

# Building an Inner Sanctuary: Complex PTSD in Chimpanzees

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**ABSTRACT.** Through the analysis of case studies of chimpanzees (*Pan troglodytes troglodytes*) in residence at a sanctuary, who previously sustained prolonged captivity and biomedical experimentation, we illustrate how human psychological models of diagnosis and treatment might be approached in great apes. This study reflects growing attention to ethical, scientific, and practical problems associated with psychological well-being of animals. The analysis concludes that a diagnosis of Complex PTSD in chimpanzees is consistent with descriptions of trauma-induced symptoms as described by the DSM-IV and human trauma research. We discuss how these findings relate to diagnosis and treatment of chimpanzees in captivity and the issue of their continued laboratory use. This clinical study contributes toward theory and therapeutic practices of an emergent trans-species psychology inclusive of both humans and other species. Such an ability to extend what we know

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about models of human trauma opens deeper understanding and insights into ourselves as well as individuals from other species. doi:10.1300/J229v09n01\_02 [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2008 by The Haworth Press. All rights reserved.]

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### INTRODUCTION

In 2004, *Science* published “Psychiatric treatment for great apes?” (Brüne, Brüne-Cohrs, McGrew, 2004). The authors suggest that apes used in laboratories, and other industries such as entertainment, might not only be clinically appropriate subjects for psychiatric treatment, but also that such treatment was a moral imperative.

The science of their proposal was unsurprising. The association of abnormal behavior with captivity has been noted for decades (Walsh, Bramblett, & Alford 1982; Goodall, 1986; Brent, Lee, & Eichberg, 1989; Nash, Fritz, Alford, & Brent, 1999; Lilienfeld, Gershon, Duke, Marino, & de Waal, 1999). Nonetheless, the topic of ape psychopathology carries a sense of tentativeness, deriving from an uncertainty in understanding how concepts long considered unique to humans, such as psychological vulnerability, aberrance, or the existence of a “psyche,” apply to another species, and from socio-political ethical uncertainty regarding using apes in experiments to serve human purposes. Even though there is a high degree of cross-species conformity in human and nonhuman primates behaviorally, physiologically, socially, and emotionally (Goodall, 1986; McGrew, Marchant, & Nishida, 1996), the concept of an ape psyche has remained, until recently, more theoretical than clinical (Maestriperi, 2003; Troisi, 2003).

Now, with an accumulation of work in nonhuman species’ psychology (e.g., Gosling & John, 1999; Troisi, 2003; Corbey, 2005; Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006; McMillan, 2005; Bekoff & Sherman, 2004; Daston & Mitman, 2005; Hauser, 2005; Bradshaw & Sapolsky, 2006; Bradshaw & Schore, 2007), discussions have shifted from *if* ape psychotherapeutic treatment is reasonable, to *how* it might be effected. Given that chimpanzees and humans share an array of qual-

ities and neural substrates (including consciousness, self-awareness, social bonding mechanisms, memory, compassion, strategic thinking, and humor; McGrew, Marchant, & Nishida, 1996; Corbey, 2005; Sapolsky, 2005; Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006), both species are vulnerable to trauma (Reimer, Schwarzbergen, & Preuschoft, 2007). Thus, the foundation of a trans-species psychology—a therapeutic and conceptual framework that accommodates human and nonhuman minds—has been laid. The psychological sciences are expanding questions of cross-cultural comparisons of mental health and well-being to other species (Troisi, 2003; Brüne, M., Brüne-Cohrs, McGrew, 2004; Fabrega, 2006; Preuschoft, Brüne-Cohrs, Brüne, & McGrew, 2006).

Here, through the lens of traumatology, we engage further in this dialogue by examining long-term effects of biomedical procedures and captivity on chimpanzees (Troisi, 2003; Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006). We focus on a set of associated symptoms that can be defined as Complex Post-Traumatic Stress Disorder (PTSD) which have been identified in human trauma survivors and related to multiple, early onset, sustained, and often highly invasive events (Herman, 1992; 1997; 2004; van der Kolk, MacFarlane, & Weisaeth, 1996; Briere & Spinazzola, 2005; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005). As our goal is to provide an operational example of psychiatric evaluation and treatment of apes, we focus on two individuals to illustrate the chimpanzees' experience and symptoms. The cases are representative of other chimpanzees in sanctuary and ape rescue facilities (e.g., Reimers, Schwarzenberger, & Preuschoft, 2007). Following discussion of symptoms, diagnosis, and treatment, we conclude with a discussion of ape psychological trauma and its broader ethical implications for ape captivity.

