The primary goal of this study was to examine the feasibility of using the Adult Attachment Interview (AAI) with 50 culturally Deaf adults. Modifications to the standard protocol included using a visual-spatial language (American Sign Language) rather than a spoken language (English), as well as coding and procedural variations from the standardized protocol. Results suggested that the adapted AAI interview and coding processes provided an effective assessment of the state of mind regarding the attachment of Deaf individuals. The expectation that Deaf participants would be less coherent in their AAI transcripts and therefore less likely than hearing individuals to be classified as Autonomous was not supported. The distribution of the classifications of this Deaf sample was not different from existing normative distributions. Moreover, there was no evidence that early separation from parents associated with attendance at a residential school for the Deaf resulted in attachment formations with residential counselors or teachers at the school.

Blindness cuts one off from things yet deafness cuts one off from people.

Helen Keller (Keller, 1933, p. 68)

A Brief Overview of Attachment Theory

Mary Main (1996) described the field of attachment as developing in three phases. The first phase began with John Bowlby (1973, 1980), a British psychoanalyst whose seminal work laid the theoretical groundwork of attachment theory. This phase was followed by Mary Ainsworth’s study (Ainsworth, Blehar, Waters, & Wall, 1978) of individual differences in infant behavior, differences she hypothesized as primarily a product of variations in the sensitivity of the mother (Ainsworth et al., 1978; Crowell & Treboux, 1995). The current phase (see Cassidy & Shaver, 1999, for a recent overview) has seen the study of attachment move to the level of mental representation revealed in narrative and discourse, work made possible by the development of the Adult Attachment Interview (AAI) by Main and colleagues (Main, Kaplan, & Cassidy, 1985).

Attachment theory holds that infants develop a cognitive representation of their relationship with the caregiver; this representation is labeled an internal working model (Bowlby, 1973). The concept has evolved as the basic framework of the attachment system, shaping social, cognitive, emotional, and behavioral responses, and is seen not only as a prototype
for future relationships, but also as itself subject to modification as a result of new experiences (Bretherton, 1985; Bretherton & Muholland, 1999).

Bowlby (1973) saw internal working models shaping future relationships through representations of both self and other: “(a) whether or not the attachment figure is judged to be the sort of person who in general responds to calls for support and protection; [and] (b) whether or not the self is judged to be the sort of person towards whom anyone, and the attachment figure in particular, is likely to respond in a helpful way” (p. 204). Sensitive and responsive caregiving, then, will promote a working model of others who are dependable, sensitive, and responsive, whereas insensitive, neglectful, or abusive caregiving will incline the child toward a model in which people are quite the opposite. Similarly, the child’s working model of self will derive from a perceived success or failure to elicit attention and comfort (Shaffer, 1994).

Internal working models are seen as relatively malleable in the first few years of life, but, assuming consistent caregiving, as progressively more resistant to change as the child matures (Bretherton & Munholland, 1999; Egeland & Farber, 1984; Thompson, Lamb, & Estes, 1982; Vaughn, Egeland, Sroufe, & Waters, 1979). Internal working models are thought to operate unconsciously and therefore, once established, are resistant to change and act as core features of the personality that shape each new relationship (Collins & Read, 1994). The study of attachment processes in adulthood, then, clearly requires the development of a meaningful and practical assessment of this key representational element.

The Adult Attachment Interview

Bretherton (1985) characterized representations or working models of attachment as “conceptual metaphors” not subject to direct measurement. Main and colleagues (Main et al., 1985; George, Kaplan, & Main, 1996; Hesse, 1999) developed the AAI as an indirect measure of the adult’s internal working model through a semistructured interview about childhood attachment relationships and the meaning given to these experiences. The AAI is designed to elicit both general descriptions of childhood relationships and supporting specific autobiographical memories. Participants are asked to describe childhood attachment relationships, separations from attachment figures, loss of attachment figures, and the effects these experiences have had on their development and personality (George et al., 1996). The AAI does not assess actual childhood attachment or the accuracy of childhood memories, but rather the adult’s ability to describe coherently these experiences. The AAI coding processes lead to one of four classifications based on the individual’s current ability to organize and convey undistorted information about his or her attachment relationships: Auto-

<table>
<thead>
<tr>
<th>Classification</th>
<th>Adult Attachment Interview descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure–Autonomous (F)</td>
<td>Coherent, collaborative discourse is maintained during description and evaluation of attachment-related experiences, whether these experiences are described as favorable or unfavorable. Speaker seems to value attachment while being objective regarding any particular experience or relationship.</td>
</tr>
<tr>
<td>Dismissing (Ds)</td>
<td>Normalizing, positive descriptions of parents (“excellent, very normal mother”) are unsupported or contradicted by specific memories. Negative experiences said to have had no effect. Transcripts are short, often with insistency or lack of memory.</td>
</tr>
<tr>
<td>Preoccupied (E)</td>
<td>Preoccupied with experiences, seeming angry, confused, and passive or fearful and overwhelmed. Some sentences grammatically entangled or filled with vague phrases (“dadadada”). Transcripts are long; some responses are irrelevant.</td>
</tr>
<tr>
<td>Unresolved–Disorganized (U)</td>
<td>During discussion of loss or abuse, shows striking lapse (or lapses) in the monitoring of reasoning or discourse, for example, may speak of dead person as if still alive in the physical sense, fall silent, or use eulogistic speech. May otherwise fit well to Ds, F, or E.</td>
</tr>
</tbody>
</table>

Note: From Main (1996).
nomous, Dismissing, Preoccupied, or Unresolved–Disorganized (see Table 1).

**Deafness and Development**

Much of the early research considered deafness only from a medical perspective, conceptualizing it as a pathological deficit rather than a set of unique characteristics. Lane (1992) described such a viewpoint as hearing-centered, medical, and paternalistic, the “broken ear with a child attached” model. In contrast to the traditional medical view, many individuals with deafness operate within a different worldview, perceiving themselves as members of a linguistic minority with a rich cultural identity. Their language, American Sign Language (ASL), is visual, their identity is rooted in people with similar life orientations, and their heritage is as rich and meaningful as that of a hearing person.

The present study examined individuals who considered themselves culturally Deaf. In the remainder of the article, we use a capital “D” to indicate that the reference is to persons identified with Deaf culture and the lowercase “d” to refer to deafness as determined solely through audiological criteria (Woodward, 1972). For most members of this Deaf community, the earliest attachment experiences occur in interaction with a hearing mother, who is initially unaware of her child’s deafness.

**The Hearing Mother of a Deaf Infant**

In spite of the challenges of deafness, the deaf child must establish a first relationship that will be a critical determinant of the form and success of later relationships in the wider world. As with the hearing infant, the deaf child’s success at living and functioning within both the Deaf and the hearing communities will be mediated by social relationships. The earliest days and weeks of this critical first relationship are marked by a unique threat. As Vernon and Andrews (1990) reported, deafness is rarely discovered until the child is between 1 and 3 years of age. The age of diagnosis is a complex function of the degree of hearing loss; parental knowledge of the presence of a genetic history of deafness, a prenatal disease (such as maternal rubella), a significant postnatal insult (such as meningitis); the likelihood that a family physician would request a formal hearing assessment; the number of other children in the family; and finally the willingness of the parents to identify and acknowledge a “difference” in their child and undergo investigation as to the cause.

The quality of early mother–infant interaction is the first dynamic affected by a delayed diagnosis. Interactions between a deaf infant and hearing mother are mediated by nonauditory cues: The soothing voice of a mother singing a lullaby to her infant is meaningless if the baby is deaf because the sounds of the nearby mother are no comfort to the deaf baby. Hearing infants can effectively use audition as a bridge to security provided by the mother, whereas the deaf infant’s access is limited to his or her visual field. When an infant’s deafness is unrecognized, the associated absence of reciprocity in social dialogue must change the dimensions of the mother–infant attachment relationship (Marschark, 1993). A second consequence of a delay in diagnosis is parental confusion: anxiety, fear, anger, and guilt arising from their inability to resolve their child’s problem, a problem they clearly perceive but cannot identify (Vernon & Andrews, 1990). The associated stress may only further undermine an already-jeopardized relationship.

