an individual child's attachment and temperamental dispositions to that child's classification in terms of her coping style. Following these results, questions may be raised as to the pertinence of founding predictions of individual modes of adaptation to social situations on the notion of individual attributes. Our conception of coping styles, within a social situation as an expression of the individual child's style of emotional management when confronted with social challenge, needs to be reviewed to include

the possibility of a more complex process in which the characteristics of both members of the dyad may be playing a part.

We took these results to indicate that the relations among attachment, temperament, and coping styles do not fit a model of individual-differences, but rather, refer to the complex co-constructions between social partners. Moreover, through discriminant analyses, we tested the hypothesis that it is only when coping style is conceptualized from a dyadic perspective, and the attachment and temperament characteristics of both members of a dyad are considered, that we can better explain dyadic coping styles. There are in fact two premises related to this proposition. First, discernible dyadic coping styles exist. Our results showed that by treating the coping data from both children as a « case » within a hierarchichal cluster analysis, we were able to identify three distinct groups of dyads, which differed in their use of apprehension/distance and attention management as coping strategies.

The second premise is that the attachment and temperament of both children can be treated jointly in order to predict the allocation of cases into dyadic coping styles. This represented both a theoretical and a methodological challenge. We questioned whether the distance between the two children in terms of their temperamental characteristics and their attachment history would determine how the dyad as a unit developed a characteristic coping style. That is to say, whether a dyadic style of coping stemmed from the relative distance between the intraindividual characteristics

of both social partners. The use of an adjusted distance score considering both the distance between the scores of both members of a dyad, and the level at which each of the members of the dyad scored on the scales, answered this challenge. By qualifying the nature of the distance between the scores of both partners we were able to consider how far apart the two children really were in terms of their attachment and temperament profiles. This approach allowed for the correct classification of 69% of the dyads on the basis of the adjusted distance between their scores on the temperament scales; 49% of the dyads on the basis of the adjusted distance between their scores on the attachment scales. Most interestingly, 82% of the dyads were correctly classified into their respective dyadic coping styles when the adjusted distance between the scores on *both* the attachment and temperament scales were included in the analysis. We had stepped into the realm of emotional co-regulation. We are tapping a process of co-construction between two children who did not know each other, who have no previous experience together. The management that they make of their emotional experience depends on the characteristics of both partners at once. Such results speak to the dyadic nature of socioemotional regulation. Together with the reported differences among dyadic socioemotional regulation styles in terms of levels of social coordination, these results point to the fact that, even among unfamiliar play partners, a process of joint regulation of the socioemotional experience is quickly put into place to facilitate social interaction.

The purpose of this study was to identify the contribution of the patternings of attachment, temperament, and coping to the level of social coordination attained by unfamiliar toddler play partners. In the course of our investigation we explored the multidimensional relations within and between the variables at hand, and attempted to integrate the notions of attachment, temperament, and coping within the global construct of socioemotional regulation.

By making the dyad, as opposed to the individuals, our unit of analysis we were able to demonstrate the importance of the immediate social context for young children's social and socioemotional adaptation. Results of this kind have far reaching implications. First, we may say that our outcome measure, social coordination, is akin to a dyadic measure of social competence. We were able to demonstrate that the characteristics of both partners in terms of attachment, temperament and coping are determining in the nature and extend of the social coordination between unfamiliar play partners. The implications of these results for future studies of social coordination (or dyadic social competence) are manifold. The literature on social competence has repeatedly presented this construct as an individual attribute. Social skills, social cognition, emotional regulation and attachment history have all been cited as intraindividual capacities which will determine the child's ability to coordinate interaction with a social partner and to participate into the peer social world. The notion of social competence has taken such an important place in our view of social adaptation. We may now question to which

extent research is addressing only a part of the problem, by looking exclusively at the characteristics of the individual child, rather than exploring the joint contribution of social partners to the success of social exchanges.

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Appendix A

Taxonomy for coding coping behaviors

Coding of coping behaviors in the context of unfamiliarity of partners

The objective of this coding taxonomy is to identify the self-regulatory behaviors displayed by the child in her attempt at coping with a mildly stressful situation of social novelty and separation. Behaviors were coded as present or absent at intervals of **10 sec.** Items in this taxonomy were modified from Parritz's & Gunnar's work.

The following codes were used to indicate the context in which the coping behaviors were observed:

99= focal child leaves the room or is out of the range of the camera

00= experimenter absent (two children alone)

10= experimenter present

11= experimenter and mother of the focal child present

12= experimenter and mother of the other child present

13= experimenter and both mothers present

14= experimenter and focal child present

01= mother of the focal child present

02= mother of the other child present

03= both mothers present

04= focal child alone

Coping Category	Description	Coping Behavior
Avoidance	• Child goes to door, says « bye, bye » or otherwise tries to leave. • Child actively avoids the partner's initiatives or approaches: Turns away, runs from, hides face.	• ***Leave-Take/escape*** • ***Avoids partner***
Distraction	• Behavior other than isolating or avoidance that delays the need to deal with a stressor. Behavior which allows the child to be occupied without having to exchange with the partner, such as exploring the environment and solitary or parallel play. The child's focus of attention serves as an indicator of the « distractive » nature of the activity	• ***Behavioral distraction***
Tension regulation	• stylized, rhythmic, or repetitive manipulation of clothing or body (e.g., rubbing or stroking). • child exhibits nervous laughter, giggling, wiggling which is not socially directed to the partner and do not appear to be . • Repetitive use of an object in a manner which is not instrumental and where the child's focus of attention is not the object itself. • Child runs or moves aimlessly around the room, touching on different objects without an apparent interest on any one particular object. Does not engage on an activity. Not exploratory behavior. Often accompanied by solitary speech. • Child comes close to tears **but does not cry**. Based on facial expression and/or tone of voice.	• ***Self-stimulate*** • ***Tension release*** • ***Unoccupied/ restless behavior*** • ***Pouting***
Mother Reference	• Child calls mother or inquires about mother. • Child « talks » to mother as if she were present. • (When mother is physically present, all references to mother, approaches or physical contact with mother which are initiated by the child).	• ***Call mother*** • ***(Attention to mother)***
Looking/ Monitoring	• Child observes or monitors the partner's activities or movements, from a «non-interpersonal distance». Not a strategy for establishing contact	• ***Monitoring partner***

Comfort from experimenter	• Child approaches, engages, touches, cuddles experimenter seeking comfort from her (him). • Asks help from experimenter	• ***Seek comfort from experimenter***
Disregulation	• Failure of the coping attempt which culminates in crying. Includes crying when frustrated by the interaction wiht the partner or by the partners' actions, as well as crying about mother's absence.	• ***Crying***
Engage partner	• Child is actively involved in interacting with partner in an affiliative manner • Child offers comfort or attempts to distract a partner who is distressed • Does not include submissive or acquiescing behaviors	• ***Socially engaged***
Control	• Child attempts to regulate interaction with partner by imposing/forcing his will, by controlling or monopolizing the use of the material, by directing the partner's play, or by blocking the partner's actions. • Replying to attempts of control from the partner, opposing partner's will. • Includes actions like trying to put the hat over the partner's head.	• ***Attempt to control partner***
Endurance	• Behavior that causes the child to endure the stressfull situation without actively controlling it or having an effect on it. • Includes: peaceful acquiescence, comply/cooperate, submit, relinquish control. • Child remains in the same spot, without moving, for more than 3 seconds, without being involved socially or with a toy. Usually accompanied by a blank facial expression and a rigid, frozen, odd. or unnnatural posture.	• ***Endure*** • ***Submit*** • ***Freeze***