### ***TRAUMATOLOGY AS APPROACH***

Our choice of trauma as an approach for the study of apes in captivity is based on several reasons, many of which directly reflect conceptual trends in psychological studies as a whole. Relative to other psychological ailments, basic relationships between trauma, stress, and underlying neural substrates are considered fairly well-understood (Yehuda, Engel, Brand, Seckl, Marcus, & Berkowitz, 2005; van der Kolk et al., 1996; Meaney, 2001). The search for understanding how experience of social and environmental stressors affects neuroendocrinal pathways has done much to integrate psychological and biological models together into a

coherent theory (Schore, 2003a; 2003b). This understanding extends across species. Relevant to the analysis here, psychobiological structures and processes impaired by trauma are considered to be shared among all vertebrates (Berridge, 2003; Panksepp, 1998; Bradshaw & Schore, 2007). And while species differences certainly do exist, practicing investigators generally work from the assumption of a common model of brain and behavior (Bradshaw & Finlay, 2005; Bradshaw & Sapolsky, 2006).

Traumatology also contributes by bringing coherence to the uneasy boundaries between science and ethics and humans and animal studies. The emergence of trans-species psychology facilitates study of nonhuman primates, but it also brings attention to the intrinsic paradox that exists in the practice of using great apes to model human psychopathology. If indeed science shows that there is “no doubt that similarities between great apes and humans exist in terms of their vulnerability to psychosocial stress and the development of persistent behavioral abnormalities” (Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006), then ethical models are compelled to follow suit and reflect a trans-species’ psychobiology. Traumatology accommodates formal enquiry at the science-ethics boundary by including cultural agents of trauma within its scope of study. In so doing, a clinical assessment of ape psychopathology in captivity engages an evaluation of the institutions involved, but one that can be comfortably grounded in scientific reasoning (Herman, 1992).

Trauma-inducing conditions experienced by human captive cases (e.g., political and war prisoners, victims of domestic violence) parallel those of ape captivity in many respects. The chimpanzees discussed here have experienced captivity for sustained periods, painful and stressful biomedical procedures, and traumatic disruptions (e.g., mother-infant separation, sensory-motor deprivation, social isolation) that are key factors leading to persistent psychological compromise in humans and nonhuman primates (Schore, 2002; Schore, 2003a, b; Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006) and to Complex PTSD (e.g., repeated, prolonged trauma, subjection to coercive control; Herman, 1992; van der Kolk et al., 2005).

Despite these parallels, little study has been directed toward ape mental health and wellbeing as a goal unto itself. Literature on the effects of stress on apes exists largely because of their use as experimental human surrogates acquired, unfortunately, at their expense. The point concerning captive ape-human parallels is particularly important in terms of making an accurate diagnosis. PTSD is unique in the DSM-IV in that it

is one of only two disorders (the other being Reactive Attachment Disorder) that includes as part of its definition the cause of presenting symptoms (Herman, 1992; APA, 2002). Accordingly, the diagnosis of Complex PTSD in the two chimpanzees discussed in this study is firmly rooted in definition, causation, and observation. Investigating ape psychophysiological effects of adverse experiences in captivity is therefore supported by several lines of research.

## **METHODS**

The study site is Fauna, a sanctuary outside Montreal, Canada, for chimpanzees and other animals. At present, 11 chimpanzees, from an initial laboratory release of 15, have lived at the sanctuary since 1997. The chimpanzees had research histories ranging from eight to 30 years. An additional chimpanzee from a zoo arrived in 2000.

Brüne, Brüne-Cohrs, McGrew, and Preuschoft (2006), Fabrega (2006), and Preuschoft, Brüne-Cohrs, Brüne, and McGrew (2006) have written concerning the difficulties with which both cross-species and cross-cultural assessments may be engaged. While certain judgments continue to be subject of debate (e.g., infanticide as psychopathologically or socio-biologically motivated behavior), there is growing consensus that an obvious syndrome associated with distress deviates statistically from a broad normative standard.

Fabrega's (2006) approach to cross-species evaluation stipulates 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. These case studies profile two chimpanzees who meet such criteria.

Consistent with human cases, qualitative clinical evaluation and assessment of trauma-induced pathologies of the chimpanzees entailed structured interviews with caregivers, direct observations, review of case histories and laboratory records, and assessment of trauma exposure, presenting problems, precipitants, and behavior. Details of early development, patterns of human and chimpanzee relationships, and living conditions are known for the two individuals.<sup>1</sup>

### **CASE HISTORIES**

#### ***Case #1: Jeannie (Ch-562)***

Jeannie, a female chimpanzee born in 1975, arrived at the sanctuary from the Laboratory for Experimental Medicine and Surgery in Primates (LEMSIP) at the age of 22, and died, in sanctuary, on January 1, 2007, at the age of 31 (Figure 1). Jeannie was a large, well-proportioned chimpanzee with a distinctive, intentionally-slow gait and deliberate movement. She was a meticulous groomer who approached new environments with caution.

Records available to the sanctuary do not indicate whether Jeannie was captive-born or wild-caught, nor whether, as is common with many laboratory chimpanzees, she was transferred to the laboratory from the entertainment trade or relinquished as a companion (“pet”) animal. It is known that she was housed in three different laboratories prior to her

FIGURE 1. Portrait of Jeannie at FAUNA



rescue.<sup>2</sup> She spent nine years at LEMSIP undergoing intensive and invasive research, including repeated vaginal washes; multiple cervical, liver punch, wedge and lymph node biopsies; and infection with HIV, hepatitis NANB and C virus. She was also used in rhinovirus vaccine studies and experienced over 200 “knockdowns” (i.e., anesthetization by dart gun).

