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# Avian Affective Dysregulation: Psychiatric Models and Treatment for Parrots in Captivity

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*Abstract:* Adult parrots often express affect dysregulation, hypersensitivity to environmental change, and an inability to self-regulate that presents commonly as uncontrollable aggression, general anxiety, and excessive screaming. In many cases, these symptoms result from the disruption or diminished quality of parent-young developmental interactions, what is referred to as relational trauma. Symptoms are difficult to eradicate because of the enduring nature of attachment processes that actively shape neuroendocrine systems. Human psychiatry has created psychotherapeutic methods on this understanding. Now, with the emergence of trans-species models of brain, mind, and behavior, these methods can be applied to relationally-related affective dysregulated behavior in parrots. In a study conducted at an avian rescue center-sanctuary facility, the "strange situation test" was used as diagnostic tool to successfully inform avian behavior re-patterning schemata for relational repair therapies. Such approaches that integrate biology and ethology with psychology and psychiatry strengthen the bridge between human and veterinary medicine and build a framework for avian psychiatry.

*Key words:* avian, disorders, behavior, development, psychiatry, attachment, self

## Introduction

Many adult disorders have their roots in development. Behavior of altricial and social brain species—those whose young strongly rely on early social interactions and adult care—is strongly influenced by early developmental events.[1] It is during this period of time when the brain is most plastic and receptive to environmental surroundings: what an infant perceives and receives effectively sculpts his/her developing neuroethology. Problems arise when there is a "mismatch" between what an individual expects ecologically and evolutionarily and what is experienced in the social and ecological context. We can consider this differential a measure of stress to which the infant adapts. If relational interactions between the infant and parent are healthful and positive, the child develops a resilient sense of self and balanced capacity to regulate their emotions and behavior successfully. If there is relational trauma—neglect, abuse, or loss of a parent—the child's adaptation to these stressors can result in psychological fragility and a compromised ability to function appropriately in social situations, often expressed as hyper-(aggression) or hypo-(depression) arousal. Under such circumstances, what may appear maladaptive in an adult, is behavior that evolved in youth to cope with adverse environmental conditions. The field of traumatology developed to understand the range and etiology of psychological, physiological, and behavioral symptoms that result from severe stress and to create ameliorative therapies. New trans-species' models of brain, behavior, and mind for all vertebrates, inclusive the self,[2,3] permit access to theories and methods of human psychiatry and psychology by veterinary medicine. Cortex neuroanatomy and cytoarchitecture indicate that the evolution of mammalian and avian neural substrates may have diverged, but mental and emotional evolution has been convergent.[4]

Through the lens of neuropsychology, we introduce the concept of avian psychiatry as a critical new field for the care of avian species in captivity. We focus on the effects of relational trauma experienced by parrots during formative years of neuroethological development that express as social dysfunction, a diminished capacity to cope with stress, and affect dysregulation. Illustrated by birds in recovery at a rescue center and sanctuary, we describe underlying theory, examples of diagnoses, and therapeutic treatments. Framing the diagnosis and treatment of avian behavioral disorders in neuropsychological models provides several advantages. First, it helps systematize diverse symptoms that are often difficult to organize in consultation with human caregivers. Second, a relationally-based classification, evaluation, and treatment regime can be used even when there are insufficient or inaccurate case histories, which is often the situation for parrots in captivity whose origins may be unknown or lost and have resided in a succession of homes. Third, avian psychiatry provides a conceptual and methodological "umbrella" inclusive of and complementary to behavioral analysis and encompassing the entirety of parrot subjective experience, that increases interdisciplinary exchange and collaboration.