Begin: _____ **Exit Experimenter:**_____ **Time Experimenter Present:** _____

End: _____ **Time experimenter Absent:** _____

Date Filming:_____ **Date Coding:**_____ **Coder:**_____

Child A

Features:_____ Code:_____ Name:_____

Age: _____ Time Touch:_____ Time Initiate: _____

Comments:

Child B

Features:_____ Code:_____ Name:_____

Age: _____ Time Touch:_____ Time Initiate: _____

Comments:

Child A
Features:________________ Code:________________ Name:______________ Age: ________

Child B
Features:________________ Code:________________ Name:______________ Age: ________

	Time	**Context**	**Coping Categories**										**Comments**
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
A			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	
B			Avoid	Distract	Tension	Mom	Look	Comfort	Cry	Partner	Control	Endure	

Appendix B

Taxonomy for coding social interaction

Décodage de l'interaction social

- Le décodage des interactions sociales se fait en fonction des *initiations sociales*.
- Pour qu'il y ait *initiation*, le comportement socialement dirigé vers le partenaire doit être précédé, accompagné ou suivi d'un regard.
- Toutes les initiations sont codées, qu'elles soient suivies ou pas d'une réponse.
- Pour qu'il y ait *interaction*, il faut qu'une *réponse* soit enregistrée en dedans de **5** sec. de l'initiation.
- Lorsqu'un comportement apparaît comme **initiation** le code correspondant doit être précédé du chiffre **1**.
- Lorsqu'un comportement apparaît comme **réponse** le code correspondant doit être précédé du chiffre **2**.
- Lorsqu'un comportement nonverbal ou un comportement verbal (tel que protester ou rire ou des cris excités) est émis par les deux partenaires en même temps, le code correspondant doit être précédé du chiffre **3**.

Décodage de l'Interaction Sociale

Regarder	10	*Prendre/Tenter de Prendre*	23
Signaler	11	*Résister*	24
Approcher	12	*Protester*	25
Vocaliser	13	*Refuser offre*	26
Verbaliser	14	*Céder*	30
Sourire/rire	15	*Acquiescer*	31
Offrir/donner/ montrer	16	*Détourner*	40
Accepter/ recevoir	17	*Ignorer*	41
Contact positif/neutre	18	*Dirigé vers l'adulte*	60
Contact négatif	20	*Impossible à coder*	70
Démontrer	21	*Impossible à coder: verbal*	74
Donner des instructions	22		

Comportement	Code	Description
Regarder	10	Regarder le partenaire durant au moins **1** sec. Examiner, regarder, surveiller, orienter, maintenir l'orientation, se tourner vers. Coder seulement lorsque 1) le regard est une *réponse* à un acte social, c-à-d lorsque le regard apparaît à l'intérieur de **5** sec. d 'un comportement socialement dirigé de la part du partenaire. 2) le regard n'est pas suivi (à l'intérieur de 5 sec.) d'une autre réponse ou d'un «détourne» par le même enfant. Lorsque «regard» est la **seule réponse**, sa **durée** doit être notée à l'aide d'une flèche. Regarder est une condition pour que les autres comportements de cette grille soient considérés comme socialement dirigés. Cependant, *les autres comportements priment sur regard.*
Signaler	11	Gestes de communication négatifs ou positifs, dirigés vers le partenaire: pointer du doigt, hocher de la tête sans vocalisation de haut en bas (signe d'acquiescement) ou de gauche à droite (signe de refus), saluer de la main, se faire comprendre par des gestes ou signes (en utilisant un objet par exemple).
Approcher	12	Comportements qui entraînent une réduction de l'espace interpersonnel entre les deux partenaires et qui sont dirigés socialement. Aller vers, courir vers, marcher vers, suivre. Déplacement vers le partenaire ou vers ses activités. On code à partir du moment où l'enfant arrive à proximité de l'autre. Dans le cas de **suivre**, sa **durée** doit être notée à l'aide d'une flèche.
Vocaliser	13	Des sons (pas nécessairement des mots), des séries des mots émis **vers** le partenaire: babiller, onomatopée. Pleurer et rire sont exclus.
Verbaliser	14	Série de mots émis **vers** le partenaire. Permet la transmission d'un message. Mots simples, parler, questionner, demander, affirmer.

Sourire/rire	15	Expression d'affects positifs envers ou avec le partenaire; avec ou sans vocalisation. Inclus les rires excités et les cris de plaisir .
Offrir/donner/ montrer	16	Tendre un objet au partenaire, donner un objet, mettre un objet dans l'espace de jeu de l'autre.
Accepter/ recevoir	17	Prendre possession d'un objet offert par le partenaire.
Contact Positif/neutre	18	Une partie du corps d'un enfant touche volontairement une partie du corps de l'autre enfant. Ce contact n'est pas brusque ou agressif. Comprend des gestes tels que: toucher sans objet comme médiateur, tenir la main, caresser, embrasser.
Contact Négatif	20	Contact physique direct et rude. Comprend: frapper, pousser, coup de pied, saisir, mordre, tirer.
Démontrer	21	Démontrer au partenaire l'utilisation d'un objet ou les actions liées à l'objet.
Donner instructions	22	Commander, donner des directives ou des ordres. Diriger verbalement les actions ou le jeu du partenaire.
Prendre/Tenter de Prendre	23	Prendre brusquement et/ou rapidement l'objet du partenaire; prendre au partenaire un objet qui n'a pas été offert. Tentatives de prendre l'objet. L'objet peut être chipé directement des mains du partenaire ou dans son espace personnel d'activité immédiate.
Résister	24	Comportement de résistance ou d'opposition aux tentatives de dominance de la part du partenaire (réponse à une demande ou directive verbale ou à une directive nonverbale) Tentative de retenir un objet par résistance active ou lutte.
Protester	25	Vocalisation **négative**, dirigée **vers** le partenaire, avec une composante émotionnelle signifiante, afin d'exprimer un désaccord. Des pleurs de protestation, expression vocale d'un mécontentement. Chigner.
Refuser offre	26	Ignorer ou refuser l'objet offert par le partenaire.

Céder	30	Abandonner la possession d'un objet face à la tentative du partenaire d'en prendre possession. Céder l'espace.
Acquiescer	31	Suivre les instructions ou démonstrations données par le partenaire. Se soumettre à ses demandes.
Détourner	40	Bris de l'orientation visuelle ou corporelle avec ou sans déplacement. Comprend: pivoter, tourner la tête dans le sens opposé au partenaire, s'en éloigner. Si la durée est de **3 sec** ou plus, considérer comme une fin de séquence.
Ignorer	41	Absence de réponse à l'initiative du partenaire. Ne pas s'orienter vers l'autre ou le regarder suite à une initiative (verbale ou non-verbale) de sa part. Si la durée est de **3 sec** ou plus, considérer comme une fin de séquence.
Dirigé vers L'adulte	60	Comportements verbaux ou non verbaux dirigés vers l'expérimentateur
Impossible à coder	70	Impossibilité de coder le comportement. Enfant caché, enfant de dos, ou non visible dans le champ de la caméra.
Impossible à coder: verbal	74	Impossibilité d'identifier celui qui parle.

