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This chapter examines the theoretically important but understudied question of concordance in adolescent siblings' representations of attachment to parents.

Representations of Attachment to Parents in Adolescent Sibling Pairs: Concordant or Discordant?

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The vast majority of adolescents have at least one sibling, and most are raised by the same parent or parents. What then might we expect two adolescent siblings' representations of attachment to parents to be like? Are both siblings likely to exhibit similarly secure or insecure representations, or is it just as likely that one sibling would have a secure representation and the other an insecure one? Surprisingly, we know very little about whether adolescent siblings raised in the same family exhibit concordant representations of attachments to parents, yet we believe the answer to this question has important implications for attachment theory.

The purpose of this chapter is to discuss this issue of sibling concordance during adolescence and its implications for attachment theory. We first present a simple conceptual model that will lead us to expect adolescent siblings' representations of attachment to parents to be relatively concordant. Our model examines theoretical pathways that begin in infancy as well those that are specific to adolescence, because these developmental trajectories that are initiated early on serve as one of the bases for the levels of

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concordance that we would expect in adolescence. We then review the existing but limited empirical research on this topic, which has tended to focus on infants and young children. Next, we describe our own empirical work examining concordance in adolescent sibling pairs. As will be seen, the degree of concordance in either childhood or adolescence is modest at best, which raises some significant questions regarding the accuracy or adequacy of the simple conceptual model. Accordingly, we reexamine the initial concordance model and discuss potential explanations for the modest degree of adolescent siblings' similarity. We discuss the implications for attachment theory and point out important directions for future research.

A Simple Model of Concordance in Adolescents' Representations of Attachment to Parents

Figure 5.1 depicts a simple model of some of the central processes that may determine adolescent siblings' representations of attachment to their parents. Such processes are set into motion early in development and begin with the caregiver. According to attachment theory, a caregiver's own representation of attachment is a primary determinant of his or her caregiving behavior (Bowlby, 1973; Main, Kaplan, & Cassidy, 1985). This process is illustrated by the paths labeled A in Figure 5.1. Consistent with this idea, extensive empirical work has shown that parents with secure attachment representations exhibit warmer and more sensitive parenting behaviors compared to parents with insecure representations (see van IJzendoorn, 1995). Moreover, theory and research suggest that parental representations are generally stable across adulthood (Ammaniti, Speranza, & Candelori, 1996; Crowell, Treboux, & Waters, 2002), thus predicting a caregiving environment for children that remains generally stable through adolescence. If parental caregiving behaviors are driven by parents' stable representations of attachment, then we would theoretically expect siblings who are raised in the same family to experience similar caregiving behaviors. Of course, mothers and fathers have unique and potentially different representations and may provide different caregiving, but each should provide similar caregiving to their different children.

Ultimately, children's caregiving experiences are expected to shape the quality of their attachment relationships with their parents (paths B in Figure 5.1). Dating back to early observational and laboratory work by Ainsworth, Blehar, Waters, and Wall (1978), research has demonstrated links between parents' caregiving and children's later attachment relationships. As described by Ainsworth and colleagues (1978), a child with a secure attachment relationship has typically experienced a history of sensitive and responsive experiences with his or her caregiver. An inconsistent history of caregiving results in an insecure/ambivalent pattern of attachment. Rejecting and unresponsive experiences are linked to an insecure/avoidant attachment relationship. The idea that children's caregiving experiences play an important role in their subsequent attachment relationship