After seven years at LEMSIP, personnel documented that she suffered “a nervous breakdown” characterized by serious emotional and behavioral problems whereupon she was removed from all future studies (LEMSIP staff, pers. comm.). Attempts were made to control her symptoms through psychotropic medications (e.g., clomipramine). Her symptoms included self-injury, seizure-like episodes, screaming, and alternating trance-like and highly anxious states. The sanctuary director, upon visiting Jeannie at LEMSIP, described her typical behavior: as laboratory personnel and sanctuary visitors approached (dressed in masks and protective clothing used by personnel in experimental procedures), Jeannie began screaming and spinning in her cage (suspended along a fixed ceiling track alongside cages in which other chimpanzees were also individually housed). Her behavior initiated screaming, aggression and fear-grimacing in the other chimpanzees. Jeannie continued screaming, frothing and salivating, rolling her eyes back, urinating and defecating, and rhythmically hitting her body against all four sides of her 5' × 5' × 7' steel cage (Figure 2). LEMSIP decided that Jeannie had become so reactive that it was no longer wise to have her remain in the same room with other chimpanzees experiencing stress. Concerns over her inability to socialize were considered contraindicated of placement in sanctuary. Euthanasia was considered. As a result of the sanctuary director's willingness to accommodate Jeannie's special needs, she was released.

While living at LEMSIP, Jeannie had a history of severe weight loss from recurring anorexia. She would often take her food and arrange each piece ritualistically in a circle around her. After several months at the sanctuary, she resumed eating and her appetite improved. She regained twelve kilos over nine years. Consistent with LEMSIP's descriptions, at the sanctuary Jeannie vacillated between complete calm and sudden, unpredictable aggression. In general, she appeared withdrawn and sleepy, yet could easily become aggressive and engage in self-mutilation and agitated behavior. She had multiple medical problems including pelvic pain, asthma, skin problems, autoimmune disorders, upper respiratory distress, seizure-like episodes which fit no known physiological pattern consistent with neurological damage, and



FIGURE 2. Portrait of Jeannie at LEMSIP



recurring tremors of her hands and feet. She had poor motor coordination and constantly held onto the enclosure bars when walking. Jeannie was prescribed Depo-Provera to help modulate the excessively heavy blood flow that occurred with her cycles and the intense self-injurious behavior and emotional instability accompanying them. Her overall health remained guarded until her death.

Upon arrival at the sanctuary, Jeannie was hypervigilant and avoided social interactions with both humans and other chimpanzees. She avoided eye contact, would not share food with or groom other chimpanzees, and attacked cage mates and humans on the other side of the cages. She awoke startled and was very sensitive to minor changes in



lighting. Perhaps reflective of her sustained tenure in the laboratory in a hanging steel cage that moved, she avoided walking on any surfaces that were new or not completely stable.

Jeannie would become extremely agitated when anyone touched her and she tried to stay by herself. When anxious, Jeannie exhibited a typical fear-grimace accompanied by increasingly intense screaming and self-injurious behaviors. This occurred in situations where new objects were introduced into her enclosure (e.g., blankets, toys) or other novel situations. In a typical episode, she would raise her arms over her head, scream, rub her head to the point of severe hair loss, and repeatedly hit her head with her hands, pull at her eyelids, and pull off her fingernails. She would also hit herself on her chin with hard, rapid movements with the back of her hand as she suspended herself from an enclosure bar, with her eyes rolling back. Her chin became callused from these episodes. These frequent and aggressive outbursts remained largely unpredictable, easily triggered, and difficult for caregivers to attenuate.

Jeannie also exhibited stereotypic rocking and episodes of dissociative “floating hand and foot”—attacking her hand or foot as though it did not belong to her. After nine years in the sanctuary, her outbursts subsided significantly but did not cease completely. Major symptom reduction occurred when she was given access to outdoor enclosures. During the first three or so years in sanctuary, Jeannie’s episodes happened daily; over the years, they reduced to once a month on average. When afraid or unsure, she began to actively seek reassurance through touch from her primary caregivers and certain chimpanzees. With chimpanzees as well as particular humans, she became more trusting and even allowed them to touch her extended hand or toe. She eventually learned to seek out other chimpanzees when afraid or angry, and to ask for reassurance in ways typical of most chimpanzees with appropriate social skills. However, most interactions remained awkward and her social skills limited. She seemed unaware and unsure about “what to do” in conspecific social situations that are normative for (free-living) non-traumatized chimpanzees. For the most part, Jeannie was eventually able to live with others, but preferred keeping to herself, not participating in the life of her cage mates, and exhibited fewer symptoms when housed alone.