Coding of Social Interaction and Social Coordination

(coding records)

No. Dyad:_____ Coder:_____

Date on tape:_____ Date coded:_____

Code A:_____ Age:_____

Code B:_____ Age:_____

Duration experimenter:_____ (Begin:___:___ End:___:___)

Comment:_____

_____

_____

Duration alone:_____ (Begin:___:___ End:___:___)

Comment:_____

_____

_____

Time	No. A	No. B	Coordination	Comments	Other
:00					
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Appendix C

Taxonomy for coding social coordination

Coding of Social Coordination

The objective of this taxonomy is to determine the degree of coordination between unfamiliar peer partners. Children are 30 month-old unfamiliar peers who are placed in a dyadic free play situation in the absence of their mothers. The play room is furnished with duplicate play materials (2 umbrellas, 2 dolls, 2 balls, etc.).

This coding constitutes the second pass on the observational material. The dyadic social behavior, comprised of each partner's individual contribution to social activity, has already been coded. Coders will return to the social behavior records and observe each previously identified sequence of social interaction in order to rate its level of coordination.

- Coordination is defined as a function of both partners' *joint definition of goals* and the *accommodations the dyad makes* in order to achieve such goals. It could be said that the study is one of the dyadic regulation of the social activity.

- In the specific context of the experimental situation, partners can share goals related to 1) play activities or games, or 2) simple-problem resolution (like retrieving a toy which has fallen out of reach or trying to open the door).

- Coordinated exchanges should be **positive** in nature and **promote the duration** of the interaction bout.

Each interactive episode is rated in terms of the quality of social coordination observed during the entire duration of the episode. Two dimensions are scored: *Shared meaning/joint definition of goals* and *joint action/dyadic accommodation*. For the *shared meaning/joint definition of goals* dimension, a score of 0 is assigned to interactive episodes where the dyad engaged in conflict which is not resolved during the interactive episode, or when the dyad engages in non-coordinated interaction. A score of 1 is given to an interactive episode during which the partners demonstrate that they are merely aware of each other's activity but do not attempt to share the activity nor the goal of the activity. A score of 2 is assigned when the action of both partners is thematically related, like when the interaction occurs around a common object. Finally, a score of 3 is assigned to interactive episodes where the goal of the interaction is clear and it is shared by the dyad as a unit.

The *joint action/dyadic accommodation* scale is scored in terms of the mutual accommodations evidenced by the partners, which is usually manifested by their joint action around toys or games. A score of 0 is given to conflictual interactions and to those that fail to demonstrate that the children recognize each other's activity and those where the children do not share a common theme. A score of 1 is given to interactive episodes where dyads minimally demonstrate timing and sequencing in relation to the each partner's behavior, like in simple imitations without elaboration of the theme. A score of 2 is assigned to interactive episodes where partners introduce new elements and accommodate to the variations introduced by each other. Finally, a

score of 3 is assigned to interactive episodes where the mutual accommodations are accompanied by manifestations of positive affect and enjoyment. Thus, each interactive episode obtains a score ranging from 0 to 3 on each of the two dimensions observed.

I. Shared Meaning / Joint Definition of Goals

1) Partners are aware of each other's behavior

- There has to be *social orientation* on the part of *both* partners: ex. partners are situated at an angle no greater than 90 degrees from each other and they have either looked at each other for 2 sec. or more or glance at each other more than once during the activity. However, if the partner's only indication of awareness (his only response) is a look, and the « initiator » turns away before the 2 seconds elapse, this code will be assigned
- *Both* partners' *attention* is focused on *each other as well as* on the play material or the activity in which they participate.
- Example: smiling or laughing at the other's activity.
- Making a comment indicating an *awareness* of the other's activity.
- Simply performing the same action or holding the same objects without being aware of the other's actions does not qualify here.
- Simply *monitoring* the other's behavior does not qualify, there has to be an *interactive quality* to the episode.

2) Acts are thematically related

- The *interaction* occurs around an identifiable *theme*.
  - Children are involved in a game with a definite theme.
  - Performing an act which together with the peer's act forms a common play theme (e.g. « finding » a « hiding » peer).
  - The theme may be a common object or an action, or a set of actions (such as jumping on or off the table or dressing the dolls), or a simple conversation (such as one child asking the other's name and obtaining a response).

3) The dyadic goal of the interaction is clear

- Both partners collaborate to attain a goal or a result.
- Joint problem resolution.
- Example: Information exchange.
- The dyad shares a goal *as a unit*, that is, each partner's action is directed towards a result which will affect both partners or their actions (like when partners play together a definite game)
- Use of commands or directions which are followed by acquiescent behavior but do not terminate the interaction

II. Joint Action / Dyadic Accommodations

1) Partners mutually adjust their behavior to accommodate each other's actions

- Timing and sequencing behavior in relation to the partner's behavior (synchronous movements around an activity or play material).
- Example: Simple imitation without notable transformations in the actions or in the way of manipulating the material.
- Behaviors that are complementary to each other and which allow the peer to continue his or her activity while expanding that activity to include both children.

2) Partners' actions vary across turns and the dyad accommodates to the new elements introduced

- Responses which demonstrate that the partners are aware of the self and other as causal agents, and that both self and other can influence the course and outcome of the interaction (as when both children are jumping in the jump box and one of them stops and waits for the other to stop, only to start jumping at a different tempo and « expecting » the partner to follow).
- Introducing different elements which remain thematically related to the common interactive theme and do not interrupt the interaction, and which are received with an accommodation by the partner within the next two turns.
- Joint fantasy or pretend play.

- No more than two individual turns performing the same action as the partner.
- Requires that the form of the behavior in each partner's turn vary. Thus, if each partner merely repeats his/her own behavior it is not considered complex accommodation.

3) Partners accommodate to each other's contribution and manifest predominantly positive affect

- Both partners' successive accommodations are accompanied by apparent positive affect.
- The interaction is manifestly pleasurable, there is a sense of a crescendo as each partner contributes subtle but significant elements to the interaction.
- Elements of complex imitation may be present.

Appendix D

Attachment Q-Set

Q-SORT SUR L'ATTACHEMENT

Traduit à partir du

ATTACHMENT Q-SORT.
Waters, J.E & Dean, K. (1985).

1. **Craint toujours de déplacer les jouets ou animaux.**
Craint toujours de déplacer les jouets ou les animaux même après qu'il ait eu la possibilité de se familiariser avec eux.

2. **Désireux de montrer les chansons, les jeux ou autre comportement appris.**
Désireux de montrer les chansons, les jeux ou autre comportement appris. Aime se donner en spectacle.

3 **Ce qui prédomine chez lui, c'est sa bonne humeur.**
Ce qui prédomine chez lui, c'est sa bonne humeur.

