Ethological Approach to Individuals With Intellectual and Developmental Disabilities

Jarrett Barnhill, M.D. 1

1University of North Carolina School of Medicine, Chapel Hill, NC

Attachment is a major factor during development throughout the life cycle. Most studies conclude that attachment is a complex interaction between brain development, temperament, and life experiences. This presentation addresses the role of attachment in psychiatric disorders in people with intellectual disabilities.

Keywords: attachment, ethology, intellectual disability, mental retardation, psychiatric

Attachment is a complex and highly conserved social-emotional process that is crucial for the survival of primates. For Homo sapiens attachment and bonding are often used interchangeably even though bonding is generally reserved for neonates and very young infants. Attachment is also a lifelong developmental process that expands from primary caregivers to include other interpersonal relationships and in a more abstract sense, attachments to communities and even ideas or belief systems. Attachment is also an epigenetic process that is affected by individual temperament, the presence of developmental disorders, parental psychopathology, and a range of psychosocial influences during child development. This author will explore several attachment issues for individuals with severe intellectual disability: the ongoing need for support and caregiving; differing patterns of expression for attachment behaviors in nonverbal individuals with severe adaptive deficits; and the importance of intuitive caregivers who are sensitive to nonverbal communications (distress signals). For clinicians, it is important that we understand the transactional nature of attachment behaviors in natural settings and in the context of an ongoing social network.

The focus of this paper is on a case study that explores ethological, behavioral and biological approaches to understanding of challenging behavior. My goal is to raise awareness among clinicians about the role attachment and attachment behaviors play in the genesis of behavioral symptoms of individuals with intellectual disability. In addition, I hope to increase awareness of ethological models to study attachment and other social behaviors as a means of enhancing functional behavioral analysis and perhaps deepen our understanding of human behavior.

Neurobiology, Development and Attachment

Field studies of social primates suggest that territoriality, dominance within social hierarchies, alliance building, and conflict resolution are crucial to survival in the wild. Attachment is an especially critical need during the neonatal period where the rapid development and maintenance of mother-infant bonds is essential for the infant’s survival. The infant ape is helpless at birth and must be able to seduce the primary caregiver to provide nurturance and protection. The strength and success of these initial bonds also lay the groundwork for brain development and the healthy maturation of the infant. Breakdowns in this complex social-emotional dance threaten the normal social development or survival of the infant. In this sense, attachment has a major affect on the reproductive fitness of the species.

Human infants require an immediate need to bond to parenting figures (usually mothers in our culture) and create a viable dyadic relationship—an intuitive and synchronous response by the mother to physiological and emotional needs of the infant. The infant must seduce the parent into caregiving by using signals that may seem generalized or ambiguous to an outsider, but are for the most part, clearly recognizable by attuned parents who are sensitized to these species specific nonverbal communications. The capacity to expand these inborn skills plays out over the markedly prolonged childhood present in our species and the ongoing need for emotional
support, learning (education a broader sense) and protection. A crucial feature of attachment is the activation of circuits involved in evoking pleasure responses in both parents and children. Current research suggests a critical role for oxytocin, dopamine, and endorphin release (pleasure pathways in the ventral-limbic system) during these early interactions. Based on these physiological responses, it is apparent that the human brain is wired to intrinsically reinforce these interactions for both participants. As we shall see, this neurochemical seduction continues to play a key role in the development of attachment throughout the lifespan. Malfunctions in this system have widespread ramifications for social-emotional and cognitive development as well as the future capacity to parent.

In addition to the obvious reinforcing properties of attachment (pleasure, relief), there is another neurological substrate committed to attachment—one that signals threat, separation, excessive perceptual discrepancy, unexpected novelty, pain and other forms of distress. For this system to be effective, the signals must convey to both species specific and over time, increasingly individualized communications. To complete a successful transaction the caregivers must also have and exercise their capacity to perceive, interpret and match caregiving responses to these signals. In this sense behavioral arousal, when separated or in pain, triggers a range of signals that function to restore homeostasis by re-establishing proximity and parental caregiving. When successful, these interactions produce both a reduction in distress and a positive affective state in both members of the dyad.