## Attachment and Neuropsychological Models of Self Development

Attachment theory is pivotal to psychiatry and psychology. Attachment is the socio-affective bonding that initiates in infancy with mother-child (or more generally to accommodate cultural variation in rearing practices, caregiver[s]-infant). While most

psychiatric investigations of attachment theory have focused on humans, Bowlby included other species in his treatment of the subject. Even though by the early twentieth century ethology and psychology were already diverging fields, John Bowlby maintained a vital connection with the theories and scholars of animal behavior including Robert Hinde, Niko Tinbergen, and Konrad Lorenz. Bowlby's keen observations of children, along with his knowledge of evolutionary biology and ethology, brought a rare fluidity to understanding behavior across species.[1] From this interdisciplinary viewpoint, Bowlby concluded that attachment is a phylogenetically evolved adaptive strategy found throughout the animal kingdom and a focal mechanism to social obligates whose lives revolve around and are mediated by family and friends.[2]

Neuroscience has confirmed ethology: interpersonal interactions that dominate development sculpt the mind and, simultaneously, neuroendocrine pathways of the brain. Minute exchanges with the caregiver via emotions, touch, and smell effectively "tune" neuroendocrine circuits that inform the infant's behavior appropriate to diverse circumstances. Through such shaping of evolving self-regulatory systems, socially dominated development cultivates an individual's sense of identity [1] The developing individual gains an understanding of how to exist and behave in a social surround and to form satisfying emotional and physical relationships. The self is therefore reflective of synergy between heritage (genetics) and experience (developmental context), the latter defined by cultural knowledge, behavior, and values.

## Relational Trauma and Affect-stress Dysregulation

Abuse, neglect, parental loss, or other relational trauma are transmitted to the child in the same way and affect perception, meaning, and behavior. When, as Holocaust survivor Viktor Frankl, observed, we are unable to change the environment, we are forced to change ourselves. Subsequently, an inability to regulate affect or stress as an adult often reflects coping mechanisms created years before to serve childhood or adolescence contexts. Psychiatric disorders *maladaptive* in adulthood, often relate to *adaptive* behaviors in childhood acquired during attachment processes.

The "strange situation" test is a way to relate differences in attachment style to behavior.[5] A parent and child sit together in a room, and then a stranger enters. After a short while, the parent leaves, then returns to comfort and embrace the child. Based on observed behavior of child and parent during these series of events, one of 4 classes of attachment style may be identified: secure, insecure-avoidant, insecure-ambivalent, and disorganized-disoriented attachment. As with most classifications, not every set of behaviors fit neatly into a single category. However, often they do, and at other occasions, they are useful in pointing out significant patterns (Table 1).

**Table 1.** Psychosocial attachment style-developmental pathways.

| | **Developmental attributes** | | | |
|---|---|---|---|---|
| Attachment style | Secure | Insecure-avoidant | Insecure-ambivalent | Disorganized-disoriented |
| Developmental context | Well-functioning social engagement system | States of hypoarousal under stress | States of hyperarousal under stress | States of hyper-and/or hypoarousal under stress |
| Early socialization | Normal bonding | Insecure in bond to parent leading to avoidant–shy and poor bonding | Caregiver who is vituperative, threatening leading to overly aggressive, dominant-style bonding | Caregiver who is unpredictable in his/her reactions and behavior toward the infant, highly contradictory |
| Juvenile socialization | Regulates stress and emotions in new or challenging situations well | Does not seek social contact for comfort during periods of stress | Escalates signals of distress to get attention and subject to poor regulation of arousal states | Unpredictable behaviors combining avoidant and ambivalent characteristics |
| Adult socialization | Good self-esteem, able to engage in intimate relationships, has high levels of trust, is empathetic | Tends not to invest in relationships, feelings of helplessness, reluctant in sharing emotions with others | Overly dependent in relationships, often exhibits vituperative & objurgational (rebuking) style in response to its children | Capricious in his/her reactions and behavior toward his/her infant, highly contradictory response to its children |

| | | | | |
|---|---|---|---|---|
| Issues/Behavioral disorders | Well-adjusted, capable of dealing with change and stress | Insecure, not aggressive | Insecure, aggressive | Highly reactive, aggression, fearful |
| Recovery method/ Attachment re-patterning | N/A | Self-esteem building and some behavioral modification/training | Occasional anger management, pharmacological and psychological therapy/training | Often, pharmacological and psychological therapy/training |