4. **Facilement consolé par l'Adulte.**
Lorsqu'il pleure ou manifeste quelqu'autre signe de détresse, un contact ou une interaction avec l'Adulte parvient sans peine à le consoler.

5. **S'approche de l'adulte pour interagir.**
Peu d'interaction s'établit à distance. L'enfant interagit / communique mieux ou le plus souvent lorsqu'il est à proximité de l'Adulte.

6. **Préfère les tâches et les activités qui ne sont pas difficiles.**
L'enfant recherche, essaie et préfère les tâches et les activités qui ne sont pas difficiles compte tenu de son âge et de sa capacité. Ignore les tâches difficiles.

7. **Est souvent inconscient des changements de localisation ou d'activité de l'Adulte.**
Ne surveille pas constamment où se trouve l'Adulte ou les activités qu'il fait.

8. **Rit facilement avec l'observateur.**
Rit facilement lorsqu'il joue ou interagit avec l'observateur. Rit facilement.

9. **Ne babille pas ou ne parle pas lorsqu'il joue seul.**
Il est tranquille lorsqu'il joue seul ou sa façon de parler n'est pas expressive et ne fait pas penser à une conversation.

10. **Evite ou rejette les nouveaux venus.**
Ne prête pas attention ou ne s'approche pas volontiers des nouveaux venus.
Le jeu ou l'interaction est perturbé jusqu'à ce que le nouveau venu quitte la place.

11. **Ne reconnaît pas la détresse chez l'Adulte.**
Ne perçoit ou ne réagit pas clairement quand l'Adulte est en colère, souffre ou est malade, à moins qu'il ne se soit exprimé clairement. (i.e. l'Adulte pleure)

12. **Les séquences d'exploration et de jeu loin de l'Adulte durent peu de temps.**
Revient sans avoir exploré ou exploité à fond les objets ou les opportunités qu'offre l'environnement. Revient plus tôt que nécessaire pour s'assurer de la localisation et des activités de l'Adulte.

13. **S'ennuie rapidement.**
S'ennuie rapidement. Il est difficile de maintenir son intérêt pour un jeu ou une interaction.

14. **N'accepte pas les marques d'affection que l'Adulte prodigue aux autres.**
Proteste ou tente d'intervenir quand l'Adulte se montre affectueux avec l'autre parent ou membre de la fratrie.

15. **Préfère les adultes féminins.**
Se montre plus amical envers les étrangers féminins qu'envers les étrangers masculins.

16. **Les évaluations négatives ou la désapprobation de l'Adulte le bouleversent.**
Devient perturbé comme si blessé dans ses sentiments. Ne reste pas sans réaction. Ne persiste pas dans le comportement désapprouvé.

17. **Ne partage pas volontiers.**
Ne partage pas la nourriture, les jouets, ou autres objets même si l'Adulte l'invite gentiment à le faire.

18. **Sollicite activement le réconfort de l'Adulte quand il est en état de détresse.**
Sollicite activement le réconfort de l'Adulte quand il est en état de détresse. Ne se contente pas de rester assis et de pleurer.

19. **Explore les objets à fond.**
Explore les objets à fond. Ses contacts avec les objets ou les jouets ne sont ni brefs ni superficiels.

20. **Devient perturbé lorsqu'il se produit une séparation à la maison.**
Devient perturbé quand l'Adulte quitte la pièce. (Peut ou non à ce moment pleurer).

21. **Reste indifférent à l'invitation de l'observateur de jouer.**
Demeure indifférent aux invitations de l'observateur pour jouer ou interagir. L'impliquer demeure difficile.

22. **Se laisse facilement distraire de sa détresse.**
Se laisse facilement distraire de sa détresse (peur, inconfort de ne pouvoir faire à sa guise, etc., peuvent être des causes de la détresse).

23. **Fait preuve d'endurance: ne se fatigue pas facilement.**
Ne se fatigue pas facilement. Fait preuve de vigueur et d'endurance. (Un bas niveau d'activités n'implique pas, en soi, un faible investissement si l'activité est soutenue.)

24. **Les cycles proximité-exploration-proximité sont repérables en-dedans d'une demi à une heure** d'observation.
Joue à distance de l'Adulte, puis joue près de l'Adulte ou en contact physique avec lui, puis retourne jouer à quelque distance; ceci peut être observé en 1/2 ou 1 heure d'observation.

25. **Émotivement, sait bien réagir et s'exprimer.**
Au niveau affectif, sait bien réagir et s'exprimer (noter des mouvements faciaux, gestes, vocalisations). L'inexpression ne le caractérise pas autant dans ses interactions sociales que dans le jeu.

26. **Ne pleure pas fort suite à une blessure mineure.**
Ne pleure pas fort ou longtemps à moins que la blessure ne soit importante. Ne pleure pas fort ou longtemps si la blessure mineure survient durant un jeu.

27. **Est soigneux avec les jouets.**
Est soigneux, doux et/ou délicat avec les jouets ou les animaux lorsqu'il convient de l'être.

28. **Est incapable de s'adapter lorsque forcé de passer d'une activité à une autre.**
Persiste ou est perturbé par le changement., même lorsque la nouvelle activité peut, en elle-même, être agréable.

29. **Pleure pour empêcher la séparation d'avoir lieu.**
Pleure ou bien cherche à empêcher la séparation quand l'Adulte s'en va ou circule d'une place à l'autre.

30. **Est sensible à la détresse de l'Adulte.**
Offre spontanément aide ou réconfort (peut ou non devenir aussi perturbé). Pas de réponse constructive de sa part: se tient là sans intervenir, s'éloigne, ignore.

31. **Quand il ressent de la méfiance, il ne se tourne pas vers l'adulte pour être rassuré.**
S'écarte des objets ou des personnes, ou fige lorsqu'il est méfiant mais ne se tourne pas vers l'Adulte pour se faire rassurer ou obtenir de l'information même de loin.

32. **Initie l'interaction avec les adultes qui lui sont familiers.**
Initie l'interaction sociale avec l'observateur. N'attend pas d'y être engagé ou invité.

33. **Pour être de très bonne humeur il doit être en présence de l'Adulte.**
C'est quand l'Adulte est près de l'enfant ou qu'il interagit avec lui qu'on voit qu'il est de très bonne humeur.

34. **Ne cherche pas à s'approcher de l'Adulte ou à le suivre lorsque ce dernier s'éloigne de lui.**
Lorsque l'Adulte s'éloigne il ne cherche pas à s'approcher ou le suivre.

35. **Préfère être réconforté par l'Adulte.**
Préfère ouvertement un, ou quelques adultes pour être réconforté quand il pleure; les autres sont rejetés ou inefficaces.

36. **Résistant aux maladies mineures.**
Souffre rarement de petits rhumes, etc., même quand on suppose qu'il y a été exposé.

37. **Est exigeant et impatient.**
Est exigeant et impatient. Interronpt l'Adulte quand celui-ci est visiblement occupé (peut-être plus spécifiquement à ce moment-là). Ne s'adapte pas aux intentions ou aux activités de l'Adulte.

38. **Conscient de l'environnement social**
Est conscient de, et attentif à l'environnement social (immédiat et à distance moyenne).