Successful responses also reinforce attachment behaviors from at least two points—the result of both positive (pleasurable contact) and negative (relieve distress) reinforcement. Successful attachment bonds strengthen during infant development. From a learning perspective these conditioned chains affect both participants in the dyad and allow for expanded generalization of responses. From an attachment perspective, success breeds success. How these successful repetitions of brief behavior-response sequences accelerated development raises questions about the critical role of attachment in the organization and maturation of the central nervous system. It is apparent that there are profound effects on multiple neurological substrates occurring simultaneously but this also translates into growing confidence or basic trust in others. As a result of this maturational process, the infant moves toward greater self-regulation and self-sufficiency, as well as accelerating cognitive and emotional development.

**Role of Caregivers**

In addition to an infant’s capacities to signal, successful attachment also depends on the intuitive skills of parents—especially since many of the signals are presented in nonverbal or global terms. An example involves the gradual development and parental understanding and response to different forms of crying. The successful transaction involves matching the parental response to the infant’s signal (synchrony). Once synchrony is established, the infant appears to quickly build on these successful interactions and eventually develops progressively more complicated and mature forms of adaptation. These changes also solidify increasingly focused social-emotional attachments. Both changes exemplify the organizing function for maturing the central nervous system and attachment behaviors. Even though we can explain these interactions in terms of classical/instrumental conditioning, it is apparent that we are dealing with a far more complex process.

Failure to respond consistently and appropriately increases distress for the infant and over time overwhelm his/her limited adaptive repertoire. Several factors can influence the outcome of these stresses. One major factor involves temperament. Other factors include neurobiological wiring, psychological sensitivity/ flexibility of parents, severe psychopathology, social distress, and family system issues. For example, consistently ignoring or incorrectly responding to the infant’s signals or temperamental style may create a vicious cycle. Parental stress or psychopathology (often depression) may adversely affect this pattern of synchronous responding. Likewise, a very difficult temperament (a hard to console infant) may seriously tax parenting skills. When both parental stress and difficult temperament are present, the poorly bonded infant is at risk of
abandonment, abuse and both physical and emotional neglect. 18,29,50,57

Synchrony to Reciprocity

Over time, there is a shift from synchrony to reciprocity and the emergence of give and take relationships. During this transition attunement and intuition expand beyond global signaling to encompass increasingly complex individualized personal communication. The development of reciprocal system of communication occurs in the context of an explosive growth in cognition and brain maturation, emergence of language, self-awareness, and curiosity about the outside world. Ambulation, exploration, potential dangers (threat perception) and the use of language force a shift in regulatory processes. 3,13,32,55

The success of these transformations has additional multi-directional effects on temperament, brain development, parental adaptation, and continued expansion of the repertoire of attachment behaviors. 28,32 Successful transitions build a growing sense of independence, resiliency, and competency while attachment shifts form parents and family to larger social groups and belief systems. Successful parents gradually accommodate their caregiving behaviors to match the growing autonomy and independence of their offspring by continually shifting the direction of attachment behaviors. 1,3,8,11

Clinical Issues with Attachment

Most infants-caregiver dyads successfully negotiate the reciprocal demands of attachment. On the other hand, faulty or dysfunctional attachment behaviors can arise from overwhelmingly intense emotional reactions to separation/reunion (temperamental factors), severe stress and adverse environmental conditions, lack of caregiver availability, insensitivity, and incapacity to soothe and comfort. 11,28,29 These mismatches mobilize hormonal, 33 physiological and behavioral stress responses that can derail normal development and serve as risk factors for later psychopathology. 14,48

From a clinical perspective, the capacity of caregivers to appropriately intuit and respond is crucial for normal development. 10,13,15 For example, depression in a primary caregiver can diminish sensitivity or capacity to respond to signals of distress, as well as the individual’s attempts to engage in emotional interactions. Left unresolved, these stressors can have an adverse effect on social-emotional as well as cognitive development. 16,26,29,38,41

Developmental disorders such as severe intellectual disability and/or autism affect the normal developmental trajectory of attachment behaviors. 20,21,46,56 For example, severe adaptive deficits, limited language or aberrant signaling of attachment needs and behaviors associated with autism create a dissonance between the dyadic participants. The end result of these mismatches is the potential for further derailment in the emergence of emotional attunement, joint attention, and social communication (building blocks for a theory of mind). In addition, these same factors diminish resilience by creating limits on the individual’s capacity to adapt or capacity to attract appropriate caregiving from others. 17,46,53,55,56