The first few years of life for the majority of deaf infants and their hearing parents thus can be a time of intense emotion and bewilderment. The infant faces the essential task of establishing his or her first intimate relationship with increasingly confused parents, who mistakenly and ineffectively rely on audition to support the development of their deaf infant. Families strive to maintain a sense of order and balance (Luterman, 1987), especially at the point of diagnosis, when their perhaps “perfect” child is described as deaf, hearing impaired, or communicatively disadvantaged. Parents commonly react initially with shock and disbelief (Vernon & Andrews, 1990), as if denying the child’s deafness distances them from the task of dealing with the effects of deafness on family life, often expending great effort to maintain the image of a normal hearing family.

Kubler-Ross’s (1969) model of the grief reaction displayed by terminally ill patients has commonly been applied to this reaction to the diagnosis of deafness by hearing parents: the orderly progression through
denial, anger, bargaining, and depression toward a healthy acceptance. Taken too literally, the model risks simplifying a complex process: There is often no clear delineation of one stage from the next (Luterman, 1987). Parents tend initially to react with denial, in itself a healthy, universal reaction to severe trauma (Vernon & Andrews, 1990), but many remain in some stage of denial with maladaptive consequences. Mothers who dedicate their lives to finding a “cure” for their child or who insist on treating their child as just another “hearing” child exemplify this inability to accept constructively the reality of deafness. The inability of many parents ever to view their children without a profound sense of sadness or loss is poignantly illustrated by the father of a 15-year-old son: “At first you hurt like hell, and then it becomes a terrible dull ache that never goes away” (Luterman, 1987, p. 41).

Vernon and Andrews (1990) wrote “Some never get past the stage of—‘How could this happen to me?’ to the realization that it did not happen to them, but to their child” (p. 131).

These experiences and the resultant emotional turmoil have the potential to impair significantly the development of the mother–infant relationship (Vernon & Andrews, 1990). The literature includes reports of associated marital discord (Luterman, 1987) and overt rejection of both the deaf child and the marital partner by narcissistic insecure mothers (Vernon & Andrews, 1990). Existing reports of research on the attachment relationships of deaf children of all ages provide some insight into the impact on the developing relationship.

**Existing Research on Attachment and Deaf Children**

**Infants and Toddlers**

It has for some time been asserted that deaf infants are less likely than their hearing counterparts to form secure attachments with their mothers, but relevant evidence is largely anecdotal (Gregory, 1976; Schlesinger & Meadow, 1972). Deafness poses a challenge for the researcher parallel to that faced by the mother–infant dyad; the literature therefore includes little well-designed, controlled research.

An exception is a study by Lederberg and Mobley (1990), who compared the quality of mother–child interactions and attachment relationships of 41 hearing-impaired toddlers attending an intervention program with those of 41 hearing toddlers; all infants had hearing mothers. Of the hearing-impaired toddlers, 56% were securely attached, as were 61% of the hearing toddlers, leading Lederberg and Mobley to conclude that the development of secure attachment does not depend on normal language development during the toddler years.

In a study pursuing Marvin’s (1977) suggestion that attachment should be markedly affected by language interactions and language development, Greenberg and Marvin (1979) found that high-communication hearing mother–deaf infant dyads showed more secure attachment relationships than did low-communication dyads. As communicative competence decreased between hearing mothers and their deaf children, there were fewer opportunities to discuss aspects of relationships, impairing the establishment of the goal-corrected partnership seen by Bowlby (1969) as critical to the development of a secure relationship.

Some caution must be exercised in interpreting the results of both these studies because of the need to adapt assessment tools designed for use with hearing infants to deaf, somewhat older children.

Marschark and Clark (1993) have pointed out that the Lederberg and Mobley study (1990), despite failing to find a greater likelihood of nonsecure attachments, revealed deficits in the communications of hearing mother–deaf infant interactions: (1) Hearing mothers of deaf infants initiated significantly more interactions than did the hearing mothers of hearing infants; (2) the deaf toddlers were more likely to terminate an interaction because they did not see or hear a communication; and (3) the hearing mother–deaf toddler dyads spent significantly less time interacting than did the hearing dyads.

The finding of normative rates of secure attachment security in deaf toddlers (Lederberg & Mobley, 1990) is consistent with the more general finding (Goldberg, Morris, Simmons, Fowler, & Levinson, 1990; Van Ijzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992) that clinical conditions such as illness, prematurity, and developmental delay are not associated with higher rates of insecure attachment. There is some evidence, however, that by early childhood
deafness can negatively affect the quality of mother–child interactions.

Early Childhood

The relative quality of interactions between hearing mothers and their deaf infants, in fact, appears to be inversely related to the age of the child; that is, in contrast to available data from infancy, by preschool age the quality of communication is significantly less than that found in hearing dyads. A number of studies have documented difficulties in post-infancy/toddlerhood interactions of hearing mother–deaf children dyads (MacKay-Soroka, Trehub, & Thorpe, 1987; K. Meadow, Greenberg, Erting, & Carmichael, 1981; Schlesinger & Meadow, 1972; Swisher, 1984). Relative to hearing mothers of hearing children, hearing mothers of deaf children are often viewed as tense and controlling (Brasel & Quiqley, 1977; Goss, 1970; Greenberg, Calderon, & Kusche, 1987; K. Meadow et al., 1981; Wedell-Monnig & Lumley, 1980), overprotective and intrusive (Schlesinger & Meadow, 1972; Cheskin, 1982; Chess, Korn, & Fernandez, 1971; K. P. Meadow, 1980), and as supporting relationships with less interactional complexity (K. Meadow et al., 1981).

Pursuing this possibility that the effects of deafness become more noticeable as the child ages, Lederberg, Willis, and Frankel (1991) reassessed the children studied by Lederberg and Mobley (1990). At 3 years of age, the communicative competence of these hearing–deaf dyads was substantially less than that of the hearing dyads. Furthermore, in interaction with their mothers, the deaf 3-year-old children showed less social initiative, creativity, compliance, enjoyment, and on-task behavior and more misbehaviors (Lederberg, 1993), lending support to the premise that advanced communication patterns are prerequisite to the development of the complex aspects of relationships.

In summary, although the frequency of nonsecure attachments at infancy is not atypically high, there is evidence that the subsequent stresses of poor communication and major separations may substantially challenge the later attachment relationships between deaf children and their hearing parents. Such impairment in communication can only be magnified in families who do not use sign language given that the communication challenges in such families are even more significant. It is estimated that over 90% of deaf children have hearing parents, and that the majority of these parents do not learn ASL (Padden & Humphries, 1988).

Historically, the deaf child’s first encounter with effective social communication often occurred in the unique environment of the residential school, but life in such an institution further complicated the social developmental pathway.

Deaf School-Aged Children

The dormitories of Canadian Deaf residential schools during the 1960s–1980s were staffed by residential counselors who often remained with the same group of students for several years. Until recently, most of the residential staff were hearing (Carbin, 1996). The residential counselors cared for the child’s daily needs, such as eating, dressing, helping with homework, solving problems, and going to bed at night. Until the mid-1980s, residential students in provincial schools returned home only for special occasions such as Thanksgiving, Christmas, or summer holidays. The residence counselors thus essentially acted as surrogate parents.

Furthermore, Carbin’s (1996) account of Deaf heritage in Canada indicated that, although sign language was often discouraged in the classrooms, it was routinely used by students in their residences. Consequently, as a result of their regular exposure to its use by their young charges, residence counselors were often the staff members most proficient in sign language.