39. **Devant un acte qui lui a déjà été défendu, il va hésiter ou s'abstiendra de le faire.**
Fait voir son intention, fait une pause, puis regarde l'Adulte pour obtenir la permission avant de toucher un objet ou de faire quelque chose d'interdit.

40. **Agit de façon à maintenir une interaction sociale.**
Peu importe qui initie l'interaction, l'enfant participe et agit pour maintenir l'interaction en cours et s'engage dans des demandes sociales réciproques.

41. **Fait preuve de souplesse quand il tente de communiquer clairement avec les adultes.**
Si un message ou un signe n'est pas compris par les adultes, l'enfant utilise d'autres signes ou le langage pour communiquer plus clairement la même idée.

42. **Est indépendant avec la plupart des adultes.**
Est indépendant / autonome face à la plupart des adultes (ce qui n'implique pas qu'il soit indifférent).

43. **A la maison, il lui arrive souvent de revenir spontanément après une prériode d'exploration ou de jeu.**
Revient souvent spontanément suite à une exploration ou à un jeu. Les retours ne sont pas toujours clairement sollicités par l'Adulte, déclenchés par le comportement de l'Adulte, ou dus à l'épuisement ou à l'activité proprement dite.

44. **Ne sollicite pas de contacts physiques avec les adultes qui ne sont pas de la famille ou n'y prend pas plaisir.**
Évite, rejette ou est indifférent aux jeux ou autres contacts physiques avec l'observateur ou tout autre adulte qui ne lui est pas familier.

45. **Sollicite activement de l'aide ou du réconfort après avoir subi une légère blessure.**
S'approche de l'Adulte, sollicite activement et accepte dêtre assisté et/ou réconforté.

46. **Le contrôle de la motricité n'est ni souple ni coordonné.**
L'enfant est gauche et maladroit. A de la difficulté à marcher, à courir, à atteindre quelque chose, à s'assoir ou à prendre diverses postures.

47. **Interagit directement avec les adultes.**
Interagit directement avec l'Adulte. Les jouets ou les autres objets peuvent être le centre d'intérêt de l'interaction mais ne représentent pas le principal moyen pour interagir.

48. **Manque de confiance en soi.**
Démissionne rapidement devant les tâches à accomplir. Demande rapidement de l'aide. Est timide quand il se retrouve dans ces contextes où il s'agit de réaliser quelque chose.

49. **Préfère les jeux réalistes ("comme cela se passe dans la vraie vie")**
L'utilisation de symboles (exemple: un caillou qui tient lieu de grenouille) ne ressort pas comme contenu du jeu. Ne fait pas semblant de jouer à l'Adulte ou à des rôles imaginaires pendant de longs moments.

50. Se comporte d'une façon protectrice ou "parentale" avec les jouets durant le jeu.
Exprime de la sympathie, de l'intérêt, un instinct protecteur ou tout autre comportement "parental", pour les jouets animés pendant le jeu (incluant des marques d'affection non-verbales).

51. Même dans un contexte fimilier n'accepte pas d'être rassuré par l'Adulte lorsqu'il se méfie.
Les assurances / encouragements de l'Adulte ne réduisent pas sa méfiance ou sa peur. A noter: l'enfant peut quand même devenir moins méfiant / appeuré quand l'objet lui devient familier.

52. Le passage de l'exploration à la proximité et au contact n'est pas affecté en douceur.
Le passage n'est pas effectué en douceur. Le mouvement en vue d'établir le contact n'est pas décisif. Son sentiment est négatif (pleure, se met en colère).

53. Ne sollicite pas ou ne tire pas plaisir de contacts physiques affectueux avec l'Adulte.
Évite, rejette ou est indifférent au contact physique affectueux avec l'Adulte.

54. S'attend à ce que l'Adulte reste indifférent.
S'attend à de l'indifférence / de la non-disponibilité de l'Adulte.

55. Répond à la séparation par des pleurs.

56. Ne fait pas voir de gestes de tension.
Ne fait pas de gestes moteurs particuliers (ex: sucer son pouce, tirer sur son corps ou sur ses vêtements) lorsqu'il est anxieux, inquiet ou autrement malheureux.

57. Le niveau moyen d'activité est élevé.
L'activité est vigoureuse et rapide. Toujours en mouvement.

58. N'est pas obéissant.
Refuse de se faire assister. N'est pas réceptif aux suggestions ou directives venant de l'Adulte.

59. Est attiré par la nouveauté.
Aime apprendre de nouvelles choses. Est fortement attiré par la nouveauté.

60. A un sommeil régulier.
A sommeil (baille, se frotte les yeux, devient irritable) ou dort à des heures régulières la plupart du temps.

61. N'est pas plus audacieux ou plus confiant lorsqu'il joue proche de l'Adulte.
N'est pas plus audacieux ou plus confiant pour explorer, jouer ou interagir quand l'Adulte est proche et attentif.

62. Est pertutbé quand l'interaction sociale est bloquée ou qu'elle devient difficile.
Devient perturbé ou désorganisé quand l'interaction sociale est bloquée ou qu'elle devient difficile. Pleure facilement. Ne persiste pas.

63. **Est perturbé quand l'Adulte s'éloigne.**
Est perturbé et / ou désorganisé par les changements dans la localisation ou le comportement de l'Adulte.

64. **Ne sollicite pas le contact physique avec l'Adulte ou n'y prend pas plaisir.**
Évite, rejette ou est indifférent au contact physique en forme de jeu avec l'Adulte.

65. **Il est orienté vers les objets.**
Il a une nette préférence pour l'exploration des objets et des lieux au détriment de l'interaction sociale. Il ne prête pas attention aux événements qui se déroulent dans l'environnement social.

66. **Ne persiste pas lorsqu'un jeu non-social est bloqué.**
Devient perturbé ou désorganisé lorsqu'un jeu non-social devient difficile ou est bloqué. Pleure facilement.

67. **A le sommeil léger.**
A le sommeil léger. Est facilement réveillé par les bruits et les mouvements.

68. **Le passage de la proximité et du contact à l'exploration ne s'effectue pas facilement.**
Le passage ne s'effectue pas facilement. Hésitant dans ses élans exploratoires. Son expression émotive est négative (pleure, se met en colère).

69. **Est indépendant avec l'Adulte.**
Est indépendant / autonome, dans ses relations avec l'Adulte (ce qui n'implique pas qu'il soit indifférent). Se sépare facilement.

70. **Il est hésitant ou n'est pas direct quand il remarque quelque chose ou qu'il fait des demandes.**
Il hésite ou n'est pas direct quand il remarque quelque chose ou qu'il fait des demandes.

71. **Préfère les jouets animés.**
Préfère les jouets animés (poupées, animaux en peluche) aux jouets inanimés (trains, blocs,livres).

72. **Quand il se retrouve dans un lieu non familier il ne reste pas plus proche de l'Adulte.**
Ne reste pas plus proche, ne surveille pas de plus près, ne vocalise pas plus, ou ne retourne pas auprès de l'Adulte plus souvent quand il est dans un contexte social ou un lieu qui ne lui est pas familier.

73. **Accepte d'être aidé.**
Accepte volontiers l'aide qui est appropriée ou indique son désir d'agir seul sans qu'il ne devienne pour autant perturbé. Ne réagit pas face à l'aide qui est appropriée comme étant intrusive.