Attachment style categories also correspond to different categories in underlying regulatory psychophysiological states. Polyvagal theory describes the complexity of the autonomic nervous system that is engaged in regulating arousal states and provides insight into the relationship between socially-mediated regulation and neuropsychophysiology.[6] The autonomic system, particularly that of altricial species, is more than a simple "on-off" switch. It is governed by a hierarchy of subsystems: the sympathetic systems (mobilization of resource: "flight or fight" accompanied by elevated heart rate, respiration, blood pressure, vocalization), the dorsal parasympathetic system (immobilization accompanied by unresponsiveness), and the ventral parasympathetic system (social engagement). This last subsystem provides an interactive way to engage (or disengage) with the environment without taxing the other two systems, thereby providing flexibility and reactive continuity.

Individuals who have experienced *secure attachment* have developed a well-functioning social engagement system. There is a balance between sympathetic and parasympathetic systems that provides both resilience and the capability to adapt even under even the most extreme circumstances. When there is trauma or compromised parental care, particularly in the absence of a restorative secure attachment, the regulatory ventral parasympathetic subsystem is poorly "tuned" and overridden, resulting in states of hyper-or hypoarousal under stress: either of which strains an individual's physical and mental health, as well as creating dissonance with the environment. For example, *insecure-ambivalent* children are extremely wary of strangers and exhibit or feel considerable distress when the parent is absent. Significantly, the parent's return is not always reassuring, evoking at times, rejection or a display of aggression. These children tend to have difficulty autoregulating and show sympathetic system dominance, a low threshold of arousal, and poor capacities to engage socially. Insecure-ambivalent adults are described as overly dependent when in relationships.

*Insecure-avoidant* attachment experiences lead to emotional and physical distancing and largely depend on auto-regulation and dorsal parasympathetic dominance. Adults tend not to invest significantly in relationships, have feelings of helplessness, lower levels of activity, are not comfortable sharing their emotions with others (affective over-regulation), are not empathetic, and have an inability to modulate affect socially, This may result in aggressiveness and hostility. *Disorganized-disoriented attachment* is characterized by a caregiver who is unpredictable in his/her reactions. Their behavior toward the infant, is highly contradictory—warm one minute and suddenly becoming cold and aloof literally the next instant, showing confused mental states and threatening, fearful body language and vocalizations. Children of these caregivers often embody similar behavior, almost simultaneously exhibiting attachment while displaying defensive behavior.

Models of self and relationships are reflective of attachment experiences. Obviously, while relational behaviors created in childhood may have been consonant with the existing social context, by adulthood such compromise to self-regulatory systems is usually maladaptive and can cause considerable distress. Psychotherapies are therefore directed at re-patterning attachment patterns (relational repair and building), "re-tuning" affect and self-regulation (affect and stress modulation), and self-identity repair.

## Study Site and Methods

The study was conducted at the Midwest Avian Adoption and Rescue Center (MAARS; www.maars.org), St. Paul, Minnesota, as part of the Parrot Directed Study Initiative (PDSI) initiated in 2007 as a collaboration between Kerulos Center researchers and MAARS to design and develop psychiatric approaches for use in clinical and home settings for addressing what are most often referred to as avian behavioral problems. MAARS was founded in July 1999 and is designed to provide avian veterinary medical care; education curricula; consultations; surrender, rescue, sanctuary; and adoption services for parrots. Staff includes a clinical psychologist and multiple trained, volunteer caregivers. The director and director's assistant (who have day-to day contact with the study subjects and extensive experience working with parrots in recovery) and the clinical psychologist (referred to in text collectively as *therapists*) conducted on-site assessments and provided structured interviews, and client case and medical histories. In keeping with human psychological and psychiatric conventions, "client" here refers to the individual receiving treatment, namely the parrot, "guardian" refers to the human who is legally responsible for the client, "caregiver" is the person either temporarily (sanctuary professional) or permanently (guardian), and "therapist" refers to the sanctuary professional involved in traumas recovery. In accordance with human subjects, pseudonyms are used to protect individual privacy and the sanctuary director granted permission for birds to participate in the study.