### ***Case #2: Rachel (Ch-514)***

Rachel is a female chimpanzee, born in an Oklahoma breeding facility in 1982. She is well-proportioned and of average height and weight

(Figure 3). She holds her body in a tense manner, with taut muscles and a protective gait. She spent her first three and one half years in a private home with a human “mother” where she was treated like a substitute child, given bubble baths and dressed in clothes. By the time she was three years old, she was considered “unmanageable” and sent to LEMSIP. She was housed alone in a cage for most of her 15 year tenure. Chimpanzees as young as Rachel were often housed with older residents but Rachel was too aggressive for group living (LEMSIP personnel, pers. comm.).

At LEMSIP, Rachel was involved in studies including 39 liver punch biopsies. She was considered “dangerous” and caregivers exercised extreme caution around her enclosure to avoid initiating Rachel’s violent, angry outbursts, strenuous lunges, and attempts to grab or injure those who approached. She often injured herself, including abrading her wrists and neck.

FIGURE 3. Portrait of Rachel at FAUNA



When she was transferred to the sanctuary in 1997 she was pale (due to having been kept indoors) and badly scarred from self-inflicted injuries, resulting in missing and deformed finger and toe nails, scabs around the sides of her face from excessive rubbing and picking, a swollen jaw line from repeatedly hitting herself, and scars throughout her body.

After living in sanctuary for the past decade, Rachel's violent episodes occur less frequently, and she has improved social skills and tolerance for other chimpanzees. However, she remains a very low ranking group member and prefers to not be a part of the group for extended periods. Today, she may be approached by sanctuary personnel whom she knows well and trusts. Her aggressive behaviors and expressions (e.g., her mouth hanging open with saliva pouring out and cheeks flapping) have continued at the sanctuary and appear to intensify during her cycles.

Although she is in good physical health, Rachel appears in almost constant distress. She rocks her head continuously, whimpers for extended periods of time, and isolates herself. She focuses on a body part, screams, and behaves as if her hand or foot is a foreign object. She positions her hand behind a chair and reacts as if her hand does not belong to her, attacking it violently or biting it so severely it bleeds. At other times, she hits herself continually in the head, loudly screaming for up to 20 minutes in repeated episodes throughout the day. She calms only when exhausted or when she sees blood.

## ANALYSIS

A baseline level of stress to which these chimpanzees have been subjected can be estimated by comparing differences between wild and captive conditions. For example, in captivity differences in such variables as attachment and social processes; food type, variety, and availability; and habitat significantly exceed the evolutionary and ecological conditions to which chimpanzees have adapted (Goodall, 1986). Chimpanzees' stress is exacerbated by biomedical procedures, the hardships of captivity, and initial psychological ruptures from being taken from their mothers.

The two chimpanzees each spent approximately one decade in solo caging under traumatic social and environmental stress (i.e., steel cages, artificial lights, a lack of fresh air, social isolation and disruptions, restricted movement, depauperate nutrition). Each experienced a series of

traumatic events during their early development. Whether wild-caught or captive-born, Jeannie experienced some form of early social disruption since she was already being used in laboratory experiments by five years old. Free-living chimpanzee young remain nearly inseparable from their mothers and are not weaned before this age (Goodall, 1986; McGrew, Marchant, & Nishida, 1996). Similarly, although Rachel was raised in what might have been a nurturing, albeit human-centered, environment by her human caregiver for three years, this abruptly ended when she was sent to LEMSIP.

The physiological effects of biomedical experimentation (e.g., liver trauma, intentional viral infection, and other invasive procedures) and the accompanying sedatives or anesthetics that contribute to acute and long-term psychophysiological breakdown cannot be underestimated. Not only do these procedures impair health but they add to the chimpanzees' extreme fear and stressful anticipation associated with not knowing whether the approaching lab personnel would hurt or help them, or other chimpanzees, in a given moment.

Details of conditions at the laboratories and observed behaviors are consistent with what Herman (1992) has defined as Complex PTSD in humans. This diagnosis was developed by Herman and others (e.g., Briere & Spinnazola, 2005; Krystal, 2004; van der Kolk, 2004) to bring attention to the severe affects that repeated, prolonged stress and trauma have on psychological well-being. Jeannie and Rachel lived under persistent environmental stress in an atmosphere of fear, unpredictability, and a nearly total lack of control over their world, with a perceived omnipresent threat of violence. Herman (2004) and others make clear it that it is the victim's total dependence on the person in power that undermines their sense of agency—a sense of self as an instrument of change in one's life.

Laboratory protocol and routine required total compliance—as do perpetrators of human abuse. While certain human routines gave some structure to the chimpanzees' everyday living (e.g., lights turned on and off in the morning and evening, feeding times), there were pressing events that were entirely unpredictable and out of the chimpanzees' control. For example, salient for the chimpanzees were the decisions regarding who would be selected, darted, and subjected to procedures. Jeannie and others would begin screaming and rocking their cages when approached or when someone new entered the area, suggesting that, like the testimony of human hostage survivors, they were in fear of their lives.