It is during these school years that the hearing family of a deaf child most often experiences a bifurcation of cultures: whereas during infancy and toddlerhood the family system remains oriented toward the hearing world, the child’s increasing ASL fluency introduces a distinct second culture. It was very common during the period 1960–1980 for the school-aged deaf child to be the only fluent signer in the family. The same situation unfortunately continues to pertain in many families today.

With this linguistic isolation from his or her family and the concomitant adoption of the conventions of the
new culture, the deaf child becomes Deaf. Some parents have characterized this important change in their child as “Deaf people stealing their child from them,” although for the child the change may simply reflect a natural gravitation toward a more accessible language and reality. This developmental pattern clearly contrasts sharply with that of most cultures in which membership is one’s birthright. Although it is difficult to understand fully the conscious and unconscious processes involved in this enculturation process (Chovaz, 1998), it seems highly likely that the majority of this cultural transmission occurs at the residential schools.

The existence of multiple cultures within a single family not only is a unique feature of families composed of hearing parents with a deaf child, but also occurs, for example, in families with children adopted across racial lines. The acquisition of a cultural identity from peers later in life rather than from the family is also characteristic of the homosexual culture (Dolnick, 1993). Yet, in both these circumstances all family members continue to share a common language, whereas the majority of Deaf people do not have the luxury of open and meaningful family communication. Under these circumstances, deaf children may eagerly embrace a replacement for the intimacy of family communication that is sadly inaccessible as a result of the linguistic barrier within their birth family—the society of the Deaf residential schools provides just such opportunity.

Admission to a Deaf residential school often separates the child geographically from his or her family, but provides access to a community that shares his or her perceptual reality. Messages are less likely to be inconsistent or insensitive because those in relationship with the child share similar ways of being in the world or at least, as in the case of the hearing residential counselors, better understand the nature of the Deaf worldview. The current study explored the hypothesis that d/Deaf children (deaf children who later adopt a Deaf cultural identity) will develop significant and influential relationships with their Deaf peers and with Deaf adults or hearing residential counselors in the school that may differ from those with their parents. Of course, perceivable signals and a shared mode of communication do not guarantee positive social relationships; as in any social setting, there will also be those individuals with whom the child interacts in less than a positive manner.

**The Case for Discontinuity in Deaf Relationships and Representations**

There are reasons to expect developmental discontinuity of attachment in deaf children. Studies of hearing children in middle class samples revealed inconsistent evidence for stability of attachment from infancy to toddlerhood; the quality of attachment has been shown to be especially unstable in families under stress (Belsky, Campbell, Cohn, & Moore, 1996). Given this trend and the challenges of communication and stresses of major separation associated with placement in a residential school, even secure attachments in early childhood will be challenged. By middle childhood, Deaf children are likely to display considerably lower rates of secure attachment relationships.

The current study pursued the general hypothesis that, even if not manifest in infancy, the factors affecting the deaf baby’s psychological and social reality have a detrimental social developmental impact. This is particularly true when representational systems become more salient and the quality of the developing mother–child attachment relationship is dependent on language acquisition.

The young hearing child encodes representational experiences into memory using affective vocabulary, thereby enabling efficient retrieval. In contrast, the young deaf child, often without any real semantic language until sign language is introduced at the Deaf school, may be unable to store these representational memories in a retrievable manner. This impediment to effective representational encoding of memories may significantly impair the use of the mother–infant relationship as a template for future relationships.

In contrast, once in a residential school for the Deaf, the deaf child has the opportunity to develop relationships with adult figures who are more aware of the child’s reality and able to communicate effectively via sign language. The deaf child may bring few coherent relationship representations with them into this new context; therefore, newly
emerging social interactions may be relatively uninfluenced by a representational model of the initial relationship with the mother. The new, sophisticated linguistic cues available as the child learns sign language will also facilitate the retrieval from memory that will critically shape future relationship experiences. The new relationships within the school rather than the initial relationship with the mother thus become the prototypical model of relationships, generalizing to Deaf persons or hearing persons knowledgeable and fluent in Deaf culture.

The fundamental premise of this study, then, was that the typical developmental trajectory of a Deaf individual raises the possibility of the formation of a dual model of relationship representation: one oriented to hearing culture and the other to Deaf culture. If supported, this model would be both theoretically and clinically instructive for the understanding of the psychological development of Deaf adults. The necessary first step in pursuing the possibility of such dual models is an exploratory examination of the mental attachment representations of Deaf adults.

We suggested that, as a result of the experiences of the deaf baby including difficulties in communication patterns and the psychodynamics frequently observed in parental reactions to diagnosis, the Deaf adult’s internal representations of relationships may be markedly different from those of a hearing person. Most important, because of the relative weaknesses of the deaf child’s initial internal working model and exposure to two dramatically distinct social contexts (home and residential school), the representation of attachment relationships may involve two distinct Internal working models, one relevant to the hearing and one to the Deaf community.

This suggestion of a unique set of cognitive representations of attachment has important implications for the widely accepted assumption of continuity across age and context of models of attachment. If, for example, Deaf adults can sustain a dual model of relationship representations as activated by two different attachment contexts, then there may be little reason to expect a correspondence between states of minds. The nature of the infant’s relationship with the hearing mother may have little, if any, influence on or correspondence with the subsequent development of the attachment relationship experienced with the residence counselor.

The current study thus pursued three objectives:

1. To explore the utility of the AAI as an instrument for describing and classifying the social cognitive representations associated with the distinct linguistic, developmental, and cultural experience of the Deaf.

2. To investigate the suggestion that, as a result of the atypical early experience common to Deaf infants and children, their states of mind regarding attachment, as revealed in AAI narratives, will result in relatively fewer autonomous classifications than that typically seen in other populations.

3. To explore the possibility of the existence of dual attachment representations in a sample of Deaf individuals as a product of experience with both the parent and a second attachment figure in the person of the residential counselor.

**Method**

**Participants**

The participants were 50 Deaf adults (25 males and 25 females) ranging in age from 20 to 66 years (\(M = 37, SD = 9\)) who had attended a residential school for the Deaf in Canada, the United States, England, or the West Indies. All had hearing parents; 23 were married, 18 single, and 9 separated or divorced; 40 were employed on a full-time basis, 7 unemployed, 1 a university student, and 2 retired. All participants reported having attained an education level of at least Grade 8, and 22 had attained a college or university degree.

Deafness was first identified for 48 of the

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningitis</td>
<td>8</td>
</tr>
<tr>
<td>Fever</td>
<td>2</td>
</tr>
<tr>
<td>Infection</td>
<td>1</td>
</tr>
<tr>
<td>Rubella</td>
<td>2</td>
</tr>
<tr>
<td>Syndrome</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>33</td>
</tr>
<tr>
<td>Hereditary</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2 Etiologies of deafness of participants (\(N = 50\)) in this study
participants between 1 and 72 months of age (M = 27 months); 2 did not know when their deafness had been diagnosed. Table 2 summarizes the etiologies of deafness. Nineteen of the participants had another family member who was deaf (15 siblings, 1 aunt or uncle, and 3 cousins).

Of the participants, 37 entered a residential school for the Deaf at age 6 years or younger, 11 at age 7 years following 1 or 2 years in a hearing school (without any kind of educational support), and 2 were admitted for 2 years to an institute for the mentally retarded before their deafness was accurately diagnosed, after which they attended a residential school for the Deaf. The mean age of entering a residential school for the overall group was 5 years (range 3 to 8 years).

All the sample indicated that ASL was not used in the classroom, although the majority reported that ASL was used in the residences. Spoken language was most commonly used within the classrooms. Table 3 presents the breakdown of methods of communication used within families, the residence, and the classrooms.

### Table 3  Methods of communication used within residences and classrooms by participants in this study

<table>
<thead>
<tr>
<th>Method of communication</th>
<th>Mother</th>
<th>Father</th>
<th>Residence</th>
<th>Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Sign Language</td>
<td>6</td>
<td>5</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>Voice</td>
<td>25</td>
<td>29</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Fingerspelling</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Signed English</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Total Communication</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Homemade signs</td>
<td>19</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Explained in ASL and provided in written English. It was explained that coding made it necessary to videotape each interview. Participants were told that participation was voluntary, and that they could withdraw from the study at any time.