Unfortunately, these early disturbances can also derail the development trajectory of higher order attachment. 6,20,21,23 Although controversial, there may be critical periods for the normal development of a common “language” of social-emotional relatedness and social cognition. Beyond these critical periods, special therapies are more likely required to compensate for these deficits. Although first described in sensory and language development, these derailments may also affect social emotional development—the capacity to expand attachment behaviors to others. The need for more prolonged interventions to compensate creates a situation where protracted caregiving is needed. 8,11,26

Clinical Problems

Frequently clinicians underestimate the importance of attachment needs and misattribute attachment behaviors in their diagnostic assessments. Rather than conceptualizing odd or disruptive behaviors as aberrant attachment, clinicians can readily misattribute unusual behaviors as “attention seeking.” The usual protocol under these circumstances is to ignore or redirect in order to minimize the risk of reinforcing “inappropriate behaviors.” In some situations, a careful behavioral re-analysis may suggest an alternative hypothesis: these challenging behaviors represent proximity-seeking behaviors, and a rapid attuned response in the long run tends to decrease rather than increase the frequency of target behaviors. 14,30,34,47
A similar problem can arise when the clinician uses the same target symptom data in the differential diagnosis of psychiatric disorders. Clinicians may prematurely cut short detailed social observational data and hypothesize that increases in behavior represent examples of baseline exaggeration and not consider the role attachment in the clinical presentation. This misattribution can be especially problematic during differential diagnosis of nonverbal individuals with severe intellectual disability. One source of confusion emerges due to severe deficits in adaptive skills. These deficits can dramatically increase sensitivity to loss and increase an individual's vulnerability to disruptive behaviors—especially those who lack adaptive skills to cope with loss of attachment figures.8,14,22,37,52,55 Under these circumstances, distress communications are often misattributed to psychopathology.

Individuals with autism are also at risk for a similar pattern of diagnostic overshadowing, mainly because their signaling and proximity-seeking behaviors are often difficult to interpret. The tendency is to misinterpret idiosyncratic attachment behaviors in terms of other psychiatric disorders. In fact, in many situations, these idiosyncratic attachment behaviors also contribute to the misconception that people with autism spectrum disorders fail to form emotional attachments.54 This sort of misinterpretation contributes to the misattribution of idiosyncratic communications (echolalia in a 20-year-old) or aberrant use of transitional objects (blocks or pencils rather than teddy bears) to pathological behaviors rather than attachment-related.7,20,21,46

**Ethological Models**

In primate studies, ethologists focus on patterns of social behavior, providing data about social positioning, patterns of interaction, dominance hierarchies and preferential relationships. As an illustration, the status of an individual troop member can be determined by the nature of the interaction, proximity to dominant members, alliance formation, and qualitative and quantitative aspects of grooming and other social behaviors. Conflicts over status, preferred companions, access to food or other resources or territorial issues can be represented by graphic or pictorial representations (ethograms).2,31,43,46

These same techniques can be useful for studying human social behavior, and this is the field of human ethology. For example, looking closely at the patterns of social placement on a playground or social gathering may provide subtle clues about key social structures and interactions. Humans display a wide range of territorial and dominance related interactions that play out in everyday interactions. Consider common greeting behaviors, a smile, eye contact, and other ritualistic behaviors. These stylized or conventional behaviors often emerge with little forethought or planning where there is uncertainty about potential threats during an initial contact. Dating behaviors also tend to be stylized and even though “love” is a very individualized emotional experience, dating behavior is quite conventional—appropriate behaviors are dictated by culture, age stratification, and social status. Many of these behaviors are fodder for ethologists even when they are disguised by culture, language, and our aversion to considering the human traits as analogous to instinctual animal behaviors.4,5,12,31

If we suspend our biases, ethological insights are a marvelous addition to functional behavioral data, and allow clinicians to expand their observational database beyond specific target behaviors. An ethological approach can augment and perhaps fine-tune the functional analysis by adding another layer of social behavioral data to the assessment by incorporating “free field” or ongoing direct observation to data collection. For example, we can gain new insights about the function of behaviors during a behavioral analysis of aggressive behaviors by exploring the setting (e.g., mealtime), who is present (dominance status) and where they are sitting (territoriality). This will enhance our understanding of the many factors associated with an individual’s need to escape the demands during mealtime.5,12,17

Data from the ethological oriented clinician may focus on who is at the table, the individual’s proximity to and relationship to “higher status” members, and degree of conflict between various individuals, including staff or direct care personnel. From this perspective, aggression may represent a form of display behavior over territorial conflicts, disruptions in dominance hierarchies, or a need to re-establish close proximity to staff in the presence of threats or competition over a scarce preferred resource (e.g., cookies).