The rescue center has 2 primary goals: rehabilitate rescued parrots physically and psychologically and prepare them for potential adoption. (Parrot reintroduction to the wild community of origin is ideal, but in most cases of captivity in North America, unfortunately is impracticable and unsafe for the bird.) The overall intent of therapy is to expand or restore the bird's *locus of control*, the extent of the psychological, emotional, and permission for social "space" that another individual can comfortably occupy, for varied aspects of their life to an optimal level. Therapeutic and recovery protocols are tailored to work in 5 core relational contexts.[5]

1. *Good–enough*. The relationship between caregiver and bird is secure but there has been a relational breach. Therapist is called to facilitate reviving the trust with the goal that the parrot will not be relinquished based on the assumption that parrot wellbeing can be restored and upheld.

2. *Maladaptive relationship with potential for change.* Bird has experienced inadequate or abusive behavior from guardian(s). However, there are signs of desired attachment and commitment from both the guardian and bird. Relinquishment may be advised.

3. *Maladaptive relationship without potential for change.* The bird has been confiscated or relinquished. Therapist focuses on re-patterning attachment with bird and also process trauma.

4. *New primary caregiver.* Sanctuary resident is considered a candidate for adoption and guardian identified. Therapist focuses on readying the bird as well as new guardian) emotionally and prepares ground and process for potential relational breaks that necessitate off-site visits.

5. *Non-primary attachments*. Therapist works with guardian and adopted resident to learn how to live with and have access to supplemental attachment figures (human and psittacine) that play diverse social-affective roles.

Individualized treatment plans at MAARS are created, effected, and documented in daily logs and case files to achieve consistent therapy and monitoring of changes and progress.

## Methods

Rescued birds follow a recovery regime commonly used for individuals diagnosed with post traumatic stress disorder.[7] First, the client is placed in a regimented, predictable, and secure environment devoid of appreciable stressors (eg, quiet, low activity) to attenuate any tendency for hyper-response to stimuli. During this period, the therapist builds upon extant case history and records observations. Once the overall health has been evaluated and medical care prescribed and the resident emerges from quarantine, s/he enters a second phase during which social competence is assessed. Recovery treatment initiates when the client appears to shows acclimatization (eg, eating well, grooming, signs of boredom, a desire for increased activities, curiosity, and lessened fear of the external environment). There is now an opportunity for the therapist to help the client extend his/her locus of control and transition recovery from passive care to one that engages the parrot and his/her relationships actively. This includes using a series of modified "strange situation" tests where instead of the parent and child, there is the rescue center therapist-parrot configuration where human and conspecific relational evaluations both take place. Based on the therapist's observations and assessment, the client's relational behavior and regulatory capacities are assigned to 1 of the 4 attachment style categories. During the third phase or recovery, novel aspects that can include reminders or images of the initial stressor (eg, garbage bag in which one bird arrived, vacuum cleaner noise) may be introduced as part of therapy to effect affect and self-regulatory modulation. This is essentially a graduated, de-sensitization process that may last for weeks, months, or even years.

Five residents representing various attachment style behaviors and self-models were selected. To minimize species and gender differences, the study was limited to umbrella cockatoo (*Cacatua alba*) males. Social ethology and natural history of free-ranging cockatoos were used as a normative baseline against which that of individuals in captivity were evaluated. Consistent with human studies and past protocols, qualitative clinical evaluation of individual psychological state entailed structured interviews with caregivers, direct observations, review of case histories and laboratory records, and assessment of trauma exposure, presenting problems, precipitants, and behavior. Individuals meet criteria approach to cross-species evaluation stipulating that symptoms qualify as pathological when behavior and psychological states are: 1) relatively persistent and express exclusive of any given specific context; 2) cause an interruption or significant change in an individual's life arc; 3) comprise identifiable psychological and somatic distress; and/or 4) constitute significant behavioral alterations relative to an understood social and cultural space.[8]