Figure 5.1. Simple Conceptual Model of Sibling Attachment Concordance
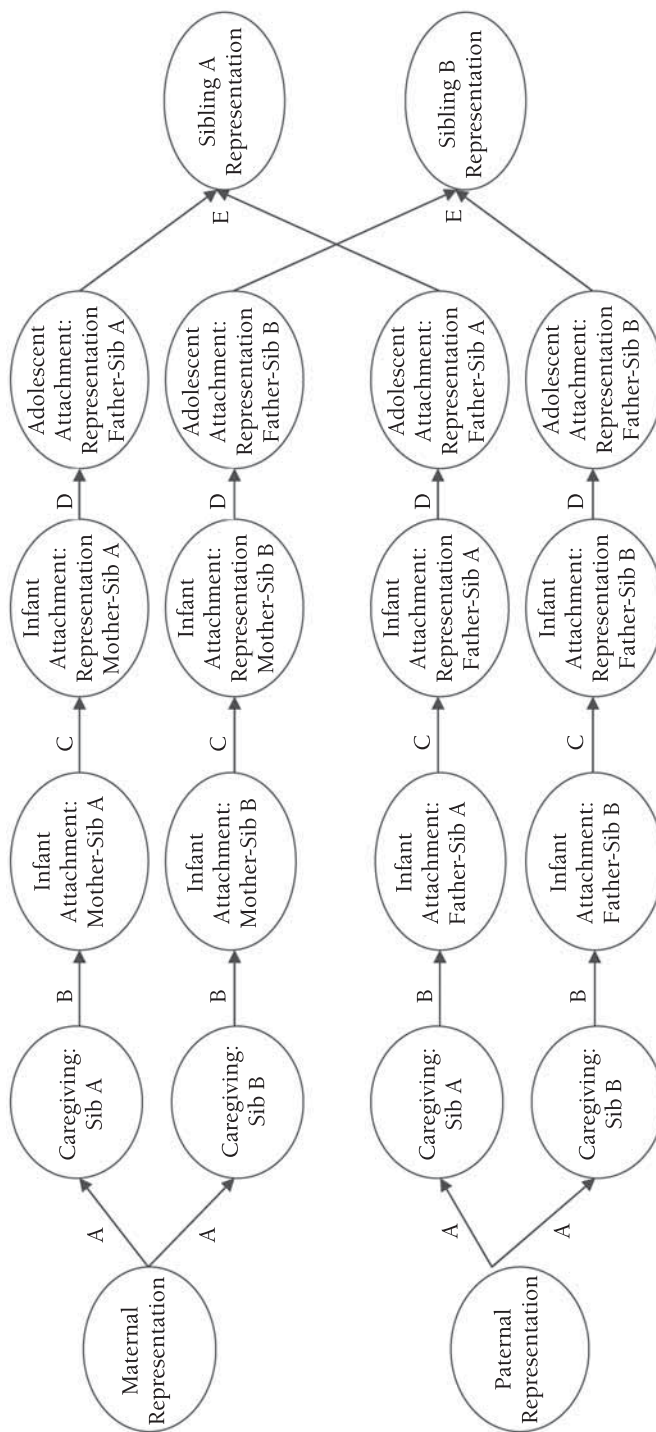
has been consistently supported in the field. For instance, in a meta-analysis of over sixty studies, De Wolff and van IJzendoorn (1997) reported that maternal sensitivity was significantly associated with the security of infants' attachment relationships, providing empirical evidence for paths B.

If a parent's representation is predictive of caregiving (paths A) and such caregiving is predictive of infant attachment (paths B), parental representations should be predictive of insecurity. In a meta-analysis of eighteen studies, van IJzendoorn (1995) reported large effect sizes between parents' representations and infant attachment. Coupling this finding with the evidence that a parent's representation of attachment is stable, we would expect that two siblings would have similar attachments to a particular parent.

Children's attachment-relevant experiences with a parent lead to the development of representations (working models) of their attachment to each parent (paths C) (Main et al., 1985). If they have had similar attachment-relevant experiences with a parent, the two infant siblings should develop similar representations.

Thus far, we have focused our theoretical discussion on infants and children, as the processes that occur then serve as a bases for attachment in adolescence. Throughout childhood, attachment representations are expected to be relatively stable (paths D) (Bowlby, 1980). Thus, if two infant siblings had similar representations of their relationships with a parent, we would expect these siblings to remain relatively similar over time, even into adolescence. Representations of relationships would be expected to change if there were actual changes in each sibling's caregiving experience (Main et al., 1985). However, given that adolescents' representations of attachment to their parents are determined by their attachment-relevant experiences with each parent (paths B), which are determined by each parent's stable representation of attachment (paths A), such changes in adolescents' experiences would not be expected usually, and, hence, changes in their attachment representations from childhood to adolescence would not be expected either.

With the onset of formal operations, adolescents begin to think about representations themselves; that is, they can step out their specific attachment relationships and think about how it functions (Main et al., 1985). They may be able to develop some perspective on why they and their parents act the way they do and change how they think about the relationship or attachment more generally. Moreover, as a result of such reflections, their separate representations of attachment with different caregivers tend to coalesce into a single representation of attachment to their parents (paths E) (Bretherton, 1985; Main, 1999; Main & Goldwyn, 1984). Consistent with this idea, adolescents' representations of their attachment relationships with mothers and fathers are related to each other (Furman & Simon, 2004). Thus, if two siblings entered adolescence with similar representations of their relationships with their mother and similar representations of their father, one might expect that their coalesced representations would be similar unless the two siblings had substantially different reflections about their relationships.

Our simple model thus suggests an intergenerational cycle wherein parents' representations of attachment affect their caregiving (paths A), which then affects the parent-child attachment relationship (paths B), and thus children's representations of their attachments to parents (paths C). Such representations are expected to be relatively stable (paths D) and, during adolescence, coalesce into a generalized representation of attachment to parents (paths E). As this process begins with each parent's own representation of attachment (paths A), which should have a similar impact on their different children, this model would lead us to expect concordance in adolescents siblings' representations of their attachments to parents.

Research on Sibling Attachment Concordance

Given such a basic and fundamentally important question regarding siblings' attachment concordance, there has been remarkably little empirical work in the area. What little research does exist has focused on children and has generally found a weak to moderate concordance. To provide a common metric for comparing studies, we calculated kappas from tables presented in other work. In one of the first studies examining sibling attachment concordance in infants, Ward, Vaughn, and Robb (1988) found that siblings exhibited significant but modest concordance in the security versus insecurity of their attachment relationships, as measured by the Strange Situation at twelve months ($\kappa = .18$ along a secure-insecure dimension; $\kappa = .23$ along a three-category classification). More recently, van IJzendoorn et al. (2000) incorporated sibling data from three international research groups. Using Strange Situation data across 138 sibling pairs, they found a modest concordance in security versus insecurity ($\kappa = .23$). Notably, rates of concordance were significant only when infant attachments were classified as secure or insecure (versus more specific attachment classifications).

