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Sensitive attunement to infants’ internal states: operationalizing the construct of mind-mindedness

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This paper focuses on caregiver sensitivity, its relation to mind-mindedness (caregivers’ attunement to their infants’ internal states), and how well both constructs predict infant attachment security. The seminal Baltimore research on sensitivity and its relation to attachment security is summarized, highlighting the conclusion that mothers in the insecure-resistant and insecure-avoidant categories could not be distinguished on the basis of sensitivity. The contrast between the complex, sophisticated construct detailed in the original studies and the broad-based nature of the sensitivity coding scale is discussed. This paper argues that we should return to Ainsworth, Bell, and Stayton’s (1971, 1974) original emphasis on the caregiver’s ability to perceive things from the child’s point of view in defining a measure of the quality of early infant–caregiver interaction. This approach led to the development of the construct of mind-mindedness. There are two mind-mindedness indices: caregivers’ tendency during infant–caregiver interaction to (a) comment appropriately on their infants’ putative thoughts and feelings (appropriate mind-related comments), and (b) misread their infants’ internal states (non-attuned mind-related comments). Both indices predict independent variance in infant–caregiver attachment security, and together can distinguish between the secure, avoidant, and resistant categories. The specific, multidimensional nature of mind-mindedness complements the global construct of sensitivity.

Keywords: sensitivity; infant; mother; observation; mind-mindedness; attachment

The observational work of Ainsworth and colleagues in the 1960s and 1970s revolutionized our understanding of early infant–caregiver interaction. Although her name is now synonymous with attachment security and the strange situation (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth & Wittig, 1969), Ainsworth’s research on the quality of infant–mother interaction in the first year of life has made an equally important contribution to the field of developmental psychology. Even in her early work with Bowlby and Robertson in London in the 1950s, Ainsworth was interested in how individual differences in infant behavior were rooted in the quality of interaction between the infant and mother. This interest took shape in her first empirical studies as an independent researcher, which detailed different patterns of interactional behavior in mothers and infants in Uganda (Ainsworth, 1963, 1967). This ground-breaking work laid the foundations for the research she conducted in Baltimore from which the concept of maternal sensitivity developed (Ainsworth, Bell, & Stayton, 1971, 1974).

This paper will argue that subsequent research had tended to lose focus on Ainsworth’s conception of what constitutes sensitivity, and propose that a fuller understanding of how early infant–caregiver interaction predicts children’s later development

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can be achieved by returning to its original definition. Ainsworth’s painstaking descriptions of individual differences in mothers’ ability to respond sensitively towards their young infants inspired our own research on the construct of maternal mind-mindedness (Meins, 1997). In defining mind-mindedness and developing a scheme for coding caregivers’ mind-minded comments, we sought to embody the essence of Ainsworth’s sensitivity concept in a new measure of the quality of infant–mother interaction.

**Defining maternal sensitivity**

Ainsworth’s early empirical research in Baltimore involved intensive, home-based observations of 26 infant–mother pairs who participated in 4-hour long observations conducted at 3-weekly intervals throughout the first year of life (Ainsworth & Bell, 1969; Ainsworth et al., 1971, 1974). Detailed narrative transcripts were made to evaluate observed mother–infant behavior and also mothers’ spontaneous and interview-based views about their infants. The frequency and scope of these observations remains unsurpassed in the literature and gave Ainsworth and her colleagues a unique insight into individual differences in early mother–infant interaction.

Ainsworth and Bell (1969) rated mothers’ behavior in the first 3 months of life according to 22 different scales, although they reported on only six of these: mother’s perception of the baby, mother’s delight in the baby, mother’s acceptance of the baby, appropriateness of mother’s interaction with the baby, amount of physical contact, and effectiveness of mother’s response to baby’s crying. In order to quantify common features of these six maternal behaviors, Ainsworth et al. (1971, 1974) devised a scale for assessing maternal sensitivity, the construct they believed was the core component of the six behaviors that Ainsworth and Bell (1969) reported on. Sensitivity was defined as the mother’s “ability to perceive and to interpret accurately the signals and communications implicit in her infant’s behaviour, and given this understanding, to respond to them appropriately” (Ainsworth et al., 1974, p. 127). The 9-point sensitivity scale involves five anchor points: (1) highly insensitive, (3) insensitive, (5) inconsistently sensitive, (7) sensitive, and (9) highly sensitive. Behaviors indicative of each anchor point on the scale are described in a paragraph of text. Ainsworth et al. (1971) used this scale to assess maternal sensitivity in the last quarter of the first year of life.

On both the individual scales and the measure of global sensitivity, Ainsworth and colleagues reported wide-ranging variance, highlighting for the first time how differently mothers approach the task of caregiving. As well as describing and assessing these individual differences in interactional behavior, these early studies also explored whether early maternal behavior was able to predict the quality of the subsequent infant–mother attachment relationship. Ainsworth and Bell’s (1969) study was the first to suggest a link between maternal behavior in the first year of life and children’s later attachment security as assessed in the strange situation procedure.

The original strange situation procedure classifies infants into one of three main categories on the basis of their response to reunion with the caregiver after short periods of separation: secure, insecure-avoidant, and insecure-resistant. These three categories are further sub-divided. There are four sub-groups in the secure category (B1, B2, B3, B4) to identify infants that are securely attached but with differing levels of the two insecure behaviors. For example, B1 infants show evidence of mild avoidance, whereas B4 infants show mild resistance; infants in the B3 category are regarded to be optimally secure. The insecure-avoidant and insecure-resistant categories both have two sub-groups, with groups A1 and C1 indicating the most pronounced avoidance and resistance respectively.
Ainsworth and Bell (1969) reported that on all six of their scales, higher scores distinguished secure-group mothers from their counterparts in the avoidant and resistant groups. However, avoidant- and resistant-group mothers did not differ from one another on any of these indices. Ainsworth et al. (1971) replicated these precise findings using the sensitivity measure to assess the quality of interaction in the final quarter of the first year of life: secure-group mothers were more sensitive than were those in the two insecure groups, but avoidant- and resistant-group mothers could not be distinguished on the basis of sensitivity.

Although this early research is very well known, it is interesting to note that several subtleties in these original findings have tended to be lost in the subsequent literature on infant–caregiver interaction and its association with attachment. The Ainsworth et al. (1971) original figure depicting their results is reproduced in Figure 1. The most obvious thing to note from Figure 1 is that maternal behavior was not only assessed with respect to sensitivity. Ainsworth et al. (1971) developed three additional 9-point scales in an attempt to identify maternal behaviors that might better characterize mothers in the avoidant and resistant groups. These additional scales focused on the dimensions of acceptance–rejection, co-operation–interference, and accessibility–ignoring. As Figure 1 shows, acceptance–rejection was the only scale that appeared to distinguish avoidant- from resistant-group mothers. However, differences between the groups were not analyzed statistically, so it is not possible to establish whether mothers in the two insecure groups differed significantly from one another with respect to this variable.