### Measures

**Adult Attachment Interview**  The AAI (George et al., 1984) is a semistructured interview consisting of 20 questions intended to elicit information regarding an individual’s current representation of childhood attachment experiences. Each participant was assigned a score on the standard AAI Experience scales: Maternal/Paternal Loving; Rejecting; Involving/Role Reversing; Neglecting; and Pressure to Achieve. Scores were assigned on a 9-point scale according to the coders’ best estimate of each interviewee’s parent’s behavior during childhood based on the narrative provided in the interview. For the purposes of this study, two of the Experience scales were expanded.

The AAI Rejecting scale (Main & Goldwyn, 1994) assesses the extent to which the parent rejects and/or avoids the child’s attachment and yields two scores: maternal rejection and paternal rejection. A third scale was added to assess the degree to which the Deaf adult recalled feeling rejected when first left by their parents at the residential school; as with other AAI scales, this factor was scored on a scale ranging from 1 (no feelings of rejection) to 9 (extreme feelings of rejection).

The existing Pressure to Achieve scale, intended to assess the extent to which the child was pressured to achieve some particular position, status, or achievement (Main & Goldwyn, 1994) was also expanded. Many Deaf adults frequently describe exhaustive efforts by their mother and father to teach them to speak in order to “appear hearing.” An additional, Pressure to Talk scale was created to capture the participant’s perception of this special pressure and was scored from 1 (the subject was definitely not pushed or pressured to talk) to 9 (the subject was pushed or pressured to talk without concern for well-being or health).

Two broader coding adaptations also were made. Question 12 reads: “Were there any other adults with whom you were close as a child, or who were especially
important to you that provided some caretaking?" In the
standard interview, if the participant reveals other
significant attachment figures, the interviewer goes on
to probe for information regarding these relationships
that can be taken into account in the final classification.
For the purposes of the current study, Question 12 was
modified to include routine probing for significant
attachments with a residential counselor or other school
figure. Second, the standard AAI includes a cannot
classify (CC) category, rarely seen in hearing popula-
tions, to identify those individuals whose unusual
mixture of mental states suggests the absence of a single
organized attachment strategy (Main & Hesse, 1990). In
this study, allowance was made for the possibility that
this pattern, in a Deaf adult, could reveal a relatively
independent and coherent attachment representation
associated with the residential counselor.

Scores on the AAI State of Mind scales reflect
a range of aspects of each participant’s attachment-
related representational processes, including Idealiza-
tion (of their parents); Current Involving Anger
(directed at their parents); Overall Derogation of
Attachment (derived directly from maternal and
paternal scores for derogation); Lack of Recall;
Metacognitive Processes; Passivity of Thought; and
Coherence of Mind.

The psychometric properties of the AAI have been
extensively studied. Bakermans-Kranenburg and van
IJzendoorn (1993) concluded that the AAI showed
good reliability and discriminant validity, a finding
replicated by Sagi, van IJzendoorn, Scharf, Koren-
Karic, Joels, and Mayseless (1994), who also demon-
strated that the instrument is robust against interviewer
effects. The discriminant validity of the AAI has been
established in studies demonstrating that the coding
system, with its emphasis on discourse coherence, is
independent of cognitive ability, logical reasoning
abilities, or verbal fluency (Bakermans-Kranenburg &
van IJzendoorn, 1993; Sagi et al., 1994; Rosenstein &
Horowitz, 1993; Steele & Steele, 1994). Van IJzen-
doorn’s (1995) meta-analysis of 20 studies revealed
strong evidence of the AAI’s predictive validity relative
to three main constructs: the parent–infant attachment
relationship as measured by the Strange Situation; the
parental response toward and parenting behavior of the
child; and adult psychopathology.

The AAI Within the Context of the Current Study

The AAI allows exploration and classification of an
adult’s mental representation or internal working
model of intimate relationships. Given a consistent
pattern of caregiving throughout childhood, internal
working models are thought to become relatively fixed
and resistant to change. The enculturation process
from deaf to Deaf at a residential school, however,
clearly introduces a significant discontinuity in care-
giving. The Deaf child has an opportunity to form an
attachment relationship with an adult with whom he or
she shares a sophisticated language of communication.
In addition to its relevance to the understanding of
social development in the Deaf, this unique shift in
attachment context provides a unique opportunity, not
available in other groups, to apply the AAI to further
basic knowledge of the developmental characteristics of
attachment representations.

Three considerations are critical to the applications
of the AAI to interviews of Deaf adults. First, we must
allow for the possibility that the Deaf internal working
model features distinct elements resulting from unique
communications and stresses experienced in childhood
and adulthood. Second, the absence of effective com-
munications and, as a result, a coherent representation
system to support childhood interactions with parents
may impede the retrieval of childhood memories.
Research suggested that a reasonably sophisticated
level of communication is required to process inner
experiences (Cassidy & Kobak, 1988); therefore, such
a deficit may predispose the Deaf adult to idealize their
childhood during the attachment interview. Third,
Deaf participants may be less coherent in describing
childhood experiences with parents given difficulties
with communication likely meant that such experiences
were not well understood in the first place.

Application of the AAI in This Study

Interview Process. As in the traditional AAI interview,
participants were invited into a comfortable room with
two chairs facing each other. Rather than being
audiotaped, the interviews were videotaped. Partici-
pants were informed of the cameras and expressed no
discomfort or nervousness. Special precautions were
taken to assure participants of the confidentiality of the
videotapes. Because it was critical that the language of communication (ASL) was clear and acceptable, participants were asked to comment on their comprehension of the interviewer’s ASL; all affirmed that communication was satisfactory.

The challenge of ensuring that the intent of the AAI questions were effectively translated into ASL was addressed by conducting two pilot interviews with Deaf adults who did not qualify for the study (i.e., did not attend a Deaf school as a child or for other reasons chose not to participate in the study). Based on the feedback of these individuals, some improvements were subsequently made to the interview process.

Coding Procedures. The established coding of the AAI involves the detailed analysis of the narrative from a typographic transcription of the oral interview. Consideration was given to paralleling this coding process by translating the ASL in the videotapes into a written English transcript. Although its technical similarity to established procedures was appealing, such a translation risked the loss of critical information. A subtly signed movement used to express an entire affective state can be difficult to capture with one spoken word; in many cases, there simply is no adequate translation. In addition to this risk of losing or altering the full content of the signed discourse, the translation would have involved considerable financial costs, including the validation of ASL-to-written-English translation. It was decided, therefore, to code videotapes directly from the ASL taped interview. All necessary adaptations for this coding adhered to the spirit and intent of the standard coding procedures. For example, detailed notes made while reviewing signed segments from the videotape allowed reference to pages previously coded as might be done in a written verbatim transcript and required viewing the interview in its entirety.

All AAI s were coded directly from the videotaped interview by the first author, who had completed an AAI coding institute. Because there were no certified AAI coders fluent in ASL, an English oral translation was made of six randomly selected interviews; the audiotapes were then transcribed verbatim into written English and independently coded by at least one other certified AAI coder. Correlations between typescript and videotape coding were moderate to high for all AAI scales (range 0.77 to 0.99) with the exception of Involving/Role Reversing scales (range 0.41 to 0.79), perhaps because role reversing was mentioned infrequently in the interviews. Overall classifications for all six interviews were identical for both coders (100% interrater agreement).