In a twin study, O'Connor and Croft (2001) examined 110 preschool-aged sibling twin pairs and found modest concordance in attachment as measured using a four-category classification from the Strange Situation. Moreover, rates of concordance were similar across monozygotic ($\kappa = .25$ along a four-category classification; $\kappa = .40$ along a secure-insecure dimension) and dizygotic ($\kappa = .21$ and $\kappa = .28$ along a four-category and two-category classification, respectively) sibling twins, supporting the idea that environmental factors such as parental representations and caregiving behavior are significant primary contributors to the development of secure representations. Similarly, Bokhorst et al. (2003) found modest concordance in a sample of 157 twins ($\kappa = .18$ along both a four-category and secure-insecure classification); concordance was slightly higher in dizygotic twins than monozygotic twins ($\kappa = .22$ versus .12 along both a four-category and secure-insecure classification).

The scant existing data suggest a modest concordance in siblings' attachment in childhood. As yet, we do not know how concordant

adolescents' representations of attachments to parents are. Adolescence, however, is a particularly interesting period of development during which to examine sibling attachment concordance. Adolescents will have had years of experience with their parents to form representations of these relationships; moreover, these relationships undergo significant changes during this period as adolescents develop autonomy and prepare to leave home. Relatedly, the process of transferring attachment figures from a parent to a romantic partner typically begins in adolescence (Furman & Wehner, 1994; Hazan & Zeifman, 1994). Finally, independent representations of attachments to parents are hypothesized to coalesce into a single state of mind during this time, as depicted by paths E in our model (see Chapter Three, this volume). As adolescents acquire the cognitive skills and sophistication of formal operations, they are able to step back and reflect on their relationships. Such meta-cognition leads to an integration of previous attachment experiences into a more generalized representation of attachment to parents (Bretherton, 1985; Main, 1999; Main & Goldwyn, 1984). Taken together, it is clearly important to examine adolescents' representations of their attachment relationships and the concordance in siblings' representations.

An Empirical Study of Adolescent Siblings' Concordance in Representations

We examined the degree of concordance in adolescent siblings' representations of their attachment relationships with parents. Data consisted of forty-one sibling pairs, drawn from a subset of a larger study on adolescent social relationships. Adolescents who were originally targeted for recruitment were in the twelfth grade (*M* age = 17.85 years, *SD* = .46). One of the target adolescent's siblings was then recruited for this particular project. Siblings' age ranged from 15.10 to 22.99 years (*M* age = 17.53 years, *SD* = 2.20). The ethnic diversity of the sample resembled general proportions found in the United States: 63 percent European American, 12 percent Latin American, 9 percent African American, and 4 percent Asian American.

Adolescents' representations of attachment to parents were assessed using the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). Interviews were administered and tape-recorded by trained interviewers, transcribed, and then coded by individuals certified in the AAI coding system. Approximately 20 percent of the interviews in the larger study were double-coded (*n* = 21); interrater agreement of the classifications was satisfactory (κ = .84). Interrater agreement on the loving scores and coherence of transcript scores was also satisfactory (ICC = .73 to .86).

First, we examined the adolescent siblings' concordance across four attachment classification categories. As shown in Table 5.1, we found little evidence of concordance (κ = .11). We found similarly low levels of concordance when classifications were collapsed into secure versus insecure categories (κ = .08).

Table 5.1. Cross-Tabulation of Siblings' Attachment Classifications

	Sibling 1				
	Secure	*Dismissing*	*Preoccupied*	*Unresolved*	*Total N*
Sibling 2					
Secure	24% (10)	17% (7)	0% (0)	5% (2)	19
Dismissing	20% (8)	25% (10)	0% (0)	2% (1)	19
Preoccupied	2% (1)	0% (0)	0% (0)	0% (0)	1
Unresolved	2% (1)	0% (0)	2% (1)	0% (0)	2
Total *N*	20	17	1	3	41

$N = 41$, $\kappa = .11$; $p = .37$.