A second thing to note from Figure 1 is that only the mothers of infants in the optimally secure B3 group scored above 7 and could thus be termed “sensitive”. In contrast, mothers of infants in the B1 and B2 groups did not score highly enough even to be classified as “inconsistently sensitive” (i.e., a score of 5). Ainsworth et al. (1971) had no B4 infants in their sample, so their level of sensitivity was unknown. Pooling the group data results in a mean sensitivity score of 5.93 for secure-group mothers which, although higher than those of mothers in the avoidant ($M = 2.63$) and resistant ($M = 2.38$) groups, is well short of the “sensitive” score.

Ainsworth et al. (1971, 1974) thus concluded that mothers in the avoidant and resistant groups could not be differentiated on the basis of sensitivity, and these original findings have been replicated many times. For example, Stifter, Couleham, and Fish (1993) reported that maternal sensitivity failed to predict attachment security at the

![Figure 1. Ainsworth et al. (1971) original figure showing mothers’ mean behavior scores as a function of attachment security. Reprinted from Ainsworth et al. (1971), with kind permission of the authors.](image-url)
three-way (secure, avoidant, resistant) level, as did Egeland and Farber (1984) for the girls in their sample. Isabella (1993) found that maternal sensitivity at 1 month predicted later three-way attachment security (although sensitivity scores of mothers in the avoidant and secure groups did not differ), but the sensitivity measures taken at 4 months and 9 months (the ages most closely matching the infants in the studies of Ainsworth & Bell, 1969, and Ainsworth et al., 1971) did not predict three-way attachment security; indeed the 9-month sensitivity scores did not predict attachment even at the dichotomous (secure/insecure) level. In their meta-analysis of 66 studies, De Wolff and van IJzendoorn (1997) concluded that there was a moderate predictive relation between sensitivity and attachment security, but that, without Ainsworth et al.’s original sample, “the solid scientific fact of a moderately strong causal association between sensitivity and attachment would not have been established” (p. 585). Yet despite providing the strongest evidence for this link, Ainsworth and her colleagues themselves realized that sensitivity could not predict security at anything more fine-grained than a secure/insecure dichotomous split, hence their development of additional scales to assess other aspects of maternal behavior.

One reason why subsequent studies have failed to replicate the strength of association between sensitivity and dichotomous attachment security reported in Ainsworth et al.’s original sample may be the fact that many researchers have assessed sensitivity in the context of a brief, laboratory-based interaction. As discussed above, the sensitivity scale was developed from extensive home-based observations conducted longitudinally, enabling coders to have a much more complete picture of the quality of the interaction between mother and child. To recapture some of this richness, Pederson et al. (1990) developed the Maternal Behavior Q-Sort (MBQS) to assess maternal sensitivity on the basis of a home visit lasting around 2 hours. Research using the MBQS has reported effect sizes of similar magnitude to those found in Ainsworth et al.’s original sample with respect to the relation between sensitivity and dichotomous attachment security (Pederson, Gleason, Moran, & Bento, 1998). The Pederson et al. (1998) study also replicated the Ainsworth et al. (1971) finding that sensitivity could not predict attachment security at the three-way level, although, in this later study, it was mothers in the secure and resistant groups who could not be distinguished on the basis of their MBQS sensitivity scores.

Multiple assessments of caregiver behavior

As discussed above, Ainsworth et al. (1971, 1974) operationalized three scales in addition to sensitivity in order to attempt to distinguish between mothers of infants with insecure-avoidant and insecure-resistant attachments, with acceptance–rejection being the dimension on which secure-, avoidant-, and resistant-group mothers appeared most clearly to differ (see Figure 1). However, scores on the sensitivity and acceptance–rejection scales were highly positively correlated, suggesting that both scales were assessing the same underlying construct. Ainsworth et al. (1971) reported a coefficient of .89 for this correlation, which is remarkably high. These findings thus present something of a paradox in that both scales assess the same aspect of maternal behavior, but the acceptance–rejection scale appears better able to distinguish between the three attachment groups.

While one can debate which of the original scales should have attained prominence, the reason behind the desire to focus on a single dimension of behavior is uncontentious. If one had to assess infant–caregiver interaction using multiple scales, each of which needs to be coded by independent researchers who can demonstrate good levels of reliability, conducting research on a reasonably large sample within a tolerable timescale would become largely untenable. A small number of studies have, however, assessed
more atypical forms of parenting (e.g., hostility, intrusion, coercion, withdrawal/disen-
gagement) in addition to traditional sensitivity in order to attempt to predict attachment
security at a three-way level. Isabella (1993) found that maternal rejection (a composite
measure including hostility, frustration, anger, and interfering manipulation) at age 1
month was associated with insecure-resistant attachment, whereas the exact same measure
at age 9 months was associated with insecure-avoidant attachment. Isabella and Belsky
(1991) reported that intrusive and ignoring behaviors were characteristic of avoidant-
group mothers, whereas resistant-group mothers appeared unable to coordinate their
response with the infant’s cue. However, these results do not provide compelling evidence
for specific differences in the interactional behavior of mothers in the insecure-avoidant
and insecure-resistant groups.

More recent studies have investigated how sensitivity and atypical parenting predict
attachment security and attachment disorganization. Main and Solomon (1986, 1990)
defined a fourth pattern of attachment (insecure-disorganized) to classify infants whose
strange situation behavior did not fit with any of three original categories (secure,
avoidant, resistant) and appeared to lack any clear strategy for organizing their attachment
behaviors. Studies by Tomlinson, Cooper, and Murray (2005) and Moran, Forbes, Evans,
Tarabulsy, and Madigan (2008) reported that atypical parenting behavior predicted secure/
insecure and organized/disorganized attachment independently of sensitivity, highlighting
the utility of including additional assessments of caregiver behavior.

However, including the disorganized category causes further problems for obtaining a
clear picture of the predictive relationship between caregiver behavior and attachment
security. Rather than establishing how indices of caregiver behavior relate to the four
individual categories of attachment security, researchers typically report on how caregiver
behavior predicts dichotomous organized/disorganized attachment. Since the organized
category includes infants in the secure, avoidant, and resistant groups, this precludes any
understanding of differences in caregiver behavior among these three organized forms of
attachment. Thus, neither the Tomlinson et al. (2005) nor the Moran et al. (2008) study
speaks to the issue of whether multiple assessments of caregiver behavior help to
distinguish between infants in the insecure-avoidant and insecure-resistant groups.
Consequently, despite decades of research, the picture of the relation between early
maternal interactional behavior and the three organized patterns of attachment security
is no clearer than when Ainsworth and colleagues first published their results.