Ethological observations also focus on direct observation of ongoing reciprocal interactions that
address the social context of observable behaviors. By doing so, the observer can glimpse the richness of complex social transactions and the multidirectional nature of the flow of social behavior—strings of mutually cue-response interactions. Attachment behaviors are only one part of this level of analysis since issues of territoriality, dominance hierarchies, and ever-changing individual and group behaviors are also in play.\textsuperscript{10,31,44}

Individual differences in temperament, developmental level, adaptive skills, and capacity to communicate also shape reciprocal social interactions.\textsuperscript{26} It is important to factor in individual sensitivities when observing patterns of social interaction and communication. This is the essence of a biopsychosocial approach that relies on multi-dimensional lines of evidence. It may be equally important to consider our species-specific behaviors also. As noted earlier, ritualized behaviors are common in many social interactions between strangers—greetings, smiling, and responding when someone is speaking to you.\textsuperscript{43,44}

Gaze aversion in such circumstances can disrupt smooth communication and reciprocal behaviors. It can also occur during meetings with a potentially aggressive or threatening stranger or rival. In addition to an appeasement gesture, gaze aversion is related to deception—responses to gaze aversion activate a similar substrate in the central nervous system that processes and responds to deliberate deception.\textsuperscript{46} Gaze aversion is also part of the behavioral phenotype in fragile-X syndrome, probably due to excessive arousal during social interactions.\textsuperscript{4,30} Gaze aversion or aberrant patterns of gaze during conversation are also noted in individuals with autism. In these individuals, aberrant patterns of facial scanning during interactions not only affects the information processed but can also alter the patterns and course of a social transaction. It is apparent that gaze aversion has many sources but the end result is often a derailment of social communication and emotional attunement.\textsuperscript{53}

Some forms of aggression are also highly stylized with a great deal of threatening and display behaviors (territorial disputes over favorite chairs). We can obtain clues about the dominance structure within a stable social group by observing where an individual commonly sits; who speaks first or initiates a conversations, who controls the TV remote, who is turned to during periods of distress, or who you concede first dibs on food or seats on the van. These observations extend beyond the individual to include the social group and are the nuts and bolts of ethological "field studies."\textsuperscript{12,17}

**Attachment and Severe Intellectual Disability**

Aberrant or highly idiosyncratic social rituals affect the course of any interaction—e.g., talking to someone who never establishes eye contact, speaks in a dull monotonic voice, and seems largely disinterested in the interactions tends to alter the style of communicating by others.\textsuperscript{12,53} If we consider attachment behaviors, many are non-verbal yet readily recognizable. Although cultural differences may fine tune these responses, most are species-specific. In this sense the attachment behaviors during distress require clear signaling and proximity seeking behaviors that can be recognized and capable of generating an appropriate response from others.\textsuperscript{46}

Parent-infant interactions are based on this form of successful signaling and responding.\textsuperscript{14,15,52,55} For individuals with profound intellectual disability who depend on others for nurturance and many basic supports, there may be less flexibility in readily adapting the natural evolution of the social signals—resulting in a pattern of perseverative signaling behaviors. In addition, these fixed patterns of behavior may impair the individual’s capacity to replace lost caregivers. Problems during these transitions may require the caregiver to adapt resulting in a period of re-education or retraining of each new caregiver.