To shed further light on our findings, we explored several family variables that could potentially moderate rates of concordance. For instance, it is possible that concordance is greater in same-sex dyads, as one might expect the caregiving of two siblings of the same gender to be more similar than the caregiving of two siblings of the different gender. We had twenty-four same-gender dyads and seventeen mixed-gender dyads but found the degree of concordance to be similar across gender configurations ($\kappa = .08$ and .15, respectively). Thus, siblings' gender did not appear to play an explanatory role in rates of attachment concordance. If anything, siblings in mixed-gender dyads exhibit slightly higher rates of concordance. Second, it is possible that concordance would be greater if siblings were closer in age, as they may be more likely to have similar caregiving experiences. We divided the sample into those who were two years or less apart ($n = 24$) and those with an age spacing that was wider than two years ($n = 17$). Levels of concordance were again similar and slightly biased against expectations ($\kappa = .07$ and .16, respectively). Third, it is possible that concordance for a twelfth-grade adolescent and a younger sibling would be greater because both siblings are living at home. Although the finding was nonsignificant, there was a slight trend in that direction ($\kappa = .19$ in the twenty-five pairs in which the sibling was younger; .08 in the sixteen pairs in which the sibling was older). Fourth, we examined whether concordance varied as a function of whether the two were closer to the same parent or to different parents. When both said they were closer to the same parent or both said they were equally close to both parents ($n = 26$), a moderate level of concordance was found ($\kappa = .31$, $p = .06$). When one said he or she was closer to one parent and the other said he or she was not closer to that parent (either because he or she was closer to the other parent or equally close to both parents; $n = .14$), the concordance was negative though nonsignificant ($\kappa = -.20$). This potential difference is discussed subsequently.

Finally, we examined the degree of similarity in two of the more comprehensive scales on the AAI loving behavior and coherence of transcript.

The loving scales are a comprehensive rating of the loving and unloving behavior of each parent, whereas the coherence scale is the most comprehensive index of the quality of the discourse. Interestingly, the two siblings' ratings of loving behavior by each parent were significantly related: mother ($r = .52$, $p < .01$) and father ($r = .29$, $p < .05$). Like the classification scores, the two siblings' coherence of transcript were not significantly related, $r = .07$. The greater concordance in experiences compared to representations is noteworthy because the attachment-related scales and classifications are derived from the same interview, which would make the correlations more likely to be similar than if independent measures had been used. This difference between concordance in representations and experience is discussed subsequently.

A Reexamination of a Simple Model of Sibling Concordance

Although each path in the conceptual model is generally supported by both theoretical and empirical work, prior research with infant siblings and analyses using our own data with adolescent sibling pairs suggest that the degree of sibling concordance is modest at best. These findings indicate that a reexamination of the specific paths in the model is warranted.

According to paths A and B in our conceptual model, parental representations influence caregiving sensitivity, which in turn affects infants' attachment relationships with caregivers. Analyses of multiple studies reveal that the link between parental representations and infant's attachment is relatively large (for example, $\kappa = .49$; van IJzendoorn, 1995). Putting together our model and this empirical information, we can use basic computational procedures of path analysis to estimate the expected covariation between two siblings' attachment (Loehlin, 2004). Specifically, the covariation between two siblings' attachment would be expected to be equal to the product of the links between parental representation and the attachment of the two siblings. Thus, we would expect the covariation to be approximately .24 (.49 $\times$ .49). This estimation of covariation is consistent with the existing literature. For example, the largest study of concordance in infancy found an intraclass correlation coefficient of .23 (van IJzendoorn et al., 2000). In some respects, the consistency between the estimation and empirical estimation is reassuring. At the same time, several aspects of these findings should not be reassuring.

First, the magnitude of the relations is moderate or even just modest. Parental representations of attachment account for only 25 percent of the variance in infant attachment; approximately 5 percent of the variance in sibling attachment is shared. These estimations can be misleadingly low because of attenuation due to measurement error. For example, if attachment should be conceptualized as a set of continuous variables (Fraley & Spieker, 2003), then simple secure-insecure dichotomizations or the use of discrete categories will underestimate the degree of association with other variables (MacCallum, Zhang, & Preacher, 2002). Yet both the AAI and the

Strange Situation are relatively reliable measures (see Hesse, 1999; Solomon & George, 1999). Accordingly, statistical corrections for attenuation in the relation between parental representations and attachment security would still leave the majority of the variance unaccounted for.

The moderate effect sizes could reflect the fact that attachment security is determined by multiple factors, and consequently a single factor is unlikely to account for much variance (see Ahadi & Diener, 1989). This explanation is appealing, as it seems highly likely that almost all human behavior is multiply determined. Yet factors other than parental sensitivity have not received as much attention as we believe is warranted. Moreover, when other variables are considered, such as parental resources, personality, psychopathology, the marital relationship, social support, or stress (see Belsky, 1999), their influence on infant attachment is commonly explained in terms of the impact on the quality of caregiving, which affects infant security. What is needed is further attention to factors that have their influence other than by affecting parental sensitivity.

The other disturbing aspect of the pattern of findings is that the degree of concordance in sibling attachment can be fully accounted for by parental representations. That is, the estimated covariation ($r = .24$) is what would be expected from a model with just parental representations predicting infant attachment. What might account for this pattern of relations? One possibility is that no other factor contributes to sibling attachment convergence except parental representations. Although possible, it seems unlikely that any single variable would be responsible for determining sibling concordance or any variable reflecting relationship qualities.