**Table 2.** Psychology and behaviors associated with self model-attachment-style.

**Self-attachment style model**

| Developmental attributes | Cockatoo normative | Cockatoo intact | Cockatoo fragile | | Cockatoo disorganized | Human intact |
|---|---|---|---|---|---|---|
| Client bird | N/A | T.G. | I.B. | T.C. | B.B. | L.C. |
| Attachment style | Secure | Secure | Insecure-ambivalent | Insecure-avoidant | Disorganized-disoriented | Secure |
| Developmental context | Wild/free-ranging | Wild /free-ranging conspecific | Wild or captive, unstable | Captive-born and reared | Captive-born reared | Captive stable human |
| Early socialization | Mother and father | Mother and father | Mother and father in tree trunk | Unstable human caregiver | Insecure bonds with multiple unstable human guardians | Close bond with initial guardian |
| Juvenile socialization | Peer socialization in wild and w/ other flock members | Peer socialization in wild and w/ other flock members | ? – captured before adolescent socialization | Lived with other birds but separated in cages | Unpredictable, multiple socialization among humans | Captive raised with good socialization among humans |
| Preferred adult socialization | Flock and pair bond with mate | Conspecific pair bonded, socializes with flock | Conspecific | Conspecific to no one | Unbonded | Human bonded |
| Issues/behavioral disorders | n/a | Well-adjusted, capable of dealing with change and stress | Insecure, immature social behavior, not aggressive, needs female "social facilitator" to interact with flock | Alternates between deep depression and high reactivity and, hyper-aggression fearful | Conflictive social behaviors, elicits contact then rejects. Highly reactive, aggression, fearful, alternating with profound depression. Medications prescribed, ineffective. | Moderately well-adjusted, capable of dealing with most change and stress |
| Socialization preferences | n/a | Prefers conspecifics readily able to socialize with humans and other bird species | Socializes with humans, does not like any or many other bird cohorts | Socializes poorly with other birds and does not like humans | Unable to work with humans or other birds | Humans but can socialize with birds |
| Current status | N/A | Well-adjusted; leader of flock at sanctuary | Pair bonded and part of flock | Uncertain prognosis | Poor prognosis | Functioned well until death in 2009 (unrelated illness) |

In contrast to the majority of human cases encountered in psychiatry, assessments of parrots and other wildlife species are complicated by the fact that many individuals are cross-fostered, reared by a member of a species not their own, in this case, humans. To account for this developmental variable, the 5 individuals were chosen to represent points along a continuum of varying developmental pathways ranging from normative free-ranging cockatoo contexts ("cockatoo self model" where genetic and epigenetic constitutions are maximally aligned) to total human-dominant contexts ("human self model" where genetic and epigenetic constitutions are minimally aligned). Vulnerability to trauma, strange situation test responses, and recovery patterns are affected by quality and identify of the primary attachment figures. [2]

Psychology and behaviors associated with self model-attachment styles are summarized in Table 2. "Cockatoo intact" individuals are individuals born in the wild and reared in normative cockatoo contexts through adolescence subsequently living out their entire lives in the wild (cockatoo normative) or are captured and brought into captivity (cockatoo intact: "T.G."). The individual is predicted to have experienced, and hence exhibits, secure attachment behavior and to have a "cockatoo self," the latter implying that their behavior, cultural, and social preferences are cockatoo-dominated. Behavioral disorders are presumed to originate with trauma of capture and/or captive living. "Cockatoo fragile" (I.B. and T.C.) are either wild-born individuals whose development was disrupted with capture or captive-born individuals who were reared by conspecific parents: in both cases, the dominant attachment figure(s) were cockatoos, hence the base self-model is conspecific, but due to relational trauma, normative attachment processes were disrupted. The term "fragile" is used to describe non-normative attachment figures in terms of identity, attachment style, developmental goals, and values. In the extreme case, when, for example, there are multiple guardians and the individual experiences not only abuse but a mixture of inadequate attachment, the likely outcome is human disorganized-disoriented ("B.B."). Individuals who are classified as having an internalized model of human self are those individuals whose formative attachment figures were not conspecifics. Captive-bred cockatoos are variably reared and in many cases prematurely weaned, some taken from their mothers at a very early age to be hand-reared or even raised from the egg. They also experience no to irregular peer socialization, and little to no adult cockatoo interaction during infancy/childhood. In cases where they receive cockatoo-rearing in captivity and a significant amount of time is spent socializing in positive human interactions through development,[9] it is predicted that they will have a human intact self ("L.C."). The qualifier "human" is used in lieu of "cockatoo" because the while the infant may be reared by conspecifics, the captive environment is necessarily very different than free-ranging life, and unless there is the intent for reintroduction into the wild, such individuals are ill-suited for free-living.