Sensitivity: the concept versus the scale

Given Ainsworth and colleagues’ original finding that sensitivity could not distinguish
between mothers of avoidant and resistant infants (despite these two patterns of attach-
ment being strikingly different), the way in which the sensitivity construct has become
inextricably linked with attachment is rather puzzling. Moreover, viewing sensitivity only
in terms of its ability to predict attachment security ignores the powerful contribution
sensitivity can make to our understanding of early infant–mother interaction. Even if
sensitivity had been found to have no predictive utility, it would remain a vitally important
index of individual differences in the quality of early infant–caregiver interaction.

It is interesting to note that, from the outset, Ainsworth and her colleagues were aware
of the likelihood that subsequent researchers would take shortcuts and use strange
situation classifications as proxies for the quality of early infant–mother interaction: “In
view of the expensive and very time-consuming nature of longitudinal research, it is an
attractive notion that one might in a 20-minute procedure [the strange situation] obtain a
reasonably reliable and valid assessment of the nature of the relationship that has developed between an infant and his mother” (Ainsworth et al., 1971, p. 19). Over 40 years later, this statement seems particularly prescient. The strange situation is often the earliest measure taken in longitudinal research, ignoring the richness of interaction in the first year of life that Ainsworth et al.’s research so eloquently described. In an interview conducted in 1994, Ainsworth remarked: “I have been quite disappointed that so many attachment researchers have gone on to do research with the strange situation rather than looking at what happens in the home or in other natural settings” (Ainsworth & Marvin, 1995, p. 12). When earlier sensitivity is assessed, it is often viewed merely as a precursor of full-blown attachment relationships; sensitivity has thus not received the research attention it deserves in its own right.

If, as Ainsworth et al. (1971) suggested, attachment security is a construct whose success is founded on the simple but effective way in which it can be assessed, the exact opposite could be argued of maternal sensitivity. In their early writing, Ainsworth and colleagues described a highly sophisticated construct. Ainsworth et al. (1971) defined the sensitive mother as being “capable of perceiving things from [the child’s] point of view” and respecting the child “as a separate person” (p. 43). In contrast, the insensitive mother was characterized as trying to “socialize with the baby when he is hungry, play with him when he is tired, and feed him when he is trying to initiate social interaction” (Ainsworth et al., 1974, p. 129). This highlights how the sensitive mother does not merely respond to cues from her child; she responds in a way that indicates she is able to “read” the cues appropriately and represent the child’s needs and wishes. The description of the insensitive mother shows that she does not simply ignore the child’s cues, but rather cannot interpret them in terms of the child’s underlying needs and so responds in a way that is mismatched to the child’s cue. Thus, a sensitive response is possible because the mother has extensive knowledge of the child, accumulated via careful observation of what cues have meant in the past, what responses have been successful in dealing with such cues, and so on. In other words, the sensitive mother recognizes the cue as indicating a particular state in the child, responds in a way that usually satisfies the child’s need or desire, and monitors her child’s response on this occasion to ensure that she has read the initial cue correctly. Consequently, one can only designate a maternal behavior as sensitive if one views the mother–infant dyad, rather than the individual mother, as the unit of analysis.

The complexity and dyadic nature of sensitivity was not, however, translated effectively into Ainsworth et al.’s (1971, 1974) sensitivity scale. A short narrative description for each of the five anchor points on the scale is all that is provided. These descriptions use a wide range of terms to describe infant cues: “subtle”, “minimal”, “understated”, “clear”, “definite”, “forceful”, “compelling”, “intense”, “prolonged”, and “repeated”. The caregiver’s perception of the infant’s cue is also described in various different ways: “attuned”, “appropriate”, “accurate”, “inappropriate”, “inaccurate”, and “distorted”. Finally, in order to assign a sensitivity score, it is necessary to interpret the motives underlying the mother’s response; the scale requires one to calculate whether the caregiver fails to comply with a cue because she feels that the infant “is too excited, over-imperious, or wants something he should not have” (Ainsworth et al., 1974, p. 131) or because “it is inconvenient or she is not in the mood for it, or because she is determined not to ‘spoil’ him” (Ainsworth et al., 1974, p. 133). The former is a description of the “highly sensitive” mother, whereas the latter describes the “insensitive” mother. No further details or behavioral examples are given to help anyone using the sensitivity scale to distinguish among these different infant cues or the mother’s behaviors and underlying motivations. If, like Ainsworth and colleagues, one had spent countless hours observing each dyad and
becoming highly familiar with the mother and infant, these fine-grained distinctions would be easier to make. However, researchers who have used the scale in the intervening years have typically assessed sensitivity from short observations that are often conducted only once, which makes correctly interpreting subtle differences in infant cues and the motivations for the mother’s behavior considerably more challenging.

The global and interpretative nature of the original scale may be one reason why sensitivity has gradually become an umbrella concept for numerous aspects of early infant–caregiver interaction. For example, over half of the studies included in De Wolff and van IJzendoorn’s (1997) meta-analysis on sensitivity and attachment assessed caregiver behavior along dimensions such as the temporal contiguity of the caregiver’s response to the infant, or the amount of support or stimulation the caregiver provided. As Meins, Fernyhough, Fradley, and Tuckey (2001) noted, these aspects of caregiver behavior have lost the focus on the appropriateness of the response that was so central to Ainsworth et al.’s (1971, 1974) description of the sensitive caregiver.

Returning to Ainsworth’s original conception of what constitutes sensitivity and insensitivity provided the impetus for our own operationalization of the quality of infant–caregiver interaction in the first year of life: mind-mindedness. Mind-mindedness is defined as caregivers’ tendency to treat their young children as individuals with minds of their own, and enables caregivers to “tune in” to what their infants may be thinking or feeling. Meins et al. (2001) focused on the core features of sensitivity – awareness and accurate interpretation of the infant’s cues, and appropriate and prompt response to them – in developing the construct of mind-mindedness in the first year of life. Our previous research had highlighted individual differences in mothers’ attributions of mindful behavior to their children, defining mind-mindedness in terms of mothers’ tendency (a) spontaneously to focus on their preschoolers’ mental characteristics when given an open-ended invitation to describe their child (Meins, Fernyhough, Russell, & Clark-Carter, 1998), and (b) to interpret their 20-month-olds’ non-word utterances as having meaning (Meins, 1998). The first aim of the 2001 study was to establish potential ways in which caregivers could demonstrate mind-mindedness in the first year of life.