Studies show that when human prisoners are group-housed, there is an opportunity to have what traumatologists refer to as the “basic unit of survival”—a companion (Luchterhand, 1980; Herman, 1992). This has not been and is not always made available to biomedical chimpanzees. While current Animal Welfare Act (AWA) regulations require attention to primates’ social needs, the language does not prohibit solo housing. Under veterinary-approved circumstances like an infectious status or being a part of an active protocol, chimpanzees continue to be subjected to solo housing, contraindicated for highly social species. Further, given their ages and previous research histories, most if not all of the chimpanzees currently held in U.S. laboratories may have been singly housed for some part of their lives. Deprivations that the two chimpanzees here sustained represent conditions not atypical of the stressors all chimpanzees endured in laboratory confinement.

In chimpanzee culture, bonding via mutual grooming is a source of comfort and well-being (McGrew, Marchant, & Nishida, 1996). Chimpanzees in solo cages have no opportunity to engage in social grooming. Without a history of nurturing relationships and social stability, attachments are difficult to form and sustain whether with other chimpanzees or with human caregivers.

The psychological demands of laboratory captivity result in symptoms that are complex, diffuse, and tenacious (Herman, 1997; 2004). Both chimpanzees showed a constellation of symptoms that included disturbances in personality, social skills, and identity formation, persistent distress, and a high vulnerability to self-injury. Their behaviors were characterized by dissociation (e.g., Jeannie’s rituals of “building an inner sanctuary”) as well as chronic somatic ailments and overall ill health. Although their presentations varied, Jeannie and Rachel both exhibited the hypervigilance, anxiety, and affect dysregulation associated with the chronic stress of recurrent danger (Schoore 2003a). Their symptoms were pathognomonic for dissociative and attachment disorders and for Complex PTSD (Tables 1 and 2).<sup>3</sup>

### ***TREATMENT ANALYSIS***

Treated by a variety of psychotherapies, trauma has been the focus of certain techniques (e.g., Ford et al., 2005). Individual and group cognitive behavioral therapies are considered the first line of treatment (e.g., dialectic behavior therapy (DBT); Lynch et al., 2006; Foa, Keane, & Friedman, 2000). Complex PTSD therapy must address the restoration

TABLE 1

Psychobehavioral Disturbances <i>After Herman, et al 1997</i>	Jeannie	Rachel
<b><u>Affect Regulation/ Behavioral Control/Cognition</u></b>		
Emotional self-regulation	Emotionally unstable; self-injurious; inability to self-soothe	Prone to excessive emotional outbursts; inability to self-soothe
Difficulty communicating wishes and desires	Withdrawn, non-interactive, required external stimuli to identify her needs	Demanding, explosive, unpredictable anger
Chronic dysregulation of affective experience, including disorders of mood	Often sank into a near vegetative state; persistent dysphoria and severe anxiety	Overreaction to perceived danger; depression, whimpering and rocking
	Hyperarousal; difficult to calm; startle response upon awakening	Difficulty relaxing, especially distraught at night
Modulation of impulses	Mood swings from withdrawn to sudden aggressive behavior	Frequent and violent self-attacks and unpredictable aggression
Self-destructive behavior	Breakdown of self protection and self-regulatory capacities; attacking herself, biting, hitting, pulling off hair and nails	Impulsive self attacks; nearly constant aggressive rubbing of fingernails across her teeth and self-hitting across the jaw
Deficits in executive Functions	Loss of motivation to develop new skills; inability to discriminate between truly noxious and benign/pleasant new stimuli	Reactive and unable to use higher level reasoning in situations that demand solution
<b><u>Attachment</u></b>		
Reliability/ predictability of the world	Guarded; hypervigilant; extreme distrust; fearful; hesitant in new environments	Hypervigilant; agitated; distrustful; overdependence on security objects
Interpersonal/boundary difficulties; altered help-seeking; deficiencies in affiliation & exploration	Inability to tolerate touch; initially could not accept soothing/grooming; preference for solitude; socially isolative; misperceiving intentions of others; awkward, limited social skills; avoided eye contact, no sharing of food	Over-grooming/clinging to others; lack of response to their need for space; vacillates between subordinate and demanding ; socially dependent yet aggressive; often causes group fighting; preference for solitude or humans; socially unpredictable; wears tolerance of others thin
<b><u>Dissociation</u></b>		
Distinct alterations in states of consciousness	Frequent dissociative episodes with eye rolling and inability to pull herself back without external intervention	Dissociates body parts from self, violently attacks hand or foot
Detachment from one's self ; dissociative coping	Detached reactions to her hands or feet; preceded by ritualistic circling and trance state while maintaining hold on bars	Dissociative and angry outbursts that cease only with exhaustion or the sight of blood from self-inflicted injury
Automatization of behavior; behavioral repetitions	Ritualistic eating; encircling herself with food before eating; frequent repetitive rocking; trance-like states	Always something in her mouth with hand engaging in ritualistic behavior; becomes overly focused to point of obsession