Coding of the AAI focuses on how childhood experiences are reflected on and evaluated by the participant rather than on the actual descriptions of those experiences (Main & Goldwyn, 1994) and is based on the premise that an adult’s attachment representation is evident in the coherence of his or her discourse. Discourse coherence is evaluated through Grice’s (1975) four maxims of quality (“Be truthful and have evidence for what you say”), quantity (“Be succinct, and yet complete”), relation (“Be relevant”), and manner (“Be clear and orderly”). Coding of a video record rather than a written transcript introduced a number of concerns. Perhaps most important among these, an important rationale for coding the AAI from a written transcript is that nonverbal cues such as tone of voice and body expressions can be excluded; however, comparable expressive cues that are integral elements of ASL, such as the raising of an eyebrow or the thinning of the lips, cannot be excluded from the video record used in coding.

Three criteria were developed to guard against variances that might arise from such differences: (1) Interviews had to be clearly codable using extrapolations from the AAI manual (Main & Goldwyn, 1994); (2) the videotaped Deaf record coding had to reflect the spirit of the coding system as applied to a written transcript (for example, an accurately coded autonomous written transcript had to be higher in coherency, a Dismissing transcript more idealizing with lack of memory, and a Preoccupied transcript more passive with more current involving anger toward parents); and (3) coding of the ASL videotaped records had to follow the same process as coding of the written English transcripts, that is, final AAI classifications must be derived by way of the specific State of Mind scales that serve to define them: Autonomous for coherence, Dismissing for idealization, and Preoccupied for current preoccupied anger with parents or passive discourse.
The 50 AAI videotapes were each assigned one of the four principle attachment classifications (Dismissing, Autonomous, Preoccupied, or Unresolved) as well as a subclassification. The Unresolved classification was scored according to the same 1–9 coding system used with the other scales, and Unresolved status was assigned to individuals with scores greater than 5 on discourse related to loss and/or trauma. All four of the subjects in the Unresolved group in this study had scores for trauma (abuse) greater than 5, and two of them also had scores of greater than 5 for loss.

### Results

#### Consistency of AAI State of Mind Scales: Comparison With a Hearing Sample

Scores on the State of Mind scales of the Adult Attachment Interview, key determinants of the final classification, were compared with those of a hearing sample of mothers from the University of Western Ontario (UWO) database. The UWO sample, coded by certified AAI coders, consisted of 32 Autonomous, 28 Dismissing, 6 Preoccupied, and 10 Unresolved mothers. All 10 mothers in the Unresolved group in this study had scores for trauma (abuse) greater than 5, and two of them also had scores of greater than 5 for loss.

#### Distribution of AAI Classifications: Comparison With Normative Distribution in Hearing Samples

It was hypothesized that, as a result of a number of developmental considerations, Deaf participants would be less coherent in their descriptions of early attachment experiences with their parents and therefore would be less likely to be classified as Autonomous relative to a normative Hearing sample.

The AAI classifications of the 50 Deaf adults were distributed as follows: 32 Autonomous, 11 Dismissing, 3 Preoccupied, and 4 Unresolved. This distribution was compared with the distribution identified in 1996 in a meta-analysis of extant studies of Hearing samples by van IJzendoorn and Bakermans-Krimpenhagen (see Table 5).

A $3 \times 4$ chi-square analysis revealed no significant difference between the distribution of attachment classifications in our sample of Deaf mothers and those of the samples of mothers and fathers used in the meta-analysis [$\chi^2(6) = 8.51, ns$]. A second chi-square test was performed collapsing the mothers and fathers from the studies in the meta-analysis into a single group; here again, the result was not significant [$\chi^2(3) = 5.17, ns$]. As can be seen from Table 5, the pattern of distributions of classifications was broadly similar for the Hearing and Deaf samples. In fact, although the overall chi-square was not significant, contrary to predictions, the portion of Autonomous

#### Table 4 Comparison of scores on State of Mind Scales of Deaf and Hearing samples

<table>
<thead>
<tr>
<th>AAI scale</th>
<th>Deaf sample</th>
<th></th>
<th>Hearing sample</th>
<th></th>
<th>Two-tailed t test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean (SD)</td>
<td>n</td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>F Coherency of Mind</td>
<td>32</td>
<td>6.6 (1.3)</td>
<td>32</td>
<td>6.4 (1.2)</td>
<td>$t(62) = 0.81, ns$</td>
</tr>
<tr>
<td>Coherency of Transcript</td>
<td>32</td>
<td>6.6 (1.3)</td>
<td>32</td>
<td>6.1 (0.9)</td>
<td>$t(62) = 1.83, ns$</td>
</tr>
<tr>
<td>Ds Maternal Idealization</td>
<td>11</td>
<td>3.2 (2.4)</td>
<td>28</td>
<td>4.9 (1.9)</td>
<td>$t(37) = 2.34, ns$</td>
</tr>
<tr>
<td>Paternal Idealization</td>
<td>11</td>
<td>3.2 (2.8)</td>
<td>28</td>
<td>4.3 (2.3)</td>
<td>$t(37) = 1.3, ns$</td>
</tr>
<tr>
<td>Lack of Memory</td>
<td>11</td>
<td>4.5 (2.3)</td>
<td>28</td>
<td>4.1 (1.7)</td>
<td>$t(37) = -0.52$</td>
</tr>
<tr>
<td>E Passivity</td>
<td>3</td>
<td>5.0 (1.0)</td>
<td>6</td>
<td>4.8 (1.6)</td>
<td>$t(7) = -0.16, ns$</td>
</tr>
<tr>
<td>Maternal Involving Anger</td>
<td>3</td>
<td>3.3 (2.5)</td>
<td>6</td>
<td>3.9 (1.9)</td>
<td>$t(7) = 0.40, ns$</td>
</tr>
<tr>
<td>Paternal Involving Anger</td>
<td>3</td>
<td>2.3 (1.2)</td>
<td>6</td>
<td>3.2 (2.9)</td>
<td>$t(7) = 0.47, ns$</td>
</tr>
<tr>
<td>U Unresolved Loss</td>
<td>4</td>
<td>3.3 (2.6)</td>
<td>10</td>
<td>5.9 (2.7)</td>
<td>$t(12) = 1.69, ns$</td>
</tr>
<tr>
<td>Unresolved Trauma</td>
<td>4</td>
<td>7.5 (1.0)</td>
<td>5</td>
<td>6.2 (3.3)</td>
<td>$t(7) = -0.74, ns$</td>
</tr>
</tbody>
</table>
Deaf individuals was higher than in the meta-analysis of Hearing samples, and the portion of Unresolved was lower.

Evidence of distinctive features of the Deaf sample was pursued at a more molecular level through an analysis of the individual scales of Loving and Rejecting in the Autonomous group. Differences here would suggest systematic variances in childhood experiences in these important areas of development. As can be seen in Table 6, this analysis also failed to reveal statistically significant differences between the Deaf and normative Hearing samples.

Examination of AAI Experience and State of Mind Scales Within the Deaf Sample

To exploit fully this first application of the AAI to a Deaf sample, an analysis of variance was performed comparing the AAI Experience scales and State of Mind scales across the four major AAI classifications. Note that AAI Experience and State of Mind scales and the attachment classifications are not methodologically independent; therefore, this analysis should be viewed only as an examination of the internal consistency of the pattern of responding in a Deaf sample. Given that multiple comparisons run the risk of inflating Type I error, a more stringent significance level of at least $p < .01$ was used in these analyses.

**AAI Experience Scales.** Table 7 displays the mean scores for each AAI classification on the standard AAI Experience scales and on the two modified Experience scales developed to capture unique experiences in the Deaf sample. Scores of the Autonomous group on the Maternal and Paternal Loving scale were higher than those in all other groups. Unresolved individuals reported higher levels of Maternal and Paternal Neglect than those in the other three groups. Unresolved participants also tended to report higher levels of Maternal and Paternal rejection than participants classified otherwise, and Autonomous participants tended to report lower levels of rejections than those in the other groups.

**AAI State of Mind Scales.** Scores on the AAI State of Mind scales, reflecting a range of aspects of each participant’s attachment-related representational processes, are presented by attachment classification in Table 8. Analyses of variance revealed significant effects for Anger Involving Mother, Lack of Recall, Metacognition, Passivity, and Coherence of Mind.