Caregiver response can also profoundly affect the attachment behaviors.\textsuperscript{18,19} For example, an unfortunate consequence of postpartum maternal depression is a reduction in positive affective responsiveness or nonverbal expressions of pleasure from infant “play”—reciprocal smiles, giggles, baby talk, eye contact and attempts to elicit and maintain the interaction.\textsuperscript{8,26,29,34,38} Such “frozen face" responses represent a failure to reciprocate and are quite stressful to infants. In response to ongoing unresponsiveness, the infant increases stress related behaviors and engages in a range of attachment behaviors.\textsuperscript{34,38} The outcome of these escalating stress responses can also threaten to overwhelm the vulnerable caregiver, adding the additional burden of a growing sense of inadequacy—starting and maintaining a vicious cycle.\textsuperscript{50} Residuals of the early distress reactions persist into adulthood but are largely disguised by
additional layers of cognitive verbal and socially adaptive behaviors. Less resilient individuals may not be able to attract others and in a sense find themselves in a position of “learned helplessness.”

At another level, grieving for many individuals with autism and/or severe intellectual disability may consist of recapitulating social behaviors and patterns of interaction that were shared with a dead or absent parent. The observable behaviors may appear bizarre or unusual but may represent attempts to re-establish familiar patterns of interacting. Unless recognized and responded to as such, the level of distress may steadily increase or further regression of skills may continue.

Each of these examples is obviously open to alternative interpretations. Hopefully the case report below will provide a more concrete example of the value of an ethological perspective for challenging behaviors as well as major psychiatric disorders. Although not adequately discussed, it is also imperative to understand that the reciprocity of social behaviors creates an open system in which the responses of caregivers or significant others is shaped by and shapes the ongoing stream of the interaction. Such an approach delves into the role of preferences with respect to interactions, or direction of challenging behavior.

**CASE REPORT**

Mr. J was a 36-year-old white male with severe/profound intellectual disability, seizure disorder, and very limited communication skills who lived in a community residence. He was generally a pleasant individual who enjoyed social contact, especially sitting on the left end of the sofa next to two preferred peers. He had a past history of disruptive behaviors and self-injurious behaviors—head slapping and hand biting. Previous behavioral analyses suggested the behaviors were a negative reaction to disruptions in routines, someone taking his seat, absences of preferred staff, and separations from his friends.

His period of stability ended with a new admission—a large, loud, boisterous and threatening male. This intrusion created a great deal of distress for every member of the stable social group of residents. Mr. J’s response included a re-emergence of challenging target behaviors at levels well above two standard deviations above his mean of long term data. This escalation was consistent with previous exacerbations of target behaviors in his remote past. Unfortunately, the older data did not reveal specific social circumstances of these escalations.

**Current Behaviors**

Mr. J has extended periods of time when his target behaviors occur at low rates. This status quo changes quickly whenever this new peer enters the room. At this point, Mr. J becomes markedly agitated, screams and begins a flurry of biting and hitting (changes in frequency and intensity without major differences in topography or typology of target behaviors). These behaviors are absent two conditions: when the new peer is not in the dayroom, and/or when the peer enters when his preferred staff is present. Mr. J tries to get close or sit next to this staff member. Mr. J also began following this staff member, a large male, and tries to maintain this close contact (proximity-seeking).

**Treatment Team Consensus**

His behaviors appear under relatively strict stimulus control (new peer). They also appear to represent an attempt to escape the threat presented by this unfamiliar and possibly aggressive individual. When preferred staff was not present, Mr. J would attempt to escape this situation by increasing vocalizations and head slapping. Rates of target behaviors with preferred staff differed markedly from those seen with substitute staff.

**Plan of Intervention**

With Mr. J in the room, the new peer enters but only in the presence of both his preferred and non-preferred staff. The goals of this intervention are to gradually desensitize Mr. J to the presence of this new male peer, minimize the reinforcement of escape behaviors by staff response to SIB/screaming, generalizing his sense of safety by pairing his preferred with non-preferred staff, then fading the presence of the preferred staff in the “safe” condition.