Psychobehavioral disturbances <i>After Herman, et al 1997</i>	Jeanie	Rachel
<b>Dissociation</b>  Difficulty focusing attention  and modulating arousal	Emotionally labile, extreme responses to minor stressors, with rapid escalation and difficulty self-soothing	Extreme responses to benign stimuli, severely compromised frustration tolerance
Re-enactments	Aggression, self-injurious behavior	A large repertoire of repetitive movements including poking at herself for hours

TABLE 2

<b>Biobehavioral Disturbances</b> <i>After Herman, et al 1997</i>	<b>Jeannie</b>	<b>Rachel</b>
Sensorimotor and developmental problems	Difficulty walking, avoided unstable surfaces; poor coordination, needed to hold on when walking, hand and foot tremors; seizures	Perpetual state of tense, taut muscles; tremors
Hypersensitivity	Highly sensitive to anyone approaching or within sight of her enclosure; very sensitive to changes in lighting	Physical relaxation difficult; sleep often accompanied by whimpering, hyperarousal
Increased medical problems/somatization	"Nervous breakdown" – required medication; anorexia; multiple physical ailments such as heavy cycles, skin problems, pelvic pain, autoimmune disorders, upper respiratory distress, cardiac symptoms	Seems to be in constant distress but no diagnosed organic etiology; excessive scars from self-mutilation, obsessively preoccupied with even the slightest physical injury
Sleep disturbances	Excessive sleepiness Aversion to night nesting materials	Insomnia Aversion to night nesting materials
Eating disorders	Ritualistic eating behavior	Obsessive oral preoccupation with constant presence of some object in her mouth

of core psychological functions keeping in mind that all individuals have their own modes, paces, and arcs of recovery (Herman, 2004).

Initially, human-directed trauma recovery therapy may not appear congruent with nonhuman ethology. However, with a few exceptions, the practices of rehabilitation and care at the sanctuary and that of human programs are strikingly similar in goals and implementation (Table 3; Reimer, Schwarzbergen, & Preuschoft, 2007).

### *1. Establishing Safety, Symptom Reduction, and Stabilization*

For these chimpanzees, like for human hostages, the sense of unpredictability and fear of annihilation is conferred to every action or new



TABLE 3

Goals Supported at Sanctuary	Treatment
1- agency, self-efficacy, perceived control	Choice—food, companions, location, activity
2- self-esteem, hope, optimism	Development of positive expectations; safe routines; consistent, unconditional support
3- assertiveness, mastery, competence	Allowing for individual needs and choices; responsiveness to demands; opportunities to develop new skills
4- empathic presence	Empathic responding, trans-species understanding
5- social bonding and relaxation	Ample opportunity for group housing and activities; social/group choices
6-human social bonding	Interactions only on chimpanzee interest; allowance for long term relationships between chimpanzees and human friends
7- health and well-being	Prompt, respectful veterinary care from consistent vets; care giving by sanctuary director and trained staff
8- avoidance of isolation or marginalization	Re-socialization supported; alone time in context of safe visual access to group
9- healthy, safe living environment	Interactions as "equals" - disrespect toward a chimpanzee not tolerated; staff does not assert dominance; all construction meets the safety and behavioral needs of the chimpanzees.
10- mood, diet, behavior, and social alliance changes	Ongoing needs assessment conducted; desired changes are accommodated with safety and well-being considered

situation (Herman, 1992, 2004; Krystal, 2004). Given that the chimpanzees arrived from conditions of stress and trauma, extra measures are made by the sanctuary to minimize stress. For example, to avoid serious fights, chimpanzees are initially kept separate and introduced with protective bars between them until there is the assurance of introduction without harm. Other measures, such as noise attenuation, are also aimed to minimize stress.

The sanctuary seeks to restore and reinforce the chimpanzee's sense of agency and safety. Each new resident is entrusted with self-empowering opportunities, such as choosing what and when she wants to eat, and if, with whom, and how she wishes to socialize. The physical design allows residents to choose various environments (Figures 4 and 5). A chimpanzee may explore on her own or retreat to solitude or retrieve an object of comfort at will. The chimpanzees are permitted to sleep and awaken according to their preferences. Lights are kept low until all chimpanzees are awake. Natural light, fresh air, outdoor areas, trees, and other environmental options are available.

FIGURE 4. Living areas at FAUNA that promote the chimpanzees' ability to regulate their social and physical environments.



The sanctuary director is responsible for details of the chimpanzees' everyday life and for monitoring psychophysical states. Establishing trust and consistency (the therapeutic alliance) with one human is critical because, in the previous laboratory environments, humans were uncertain instruments of pain, fear, or comfort. Even in sanctuary, it must not be forgotten that the chimpanzees are still incarcerated, and thus there is potential for re-traumatization.

## ***2. Restoring Connection, Personality Integration, and Relationship***

As social obligates, a sense of self in chimpanzees and humans is significantly informed by relationships. For instance, grooming, an integral social process that establishes communication and reinforces bonding, is not possible in non-group housing. The loss of social structures, and resultant inability to engage in such, constitutes a significant threat to health and well-being (Sapolsky, 2005). The absence of social groom-

FIGURE 5. Living areas at FAUNA that promote the chimpanzees' ability to regulate their social and physical environments.



ing can mutate to obsessive self-grooming to the point of severe and permanent hair loss, bleeding, and scarring, as Rachel exemplified.