---

**Table 5** Comparison of distribution of Adult Attachment Interview (AAI) classifications in the Deaf sample with the distribution identified in a meta-analysis* of studies of Hearing samples

<table>
<thead>
<tr>
<th>Sample</th>
<th>Autonomous</th>
<th>Dismissing</th>
<th>Preoccupied</th>
<th>Unresolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaf</td>
<td>64</td>
<td>22</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Hearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>55</td>
<td>16</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Fathers</td>
<td>57</td>
<td>13</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Mothers and fathers</td>
<td>56</td>
<td>23</td>
<td>10</td>
<td>18</td>
</tr>
</tbody>
</table>


**Table 6** Parental Loving and Rejecting Adult Attachment Interview (AAI) Experience scales for Autonomous groups

<table>
<thead>
<tr>
<th>AAI Experience scale</th>
<th>Deaf participants, mean (SD)</th>
<th>UWO sample, mean (SD)</th>
<th>Two-tailed t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Loving</td>
<td>3.4 (2.8)</td>
<td>4.5 (1.7)</td>
<td>$t(51) = 1.79, ns$</td>
</tr>
<tr>
<td>Maternal Rejecting</td>
<td>3.3 (2.5)</td>
<td>2.9 (2.6)</td>
<td>$t(51) = 0.59, ns$</td>
</tr>
<tr>
<td>Paternal Loving</td>
<td>3.0 (2.6)</td>
<td>3.7 (2.1)</td>
<td>$t(51) = 0.98, ns$</td>
</tr>
<tr>
<td>Paternal Rejecting</td>
<td>4.2 (2.5)</td>
<td>2.8 (2.7)</td>
<td>$t(51) = 1.95, ns$</td>
</tr>
</tbody>
</table>

*Note: UWO, University of Western Ontario.*
Individuals in all four attachment groups were assigned low scores for Maternal and Paternal Idealization (scores ranged from 1 to 3). Although there was evidence of some trend for a difference in Idealization between the mean score of the Dismissing group and those of the other three groups, the analysis of variance across the four classifications was not significant. A reanalysis using only the three principal attachment classifications, Autonomous, Dismissing, and Preoccupied, revealed significant group effects for Idealization of the mother \( F(2, 49) = 3.71, p < .03 \), and \( F(2, 49) = 8.62, p < .001 \). A post hoc Neuman-Keuls multiple comparisons test found that the Anger Involving Mother scores of the Preoccupied and Unresolved groups differed significantly from those of the Autonomous and Dismissing groups. As can be seen in Table 8, current Anger Involving Fathers was more similar among the attach-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Autonomous mean (SD)</th>
<th>Dismissing mean (SD)</th>
<th>Preoccupied mean (SD)</th>
<th>Unresolved mean (SD)</th>
<th>( F(3, 46) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abandonment</td>
<td>4.3 (2.4)</td>
<td>4.1 (2.7)</td>
<td>6.7 (0.6)</td>
<td>4.7 (3.2)</td>
<td>0.86</td>
</tr>
<tr>
<td>Maternal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loving</td>
<td>5.0 (1.9)( ^a )</td>
<td>3.3 (0.9)( ^b )</td>
<td>2.3 (1.2)( ^b )</td>
<td>1.5 (1.0)( ^b )</td>
<td>7.96**</td>
</tr>
<tr>
<td>Rejecting</td>
<td>3.1 (2.3)( ^a )</td>
<td>4.5 (2.0)( ^b )</td>
<td>6.0 (1.0)( ^a,b )</td>
<td>7.3 (2.4)( ^b )</td>
<td>5.74*</td>
</tr>
<tr>
<td>Involving</td>
<td>2.4 (1.8)</td>
<td>2.2 (2.0)</td>
<td>3.3 (2.1)</td>
<td>3.0 (2.0)</td>
<td>0.4</td>
</tr>
<tr>
<td>Pressure</td>
<td>1.2 (0.6)</td>
<td>1.0 (0.0)</td>
<td>1.0 (0.0)</td>
<td>1.0 (0.0)</td>
<td>0.35</td>
</tr>
<tr>
<td>Neglecting</td>
<td>1.1 (0.3)( ^a )</td>
<td>1.7 (1.5)( ^a )</td>
<td>1.0 (2.5)( ^a )</td>
<td>6.3 (2.2)( ^b )</td>
<td>39.58**</td>
</tr>
<tr>
<td>Pressure to Talk</td>
<td>3.6 (2.9)</td>
<td>4.2 (3.3)</td>
<td>5.3 (0.6)</td>
<td>4.3 (2.5)</td>
<td>0.41</td>
</tr>
<tr>
<td>Paternal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loving</td>
<td>4.4 (2.2)( ^a )</td>
<td>3.0 (1.3)( ^b )</td>
<td>2.7 (1.5)( ^b )</td>
<td>1.0 (0.0)( ^b )</td>
<td>3.99*</td>
</tr>
<tr>
<td>Rejecting</td>
<td>3.8 (2.5)( ^a )</td>
<td>5.0 (1.6)( ^a,b )</td>
<td>5.3 (4.0)( ^a,b )</td>
<td>9.0 (0.0)( ^b )</td>
<td>4.84*</td>
</tr>
<tr>
<td>Involving</td>
<td>1.3 (0.8)( ^a )</td>
<td>1.6 (1.4)</td>
<td>1.0 (0.0)</td>
<td>1.0 (0.0)</td>
<td>0.53</td>
</tr>
<tr>
<td>Pressure</td>
<td>1.1 (0.5)( ^a )</td>
<td>1.4 (1.3)</td>
<td>1.0 (0.0)</td>
<td>1.0 (0.0)</td>
<td>0.48</td>
</tr>
<tr>
<td>Neglecting</td>
<td>2.3 (2.0)( ^a )</td>
<td>2.3 (1.7)( ^a )</td>
<td>1.0 (0.0)( ^a )</td>
<td>8.7 (0.6)( ^b )</td>
<td>12.1**</td>
</tr>
<tr>
<td>Pressure to Talk</td>
<td>2.2 (2.1)</td>
<td>1.8 (1.5)</td>
<td>1.0 (0.0)</td>
<td>1.0 (0.0)</td>
<td>0.76</td>
</tr>
</tbody>
</table>

*Note: Means with different superscripts differ from each other using the Neuman-Keuls multicomparison test at the .01 level.

*\( p < .01 \), **\( p < .001 \).
ment classifications than Anger Involving Mothers. Although the individuals in the Unresolved group showed a trend to report the greatest Anger involving their fathers, post hoc tests failed to reveal a significant difference. The means scores for overall Derogation were low for all four groups, suggesting little if any dismissing derogation of attachment. Individuals in the Autonomous group displayed the least difficulty, and those in the Dismissing group reported most difficulty recalling memories of childhood experiences, a pattern confirmed by follow-up statistical tests.

Consistent with the internal logic of the AAI coding scheme and with the pattern of results of studies of Hearing samples, Metacognitive monitoring was most evident in the narratives of those classified as Autonomous; multiple comparisons test confirmed that individuals in this group displayed higher levels of Metacognitive monitoring in the AAI than did those in the other three attachment classification groups. This same pattern was observed for Coherence of Mind scores across attachment groups. Members of the Preoccupied group displayed higher levels of passivity than those in the other three attachment groups.

Evidence of a Secondary Attachment Figure

The final expectation of this study was that the attachment histories of Deaf adults would reveal a dual pattern of significant attachment: a parent-based relationship and a residence counselor–based relationship. This expectation was not supported: During the AAI, not 1 of the 50 Deaf participants reported any sort of attachment relationship with a figure at the residential school.

Discussion

Application of the Adult Attachment Interview to Studies With Deaf Adults

The primary goal of this study was to test the feasibility of using the AAI with a group of culturally Deaf adults. The interview process and coding were adapted in light of considerations arising from the unique situation and characteristics of Deaf participants, the most important of these being the absence of the written transcript used in coding interviews with hearing participants. The study confirmed that the specially adapted interview and coding processes provide an effective assessment of the state of mind regarding attachment of Deaf individuals.