Our aim in developing the mind-mindedness coding scheme was to provide researchers with a tool that was suitable for assessing relatively brief, laboratory-based interactions, giving clear descriptions of a number of discrete behaviors that could be quantified. While less naturalistic than the home environment, we reasoned that the laboratory provides the clearest test of whether a caregiver can perceive things from the infant’s point of view. In the laboratory, the mother does not have to divide her attention between the infant and other activities, and the infant is likely to be alert and ready to interact – insensitivity to the child’s cues when the caregiver’s only task is to interact with the child is thus more striking than an insensitive response when the caregiver is attempting to complete tasks around the home in addition to caring for the child.

In order to develop the mind-mindedness measure, Meins et al. (2001) observed mothers and their 6-month-olds interacting in a free-play session in which the only instruction was for the mother to play with her baby as she would if they had spare time together at home. Several behaviors that could index mind-mindedness were identified: (a) response to change in the infant’s gaze direction, (b) response to the infant’s object-directed activity, (c) imitating the infant, and (d) encouraging autonomy in the infant. These responses indicated that the mother believed her child’s behavior was intentional and goal-directed, and thus implied treating the infant as an individual with a mind of their own. For example, a mother would not name or fetch a toy in response to the infant looking at it or gesturing toward it if she did not interpret the child’s gaze or
gesture as being meaningful. Similarly, a mother would not imitate a child’s facial expression or manipulation of a toy, or encourage the child to perform a behavior autonomously, if she did not view the child as being capable of intentional behavior.

These types of maternal response were expected, but the final mind-mindedness category – appropriate mind-related comments – indexed a somewhat more surprising maternal behavior. Despite the fact that the infants were only 6 months of age, the vast majority of mothers commented on what their infants might be thinking or feeling. As well as commenting on likes and desires, mothers talked about their infants’ cognitive processes (e.g., memory, recognition, decision-making), emotional reactions (e.g., surprise, excitement, happiness), and some mothers even attributed sophisticated mental states such as joking and teasing to their 6-month-olds.

Mind-related comments focus exclusively on the mother’s attributions about the infant’s internal state; attributions about the internal states of any other individual are not included in this category. Mind-related comments involve the mother voicing out loud what might be going on in her child’s mind, and thus provide the most obvious indication that the mother is representing the infant’s thoughts and feelings. To be classified as appropriate, the mind-related comment has to (a) indicate an internal state that appeared consistent with the infant’s current behavior (e.g., stating that the infant liked or was interested in a toy with which they were playing), (b) link current behavior with a similar event in the past or future (e.g., “You remember going to the farm” while the child was playing with toy farm animals), or (c) clarify how to proceed after a lull in the interaction (e.g., “You’ll like this book”). Comments where the mother “put words into the child’s mouth” so that the mother’s speech became a dialogue are also classified as appropriate mind-related comments. Caregivers receive scores for each category of mind-mindedness that can be expressed as basic frequency measures or as a proportion of the caregivers’ overall amount of speech to control for verbosity.

Mind-mindedness, with its focus on quantifying specific aspects of caregiver behavior, thus complements the global assessment of the interaction as a whole that is provided by Ainsworth et al.’s (1971, 1974) maternal sensitivity scale. In order to establish how the mind-mindedness indices related to traditional sensitivity, Meins et al. (2001) additionally assessed the free-play interactions using Ainsworth et al.’s scale and coding procedure. Sensitivity was positively correlated with all of the mind-mindedness indices apart from encouragement of autonomy. The strongest relations with sensitivity were observed for response to infant gaze and appropriate mind-related comments, suggesting that these variables were tapping into similar aspects of sensitive responsiveness, although the size of the coefficients ($r = .40$) indicated that these variables were by no means equivalent.

The final aim of Meins et al.’s (2001) study was to explore whether mind-mindedness predicted attachment security as assessed in the strange situation at age 12 months. Given the relatively small sample size ($N = 71$), attachment security was treated as a dichotomous variable (secure/insecure) in the main analyses. When the five mind-mindedness indices were entered into a logistic regression, only appropriate mind-related comments predicted attachment security. A second regression investigated whether appropriate mind-related comments and maternal sensitivity independently predicted attachment security. Appropriate mind-related comments accounted for 12.7% of the variance in dichotomous attachment security over and above the variance predicted by sensitivity (6.5%). These findings thus showed that, although positively correlated with traditional sensitivity, this index of mind-mindedness was an independent predictor of infant–mother attachment security, providing the first evidence that maternal attunement specifically to infants’ internal states facilitates secure attachment.
This link between appropriate mind-related comments and attachment security has been replicated in independent samples (Laranjo, Bernier, & Meins, 2008; Lundy, 2003). However, due to the fact that these studies assessed attachment using the Attachment Q-Sort (Waters, 1995), which does not classify infants into attachment categories, it was not possible to establish whether appropriate mind-related comments could distinguish among infants in the secure, insecure-avoidant, and insecure-resistant groups.

**Mind-mindedness as a multi-dimensional construct**

The promising results of Meins et al.’s (2001) study prompted us to explore the construct of mind-mindedness and its relation with sensitivity and attachment in greater detail. Ainsworth et al.’s (1971, 1974) four maternal behavior scales were all unidimensional, with the two poles of these original scales — sensitivity—insensitivity, acceptance—rejection, cooperation—interference, accessibility—ignoring — representing opposite ends of the same behavioral dimension. It thus makes no sense to assess both sensitivity and insensitivity, or acceptance and rejection, because one would simply be measuring the same core behavior twice: it is meaningless to assess the sensitivity of a behavior if it has already been classified as insensitive.

In the 2001 study, we similarly treated mind-related comments as a unidimensional construct, focusing solely on mind-related comments that were appropriate attributions of the infant’s likely internal state. However, not all mind-related comments were deemed to be appropriate; we also defined criteria for classifying mind-related comments that were not attuned to the infant’s internal state. A comment was coded as non-attuned if (a) the attributed internal state appeared at odds with the infant’s behavior (e.g., stating the infant disliked or was bored with a toy while the infant was actively playing with it), (b) the internal state relating to the infant’s past or future behavior was unrelated to the infant’s current behavior (e.g., commenting on a food that the infant loved while the infant was playing with a ring-stack toy), (c) the mother queried what the infant wanted when the infant was already clearly engaged in an activity, or (d) the referent of the internal state was not clear (e.g., stating the infant liked something when there was no obvious object or activity to which this comment could refer). As for appropriate mind-related comments, caregivers receive a score for the total number of non-attuned comments made during the observation, and this can be expressed either as a frequency score or as a proportion of the total amount of maternal speech. If the caregiver makes non-attuned comments, the infant is likely to experience the interaction as disjointed and non-collaborative, whereas infants will experience a sense of partnership and attunement if the caregiver comments appropriately on their internal states.