Alternatively, another variable may contribute, but its influence is being spuriously attributed to parental representations because that variable covaries with parental representations. Interestingly, a gap in the transmission of attachment patterns from parent to infant has been identified (van IJzendoorn, 1995). That is, some of the effect of a parent's representation on the infant's subsequent attachment can be explained by paths A and B in our model, but approximately 77 percent of the effect remains unexplained. When investigators have tried to account for the transmission gap, they have typically looked for variables other than maternal sensitivity that may mediate the link between parental representations and attachment security. For example, parental mindedness and reflective functioning have been proposed as mediators (Fonagy, Gergely, Jurist, & Target, 2002; Meins, 1999). Although evidence for these mediators exists (Bernier & Dozier, 2003; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005), little consideration has been given to the possibility that it is not a mediator but some covariate of parental representations that is a determinant of infant security and accounts for the seeming transmission gap. The quality of the marital or spousal partnership is one possible covariate. Specifically, the quality of marriage is associated with both representations of attachment and parental caregiving. A harmonious marriage may lead to more secure representations

and a more positive child-rearing context for children, providing a sense of safety and security to the infant. Disharmony in the marital relationship could lead to insecurity and poor parenting (see Cox, Paley, & Harter, 2001; Treboux, Crowell, & Waters, 2004). Accordingly, part of the unexplained link between parental representations and attachment security may stem from the fact that both are influenced by the marital relationship.

Finally, it is possible that other variables contribute to concordance in sibling attachment security, but their influence is not apparent because they are offset by another set of variables that lead to discordance in attachment security. Given that siblings share half of their genes, one might expect genetic factors to contribute to concordance in sibling attachment. However, genetic influences appear to play a small role in security of attachment (Bokhorst et al., 2003; van IJzendoorn et al., 2000). Although early reviews and research tended to dismiss the significance of shared environmental influences, more recent work finds evidence of such influences (see Rutter, 2000). As yet, however, the shared environmental factors contributing to concordance in attachment have not been delineated.

Perhaps the more interesting question is what nonshared environmental factors could contribute to differences in attachment security. One possibility is that parents' representations of attachment have different effects on the security of attachment of different siblings. Although relatively stable, a parent's representation could change as a function of having children. Experiences with one's firstborn child could influence one's representation and one's subsequent caregiving behaviors with another child, thus predicting different parenting practices for two siblings raised in the same family. The birth of a sibling may also change the frequency, nature, and context of interactions between parents and existing children, which could have a direct impact on parent-child attachment relationships. In fact, the attachment security of firstborn children is more unstable or tends to decrease after the birth of a sibling (Teti, Sakin, Kucera, Corns, & Eiden, 1996; Touris, Kromelow, & Harding, 1995).

Although it would be important to examine temporal changes in parents' representations of attachment as a function of having children, this is not likely to be the primary explanation of siblings' discordance in attachment. If it were, we would expect concordance to be much greater in twins than siblings because twins would experience the same parental representation as they were born simultaneously. The degree of attachment concordance in monozygotic and dizygotic same-sex twins, however, is not stronger than the concordance rate in same-sex siblings (Bokhorst et al., 1993, $\kappa = .18$; O'Connor & Croft, 2001, $\kappa = .24$; van IJzendoorn et al., 2000, $\kappa = .13$). Similarly, our data did not implicate age spacing as a significant moderator of attachment concordance in adolescent siblings.

Another possibility is that a parent's representations of relationships with his or her own parents interact with the characteristics of the infant to pro-

duce unique patterns of attachment across siblings. Investigators have tried to identify child characteristics, such as temperament, that are predictive of attachment security; however, less attention has been paid to the moderating effect of child characteristics on a parent's representations (Belsky, 1997).

Parents' representations of attachment to their own parents may also not be the most proximal mechanism of their caregiving behavior (see Mayseless, 2006). Representations of relationships can be conceptualized in terms of a hierarchical model (Collins & Read, 1994; Furman & Simon, 1999). That is, individuals may have representations of particular relationships, types of relationships (such as romantic relationships), and close relationships in general. Thus, parents may have representations of their relationships with particular children, and these may be stronger predictors of caregiving. In fact, several measures of such representations have been developed and found to be related to AAIs and caregiving behavior (George & Solomon, 1996; Slade, Belsky, Aber, & Phelps, 1999; Zeanah & Benoit, 1995). It seems quite possible that parents have different representations of their relationships with different children and that such representations lead to differential caregiving of their different children and siblings' discordant attachment classifications.

Adolescents' Concordance of Representations

In our study of the concordance of adolescent siblings' attachment representations, we obtained a kappa of .07, whereas in the largest study of infant attachment concordance (van IJzendoorn et al., 2000), the concordance was .23. This difference is not statistically significant, though the chances are slightly greater that it is different than it is not. In effect, we cannot conclude they are the same or different.

In either case, each of the potential explanations for the relatively low level of concordance in infant attachment relationships could contribute to the low concordance observed in adolescent representations. Moreover, several other factors specific to later childhood or adolescence may contribute to the low level of concordance found.