## Results

**Table 3.** Avian affective regulatory disorders (symptoms presented here specific to umbrella cockatoos).

| Constellation of disorders | DSM IV-TR category | Neuropsychological state | Psychological descriptors | Common cockatoo symptoms |
|---|---|---|---|---|
| **Anxiety & phobia disorders** | 300.x | Hyperarousal | Anxiety, rage | Rapid pacing in cage, distress calls, screams, self-mutilation, aggression in response to physical contact |
| **Attachment & adjustment disorders** | 309.x – 313.x | Compromised social engagement | Anxiety, fearful | No response to social overtures, staring off into space, distress calls and screams upon being left alone or removed from significant others |
| **Post traumatic stress disorder** | 309.8 | Compromised social engagement | Depression and fear reaction mixed | Flat-crest, turns back to front of cage; asociality with violent aggression; lack of grooming; nightmares & insomnia; self-mutilation |
| **Mood disorders** | 296.x | Hypoarousal | Depression; dissociation | Flat-crest, turns back to front of cage; asociality without significant aggression; lack of grooming; anorexia, insomnia, self-mutilation |

Prior to rescue, T.G. had lived in one home that had other smaller parrots, and in a second home as a single bird. His last guardian reported that T.G. had pair-bonded with her, but he began to "scream excessively," biting and acting aggressively towards her

and her fiancé when she became engaged. Upon relinquishment to the rescue center, T.G. initially showed anxiety, a frequent distrust of humans and fear of numerous, common household items (e.g., sustained periods of moving agitatedly in cage, pulled away from humans, exhibited agitated behavior, screaming). He exhibited signs of anxiety and agitation when he saw transport carriers, other birds in restraint for examination or treatment, the sanctuary veterinarian, and any strangers in scrubs; he responded at times by vomiting. However, T.G. began to quickly connect and socialize with other parrots (e.g., initiated socialization, engaged in sustained socialization). T.G. was diagnosed as a cockatoo intact, secure attachment based on his case history, behavior upon arrival at the rescue center, and attachment style assessment. The treatment goal was to revitalize T.G.'s secure cockatoo sense of self by encouraging and providing opportunities for him to exercise autonomy, agency, and social and physical competence.

I.B. was classified as a "cockatoo fragile insecure-ambivalent." Little is known about his history. In the modified situations tests, he was very wary of strangers, preferred cockatoos over humans, showed considerable anxiety when not with another cockatoo (over-investment in relationships), a low threshold of arousal, and hyper-reactivity. When introduced to the cockatoo flock, he showed poorly developed social skills (eg, bit the oldest and largest male cockatoo and showed aggressive dominant behavior) and subsequently was [gently] rejected from the flock). Based on attachment style tests, it was inferred that I.B. had had early secure attachment with adult cockatoos but likely his socialization was incomplete due to capture or other trauma. His immature behavior in the flock and preference for conspecifics suggested an introduction to a female to aid in his socialization. Treatment entailed his introduction to a female cockatoo who now behaves like his "social facilitator." Through her "teaching," he is less reactive, has learned to interact appropriately with many other cockatoos, and does not exhibit dominance behavior. However, he has not yet developed a sense of social and self-confidence: when interacting in the larger cockatoo flock, I.B. feels comfortable (eg, absence of aforementioned anxious, aggressive behaviors) only when the pair bond is present.