Meins et al. (2001) did not consider the possibility that appropriate and non-attuned mind-related comments might relate to sensitivity and security in different, independent ways, and none of the analyses in this paper involved non-attuned comments. In retrospect, it seems obvious that we should also have reported on non-attuned comments, but our aim in this first paper was to focus explicitly on the appropriateness of response (the core feature of sensitivity) in defining the mind-mindedness indices. However, subsequent papers reporting on this sample suggested that appropriate and non-attuned mind-related comments do not represent opposite poles of a unidimensional scale.

For example, in a follow-up study investigating relations between early mind-mindedness and children’s mentalizing abilities in the preschool years, Meins et al. (2003) reported that the two indices of mind-mindedness were unrelated \( (r = .08) \). Moreover, Meins et al. (2003) reported that non-attuned mind-related comments were
unrelated to maternal sensitivity as assessed on Ainsworth et al.’s (1971, 1974) scale, in contrast to the positive correlation between appropriate mind-related comments and sensitivity that was observed in this sample (Meins et al., 2001). Given that the two forms of mind-related comments appear to tap into unrelated facets of the caregiver’s tendency to treat the infant as an individual with a mind, the assumption that appropriate and non-attuned mind-related comments represent opposite poles of the same behavioral dimension may not be well founded. The potential multidimensional nature of mind-mindedness was thus explored in a larger-scale study, involving an entirely new sample of infants and mothers (Meins et al., 2012). We argued that by assessing caregivers’ mind-related comments, and distinguishing between those that were appropriate versus non-attuned to the infant’s internal state, it was possible to measure the quality of infant–caregiver interaction along two distinct dimensions within one coding system. Given that appropriate mind-related comments are positively correlated with scores on Ainsworth et al.’s (1971, 1974) sensitivity scale, this index of mind-mindedness can be seen to assess the type of engagement with and responsivity to the child’s cues that is the hallmark of traditional sensitivity. In contrast, comments that betray a misreading of the infant’s internal state appear to index a form of caregiver behavior that is orthogonal to traditional conceptualizations of sensitivity. Only by taking into consideration what the caregiver says about the infant’s internal state can this distinction be made.

Meins et al. (2012) highlighted the fact that non-attuned mind-related comments index subtle failures in caregivers’ attunement to their infants’ internal states that are likely to be missed by coding schemes that assess more overtly insensitive or atypical caregiving behavior, such as those used by Tomlinson et al. (2005) and Moran et al. (2008). To illustrate the greater clarity in interpreting the quality of caregiver behavior that is afforded by assessing caregivers’ mind-related comments, we used the example of a mother who withdraws a toy car when her young infant calmly turns away from it. If one focuses solely on the caregiver’s behavior, withdrawing the toy is likely to be coded as a sensitive response. However, suggesting alternative types of mind-related comment that could accompany withdrawing the toy gives a different flavor to the quality of this same caregiver behavior. Imagine that the mother said, “The toy scared you” or “You really don’t like playing with me” as she withdrew the toy; here, one would have to conclude that the mother has misrepresented the underlying internal state governing the infant’s calm turning away. Conversely, if the mother commented that the infant did not want or was not interested in the toy as she withdrew it, this would appear to be an appropriate attribution of what the infant was thinking or feeling.

The mismatch between sensitivity and the non-attuned nature of the caregiver’s speech can also be illustrated by responses to infant distress. An infant in the 2012 study toppled over, hurt his cheek on a toy, and began to cry. The mother promptly picked the infant up and attempted to comfort him, and this response was coded as sensitive. However, while comforting the child, the mother stated repeatedly that the infant was crying because he was “grumpy and tired”, thus misattributing the true cause of the infant’s distress, despite having witnessed her child injure himself. Conversely, it is possible for a caregiver accurately to read the infant’s internal state but be unable to use this information to act in a sensitive manner. For example, Pawlby et al. (2010) investigated mind-mindedness in a sample of mothers who had been hospitalized for a range of severe mental illnesses. They described a mother who accurately commented that her child was “fascinated” by the strap on the baby seat, but said this in a very irritated voice because she wanted the child to look at and interact with her rather than play with the strap.
Meins et al.’s (2012) study involved a new sample of 206 infant–mother pairs who were observed in a free play interaction when the infants were aged 8 months. These interactions were coded for mind-mindedness using Meins et al.’s (2001) scale, yielding scores for appropriate and non-attuned mind-related comments. As reported for our previous sample (Meins et al., 2003), we found that appropriate comments were considerably more frequent than were non-attuned comments. The free play interactions were also assessed for maternal sensitivity using Ainsworth et al.’s (1971, 1974) scale and coding procedure. Meins et al. (2012) replicated previous findings that (a) appropriate and non-attuned mind-related comments are unrelated ($r = .07$), (b) appropriate mind-related comments are positively correlated with sensitivity ($r = .39$), and (c) non-attuned mind-related comments are not related to sensitivity ($r = .04$). Indeed, the correlation coefficients were almost identical to those reported in Meins et al.’s (2001, 2003) previous study.

These subtleties in attunement and lack of attunement to the infant’s internal states that are highlighted by coding caregivers’ mind-related speech can help explain the pattern of relations observed between the two mind-mindedness indices and sensitivity. Depending on the nature of the accompanying mind-related comment, a seemingly sensitive behavior can be classified as appropriate or non-attuned. Conversely, a seemingly insensitive behavior can potentially be accompanied by an appropriate mind-related comment, as Pawlby et al. (2010) demonstrated in their study on mothers with severe mental illness. The lack of association between traditional sensitivity and non-attuned mind-related comments, and the relatively modest strength of the relation between sensitivity and appropriate mind-related comments – particularly in contrast to the extremely high positive correlations among Ainsworth et al.’s (1971) original scales – are thus not surprising.

**Mind-mindedness and attachment security**

Considering the possibility that the two indices of mind-mindedness might independently predict the quality of the caregiver–child relationship also provided grounds for hypothesizing ways in which the multidimensional nature of mind-mindedness might help predict attachment security across all four categories (secure, avoidant, resistant, disorganized). Meins et al. (2012) hypothesized that different combinations of high versus low scores for appropriate and non-attuned mind-related comments could help distinguish among caregivers in the four attachment groups. We expected to replicate Meins et al.’s (2001) finding that secure-group mothers scored highly for appropriate mind-related comments. With respect to non-attuned comments, Ainsworth et al.’s (1971) characterization of secure-group mothers as being highly sensitive, accepting, cooperating, and accessible led to the prediction that secure attachment would be associated with low levels of non-attuned mind-related comments.