This protocol proved successful over a period of several weeks. There was an interesting twist to this story—Mr. J developed a friendship with his former nemesis. The two are now inseparable. One humorous explanation evolved from the treatment team—Mr. J now has a personal bodyguard. Both men still spend considerable time with Mr. J’s primary staff person, “sharing” him with minimal conflict.
DISCUSSION

As clinicians we can formulate several conceptual hypotheses to explain this scenario. We can also draw quite different conclusions from the same observations. From a biological perspective Mr. J’s clinical presentation has the earmarks of a phobic-panic response with intense autonomic activity, protest screaming and proximity seeking. For many individuals with phobias or panic disorder, the presence of significant others can attenuate symptoms during graduated exposure and help modulate avoidance behaviors and agoraphobia.\textsuperscript{9,37,41,42} In more challenging situations psychopharmacological approaches focus on reducing arousal and the intensity of anxiety, as well as address anticipatory anxiety that may emerge as a result of fear conditioning and an over active amygdala-hippocampal system.\textsuperscript{4,9}

We could also focus on the relationship between a specific stressor and the emergence of a cluster of psychiatric symptoms that could easily be categorized as an acute stress reaction.\textsuperscript{14,18,47} Factors supporting such a diagnosis include the rather sudden precipitation of escalating protest and the sudden appearance of largely dormant target behaviors. The appearance of the large male seemed to trigger his behaviors. His presence disrupted Mr. J’s social routines and access to activities. The sudden escalation in target behaviors (baseline exaggeration) and their relatively rapid disappearance could support the diagnosis of acute stress disorder.\textsuperscript{14,48} If we opted for a psychopharmacological approach, the most logical approach is to decrease autonomic hyperarousal and minimize the risk for fear conditioning and generalization or persistence of dysfunctional compensatory behaviors.\textsuperscript{4,8,9}

His vulnerability and limited ability to escape also increases the risk of developing a variation of learned helplessness, a potential model for posttraumatic stress disorder (PTSD).\textsuperscript{22} Mr. J has a major risk factor for PTSD because he had a history of abuse as a child by relatives. As a result of prior sensitization (abuse), he is at greater risk for developing a chronically maladaptive intrusive overarousal, behavioral constriction and avoidance, and in many cases increased disruptive or aggressive behaviors that seem context specific. On the surface we could argue that his reaction to the intruder is exaggerated beyond any real threat due to heightened sensitivity. He is hypervigilant and over responds to both specific (large male) and context related triggers (room). He has a repertoire of avoidance behaviors that could be inadvertently reinforced by staff contact.\textsuperscript{9,16} As such, PTSD might be a valid diagnosis if we had sufficient evidence of these changes persisting beyond the time period of these events. Prior to and shortly after resolving his “crisis,” there is little clinical evidence to support chronic PTSD.\textsuperscript{3,6,18,23,25}

From a behavioral perspective, Mr. J’s behaviors changed dramatically when a new peer was admitted to his living area. Staff reaction was to go to Mr. J and either take him or the peer for a walk. It is apparent that his SIB/disturbing behaviors allowed him to escape what he perceived to be a danger—the large and possibly aggressive peer. It was quickly apparent from data that attention to Mr. J’s fear responses had the potential to reinforce his SIB/agitated behaviors—negative reinforcement schedule and that response by his preferred staff could also serve to reinforce these behaviors.\textsuperscript{14,30,34,47}

Both a categorical psychiatric diagnosis and strictly behavioral analysis seem reductionistic in this context. Both really skirt the issue of complex social behaviors that are also present in this rich social environment. The linkage with attachment behaviors and social rituals adds richness to this very interesting treatment plan.

Ethological Model

In reviewing Mr. J’s behavioral responses, several intriguing observations come into play. One, Mr. J’s responses are quite specific—he reacted only to the presence of the large peer, and only when a specific male staff was absent. Looking at his behavioral data, this pattern was stable across several weeks. The selectivity and rapidity of his response is also noteworthy. Another pattern of behavior adds a curious twist—his proximity/comforting response did not generalize to other non-preferred male staff. There seems to be a very specific relationship between this staff member and Mr. J that could be driven by panic/fear or escape-avoidance behaviors.

From an ethological perspective, there are several alternative hypotheses regarding the sudden change in Mr. J’s behaviors and intensification of contact with his preferred staff member. Clinicians using an ethological approach might consider Mr. J’s behaviors motivated in part by proximity seeking-attachment behaviors. The
preferred staff member sat next to Mr. J, indirectly “protecting” his access to his favorite seat. This alliance has definite dominance hierarchy characteristics as well as deflects any potential territorial conflict. One outcome of this intervention is the formation of a new social alliance and a new equilibrium that helped resolve the instability in territorial and dominance parameters of this once stable social network. As a result, the disruptive and other proximity-seeking behaviors have largely disappeared.