74. **Est exigeant quand il initie des activités avec l'Adulte.**
Est dépendant / exigeant quand il initie des activités avec l'Adulte (tient compte du niveau de l'Adulte ou de sa flexibilité).

75. Pleure souvent.
Pleure souvent (peut être cependant joyeux entre les crises de larmes; les crises peuvent être brèves ou prolongées).

76. Exprime du plaisir à accomplir des choses ou à atteindre son but.
Exprime spontanément le plaisir qu'il éprouve dans l'accomplissement ou dans l'achèvement de choses. L'expression manifeste du sentiment n'a pas besoin de lui être suggérée.

77. Un échange affectif a lieu durant le jeu.
Il montre les objets, sourit et vocalise spontanément quand il est à une certaine distance de l'adulte.

78. Ne se remet pas à pleurer spontanément après avoir déjà pleuré et avoir été apaisé.
Ne recommence pas à pleurer après s'être ressaisi suite à une crise de larmes, à moins que ne se reproduise ce qui a causé les premiers pleurs.

79. Imite l'observateur.
Imite spontanément le comportement de l'observateur. Introduit le comportement imité dans le jeu.

80. Est plus tolérant face aux séparations qu'il a initiées que face à celles initiées par l'Adulte.
L'enfant s'éloigne de l'Adulte plus facilement, plus loin, ou pour plus longtemps qu'il ne laisserait l'Adulte s'éloigner de lui..

81. Est créatif dans le jeu.
Est créatif dans le jeu avec les objets ainsi que dans ses manipulations.

82. Se fâche facilement contre l'Adulte.
Est enclin à se fâcher facilement contre l'Adulte. Se fâche facilement.

83. Récupère lentement suite à une blessure mineure.
Il guérit lentement de ses blessures mineures ou l'inconfort persiste plus longtemps que ce à quoi on peut s'attendre.

84. N'adapte pas les jeux actifs de telle sorte d'éviter de faire mal à l'Adulte.
Frappe fort, met les doigts dans les yeux, tire les cheveux, blesse l'Adulte avec les jouets ou ne réussit pas autrement à adapter le jeu de façon à éviter de lui faire mal.

85. A besoin d'encouragements pour se tenir occupé de façon constructive.
A besoin d'encouragements pour se tenir occupé de façon constructive. Ne joue pas longtemps seul ou en présence de l'Adulte sans qu'on lui demande de continuer.

86. Dans un contexte non-familier, n'accepte pas d'être rassuré par l'Adulte lorsqu'il est méfiant.
Les assurances / les encouragements de l'Adulte ne réduisent pas sa méfiance ou sa peur. A noter: l'enfant peut devenir moins méfiant / appeuré quand le contexte ou l'objet lui devient familier.

87. **Ne rit pas facilement avec l'Adulte.**
L'enfant n'a pas tendance à rire facilement lorsqu'il joue ou interagit avec l'Adulte. Ne rit pas facilement.

88. **Imite le comportement de l'Adulte.**
Imite le comportement de l'Adulte pendant l'interaction. Introduit le comportement imité au jeu.

89. **Les cycles proximité-exploration-proximité sont repérables en-dedans de 3 à 5 heures d'observation.**
Joue à distance de l'Adulte, puis joue près de l'Adulte ou en contact physique avec lui, puis retourne jouer à quelques distances; ceci peut être observé en 3 ou 5 heures d'observation.

90. **Montre des signes de maîtrise de soi.**
S'empêche ou se réprimande lui-même lorsqu'il s'engage ou est sur le point de s'engager dans un comportement déjà interdit ou puni.

91. **Demande rarement de l'aide.**
L'enfant n'est pas très enclin à demander de l'aide. Demande rarement de l'aide même si cela était approprié.

92. **Ne se fâche pas contre les jouets.**
N'est pas enclin à se fâcher contre ses jouets ou autres objets. Ne se fâche pas facilement.

93. **Accepte que l'Adulte donne son attention aux autres.**
Se joint à l'Adulte ou accepte que celui-ci soit attentif à l'autre parent ou à un autre membre de la fratrie.

94. **Dans des lieux non familiers, il revient souvent spontanément après une période d'exploration et de jeu.**
Revient souvent spontanément suite à une exploration ou à un jeu. Les retours ne sont pas toujours clairement sollicités par l'Adulte.

95. **L'enfant n'est pas facile à comprendre quand il fait des remarques ou des demandes.**
Les remarques à propos de l'environnement et les requêtes pour obtenir des objets ou de l'aide ne sont pas claires et / ou sont difficiles à comprendre.

96. **Est obéissant.**
Répond promptement aux interdictions de l'Adulte quand elles sont signifiées.

97. **Ne se méfie pas devant de nouveaux objets.**
Est audacieux avec les jouets animés, les animaux etc., lorsque mis en contact pour la première fois avec eux.

98. **N'a pas de préférence pour le contact physique avec l'Adulte.**
Il n'aura pas plus de préférences pour le contact physique avec l'Adulte qu'avec l'observateur devenu familier ou avec d'autres personnes.

99. **La manipulation au niveau de la motricité fine est malhabile.**
Est malhabile et manque de coordination dans la manipulation de petits objets et dans l'exécution de mouvements précis.

100. Ne combine pas plusieurs objets en jouant.
Manipule / joue avec un seul objet à la fois quand il y en a plusieurs de disponibles et qu'il pourrait les utiliser ensemble.

Appendix E

Toddler Temperament Scales

QUESTIONNAIRE SUR LE TEMPÉRAMENT

Traduit à partir du

TODDLER TEMPERAMENT SCALE.
Fullard, W., McDevitt, S., & Carey, W.B. (1977).

1) Mon enfant se couche à peu près à la même heure tous les soirs (ne dépasse pas une demi heure).

2) Mon enfant ne tient pas en place durant des activités calmes (raconter des histoires, regarder des images).

3) Mon enfant mange calmement et réagit modérément que la nourriture lui plaise ou non.

4) Mon enfant est content (sourit, rit), lorsqu'il arrive pour la première fois dans un endroit inconnu.

5) La première réaction de mon enfant à la vue du médecin en est une d'acceptation.

6) Lorsque je (nous) joue (ons) avec mon (notre) enfant, il porte attention au jeu pendant seulement une minute ou deux.

7) D'une journée à l'autre, mon enfant fait ses selles à des moments différents (différence de plus d'une heure).

8) Mon enfant est difficile lorsqu'il s'éveille (renfrogné, plaignard, pleurnichard).

9) La première réaction de mon enfant en présence d'une nouvelle gardienne en est une de rejet (pleure, s'accroche à moi, etc..).

10) Mon enfant réagit lorsque je lui donne de la nourriture qu'il n'aime pas, et ce, même si je la mélange avec ses aliments préférés.

11) Mon enfant peut attendre pendant plusieurs minutes que je lui prépare les objets ou les activités qu'il veut faire (collation, gâteries, cadeaux).

12) Mon enfant bouge peu (reste tranquille) lorsque je l'habille.

13) Mon enfant continue son activité en dépit du bruit qu'il peut y avoir dans la même pièce.