Ainsworth et al.’s (1971) results indicated that rejection characterized mothers of insecure-avoidant infants. We thus predicted that avoidant-group mothers would score low on appropriate mind-related comments due to their inability or unwillingness to engage with or respond to the child’s needs. Avoidant-group mothers were also predicted to score highly on non-attuned mind-related comments because of their documented tendency to follow their own agenda rather than respond to cues from the child. For example, Ainsworth et al. (1971) described avoidant-group mothers as “quite unable … to be guided by the baby’s display of initiative [discounting] the baby’s communications … as relevant guidelines” (p. 44). One could thus imagine that these mothers would be more likely to make non-attuned comments due to the fact that they imposed their own thoughts or feelings on the child, rather than recognizing that the infant may be thinking or feeling
something entirely different. For example, a mother might comment that her infant no longer wanted a toy, despite the fact that the infant was still actively engaged in playing with it, because she herself wished the child to move onto another activity.

Mothers of resistant infants were predicted to have a third profile of appropriate and non-attuned mind-related comments. Ainsworth et al. (1971) described the caregiving of resistant-group mothers as being inconsistent, although these mothers “had a strong emotional investment in the maternal role … [and] gloried in being mothers” (p. 44). These mothers scored moderately highly with respect to acceptance of the child’s cues, but nevertheless scored low on sensitivity, cooperation, and accessibility. Meins et al. (2012) thus predicted that resistant-group mothers might score highly on both indices of mind-mindedness because acceptance is likely to be accompanied by appropriate mind-related comments, whereas their tendency to interfere and ignore the child’s cue will lead to them commenting in a non-attuned manner on the infant’s internal state.

Meins et al. (2012) also explored relations between mind-mindedness and insecure-disorganized attachment. Obviously, Ainsworth et al.’s (1971) descriptions of maternal behavior cannot provide guidance for the types of caregiving behavior that may be involved in disorganization because this form of attachment was first identified in 1986. However, more recent research has indicated that atypical caregiving behaviors may play a role in disorganization. Lyons-Ruth, Bronfman, and Parsons (1999) devised the AMBIANCE scheme to assess behaviors such as withdrawal, negative-intrusion (e.g., mocking the infant), and affective errors, and reported that mothers of disorganized infants engaged in higher levels of these atypical behaviors. Hesse and Main (2000, 2006) identified maternal frightening or fearful behaviors as predicting insecure-disorganized attachment. Bernier and Meins (2008) argued that these atypical behaviors were likely to be related to the caregiver’s inability to read the infant’s internal states appropriately; thus, disorganized attachment might be associated with high levels of non-attuned comments. Due to the fact that infants classified as disorganized are given an additional “forced choice” classification to indicate their underlying attachment strategy (secure, avoidant, or resistant), Meins et al. did not make directional predictions for the mind-mindedness profile of mothers of disorganized infants.

Meins et al.’s (2012) results on the relation between infant–mother interaction at age 8 months and attachment security at age 15 months are summarized in Figure 2. In a series of multinomial regression analyses, we explored whether the two mind-mindedness indices and sensitivity could distinguish among mothers in the four attachment groups. The first analysis focused on the issue of whether the early interaction variables could predict infant attachment according to Ainsworth’s original three categories (secure, avoidant, resistant). Secure group mothers attained higher scores for appropriate mind-related comments and lower scores for non-attuned mind-related comments than their counterparts in the both the avoidant and resistant groups. With respect to distinguishing between mothers in the two insecure groups, resistant-group mothers scored more highly than avoidant-group mothers on non-attuned mind-related comments, but there was no difference between the two groups’ scores for appropriate mind-related comments.

The fact that avoidant- and resistant-group mothers could be distinguished on the basis of non-attuned mind-related comments is noteworthy, given that this index of mind-mindedness differs most obviously from previous scales for assessing the quality of infant–caregiver interaction. As discussed above, non-attuned comments are not related to traditional sensitivity, nor are they sufficiently extreme to fall within the scope of schemes assessing atypical caregiving behaviors. Considering non-attuned comments in combination with appropriate mind-related comments can thus help explain our success in distinguishing
among mothers in the secure, avoidant, and resistant groups. Meins et al. (2012) highlighted how non-attuned comments were particularly rare in secure-group mothers, with scores of less than 2% for 90% of the mothers in this group. Supplementing the data presented in the 2012 paper, 35% of secure-group mothers did not make any non-attuned comments during the observation, with a further 21% making only a single non-attuned comment. In contrast, all of the mothers in the insecure-resistant group made at least one non-attuned comment, as did 92% of the mothers in the avoidant group.

A follow-up analysis that additionally included the disorganized group showed that secure-group mothers achieved higher scores for appropriate mind-related comments and lower scores for non-attuned mind-related comments compared with their disorganized-group counterparts. However, no differences were observed between the disorganized group and those in the avoidant and resistant groups, except for the elevated level of non-attuned comments in the resistant-group mothers (see Figure 2).

In contrast to the clear differences among the attachment groups with respect to appropriate and non-attuned mind-related comments, Figure 2 shows that Meins et al.’s (2012) study could not predict attachment security from mothers’ sensitivity scores. Indeed, sensitivity did not predict attachment even at a dichotomous secure/insecure level. Although at odds with Ainsworth et al.’s (1971) original findings and those of our own initial study (Meins et al., 2001), this lack of association between sensitivity and dichotomous attachment is consistent with a number of null findings on wide-ranging populations (e.g., Goldberg, Perrotta, & Minde, 1986; Isabella, 1993; Lyons-Ruth, Connell, Zoll, & Stahl, 1987; Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996).

The results of Meins et al.’s (2012) study thus show that, although it was not possible to predict infant–mother attachment security on the basis of scores on the original sensitivity scale, by returning to Ainsworth et al.’s (1971, 1974) emphasis on appropriateness and perceiving the world from the child’s perspective as key components of sensitive caregiving, it is possible to distinguish secure-group infants from their counterparts in each of the three insecure groups, and to distinguish insecure-avoidant infants...
from those who are insecure-resistant. The two indices of mind-mindedness focus on a very specific caregiving behavior – mind-related comments – and the coding scheme (Meins & Fernyhough, 2012; Meins et al., 2001) gives criteria and examples to help researchers classify such comments as appropriate or non-attuned. The scheme is also tailored to assess caregivers’ attunement to their infants in the context of a single, relatively short observation in the developmental laboratory. Consequently, mind-mindedness is operationalized much more precisely than was sensitivity, while maintaining clear links with Ainsworth’s theoretical construct.