T.C. was classified as "cockatoo fragile" insecure-avoidant preferring birds over humans, with neutral to aggressive interactions (including attacks) with conspecifics. He was also depressed (eg, did not groom, flat-crested, sat at bottom of cage, uninterested in enrichment projects, hypo-reactive). T.C. shows high levels of anxiety and depression, preferring to remain for the most part alone in his cage. Treatment has included prescribed psychotropic medications to aid in implementation of relational therapies; however, this has not yet proven successful so far. If and when relational therapies are possible, treatment would begin with one-on-one acclimatization with therapist to model a secure, consistent relationship, then, if possible, be gradually introduced to a secure member of the flock.

B.B. was classified as "disorganized-disoriented." He was captive-bred and was exposed to multiple caregivers who were themselves highly unstable (eg, domestic violence, substance abuse). B.B. was passed to other family members and neighbors to care for and brought out at loud parties to perform. He appears to have some preference for humans, but generally speaking, is unable to successfully socialize with either humans or birds. For example, his relational overtures are conflictive and confusing. He will sing and "dance" as a way to get attention, but when a caregiver responds, his only response is sexual or highly aggressive (eg, attacks, bites). He never shows affection to humans or other birds, and shows depression and lack of self-confidence and esteem (eg, flat-crest, withdrawn, lack of affect). He will "fly into a rage" (eg, scream incessantly, move erratically in his cage at the same time, and exhibit attacking behavior)if there is an unexpected noise or a stranger comes into the room. His moods and behavior are highly unpredictable. All symptoms are consonant with what is known about his human family prior to his coming to the sanctuary. He has been prescribed a series of medications to attenuate his excessive reactivity (ie, amitriptyline, clomipramine, prozac) with (in contrast to other cases at the rescue center) no significant results. The center is performing a re-evaluation in the hopes of securing a regime that will help him.

L.C. is included to illustrate an example of "human intact" self model. L.C. was captive-bred in one household with stable and consistent attachment until he was relinquished when his caregiver married and began planning a family. Upon arrival, L.C. exhibited aggressive, reactive behavior reflective of abandonment. Initial socialization with flock members was not successful because he showed ineptitude with cockatoo customs and was rejected by the flock. However, L.C. did not seem upset, only startled, that is, his reaction was transient, non-violent, and the incident did not appear to affect any aspects of functioning. He continued to prefer sole companionship and socializing with humans. L.C. showed no anxiety with strangers and was friendly, but was protective of and preferred his human "flock." He was affectionate, stable emotionally (eg, exhibited none of the anxious behavior describing other individuals in the study), and allopreened with humans. Treatment sought to re-establish human-based secure consistent bonds with humans and convey that he had a permanent home, that is secure consistent attachment figures.

## Conclusions

Relational therapies that are designed to repair developmental trauma are highly successful methods for treating psittacine psychiatric disorders. This study illustrates how concepts and methods from human psychiatry are readily adapted to psittacines consonant with extant knowledge of parrot physiology, natural history, and social ethology. Traumatology and attachment theory emphasize relationships as the object of diagnosis and treatment and underscores the need to address psychological and emotional health of the environment in which the parrot has experienced in the past and now lives. As mentioned earlier, careful attention needs to be paid to species-specific differences and method of attachment style evaluation and treatment tailored accordingly.

If the parrot has been raised in a secure attachment, then treatment focuses on revitalizing those bonds either through human mediation (for "human intact" parrot selves), conspecific (for "parrot intact" self), or some combination. If on the other hand, social development has been interrupted or is severely compromised in quality, then the task of the therapist is to cultivate and "teach" a secure attachment thereby effecting a type of emotional and psychological triage. In these latter cases, the client is likely to remain vulnerable to trauma reactivation and symptoms may return under stressful conditions. In yet other cases, sadly as we saw illustrated in two examples, repair and even triage may not be possible. It is therefore critical to consider the intrinsic capacity of each individual, otherwise, there is risk of re-traumatization and further exacerbation of psychological vulnerability. Finally, results underscore the dangers for cross-generational transmission of dysregulation disorders and the intrinsic compromise effected by captive breeding.[10]

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