14) Mon enfant réagit fortement à l'échec (pleure, tape du pied).

15) Mon enfant joue sans arrêt et pour plus de 10 minutes avec un jouet favori.

16) Mon enfant ne porte pas attention à la température de la nourriture qu'elle soit chaude ou froide.

17) Les demandes de mon enfant pour avoir une bouteille ou une petite collation avant de se coucher varient d'un soir à l'autre.

18) Mon enfant reste calmement assis lorsqu'il attend pour manger.

19) Mon enfant s'excite facilement lorsqu'on l'encourage (rit, crie, saute).

20) Mon enfant pleure lorsqu'il tombe ou se cogne.

21) Mon enfant s'approche et joue avec des petits animaux qu'il ne connaît pas (petits chiens, chats).

22) Mon enfant arrête de manger et lève la tête lorsqu'une personne passe près de lui.

23) Mon enfant ne semble pas faire la différence de goût entre les liquides bien connus (type de lait, différents jus).

24) Mon enfant se déplace activement lorsqu'il explore de nouveaux endroits (court, grimpe ou saute).

25) Mon enfant chigne ou pleurniche lorsqu'on le lave après qu'il ait fait ses selles.

26) Mon enfant sourit lorsqu'il joue avec des adultes étrangers.

27) Mon enfant se détourne de son jeu et me regarde lorsque j'entre dans la pièce.

28) Mon enfant peut passer plus d'une heure à lire ou regarder les images d'un livre.

29) Mon enfant répond fortement à la frustration (crie, hurle).

30) Mon enfant mange à peu près la même quantité d'aliments solides d'un repas à l'autre.

31) Mon enfant reste content même lorsqu'il a faim et qu'il attend que la nourriture soit prête.

32) Mon enfant ne proteste pas lorsque je lui lave la figure (se débat, se détourne).

33) La quantité de lait ou de jus que mon enfant boit durant un repas est imprévisible d'une fois à l'autre (plus de 2 onces de différence).

34) Mon enfant fait des activités physiques pendant moins de 5 minutes à la fois (grimpe, saute, pousse des objets).

35) Lorsqu'il est rassasié, mon enfant refuse de prendre plus de nourriture ou de lait (régurgite, ferme la bouche, pousse la cuiller, etc..).

36) A la maison, mon enfant est actif lorsqu'il joue avec ses jouets (frappe violemment, lance, court).

37) Mon enfant ne porte pas attention à ce qu'on dit lorsqu'il joue avec son jouet préféré.

38) Mon enfant s'approche se déplace vers des nouveaux visiteurs qui se présentent à la maison.

39) Par temps chaud ou froid, mon enfant joue à l'extérieur sans qu'il semble remarquer les différences de température.

40) Mon enfant joue avec d'autres enfants pour des périodes qui ne dépassent pas 5 minutes et s'éloigne par la suite.

41) Mon enfant continue de regarder les images d'un livre même s'il y a du bruit qui peut le distraire (klaxon d'auto, sonnette d'entrée).

42) D'une journée à l'autre, mon enfant veut sa collation à différents moments (plus d'une heure de différence).

43) Mon enfant est content, sourit lorsqu'on le couche pour une sieste ou pour la nuit.

44) Cela prend plusieurs jours à mon enfant pour s'habituer (se comporter de façon habituelle) à de nouvelles situations où je suis absent(e) (jeu en groupe, garderie, gardienne).

45) Mon enfant adresse immédiatement la parole à un adulte étranger.

46) Mon enfant réagit fortement (pleure ou crie) lorsqu'il est incapable de terminer une activité de jeu.

47) Mon enfant préfère jouer à courir et sauter plutôt que d'être assis à jouer tranquillement.

48) Lorsque mon enfant s'aperçoit qu'il est trempé, il veut qu'on le change tout de suite de vêtement.

49) Mon enfant est difficile ou maussade lorsqu'il a attrapé une grippe ou un virus intestinal.

50) Mon enfant ne répond pas au premier appel lorsqu'il regarde son émission de télévision préférée.

51) Mon enfant perd intérêt à de nouveaux jouets ou jeux avant la fin de la première heure.

52) Mon enfant se rend rapidement où il veut aller.

53) Mon enfant est inquiet (s'agrippe à moi, se tient à l'écart quelques minutes) lorsqu'il est dans un nouvel environnement (magasin, maison, endroit de vacances).

54) D'une journée à l'autre, mon enfant fait sa sieste à des moments différents (différence de plus d'une heure).

55) Mon enfant réagit modérément (se renfrogne ou sourit) lorsque je l'interromps pendant qu'il joue.

56) Mon enfant ne proteste pas lorsqu'on l'habille et le déshabille.

57) A l'extérieur de la maison, mon enfant n'a pas peur d'aller vers des adultes étrangers.

58) Mon enfant court en avant lorsqu'il se promène avec moi (nous).

59) D'une journée à l'autre, les périodes de grandes activités physiques de mon enfant se produisent à peu près au même moment.

60) On peut dissuader mon enfant de faire des activités interdites.

61) Lorsque quelqu'un s'approche de lui, mon enfant s'arrête de jouer et le regarde.

62) Mon enfant retourne à la même activité après une brève interruption (collation, toilette).

63) Mon enfant rit ou sourit lorsqu'il rencontre d'autres enfants.

64) Mon enfant reste tranquillement assis lorsqu'il regarde la télévision ou écoute de la musique.

65) Mon enfant évitera de se comporter de la même façon lorsqu'il a déjà été puni une ou deux fois.

66) Mon enfant continue de s'amuser avec un jouet même si des bruits proviennent soudainement de l'extérieur (sirènes, klaxon d'auto, etc..).

67) Mon enfant ne se préoccupe pas de la saleté qu'il peut y avoir sur lui.

68) D'un matin à l'autre, mon enfant ne s'éveille jamais à la même heure (écart d'une heure ou plus).

69) Quand mon enfant est maussade et difficile, c'est que ce n'est pas "son jour".

70) Mon enfant réagit modérément (sourit ou se renfrogne) lorsqu'un autre enfant prend son jouet.

71) Mon enfant passe plus de 5 minutes dans une tâche routinière (habillement, ramasser ses jouets).

72) Lorsqu'il se produit un son inhabituel (téléphone, sonnette d'entrée), mon enfant s'arrête de manger et regarde dans cette direction.

73) Mon enfant reste tranquillement assis (bouge peu) pendant qu'il se fait brosser les cheveux ou couper les ongles.

74) Mon enfant manifeste beaucoup physiquement (trépigne, se tord, agite les bras) lorsqu'il est contrarié ou qu'il pleure.

75) Mon enfant aime (sourit, rit) se faire laver le visage.

76) A la maison, la première réaction de mon enfant à l'approche d'un étranger en est une d'acceptation (le regarde, le rejoint).

77) Mon enfant a faim à l'heure du repas

78) Mon enfant continue d'aller dans des endroits interdits ou de prendre des objets, malgré que je le lui défende.

79) Mon enfant s'arrête pour examiner minutieusement de nouveaux objets (5 minutes ou plus).

80) Mon enfant ne porte pas attention aux odeurs (cuisson, fumée, parfum) qu'elles soient plaisantes ou non.