Interview Process. The results indicated that the ASL translations maintained the essential content and spirit of the original English AAI questions. The participants’ responses confirmed their understanding of the questions. Only Question 10 posed any difficulty: “In general, how do you think your overall experiences with your parents have affected your adult personality?” Many participants asked for clarification or responded that they did not understand the question, perhaps as a result of its relatively abstract nature. Vernon and Andrews (1990) reported that Deaf tend to think more in concrete terms, and future applications of the AAI with Deaf samples may attempt to reconceptualize this question.

The coding process for the AAI was adapted to accommodate the inflectional processes that are integral to ASL (i.e., referential indexing, reciprocity, distributional aspect, and temporal aspect) (Bellugi, 1980). It is common for the nonverbal signs of affect to mirror intensely the signed content (e.g. an angry topic becomes an angry signer). The person signing, however, may not actually own that affect because it belongs to the signs. Likewise, it is common for a signer to re-create in a strikingly literal fashion the dialogue between two other individuals; yet, such a detailed recreation, including nonverbal signs of intense affect, is a characteristic application of the language and does not suggest that the signer actually feels the same affect as did the original communicator.

The use of a written transcript in the typical coding of the AAI is explicitly intended to eliminate the influence of nonverbal information regarding affect on the final attachment classification. In sharp contrast, the videotaped record used in the coding process adapted here contained these affect-laden nonverbal elements. In spite of this, we did not find significant differences between classifications derived from videotaped and written transcriptions or any suggestion that the overall pattern of classifications was different from those associated with the typical coding process.
Another concern raised by the adaptation of the AAI to ASL was the frequent use of illustrative prompts in questioning. It is not only common in ASL to frame questions by providing examples of optional responses, such as “How did you come here today? By bus, by car, or by train?” but also this usage is one of the basic linguistic rules of the language (Baker & Battison, 1980). We feared that the provision of such examples might “lead” the interviewee, perhaps predisposing to affirm responses that were false or unrepresentative; thus, we did not routinely provide explicit alternatives. As expected, however, participants frequently responded to questions (such as Question 3, which requested five adjectives to describe the relationship with the mother) with a request for examples. When participants requested examples in this manner, the same two polar adjectives were used (i.e., “happy,” “not happy”) in hopes this would not unduly influence or elicit answers.

**Coding Process.** From the outset of the study, the success of the application of the AAI was seen as dependent on meeting three essential requirements: (1) Videotaped records must be codable using extrapolations from the AAI manual; (2) the coded records must reflect the basic logic and spirit of the coding system, with Autonomous participants higher in Coherency, Dismissing participants higher in Idealization, and Preoccupied participants higher in Passivity; and (3) the State of Mind scales used to define the final classification in normative transcripts must be instrumental in assignment of a final classification in the Deaf videotaped records.

The first requirement was satisfied: The Deaf videotaped records were readily coded using extrapolations from the AAI manual. Although minor adaptations were required as a result of working in a visual-spatial language rather than a written transcript, the narratives of the Deaf participants paralleled the stories of hearing individuals. It was possible to use Coherency as the key marker of an Autonomous state of mind regarding attachment, a central coding element of the AAI.

The second requirement, a central expectation of the AAI classifications system, was that Autonomous records are higher in Coherency, Dismissing records higher in Idealization, and finally Preoccupied records higher in Passivity. This expectation was satisfied for the Autonomous and the Preoccupied groups: Autonomous Deaf participants had significantly higher Coherency scores, and Preoccupied Deaf participants were rated as significantly more Passive. It is worth noting that Passivity was the most difficult of the State of Mind scales to assess using videotaped interviews. The criteria for passivity as outlined in the AAI manual are understandably oriented toward a spoken language, involving examples of passive speech acts such as failure to complete a sentence, adding words or brief phrases to the ends of sentences (such as the word “huh”), changing into a child’s grammatical voice or lexicon, using words or phrases that the child may have heard as a child, or becoming lost in discourse.

Some thought in future studies needs to be given to comparable manifestations of passivity in a signed language. In the Deaf sample, becoming lost in discourse while signing and wandering away into other topics different from the interview context was the most frequent and obvious marker for passivity. Possible examples of passive thought might then be a switch in signing style in mid-interview or the use of a signed linguistic marker to hold, delay, or divert the thought. Although difficult to describe in written words, such a signed marker may be the fluttering of fingers during a thought such as an “ummmmmmm” in spoken discourse. The criteria for passivity were applied according to the AAI manual, and as a result, it may be that Passivity was underestimated in this group.

Our second requirement also demanded that a third State of Mind scale, Idealization, be higher in participants classified as Dismissing. Although there was a trend in this direction, the difference did not reach significant levels. However, when the study records were reanalyzed using only the three primary AAI classifications (i.e., omitting Unresolved), the trend gained statistical significance. These results satisfied the requirement that Autonomous, Dismissing, and Preoccupied Deaf records reflected higher scores on Coherency, Idealization, and Passivity, respectively.

The final requirement was that the specific State of Minds scales used to classify normative hearing transcripts should also be found to be the defining scales in the Deaf records was satisfied when comparisons with
the UWO hearing sample revealed no significant differences. Although the impact on statistical power of the relatively small sample sizes in some of the attachment categories must be kept in mind, the satisfaction of these three coding requirements provides a level of confidence that the AAI coding procedures can meaningfully be applied to the videotaped ASL narratives of Deaf adults. Given the usefulness of this well-established assessment procedure in the study of hearing samples, the AAI promises to provide an exciting window into the attachment-related representational processes of Deaf individuals.

Attachment Representational Processes in Deaf Adults

It was hypothesized that placement in Deaf residential schools and the resultant intense exposure to Deaf adults might predispose Deaf children to develop attachment relationships with the residential counselor. The results failed to provide any indication of such a second attachment figure and did not confirm the additional prediction that the AAI narratives of Deaf participants would be lower in coherency and thus that fewer would display Autonomous states of mind regarding attachment.

When considering the implications of these results, it is important to note that the sample size used here was of necessity smaller than that used in parallel studies of hearing populations; therefore, null findings must be interpreted with a degree of caution. Even given this consideration, however, the finding that the distribution of attachment representation types in the Deaf population studied here was similar to that typically seen in a hearing population was unexpected. Consideration of the atypical developmental experiences of deaf children and their hearing mothers led us to suggest that many Deaf adults would be unlikely to display autonomous narratives when discussing parent–child memories. It was expected, rather, that the narratives of Deaf adults might reflect poor recall, idealization, and perhaps derogation. In contrast to these expectations, 32 individuals in this study displayed autonomous representations and were able to discuss their memories in a coherent, autonomous manner. Given that there was no evidence of differences in communication patterns across attachment groups, it may be that the development of an autonomous attachment representation was a result of other mechanisms, perhaps mediational processes yet to be examined in the Deaf population. A number of possible lines of investigation might be explored.

Attachment as Unrelated to Child Problems

The lack of support for the hypothesis that Deaf individuals would be less likely than hearing to be categorized as autonomous is consistent with van IJzendoorn et al.’s (1992) conclusion that developmental problems that are characteristics of the child do not necessarily decrease the likelihood of secure attachments in infancy. According to the implications of their account, Deaf individuals will develop autonomous attachment relationships if their mothers are able to contain the deafness as a problem of their children and not of themselves, thus allowing them to adapt their interactions to their child’s deafness in a sensitive manner. According to van IJzendoorn et al. (1994), “When children are impaired (physically or mentally) in various degrees, their mothers are generally capable of compensating for the potential handicap in the dyadic relationship” (p. 854). Van IJzendoorn et al.’s suggestion is consistent with the well-established, general attachment construct (Ainsworth et al., 1978; Sroufe, 1990) that the mother plays a more important role in the shaping of the quality of relationships than does the child.