**Comparative Analysis and Conclusions**

There are obviously many parallels between a functional behavioral analysis and this ethological approach. In retrospect, it is apparent that an ethological perspective enriched Mr. J’s behavioral data—ethological techniques added to the behavioral program by expanding the clinical focus from a reliance based solely on the hypotheses of escape behaviors (negatively reinforced). We added an additional wrinkle by hypothesizing that Mr. J’s behaviors could easily represent efforts to reestablish proximity to his “protector,” the real dominant “alpha” male in his home.4,5,43,44

From an ethological perspective, it is apparent that the introduction of a male peer changed a stable social structure (social preferences and alliances, dominance hierarchy). The intrusion disrupted a group “set in their ways” and forced a realignment of multiple social relationships.8,12,31 For Mr. J, this change was a source of significant distress. His heightened sensitivity (disproportionate fear response) to this threat tapped into the affects of temperament and past experiences on social communication and attachment behaviors. Mr. J was also quite sensitive to the collapse of his social network system and sudden loss of his sense of communal peer supports. In essence, he responded to the exaggerated threat by engaging in SIB and screaming, which seemed to function as a means of assuring proximity to staff—who initiated his behavioral program.1,7,8,9,31

In short, the presence of a new individual triggered a distress response in Mr. J. This reaction occurred in a social context that was intuitively understood even though his pattern of behavior was both ritualized and quite idiosyncratic. His response to the departure of his key attachment figure (male staff member) started a sequence of protest behaviors that began by proximity seeking but could quickly evolve into highly maladaptive destructive behaviors (SIB).4,30,51 Even though the entire group reacted warily, Mr. J was particularly distressed, suggesting sensitization by previous trauma. In this sense, the biopsychosociology of his exaggerated response had roots in his previous life experiences with abuse; a biological predisposition to exaggerated anxiety, phobia or panic disorder might have had a similar effect.9,12,16,23,25

His efforts to quickly seek out an even larger male staff under these specific circumstances suggest analogies with behaviors seen in individuals with phobias.4,9,41 The danger in this sort of relationship is the risk of reinforcing regressive behaviors. These issues and concerns lie at the heart of the conflict between behaviors motivated by escape (negative reinforcement) based on functional behavioral points of view and proximity seeking as an expression of attachment. The crucial variable may be Mr. J’s response—he developed a sense of greater independence and his behaviors seemed more adaptive, albeit dependent of primary caregivers.5,8,24,28

In general, Mr. J’s rapid improvement and new adaptive social behaviors suggest the successful mastery noted in infants when distress is followed by appropriate caregiver responses (synchronous and attuned to real threat).13,37 Although he befriended his former protagonist and may have shifted dependency needs to his peers, Mr. J maintains a warm relationship with his former protector.

**Limitations**

The limitations of an attachment model grow out of difficulties defining the point where these patterns of proximity seeking, attachment behaviors and staff response come to reinforce “pathology.” Taking a rigid behavioral perspective of this scenario, the male staff response should entrench target behaviors rather than open the door to an expanded repertoire of social behaviors.13,47,50 The ethologist interested in attachment might have a different view, but how does the clinician appreciate the differences and decide which approach is appropriate? The outcome can help—changes in rates of target behaviors.30 As clinicians, however, we need to clarify several aspects of attachment and attachment behavior before making the leap to treatment.
Ainsworth argues that the risk for pathology lies in the quality of attachment behaviors, especially in infants and children with insecure or ambivalent attachments. Individuals displaying ambivalent or insecure attachments may be unable to tolerate the absence of the attachment figure (male staff) or fail to be comforted or soothed by his return. These qualitative differences may set the stage for clinical problems with reinforcing regressive behaviors or psychopathology. The patterns of attachment lie at the heart of reactive attachment disorders, although the focus of the classification is on parental actions rather than a transactional model.