81) Mon enfant se détourne de son activité lorsqu'il entend le bruit provenant de d'autres enfants qui jouent.

82) Le temps que prend mon enfant pour s'endormir est à peu près le même à chaque fois que je le mets au lit.

83) A l'arrivée de sa gardienne, mon enfant manifeste ouvertement ses émotions qu'elles soient positives ou négatives.

84) Mon enfant demeure maussade plus que quelques minutes après avoir été corrigé ou disputé.

85) Mon enfant reste tranquillement assis pendant un voyage en auto ou en autobus.

86) Mon enfant ne regarde pas la télévision plus longtemps que dix minutes, puis retourne à une autre activité.

87) Mon enfant est gêné (se détourne ou s'agrippe à moi) lorsqu'il rencontre un autre enfant pour la première fois.

88) Même après 15 minutes, mon enfant reste toujours méfiant face aux étrangers.

89) Mon enfant s'impatiente et pleure lorsqu'il apprend quelque chose pour la première fois (s'habiller lui-même, ramasser ses jouets).

90) Mon enfant est tranquillement assis quand il prend son bain.

91) Mon enfant exerce ses nouvelles habilités (lancer, empiler, dessiner) pendant dix minutes ou plus.

92) Mon enfant ne prête pas attention aux différences de goût ou de consistance entre les aliments couramment utilisés.

93) Mon enfant dort mal (éveillé, agité) pendant les 2 ou 3 premières fois qu'il couche ailleurs.

94) En notre présence, mon enfant craint d'être déposé dans un endroit non familier (chariot de supermarché, nouvelle poussette, parc d'enfant).

95) Mon enfant rouspète ou se plaint lorsqu'on le laisse s'amuser seul.

96) Mon enfant accepte en moins de 10 minutes (se sent chez lui, à l'aise) de se retrouver dans de nouveaux sites (maison, magasin, aire de jeux).

97) Mon enfant se détourne de son jeu lorsqu'il entend le téléphone ou la sonnette.

Appendix F

Items in the Attachment Q-Set descriptive scales

Scale
Proximity/Exploration Balance
• Ne cherche pas à s'éloigner de l'adulte ou à le suivre lorsque ce dernier s'éloigne de lui (34) • À la maison, il lui arrive souvent de revenir spontanément après une période d'exploration et de jeu.(43) • N'est pas plus audacieux ou plus confiant lorsqu'il joue proche d'un adulte (61) • Quand il se retrouve dans un lieu non familier il ne reste pas plus proche de l'adulte (72) • Dans des lieux non familiers, il revient souvent spontanément après une période d'exploration et de jeu (94). • Ne se méfie pas devant des nouveaux objets (97) • Ne sollicite pas ou ne tire plaisir de contacts physiques affectueux avec l'adulte (53) • Est perturbé quand l'adulte s'éloigne (63) • Dans un contexte non-familier, n'accepte pas d'être rassuré par l'adulte lorsqu'il est méfiant (86) • Les séquences d'exploration et de jeu loin de l'adulte durent peu de temps (12)

Differential Responsiveness to Caregiver
• Sollicite activement le réconfort de l'adulte quand il est en état de détresse (18) • Quand il ressent de la méfiance, il ne se tourne pas vers l'adulte pour être rassuré (31) • Préfère être réconforté par l'adulte (35) • N'a pas de préférence pour le contact physique avec l'adulte (98) • Sollicite activement de l'aide ou du réconfort après avoir subi une légère blessure (45) • Est souvent inconscient des changements de localisation ou d'activité de l'adulte (07) • Demande rarement de l'aide (91) • Ne sollicite pas le contact physique avec l'adulte ou n'y prend pas plaisir (64)

Positive Affect
• Ce qui prédomine chez lui, c'est sa bonne humeur (03)
• Rit facilement avec l'observateur (08)
• Émotivement, sait bien réagir et s'exprimer (25)
• Exprime du plaisir à accomplir des choses ou à atteindre son but (76)
• Un échange affectif a lieu durant le jeu (77)
• Ne rit pas facilement avec l'adulte (87)
• Pleure souvent (75)
• Ne pleure pas fort suite à une blessure mineure (26)
• Manque de confiance en soi (48)
• Est exigeant et impatient (37)

Sociability
• Désireux de montrer les chansons, les jeux ou autre comportement appris (02) • Reste indifférent à l'invitation de l'observateur de jouer (21) • Initie l'interaction avec les adultes qui lui sont familiers (32) • Agit de façon à maintenir une interaction sociale (40) • Interagit directement avec les adultes (47) • Imite l'observateur (79) • L'enfant n'est pas facile à comprendre quand il fait des remarques ou des demandes (95) • Évite ou rejette les nouveaux venus (10) • Ne sollicite pas de contacts physiques avec les adultes qui ne sont pas de la famille ou n'y prend pas plaisir (44) • Le niveau moyen d'activité est élevé (57) • Est attiré par la nouveauté (59) • Est créatif dans le jeu (81) • Imite le comportement de l'adulte (88)

Independence
• Devient perturbé lorsqu'il se produit une séparation à la maison (20)
• Pleure pour empêcher la séparation d'avoir lieu (29)
• Répond à la séparation par des pleurs (55)
• Est indépendant avec l'adulte (69)
• Est exigeant quand il initie des activités avec les adultes (74)
• Accepte que l'adulte donne son attention aux autres (93)
• Se fâche facilement contre l'adulte (82)
• Ne partage pas volontiers (17)
• Facilement consolé par l'adulte (04)
• Se laisse facilement distraire de sa détresse (22)

• **Social Perceptiveness**
• Ne reconnaît pas la détresse chez l'adulte (11) • Est sensible à la détresse de l'adulte (30) • N'est pas obéissant (58) • N'adapte pas les jeux actifs de telle sorte d'éviter de faire mal à l'adulte (84) • Est obéissant (96) • Est soigneux avec ses jouets (27) • Se comporte d'une façon protectrice ou « parentale » avec les jouets durant le jeu (50) • Ne babille pas ou ne parle pas lorsqu'il joue seul (09) • Préfère les jeux réalistes (« comme cela se passe dans la vrai vie ») (49) • Ne se fâche pas contre les jouets (92)

Vitality
• Préfère les tâches et les activités qui ne sont pas difficiles (6) • S'ennuie rapidement (13) • Ne accepte pas les marques d'affection que l'adulte prodigue aux autres (14) • Fait preuve d'endurance: ne se fatigue pas facilement (23) • Est incapable de s'adapter lorsque forcé de passer d'une acidité à une autre (28) • Le passage de l'exploration à la proximité et au contact n'est pas affecté en douceur (52) • Est perturbé quand l'interaction sociale est bloquée ou qu'elle devient difficile (62) • Ne persiste pas lorsqu'un jeu non-social est bloqué (66) • Montre des signes de maîtrise de soi (90) • Le passage de la proximité et du contact à l'exploration ne s'effectue pas facilement (68) • A besoin d'encouragements pour se tenir occupé de façon constructive (85) • Devant un acte qui lui a déjà été défendu, il va hésiter ou s'abstiendra de le faire (39) • Fait preuve de souplesse quand il tente de communiquer clairement avec les adultes (41)