A new analysis of Meins et al.’s (2001) data

Despite the success of caregivers’ mind-related comments in predicting attachment security at the fine-grained level, operationalizing mind-mindedness purely in terms of caregivers’ speech presents one obvious conundrum: why is what caregivers say to their infants a more important predictor than how caregivers respond to their infants? As discussed above, our original 2001 paper on mind-mindedness in the first year of life suggested various caregiver behaviors that might index the ability to treat the infant as an individual with a mind, whereas our more recent research has moved to an exclusive focus on mind-related comments as the index of mind-mindedness in the first year of life. While Meins et al. (2001) reported that none of the behavioral indices of mind-mindedness (response to infant gaze or object-directed activity, imitation, encouragement of autonomy) were predictors of attachment security, it is possible that a measure that includes both mind-minded behavior and mind-related comments may predict later patterns of attachment.

Meins et al.’s (2001) data were reanalyzed to investigate whether (a) appropriate and non-attuned comments independently predicted attachment security, and (b) a composite score involving behavioral and speech-based indices of mind-mindedness predicted dichotomous attachment security. To address (a), Meins et al.’s (2001) original binary logistic regression was rerun including non-attuned mind-related comments in addition to the original variables (infant cognitive ability, maternal education, maternal sensitivity, appropriate mind-related comments). With all variables entered into the regression equation, the two mind-mindedness indices were the only independent predictors of dichotomous (secure/insecure) attachment: non-attuned comments, Wald = 7.06, p < .01, $R^2 = .17$; appropriate comments, Wald = 4.70, p < .05, $R^2 = .09$. Non-attuned mind-related comments were lower for secure group mothers ($M = 0.81$, $SD = 1.35$) compared with their insecure group counterparts ($M = 3.13$, $SD = 2.63$), $t(69) = 4.22$, $p < .001$. These findings thus replicate the precise pattern of findings reported by Meins et al. (2012) in a separate sample: when both indices of mind-mindedness are included in the analysis, maternal sensitivity does not account for independent variance in attachment security, and non-attuned mind-related comments predict attachment security more strongly than do appropriate mind-related comments.

To investigate the comparative strength of a composite score involving behavioral and speech-based indices of mind-mindedness in predicting attachment security, the internal reliability of a number of potential composites was first explored. Meins et al. (2001) reported that three of the five original indices of mind-mindedness were robustly positively correlated: appropriate mind-related comments, response to infant gaze, and response to infant object-directed activity. The internal reliability for the composite measure of these three variables was acceptable, $\alpha = .69$. The binary logistic regression analysis described above was rerun, with this three-variable composite replacing...
appropriate mind-related comments. The independent variables were thus: infant cognitive ability, maternal education, maternal sensitivity, non-attuned mind-related comments, and the mind-mindedness behavior/speech composite. In this analysis, only non-attuned mind-related comments predicted dichotomous attachment security, Wald = 7.50, $p < .01$, $R^2 = .21$, with the behavior/speech composite failing to predict independent variance, Wald = 1.27, $p = .259$, $R^2 = .02$.

This reanalysis shows the independent role of both appropriate and non-attuned mind-related comments in predicting later attachment security, and is in line with the argument that mind-mindedness is a multidimensional construct. Moreover, these new analyses involving the original behavioral mind-mindedness scales most strongly related to appropriate mind-related comments suggest that speech-based indices of mind-mindedness are more successful in predicting attachment security than a composite index based on both behavior- and speech-based indicators of mind-mindedness.

**Caregiver speech and caregiver behavior**

Despite the fact that reanalysis of Meins et al.’s (2001) data showed that a measure incorporating a behavioral dimension of mind-mindedness was worse in predicting attachment security than were the speech-based measures of mind-mindedness, this does not rule out the possibility that behavioral manifestations of mind-mindedness play a role. In a new conceptualization of infant–caregiver interaction, Shai and Belsky (2011) focused on caregivers’ kinesthetic behaviors as a marker of their ability to recognize their infants’ internal states (so-called parental embodied mentalization). These kinesthetic behaviors are coded entirely independently of caregivers’ speech; indeed, the soundtrack to the observation is muted so as not to influence the coder’s interpretation of the caregiver’s kinesthetic response to the child.

The main strength of Shai and Belsky’s (2011) work is its focus on the infant–caregiver dyad as the unit of analysis. Thus, assessing parental embodied mentalization and the appropriateness of mind-related comments both require one to consider the parent’s response in light of the infant’s ongoing behavior. This commonality suggests that parental embodied mentalization may be a behavioral index of mind-mindedness, a suggestion that we are currently testing by coding the same infant–mother interactions for both mind-related comments and parental embodied mentalization. This research will further develop the construct of mind-mindedness by elaborating its potential behavioral dimensions.

Alternatively, combining laboratory-based assessments of mind-mindedness with extensive home-based assessments of maternal sensitivity may provide the most complete picture of the quality of early caregiver–child interaction. In previous research, mind-mindedness and sensitivity have been assessed from the same free-play observation (Meins et al., 2001, 2012). If mind-mindedness is assessed in a different context to that in which maternal sensitivity is measured, different findings may emerge. For example, it may be that the positive correlation between appropriate mind-related comments and sensitivity will not be as robust when assessed from different observations.

The results of Laranjo et al. (2008), who assessed maternal sensitivity using the MBQS and appropriate mind-related comments from a free play interaction, are in line with this suggestion. The measures of mind-mindedness in this study were somewhat different (frequency scores of specific sub-categories of appropriate mind-related comments) from those used in Meins et al.’s longitudinal studies, but the correlation coefficients for relations between mind-mindedness and sensitivity ranged from .14 to .28, in
contrast to coefficients of .40 and .39 reported respectively by Meins et al. (2001, 2012). However, Laranjo et al. ’s (2008) free play interaction was conducted in the home, meaning that this study cannot provide a definitive answer to how appropriate mind-related comments in a laboratory setting relate to sensitivity in the home environment. It may also be the case that non-attuned mind-related comments in free play relate more strongly to insensitivity in the home environment than in the laboratory. For example, it seems reasonable to hypothesize that caregivers who tend to misinterpret their infants’ internal states in the relatively low-stress context of a laboratory-based free play session are likely to be insensitive when they have to deal with the additional demands on their time that occur in the home environment.

It is also possible, though, that what caregivers say is genuinely more important in predicting attachment security than what they actually do. The wealth of literature showing that caregivers’ representations of attachment relationships in the Adult Attachment Interview relate strongly to infant–caregiver attachment (e.g., van IJzendoorn, 1995) is testament to the influence of “offline” attachment representations on the quality of actual relationships. Research on the caregiving system has also shown how caregivers’ representations of the child and themselves in the caregiving role as assessed in the Parent Development Interview (Slade, Aber, Berger, Bresgi, & Kaplan, 2003) or Caregiving Interview (George & Solomon, 1998) relate to infant–caregiver attachment security.