We can speculate that when excessive autonomic reactivity or dysfunctional oxytocin/vasopressin/endorphin systems are present, the individual is less responsive to reunion and may be less resilient—unable to find succor in any relationship. The role of imprinting in humans lurks beneath the surface. Imprinting is a period of rapid learning. Lorenz first described the process with geese, but the concept has broadened over the last few decades. One tenet of imprinting is a critical period, a brief time span when this rapid locking in on caretakers occurs. This concept of both imprinting and critical period have expanded to include a much longer period of early learning, substrates for the process, and now includes some aspect of human bonding, socialization, and language development. During the period of entrainment, these systems become linked to social contact and over time expand or generalize their emotional selectively from specific individuals to a social group. The process of generalization increases adaptive skills and learning (sensitivity to reinforcement).

There may be limits imposed by severe intellectual disability on the plasticity required to develop independent behaviors or the behavioral flexibility to expand beyond the need for primary caregivers. Thus attachment behaviors may persist but resilient individuals may tolerate caregiver changes because the capacity to attach is intact. We should keep this sensitivity in mind when we address loss or grieving, or adverse reactions to the sudden rupture in close emotional ties brought about by the departure of preferred staff.

In other words we can view the prolongation of dependency as beneficial to survival of our species but there is a price for individuals with severe adaptive and intellectual deficits. For example, there are differences in patterns of protest-despair-detachment responses to loss that may alter the presentation of course of grieving. For individuals with severe intellectual disability we may observe a protracted vulnerability and greater sensitivity to the loss of essential caregivers as well as a greater risk for catastrophic reactions to these losses. Resilience under these circumstances may arise from the individual's capacity to establish new social/emotional relationships—a failure to do so may contribute to a heightened sensitivity, inability to find alternative attachments through "normal" attachment behaviors and set the stage for significant behavioral or psychiatric disability.

**Summary**

We may need to expand our view of proximity seeking behaviors (attention seeking or escape demands) to include attachment. If such a leap is tenable, then we need to consider the social context of behaviors as well as the ongoing transactional behavior in the social context where it occurs. One possible solution involves carefully reframing and combining behavioral with available neurophysiological and neuroendocrinological and ethological data. An ethological approach also allows for the use of "field observations" to reconceptualize our thinking about target behaviors and symptoms. We can apply these observations to hypotheses about disrupted attachment and attachment behaviors, dominance and territorial issues. The approach to understanding challenging behavior and psychopathology can be viewed in terms of broader deficits such as in reciprocal interactions and social communication.

This approach is the essence of a biopsychosocial model and expands our usual assessments and design interventions by incorporating the larger social context—redefining target behaviors in terms of synchrony, reciprocity, and attachment behaviors with key friends or caregivers. An outgrowth of this approach involves assessing the impact of the security of attachments on the acquisition of new adaptive behaviors or the capacity of people with severe intellectual disability to form new social relationships (a variation on differential reinforcement paradigms). This approach is
analogous to the Ainsworth Strange Situation Tests—adapting them to a social rather dyadic context and using the patterns of attachment to assess risk or shape interventions.\textsuperscript{1,6,11,13,14}

The major objection to ethological study of human behavior is its historical focus on instinctual and reliance on observation data drawn from animals and nonhuman primates.\textsuperscript{1,4,31}

Both can be seen as less relevant to humans. The author is also well aware of the dangers of extrapolating this data to humans. But ethological principles and methodologies, when applied to humans, can enhance our understanding of people with intellectual disability. It does not dehumanize or denigrate people as subhuman or “primitive.” It also does not necessarily homogenize people based on observations of species-specific rather than individualized behaviors any more than the assumption that all humans increase behavior in the face of proper reinforcement.

Unfortunately, many of our assessment and treatment models are one dimensional and reductionistic. We often fail to integrate the diversity of human experiences or the complex relationship between species-specific behaviors (ethology), brain development and function (neurobiology), and the impact of life experiences and learning (psychosociology and behavioral models). We need to remember that individuals with severe intellectual disability behave as humans, and I do not think anyone equates the complex social behaviors seen in a dining hall at a university or community residence around meal time with a group of chimpanzees foraging for food. In spite of these concerns, ethology can make significant contributions to individualizing and understanding human social behavior.\textsuperscript{3,31}

Therein lies the value of this approach.

References


48. Roomer D, Walker EF. *Adolescent Psychopathology and the Developing Brain*:


Correspondence: Jarrett Barnhill, M.D., University of North Carolina School of Medicine, Chapel Hill, NC 27599-7160; email: Jarrett_Barnhill@med.unc.edu.