If such an account is accurate, it raises the question of how mothers are able to coexist with or overcome the substantial obstacles of their child’s deafness and to function as a secure base in infancy. Several possibilities are worth exploring. Although hearing mothers of deaf children describe the onslaught of professional opinions as intrusive and upsetting (Luterman, 1987), it may be that this professional support is, nevertheless, helpful to their relationship with the child. Given, however, that the deafness of a majority of infants is not diagnosed until the second or third year of life, even if effective, such professional support would seem unlikely to overcome a maladaptive attachment relationship that would be well established by this time.

An alternative to the positive impact of professional support as an account for the apparent resilience of the
attachment system of Deaf individuals might be the straightforward suggestion that the majority of mothers have an intuitive ability to interact with their infants in a manner that leads to the development of secure attachment relationships, regardless of what their children bring to their interactions. Clues to an understanding of this adaptive maternal responsiveness may be found in the results of existing research on maternal sensitivity.

Maternal Sensitivity
A meta-analysis of existing studies provided statistical evidence that maternal sensitivity mediates the association between maternal attachment representations and the attachment relationship (van IJzendoorn, 1995), but also suggested that it could not fully account for the relatively robust association between a mother’s representation of attachment and the quality of her relationship with her child. A study by Pederson, Gleason, Moran, and Bento (1998) is illustrative of this conclusion. These authors found that maternal sensitivity accounted for only 17% of the relation between the AAI and Strange Situation classifications of the attachment relationship at 1 year of age. Faced with this result, Pederson and colleagues speculated that maternal sensitivity, as traditionally conceptualized in attachment theory, even in a low-risk, hearing population, might be only one of many possible experiential mediators of the attachment relationship.

This conclusion seems especially likely in the case of a hearing mother and a deaf infant because secure attachment relationships can only develop in an environment in which the mother’s ignorance of her child’s deafness must make it highly unlikely that she is able to display the interactive sensitivity necessary for the development of such adaptive relationships. Pederson et al.’s (1998) suggestion implies, then, that the interactions of such mothers must involve a responsiveness that is captured neither conceptually nor methodologically by existing measures of interactive sensitivity. It may be that, in the case of Deaf children, other social interactive processes transcend what has previously been thought to be conscious (and measurable) mechanisms capable of leading to secure relationships.

The hearing mother who has developed a secure relationship with her deaf baby may be utilizing unrecognized resources that allow her to optimize her interactions with her infant. Cassidy (1994), for example, argued that mothers are able to support the socialization of emotion through insightful recognition and acceptance of infant emotional expressions. In the case of the hearing mother of a deaf infant, then, the mother may, consciously or unconsciously, respond to her baby’s needs within the baby’s visual range using predominantly nonverbal means of communication. Although the diagnosis of deafness may be quite delayed, it is not inconceivable to imagine that a mother “knew” there was a difference in her child and engaged in early adaptive social interactions. This may explain why, in retrospect, many mothers describe frustration with their attending physician because the mothers felt sure something was wrong only to be reassured time and time again that objective measures indicated all was well.

This capacity of some mothers for emotional socialization may be a product of a relatively high level of emotional availability and responsiveness. Pederson et al. (1998) proposed that such variation may be accounted for by aspects of maternal representations beyond current models of sensitivity. For example, the concordance of parent attachment representations and parent–infant attachment representations may be under a shared genetic influence. This idea is compelling given the studies that clearly parallel developmental processes of Deaf mother–Deaf child dyads with hearing mother–hearing dyads.

In summary, an explanation of the resilience of attachment in deaf children of hearing parents may lie in the mediational role that maternal interaction plays in the development of attachment representations of Deaf adults. The quality of such maternal interaction must differ from those aspects currently captured by concepts and measures of maternal sensitivity. It may be that the further exploration of the construct of emotional socialization will prove a helpful line of investigation in the study of the communication between a hearing mother and her deaf baby.

Discontinuity of Attachment
Another source of insight into this developmental puzzle can be found in Bowlby’s original theorizing
regarding working models of attachment. Although he argued that such representations were formulated largely in infancy and early childhood and thereafter were resistant to change, he also clearly acknowledged that working models were susceptible to modification at older ages and under particular conditions (Belsky & Cassidy, 1992). Researchers have found evidence of such lawful discontinuity of attachment (Belsky et al., 1996) and linked it to stressful family circumstances that confer an unusual degree of volatility on the mother–child relationship (Egeland & Farber, 1984), leaving it more susceptible to change than relationships developing in a more stable social environment. Clearly, changes in the attachment relationship could be for better or worse.

The substantial communication problems, related social stress, and early separations experienced by the deaf child are an example of the unstable circumstances that can give rise to discontinuity in attachment across developmental stages. According to this logic then, the relatively high portion of autonomous attachment representations seen in adulthood in the Deaf participants of this study may not be attributable to continuity arising in Secure attachment in infancy, but rather are the result of positive social experiences in later life that overcome earlier difficult social experience—the concept of “earned security” (see Phelps, Belsky, & Crnic, 1998, for a discussion of this concept).

Some clues to the process by which this early insecure attachment might be resolved and be replaced by Autonomous representations in adulthood can be found in the details of the narratives seen in the AAI s with the Deaf adults in this study. Communication difficulties were a central and common theme of the Deaf story that dominated much of the Deaf participants’ early recall. It was uncommon for an individual not to comment on the feelings of isolation and confusion imposed by communication barriers, especially regarding his or her mother.

A poignant theme throughout the Deaf narratives was a profound sense of abandonment experienced when first left at the residential school. The trauma of this important separation was compounded by communication difficulties that prevented the young child from appreciating the rationale offered by parents for the separation. There was not as much a sense of sadness at leaving parents, other family members, and friends as a sense of an inexplicable disruptive event that forever changed the course of their lives. Almost all of the participants described a deep sense of bewilderment at the time of the separation, with a dawning awareness of the reasoning by 10 to 12 years of age.

A second theme of the interviews was the importance of Deaf culture and the role it plays in their lives. As in any group, a few of the participants were militant about their culture, tending to be disdainful of anything that was not Deaf. The majority of participants, however, framed Deaf culture as a backbone of their lives, seeing it as providing a long-standing sense of support, shared experiences such as residential school, and pride in their language and their heritage. Many participants described it as giving meaning to their lives, with moving descriptions of their discovery of a sense of belonging.

A powerful example of the protective nature of the Deaf culture perceived by the participants was related to the common theme of victimization from abuse. Physical or sexual abuse, although often cited in our interviews, was rarely reported to authorities or parents at the time it occurred. Rather, it was often described as an expected and common experience at the hands of hearing people. Only a few of the participants described any sense of injustice or anger at these abusive events.

For many individuals, this relatively benign conceptualization of the abuse appeared to be a product of the emotional and cognitive protection offered by an alignment with the Deaf culture in which Deaf individuals are able to consider themselves as intact members of society: not disabled or somehow less of a person because of their differences in hearing levels from the majority group. As children, they may have had little defense against the abuse of a hearing adult, but many of their narratives suggested that, as the Deaf child becomes an adult embedded in the Deaf culture, he or she was able to resolve such traumatic events into a coherent memory. Within a cultural context, the self is conceptualized as whole and intact; furthermore, abuse from hearing individuals is considered an expected and perhaps even normative experience of a Deaf child.
Such experiences are one extreme of the experiences of a deaf child growing up in a harsh world defined by hearing adults. The apparent resilience displayed here may be a reflection of the restorative potential of the Deaf culture. In the context of this study, the later powerful developmental experiences may allow many Deaf individuals to construct an autonomous state of mind regarding attachment that contrasts significantly with the socially maladaptive early reality of many of the Deaf participants in our study. The AAI provides us with a window through which to explore further the tenacity and ability of the human spirit under duress and the protective response of the minority culture.

References


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