Secure attachment is associated with having a caregiver who is capable of reflecting on how parenting involves a complex interplay between the internal states of the caregiver and child (Slade, Grienenberger, Bernbach, Levy, & Locker, 2005), and who represents caregiving in a flexible, balanced, and integrated fashion (see George & Solomon, 2008). Moreover, research has failed to provide convincing evidence for infant–caregiver interactional behaviors mediating the relation between caregivers’ interview-based representations and caregiver–infant attachment security (Goldberg, Benoit, Blokland, & Madigan, 2003; Grienenberger, Kelly, & Slade, 2005; Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Madigan, Pederson, & Moran, 2006; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; van IJzendoorn, 1995), leading to van IJzendoorn’s conclusion that there is a “transmission gap” in the intergenerational transfer of attachment. These findings thus highlight the important association between what caregivers say about their close relationships and the security of the infant–caregiver attachment relationship. In light of this seminal research, it is less surprising that we found caregivers’ mind-related comments during actual interactions with their infants predicted attachment security more strongly than did behavioral measures of the quality of infant–mother interaction.

While several studies have explored the relation between mind-mindedness and infant–caregiver attachment, research has not fully investigated how mind-mindedness relates to representational measures of attachment. Arnott and Meins’ (2007) results suggested that mind-mindedness in infant–caregiver interaction was associated with caregivers’ attachment representations in the Adult Attachment Interview, but the sample size in this study was very small, precluding any firm conclusions from being drawn. No study has yet investigated how mind-mindedness during infant–caregiver interaction relates to parents’ caregiving representations during the Parent Development Interview or Caregiving Interview. Investigating these relations is thus an interesting avenue for future research. As well as exploring the relation between mind-mindedness and caregivers’ representations of attachment and caregiving, future studies should establish whether mind-mindedness – and its focus on caregivers’ attunement specifically to their
infants’ internal states – can help bridge the transmission gap, and thus shed light on the potential mechanisms involved in the intergenerational transfer of attachment security.

Final reflections

Mary Ainsworth has had an influence on my entire research career. Her work on early infant–mother interaction first sparked my interest in individual differences and inspired me to pursue academic research in developmental psychology. Three aspects of her approach have acted as constant guides in my own work: (a) start every new piece of research with careful observation, (b) do not be afraid to define new constructs that may initially be seen to be at odds with accepted theories, and (c) be open-minded to alternative ideas that can refine and extend your research.

If Ainsworth had not taken an empirical approach to attachment and actually observed infants interacting with their mothers, we would not have the concept of attachment security or realize that the patterns of attachment behavior were much more varied than Bowlby (1958) originally believed. Ainsworth’s early empirical research was thus instrumental in Bowlby’s (1969/1982) revision of attachment theory and his move to describing attachment as a goal-corrected system. Of course, Ainsworth herself was equally willing to embrace the findings of other researchers in revising her own research ideas. For example, she readily accepted the insecure-disorganized pattern of attachment (Main & Solomon, 1986, 1990) as an important refinement of her original strange situation classification system. Indeed, when asked how she would react if someone discovered a new pattern of insecure behavior, Ainsworth replied, “That would not be all that surprising; there are many more possible ways of organizing behavioral strategies for coping with an insecure relationship” (Ainsworth & Marvin, 1995, p. 14). She was also willing to revise her own ideas if she believed they could be improved: when it was discovered that the maternal sensitivity construct could not distinguish between mothers of infants in the avoidant and resistant attachment categories, Ainsworth et al. (1971, 1974) invented new scales to assess other aspects of interactional behavior that might prove more discriminating.

I hope that, in our research on mind-mindedness, I have managed to continue Ainsworth’s spirit of discovery through careful observation. In all of this work, we have sought to use the core features of Ainsworth’s original concept of sensitivity as our guiding principle, with the aim of defining specific interactional behaviors that best fit the criteria for appropriate interpretation of the infant’s cues. If our research has been critical of the concept of sensitivity, then this criticism is not of the construct itself but of the assessment scale and its misinterpretation and misuse over the intervening years. In giving clear-cut criteria and detailed examples for coding mind-related comments as appropriate or non-attuned, we hope to provide researchers with a useful, freely-available tool for assessing infant–caregiver interaction in the developmental laboratory. Moreover, our goal was to make the coding scheme sufficiently detailed that it could be used without the requirements for researchers undergoing labor-intensive training and reliability procedures. Feedback on the mind-mindedness coding scheme is actively encouraged, and researchers who are independently using the scheme in their work continually make valuable suggestions for its adaptation and improvement. I believe that Ainsworth would approve of our adaptation of her concept of sensitivity: the precision of the mind-mindedness coding scheme and its utility in assessing brief, laboratory-based observations perfectly complements the sensitivity scale as an index of the global quality of extensive observation in the home.
Had we not observed – and more importantly, listened to – mothers interacting with their young infants, keeping an open mind about the ways in which caregivers might demonstrate their attunement to their young infants, we may not have recognized the importance of mothers voicing out loud what their infants might be thinking or feeling. With their specific focus on caregivers’ attunement to their infants’ mental and emotional states, appropriate mind-related comments are likely to facilitate not only secure attachment, but also children’s own subsequent understanding of other people’s perspectives and internal states. In support of this proposal, research has shown that mothers’ appropriate mind-related comments in the first year of life have been found to predict children’s mentalizing abilities throughout the preschool years (Laranjo, Bernier, Meins, & Carlson, 2010; Meins, Fernyhough, Arnott, Leekam, & de Rosnay, 2013; Meins et al., 2002, 2003). This research thus highlights how individual differences in the quality of early infant–caregiver interaction are able to predict core developmental abilities well beyond the establishment of the attachment relationship.

Mind-mindedness is a construct at the interface between behavioral and representational measures of the quality of the infant–caregiver relationship. To be mind-minded, the caregiver must first accurately represent the infant’s thoughts and feelings and then actually voice this representation. Mind-mindedness provides an index of how caregivers represent their infants’ internal states “online” while interacting with the child. As such, this construct complements both purely behavioral and purely representational (interview-based) assessments of the infant–caregiver relationship. I hope that our research has thus followed the advice Ainsworth gave in 1994: “I believe that we must continue to rely on direct observation – on what I’ve called ‘fieldwork’ – in gathering more information on what actually happens in different contexts in different relationships. But moving to also study internal attachment-related events is certainly appropriate and necessary to get at the ‘rules’ and processes … As long as this trend doesn’t become an ‘either/or’ thing – either you observe, or you probe for internal events – but remains rather a matter of balance between the two, I think it will serve us well” (Ainsworth & Marvin, 1995, p. 21, original emphasis).

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