Sanctuary recovery supports the redevelopment of relationships through therapeutic socialization. Although there are cases when chimpanzees are reunited with a family member or past friend, the majority of social encounters are new. Given the extreme social traumas experienced by most residents prior to entering the sanctuary, reintroductions to conspecifics hold the potential for re-traumatization and have to be carefully executed. The sanctuary allows the opportunity for healthy attachment and bonding to occur with human caregivers and other chimpanzees. Recovering a sense of agency is achieved through voluntary interaction with food, objects, chimpanzees, and caregivers.

Social interactions allow the individual to learn how to regulate affective responses to stress. Environmental modulation gives the chimpanzee a sense of physical safety while being allowed to exercise a greater degree of choice. This provides an adaptive medium in which

psychological faculties can be redeveloped and cognitive skills renewed. The latter is further encouraged by the provision of various activities, objects, and foods to explore.

Some of the chimpanzees at LEMSIP were allowed a single object, such as a tire. For Rachel, a tire continues to be an object that provides a sense of security. At the sanctuary, through sessions with the caregiver and/or other chimpanzees, there is an effort to help rebuild confidence and competence physically and socially, revitalizing psychological coping strategies, environmental control, and positive anticipation.

### ***3. Reconstructing the Trauma, Developing Authority Over Feelings/Memories***

Verbal narratives and discussion are vehicles that human trauma survivors use in therapeutic memory processing and reintegration. Without the capability for verbal narrative, how can this goal be attained with chimpanzees? Are relationships to memory even comparable between species?

Historically, the somatic “voice” has been ignored or downplayed in human trauma psychology. Views of trauma as an embodied phenomenon have encouraged the therapeutic repertoire to include attention to the affective and somatic in addition to vocalizations. Increasingly, there is expanding consideration of “nonverbal centers”: the right hemisphere and body (Schoore, 2002). Some insist that trauma recovery cannot succeed without therapeutic attention to the body. Pat Ogden and others have encouraged an extended vision of how trauma is experienced and processed by including the body and contextualizing the verbal narrative among all the five modalities of communication and experience (Ogden, Minton, & Pain, 2006). This idea is encapsulated in the phrase “the body keeps the score” (van der Kolk et al., 1996) and in Schoore (2005) where the prejudice for weighing verbal over other sensorimotor modalities is addressed: “The [focus] on the patient’s verbal outputs as the primary data of the psychotherapeutic process . . . delete the essential ‘hidden’ prosodic cues and visuo-affective transactions that are communicated between patient and therapist.” This philosophy is resonant with sanctuary treatment.

Chimpanzees’ inability to verbally express their trauma in the way that an adult human can is not a reason to preclude the diagnosis, nor is it a reason to assume that chimpanzees’ trauma is not being expressed in other ways. Previously, children were believed to be incapable of developing PTSD because they did not express typical verbal manifestations

of the disorder. It is now known that children and adolescents can have PTSD and may develop severe forms given prolonged and persistent trauma. In fact, children have high rates of trauma-induced disorders because of their dependency upon and vulnerability to adults (Perry et al., 1995; Schore, 2003a). Similarly, chimpanzees in laboratories are completely dependent on and vulnerable to human caregivers.

Like a therapist with a human trauma patient, the sanctuary caregivers must recognize the chimpanzees' vocal and somatic emotional language. By refined observations and intimate communications, a sanctuary caregiver is in the role of "culture broker" (Figure 6; Weidman, 1975) who comes to learn the language spoken by the chimpanzee: their preferences, moods, demands, and fears. Past descriptions of ape empathy have often been dismissed as anthropomorphic. However, all mammals are considered to have the potential for empathetic behavior because of shared underlying neural mechanisms (Berridge, 2003). *In situ* and *ex situ* studies document empathy (Flack & deWaal, 2000; Preston & DeWaal, 2002). From this perspective, continued disregard for human-chimpanzee interactions recall criticisms of "empathic failure" that have been levied at some forms of human psychotherapy

FIGURE 6. FAUNA Director Gloria Grow and Jeannie.



(Stark, 2000). Consequently, the distinction between a psychotherapist trained in human behavior and one trained in that of chimpanzees diminishes. As with human patients, the correctness of the empathic assumption is born out in the chimpanzee patient's response. Good caregivers, like their therapist counterparts, develop, through careful observation, a true ability for trans-species empathy.

## **DISCUSSION**

A primary intent of this case study has been to investigate how principles of psychological diagnosis and treatment may be extended to other species, specifically chimpanzees. Symptoms of the sanctuary residents were found to overlap with symptoms of human survivors who have experienced forced captivity or early traumatization.