In particular, attachment relationships and representations are hypothesized to be relatively stable, but not completely. In fact, the terminology of "working" and "model" was favored by Bowlby because they suggest processes that are ultimately dynamic and alterable (Bretherton, 1993). Consistent with this idea, security in infant attachment has been predictive of late adolescent representations of attachments to parents in several studies (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000), but not always (Lewis, Feiring, & Rosenthal, 2000; Weinfield, Sroufe, & Egeland, 2000). Such discontinuity has been linked to negative life events and circumstances, suggesting that there may be lawful discontinuities that lead to changes in attachments and, perhaps, differences in adolescent siblings' attachments (see Chapter Six, this volume).

As children get older, their attachment relationships become increasingly characterized as goal-corrected partnerships (Bowlby, 1969; Waters, Kondo-Ikemura, Posada, & Richters, 1991), and the active role of the child or adolescent increases. Attachment theorists have suggested that the characteristics of the only infant play a small role in infant attachment (Sroufe, 1985; Ward et al. 1988), but the individual characteristics of an adolescent may be more important because of the role he or she plays in determining the relationship with a parent.

Nonshared environmental influences may contribute to discordance in infants' attachment and seem likely to be increasingly important factors as children get older and become adolescents. Consistent with this idea, twins become increasingly less similar as they grow older (McCartney, Harris, & Benieri, 1990). One such nonshared environmental influence that has been thought important is differential parental treatment. The degree of parenting consistency varies considerably as a function of the particular aspect of parenting being examined, but often the consistency is only modest in scope (Furman & Lanthier, 2002) and thus could contribute to differences in siblings' attachment. Much of the literature on parental treatment, however, has focused on objective differences in parenting patterns. One would not expect a sensitive parent to treat children or adolescents of different ages the same; similarly, sometimes practices with a child who is of a particular age would not be as effective or appropriate for another child of that same age (Furman & Lanthier, 2002). The links between differential parenting behaviors and siblings' attachment will require careful consideration of the context of parenting. For example, whether differential treatment is perceived to be fair matters (Kowal, Krull, & Kramer, 2004). Differential parental treatment perceived to be unfair is associated with poorer parent-child relationships, but not differential treatment seen as fair. Moreover, it will be important to provide direct evidence of the role of particular differences in parenting and not simply infer that such differences are important. For example, differences in maternal sensitivity have not been found to be predictive of discordance in attachment security (van IJzendoorn et al. 2000).

Another source of nonshared environmental factors is the interaction between siblings, particularly when one is substantially older than the other. Siblings may also seek to differentiate themselves from each other and counter some of their shared experiences or commonalities in the parenting they have received (Caspi, Herbener, & Ozer, 1992).

Other potential nonshared environmental influences include accidental factors and extrafamilial influences, such as peer and teacher relations (Rowe & Plomin, 1981). To illustrate, one adolescent in our study experienced the loss of a close friend, which significantly affected her expectations of close relationships in general, and hence her classification, but this person's sibling was not directly affected by this loss and was classified differently. To account for cases such as these, we need to develop theoretical

models describing the mechanisms by which these extraneous variables have an influence on attachment security, as well as empirical evidence that they are relevant.

It is interesting to note that the degree of concordance in the ratings of loving behavior, especially by mothers, tended to be higher than the concordance in the AAI classifications. Such a finding is particularly striking as both ratings of relationships and the classifications were derived from the AAI. If representations of a relationship were exclusively based on experiences in a relationship as they are believed to be in childhood, we may have expected similar levels of concordance. However, adolescents are able to reflect on their relationships and how it functions (Main et al., 1985). Thus, two adolescent siblings may reflect differently on their experiences with a parent and have different representations of the relationship even if they had similar experiences with a parent. For example, one pair of adolescents in our study shared the experience of a loss but appeared to respond in different ways. The difference in reaction seems to have contributed to their discordance in their representations (one sibling was classified as insecure, the other as secure).

In addition, the process of coalescing representations of particular relationships into an integrated representation of relationships with parents may reduce the degree of concordance. Adolescents' representations of relationships with mothers and fathers are related, but only moderately so (Furman & Simon, 2004). An adolescent may have a secure representation of his or her relationship with one parent and an insecure representation of his or her relationship with the other parent. Moreover, one child may be more influenced by experiences with the mother, whereas the other sibling may be more influenced by experiences with the father. Thus, their generalized representations of their parents may be differentially influenced by the two relationships each has had. Even if each parent behaved consistently toward the two, the siblings' integrated representation of these relationships may not be fully concordant.

In our study of adolescent concordance, we found initial evidence that concordance in attachment appears to be greater when the two siblings both indicated that they were closer to the same parent or equally close to both parents. Future work with a larger sample is necessary to replicate this finding; it would be particularly interesting to compare the concordance in representations of attachment with both parents and concordance in representations of particular parents. If part of the reason for the modest concordance in representations is that siblings incorporate the representations of mothers and fathers differently in their overall representations of relationships with parents, then greater concordance may occur in the specific models of parents. If the modest concordance primarily reflects differences in representations of each parent, then we might expect similar modest levels of concordance in parent-specific representations.