Commonalities in human and chimpanzee psychobiologies and socio-affective patterns, and homologies of the underlying neural networks (particularly the limbic and right hemispheric systems), predict that such symptoms will surface under conditions of traumatic captivity. Consistent with diagnoses of Complex PTSD, the two residents exhibited compromise in the major categories of functionality (Tables 1 and 2).

While other sanctuary chimpanzees show dysfunctions, Jeannie and Rachel exhibited the greatest severity, defined by the precipitating circumstances and the chimpanzees' psychological and behavioral states. From what is known, the two residents both experienced early developmental trauma (i.e., premature maternal separation) as well as a succession of other traumas during their tenures in laboratories.

While this paper focuses on Complex PTSD as the appropriate diagnosis for these two residents, and likely for a large percentage of chimpanzees from or in research, other diagnoses such as reactive attachment, major depressive, and anxiety disorders should not be ruled out. Given what we know about human trauma, depression, anxiety, and other emotional disorders, and given that chimpanzees share most of our cognitive, emotional and social needs, chimpanzees' ability to suffer as the result of their institutionalized use in biomedical research and testing is likely to lead to myriad symptoms which in humans would warrant psychiatric diagnosis and intervention (Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006).

The lack of safe social support in which these traumas occurred constitutes an additional stressor. By definition, laboratory personnel play a



dual role as agents of suffering and solace given their simultaneous charge for chimpanzee welfare and frightening and painful experimentation. Persistent dissociative states and extreme social and functional impairment are consistent with the severe trauma that is prolonged and repeated, experienced in helplessness as a biomedical subject.

For the most part, cross-species' parallels are fairly transparent, with the exception of the construction of the trauma narrative (Table 3). The idea of chimpanzees "telling their story" may sound like egregious anthropomorphism, but given what we now know of neurobiological and behavioral similarities among humans and chimpanzees, a more liberal interpretation is encouraged. Indeed, the empathic dialogue engaged by sanctuary chimpanzees and human caregivers is reflected in the multiple descriptions of human-human therapeutic witnessing (Oliver, 2001), transference-countertransference communication (Stark, 2000), and body-centered therapies (Ogden, Minton, & Pain, 2006) where symptoms are conceptualized beyond pathology to communications of suffering and distress. Extrapolating to traumatized chimpanzees, behavioral disorders are not merely "problems to get rid of" but contain valuable information of past experiences, i.e., disorders are psychophysiological communications of life narratives. A chimpanzee's inability to verbally express his/her trauma is not reason to assume that his/her trauma is not being expressed in other ways.

The use of psychiatric medications in traumatized individuals is often advocated. Such consideration for chimpanzees requires significant philosophical and scientific reflection. In the same manner that arguments are constructed concerning the validity of culturally-contingent (Kirmayer, 2006) and cross-species (Fabrega, 2006) diagnoses, the appropriateness and ethics of treatment methods need to be carefully evaluated. Treatments deriving from the same culture responsible for traumatizing chimpanzees are logically suspect and raise the question whether a treatment, chemical or not, accommodates the chimpanzee or humans and their institutions. The fact that animal well-being has been scientifically and legally defined by human values compels this question.

## CONCLUSIONS

The case studies of Jeannie and Rachel illustrate symptoms of chimpanzees suffering from severe trauma, and substantiate what previous authors (e.g., Troisi, 2003; Brüne, Brüne-Cohrs, McGrew, & Preuschoft, 2006; Reimer, Schwarzbergen, & Preuschoft, 2007) have asserted: gen-



eral principles of diagnosis and treatment developed for humans can successfully extend to apes. More epidemiological research from the hundreds of histories of chimpanzees now in sanctuary would contribute further to the diagnosis of complex trauma and other DSM classifications in apes and their subsequent treatment.

This paper has raised important ethical questions regarding the validity and humaneness of research on chimpanzees in captivity. In human traumatology, the first step in treatment is to arrest its causes. This implies that prevention and treatment of chimpanzee psychopathology entails considering the factors and institutions that have brought chimpanzees to the point of irreversible distress: in simple terms, desisting from using apes as biomedical subjects in lieu of humans is compelled if trauma is not to be perpetuated. The costs of laboratory-caused trauma are immeasurable in their life-long psychological impact on, and consequent suffering of, chimpanzees.

## NOTES

1. In clinical studies, participant anonymity is protected. Researchers are required to procure their consent and, where competency is uncertain, the approval of their guardian or supervising physician. Protection holds even for deceased subjects. In the case of nonhuman animals consent cannot be obtained. We use their given names in lieu of the practice of anonymity in an effort to discontinue their objectification. We also include their assigned laboratory numbers.

2. In 1981, at age six, Merck, Sharpe and Dohme (Merck) pharmaceuticals donated her to the Buckshire Corporation, and seven years later in 1988, she was sent to the Laboratory for Experimental Medicine and Surgery in Primates (LEMSIP). From LEMSIP she was sent to sanctuary.

3. The standard domain of impairment (Herman et al., 1997) that was not used was that of "Self-Concept," as no presumptions were made regarding intrapsychic states (e.g., presence of shame or guilt or a diminution in self-esteem) of these two individuals.

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