More generally, one of the overarching themes of this volume is the question of the convergence and diversity of adolescents' representations or

working models (see Chapter One, this volume). As noted previously, representations of relationships can be conceptualized in terms of a hierarchical model with representations of particular relationships, types of relationships, and close relationships in general (Collins & Read, 1994; Furman & Simon, 1999). As yet, we know relatively little about what contexts elicit which types of representations. Moreover, the relevant representations may also differ as a function of the nature of parental relationships. In a family with no father figure available in adolescents' lives, representations of the relationship with mothers might be particularly salient. In a blended family in which adolescents may be subject to stepparent influences as well as parental influences, the nature of representations may also differ. Further work is needed in understanding differences in representations and what determines the salience of various representations.

Conclusion

In summary, we drew on fundamental principles of attachment to propose a simple model of attachment concordance in adolescent sibling pairs. A review of existing data with children revealed a modest to moderate level of concordance in attachment security; similarly, our own data on adolescents did not find any concordance in representations. These findings are troubling both because they suggest only a moderate or perhaps just modest level of concordance exists, and this concordance can be fully accounted for by parental representations of attachment. We discussed several explanations for this pattern of results and suggested a number of possible paths that could be included in a revised model of adolescent siblings' concordance of attachment. Moreover, we discussed the implications the body of findings has for attachment theory more generally. It is our hope that our examination of the facets and evidence of a simple model of concordance will lead to some new directions for research in this area.

References

Ahadi, S., & Diener, E. (1989). Multiple determinants and effect sizes, *Journal of Personality and Social Psychology, 56,* 398–406.

Ainsworth, M.D.S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation.* Mahwah, NJ: Erlbaum.

Ammaniti, M., Speranza, & Candelori, C. (1996). Stability of attachment in children and intergenerational transmission of attachment. *Psichiatria dell'Infancia e dell'Adolescenza, 63,* 313–332,

Belsky, J. (1997). Theory testing, effect-size evaluation, and differential susceptibility to rearing influence: The case of mothering and attachment. *Child Development, 68,* 598–600.

Belsky, J. (1999). Interactional and contextual determinants of attachment security. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 249–264). New York: Guilford Press.

Bernier, A., & Dozier, M. (2003). Bridging the attachment transmission gap: The role of maternal mind-mindedness. *International Journal of Behavioral Development, 27,* 355–365.

Bokhorst, C. L., Bakermans-Kranenburg, M. J., Fearon, R. M., van IJzendoorn, M. H., Fonagy, P., & Schuengel, C. (2003). The importance of shared environment in mother-infant attachment security: A behavioral genetic study. *Child Development, 74,* 1769–1782.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment.* New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anger and Anxiety.* New York: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss: Sadness and depression.* New York: Basic Books.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. *Monographs of the Society for Research in Child Development, 50* (1–2, Serial No. 209), 3–35.

Bretherton, I. (1993). From dialogue to internal working models: The co-construction of self in relationships. In C. A. Nelson (Ed.), *Minnesota Symposia in Child Psychology: Vol. 26. Memory and affect in development* (pp. 237–263). Mahwah, NJ: Erlbaum.

Caspi, A., Herbener, E. S., & Ozer, D. J. (1992). Shared experiences and the similarity of personalities: A longitudinal study of married couples. *Journal of Personality and Social Psychology, 62,* 281–291.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58,* 644–663.

Cox, M. J., Paley, B., & Harter, K. (2001). Interparental conflict and parent-child relationships. In J. Grych & F. Fincham (Eds.), *Child development and interparental conflict* (pp 249–272). Cambridge: Cambridge University Press.

Crowell, J. A., Treboux, D., & Waters, E. (2002). Stability of attachment representations: The transition to marriage. *Developmental Psychology, 38,* 467–479.

De Wolff, M., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68,* 571–591.

Fonagy, P., Gergely, G., Jurist, E. L., & Target, M. (2002). *Affect regulation, mentalization, and the development of the self.* New York: Other Press.

Fraley, R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuously or categorically distributed? A taxometric analysis of strange situation behavior. *Developmental Psychology, 39,* 387–404.

Furman, W., & Lanthier, R. (2002). Parenting siblings. In M. Bornstein (Ed.), *Handbook of parenting: Vol. 1. Children and parenting* (2nd ed., pp. 165–188). Mahwah, NJ: Erlbaum.

Furman, W., & Simon, V. A. (1999). Cognitive representations of adolescent romantic relationships. In W. Furman, B. B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 75–98). Cambridge: Cambridge University Press.

Furman, W., & Simon, V. A. (2004). Concordance in attachment states of mind and styles with respect to fathers and mothers. *Developmental Psychology, 40,* 1239–1247.

Furman, W., & Wehner, E. A. (1994). Romantic views: Toward a theory of adolescent romantic relationships. In R. Montmayer, G. R. Adams, & G. P. Gullota (Eds.), *Advances in adolescent development: Vol. 6. Personal relationships during adolescence* (pp. 168–175). Thousand Oaks, CA: Sage.

George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview.* Unpublished manuscript, University of California, Berkeley, CA.

George, C., & Solomon, J. (1996). Representational models of relationships: Links between caregiving and attachment. *Infant Mental Health Journal, 17,* 198–216.

Hamilton, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development, 71,* 690–694.

Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew & D. Perlman (Eds.), *Advances in personal relationships: Vol. 5. Attachment processes in adulthood* (pp. 151–178). London: Jessica Kingsley.

Hesse, E. (1999). The Adult Attachment Interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment theory and research* (pp. 395–433). New York: Guilford Press.

Kowal, A. K., Krull, J. L., & Kramer, L. (2004). How the differential treatment of siblings is linked with parent-child relationship quality. *Journal of Family Psychology, 18,* 658–665.

Lewis, M., Feiring, C. & Rosenthal, S. (2000). Attachment over time. *Child Development, 7,* 707–720.

Loehlin, J. (2004). *Latent variable models: An introduction to factor, path, and structural equation models* (4th ed.). Mahwah, NJ: Erlbaum.

MacCallum, R. C., Zhang, S., & Preacher, K. J. (2002). On the practice of dichotomization of quantitative variables. *Psychological Methods, 7,* 19–40.

Main, M. (1999). Epilogue: Attachment theory: Eighteen points with suggestions for future studies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 845–888). New York: Guilford Press.

Main, M., & Goldwyn, R. (1984). *Adult attachment scoring and classification systems.* Unpublished manuscript, University of California at Berkeley.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. *Monographs of the Society for Research in Child Development, 50* (1–2, Serial No. 209), 66–106.

Mayseless, O. (Ed.). (2006). *Studying parenting representations as a window to parents' internal working model of caregiving.* Cambridge: Cambridge University Press.

McCartney, K., Harris, M. J., & Benieri, F. (1990). Growing up and growing apart: A developmental meta-analysis of twin studies. *Psychological Bulletin, 107,* 226–237.

Meins, E. (1999). Sensitivity, security, and internal working models: Bridging the transmission gap. *Attachment and Human Development, 1,* 325–342.

O'Connor, T. G., & Croft, C. M. (2001). A twin study of attachment in preschool children. *Child Development, 72,* 1501–1511.

Rowe, D. C., & Plomin, R. (1981). The importance of nonshared (E1) environmental influences in behavioral development. *Developmental Psychology, 17,* 517–531.

Rutter, M. (2000). Psychosocial influences: Critiques, findings, and research needs. *Development and Psychopathology, 12,* 375–405.

Slade, A., Belsky, J., Aber, J. L., & Phelps, J. L. (1999). Mothers' representations of their relationships with their toddles: Links to adult attachment and observed mothering. *Developmental Psychology, 35,* 611–619.

Slade, A., Grienenberger, J., Bernbach, E., Levy, D., & Locker, A. (2005). Maternal reflective functioning, attachment, and the transmission gap: A preliminary study. *Attachment and Human Development, 7,* 283–298.

Solomon, J., & George, C. (1999). The measurement of attachment security in infancy and childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment theory and research* (pp. 287–318). New York: Guilford Press.

Sroufe, L. A. (1985). Attachment classification from the perspective of infant-caregiver relationships and infant temperament. *Child Development, 56,* 1–14.

Teti, D. M., Sakin, J., Kucera, E., Corns, K. M., & Eiden, R. D. (1996). And baby makes four: Predictors of attachment security among preschool-aged firstborns during the transition to siblinghood. *Child Development, 67,* 579–596.

Touris, M., Kromelow, S., & Harding, C. (1995). Mother-firstborn attachment and the birth of a sibling. *American Journal of Orthopsychiatry, 65,* 293–297.

Treboux, D., Crowell, J. A., & Waters, E. (2004). When "new" meets "old": Configurations of adult attachment representations and their implications for marital functioning. *Developmental Psychology, 40,* 295–314.

Van IJzendoorn, M. (1995). Adult attachment representations, parental responsiveness, and infant attachment on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117,* 387–403.

Van IJzendoorn, M., Moran, G., Belsky, J., Pederson, D., Bakermans-Kranenburg, M. J., & Kneppers, K. (2000). The similarity of siblings' attachments to their mother. *Child Development, 71,* 1086–1098.

Ward, M., Vaughn, B. E., & Robb, M. D. (1988). Social-emotional adaptation and infant-mother attachment in siblings: Role of the mother in cross-sibling consistency. *Child Development, 59,* 643–651.

Waters, E., Kondo-Ikemura, K., Posada, G., & Richters, J. E. (1991). Learning to love: Mechanisms and milestones. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development* (pp. 217–255). Mahwah, NJ: Erlbaum.

Waters, E., Merrick, C., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development, 71,* 684–689.

Weinfield, N. S., Sroufe, A. L., & Egeland, B. (2000). Attachment from infancy to early adulthood in a high-risk sample: Continuity, discontinuity, and their correlates. *Child Development, 71,* 695–702.

Zeanah, C. H., & Benoit, D. (1995). Clinical applications of a parent perception interview in infant mental health. *Child and Adolescent Psychiatric Clinics of North America, 4,* 539–554.

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